

**The  
State of Florida  
Hazard Mitigation Plan**



**State of Florida  
Department of Community Affairs  
Division of Emergency Management**

**December, 2003**

**VISION and MISSION STATEMENT**

**VISION:** Florida will be a disaster resistant and resilient state, where hazard vulnerability reduction is standard practice in both the government and private sectors.

**MISSION:** Ensure that the residents, visitors and businesses in Florida are safe and secure from natural, technological and human induced hazards by reducing the risk and vulnerability before disasters happen, through state agencies and local community communication, citizen education, coordination with partners, aggressive research and data analysis.

*Florida Enhanced Hazard Mitigation Plan*

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# INTRODUCTION

Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, enacted under the Disaster Mitigation Act of 2000, (DMA2K), provides new and revitalized approaches to mitigation planning. This section continues the requirement for a Standard State Mitigation plan as a condition of disaster assistance; but provides for states to receive an increased percentage of HMGP funds (from 7.5 to 20 percent of the total estimated eligible Federal assistance) if, at the time of the declaration of a major disaster, they have in effect a FEMA-approved Enhanced State Hazard Mitigation Plan. It establishes a new federal requirement for local mitigation plans; and authorizes up to 7 percent of the HMGP funds available to a state to be used for development of state, tribal, and local mitigation plans. Section 322, in concert with other sections of DMA2K, provides a significant opportunity to reduce the Nation's disaster losses through mitigation planning. In addition, implementation of planned, pre-identified, cost-effective mitigation measures will streamline the disaster recovery process.

In order to meet the compliance criteria of the DMA2K for an enhanced plan, the Florida Enhanced Hazard Mitigation Plan (FEHMP) provides a framework for linking pre- and post-disaster mitigation planning and measures with public and private interests to ensure an integrated, comprehensive approach to disaster loss reduction. It emphasizes the importance of strong state and local planning processes and comprehensive program management. This new planning approach supports state administration of the Hazard Mitigation Grant Program and the Pre-Disaster Mitigation Grant Program, and represents an invigorated state commitment to mitigation activities, comprehensive state mitigation planning, and improved state program management. The new planning process provides a **strong** link between state and local mitigation programs. The FEHMP emphasizes that both state and local plans must address incorporation of post-disaster early mitigation implementation strategies and sustainable recovery actions. Improved mitigation planning will result in a better understanding of risks and vulnerabilities, and will expedite implementation of measures and activities to reduce pre- and post-disaster risks.

The FEHMP illustrates that the State has developed a comprehensive mitigation program, that it effectively uses available mitigation funding, and that it is capable of managing the increased funding. An important requirement of the legislation is that FEMA must approve a completed enhanced plan before a disaster declaration, in order for a state to be eligible for the increased funding. A major goal of the FEHMP is, therefore, for state and local governments to focus early on the development of comprehensive and integrated plans that are coordinated through appropriate state,

local, and regional agencies, as well as non-governmental interest groups. To the extent feasible, the FEMP consolidates the planning requirements for different FEMA mitigation programs. This will ensure that local plans will meet the minimum requirements for all of the different FEMA mitigation programs, such as the Flood Mitigation Assistance Program, the Community Rating System, the Pre-Disaster Mitigation Program, the Hazard Mitigation Grant Program, and the mitigation activities that are based upon the provisions of section 323 and subsections 406(b) and (e) of the Stafford Act. Improved mitigation plans may also serve to integrate documents and plans produced under other emergency management programs. The FEHMP identifies overall goals and state level priorities, incorporates the more specific local risk assessments, when available, and reinforces the link between pre-disaster planning, building and construction standards, and post-disaster reconstruction efforts.

In summary, this Florida Enhanced State Mitigation Plan provides the overall guidance to knit together the planning efforts of all state agencies, local governments and private and non-profit organizations into one viable, comprehensive and state-wide mitigation program.

# 1.0

# PREREQUISITES

# 1.1 PLAN ADOPTION

***44 CFR 201.4(c)(6) – The plan must be formally adopted by the State prior to submittal to FEMA for final review and approval.***

The State of Florida Hazard Mitigation Plan meets the requirements Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (commonly referred to as the Stafford Act - Public Law 93-288). Additionally, this plan meets the minimum planning requirements under 44 Code of Federal Regulations, Part 78 (Flood Mitigation Assistance).

It is intended that this plan also meet the requirements of the Disaster Mitigation Act of 2000 (DMA2K), Section 322. Section 322 of the Act requires that states, as a condition of receiving federal disaster mitigation funds, have a mitigation plan in place that describes the planning process for identifying hazards, risk and vulnerabilities, identifies and prioritizes mitigation actions, encourages the development of local mitigation and provides technical support for these efforts. In addition, the Act requires local and tribal governments to also have mitigation plans.

The development and implementation of this strategy is authorized and/or required by the following state statutes:

Chapter 252, Florida Statutes (specifically Sections 252.311(2), 252.32 (1)(e), 252.34(4)(e) 252.35(2)(a)4, and 252.35(2)(g), Emergency Management)

Chapter 163, Florida Statutes (specifically Section 163.3184(6), County and Municipal Comprehensive Planning) as implemented through Rule 9J-5, Florida Administrative Code

Chapter 187, Florida Statutes (and specifically Sections 187.2017(7)(a), 187.201(7)(b)25, 187.201(9)(a), 187.201(9)(b)3 and 9, 187.201(16)(b)6, and 187.201(21)(b)5,10 and 13, State Comprehensive Plan)

In accordance with 44.C.F.R. 201.4©(6), the following Hazard Mitigation Plan is hereby adopted by the State of Florida and submitted to the Federal Emergency Management Agency for approval.

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W. CRAIG FUGATE  
Governor's Authorized Representative

# 1.2 COMPLIANCE WITH FEDERAL LAWS AND REGULATIONS

***44 CFR 201.4(c)(7) – The plan must include assurances that the State will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with CFR 13.11(c). The State will amend its plan whenever necessary to reflect changes in State or Federal laws and statutes as required in CFR 13.11(d).***

Through the development and enforcement of this plan, the State of Florida will comply with all provisions in 44 Code of Federal Regulations, Part 13 as well as Subchapter B- Insurance and Mitigation, Subchapter D- Disaster Assistance and Subchapter F- Preparedness. Additionally, the assurances listed below are provided as documentation that the state or any subsequent sub-grantee (recipients) that receive federal grant funds will comply with all applicable Federal statutes and regulations. The state will amend the plan whenever necessary to reflect changes in federal statutes and regulations or material changes in state law, organization, policy or state agency operations.

To the extent outlined above, the following provisions apply to the award of assistance:

- (a) Recipient possesses legal authority to enter into agreements, and to execute the proposed programs;
- (b) Recipient's governing body has duly adopted or passed as an official act a resolution, motion or similar action authorizing the execution of hazard mitigation agreements, including all understandings and assurances contained therein, and directing and authorizing the Recipient's chief administrative officer or designee to act in connection with any application and to provide such additional information as may be required;
- (c) No member of or delegate to the Congress of the United States, and no Resident Commissioner, shall be admitted to any share or part of any agreement or to any benefit to arise from the same. No member, officer, or employee of the Recipient or its designees or agents, no member of the governing body of the locality in which the program is situated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the program during his tenure or for one year thereafter, shall have any interest direct or indirect, in any contract or subcontract, or the proceeds thereof, for work to be performed in connection with the program assisted under this plan. The Recipient shall incorporate or cause to be incorporated, in all such contracts or subcontracts a provision prohibiting such interest pursuant to the purpose state above;

(d) All Recipient contracts for which the State Legislature is in any part a funding source, shall contain language to provide for termination with reasonable costs to be paid by the Recipient for eligible contract work completed prior to the date the notice of suspension of funding was received by the Recipient. Any cost incurred after a notice of suspension or termination is received by the Recipient may not be funded with funds provided under a grant agreement unless previously approved in writing by the Department. All Recipient contracts shall contain provisions for termination for cause or convenience and shall provide for the method of payment in such event;

(e) Recipient will comply with:

(1) Contract Work Hours and Safety Standards Act of 1962, 40 U.S.C. 327 et seq., requiring that mechanics and laborers (including watchmen and guards) employed on federally assisted contracts be paid wages of not less than one and one-half times their basic wage rates for all hours worked in excess of forty hours in a work week; and

(2) Federal Fair Labor Standards Act, 29 U.S.C. Section 201 et seq., requiring that covered employees be paid at least the minimum prescribed wage, and also that they be paid one and one-half times their basic wage rates for all hours worked in excess of the prescribed work-week.

(f) Recipient will comply with:

(1) Title VI of the Civil Rights Act of 1964 (P.L. 88-352), and the regulations issued pursuant thereto, which provides that no person in the United States shall on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Recipient receives Federal financial assistance and will immediately take any measures necessary to effectuate this assurance. If any real property or structure thereon is provided or improved with the aid of Federal financial assistance extended to the Recipient, this assurance shall obligate the Recipient, or in the case of any transfer of such property, any transferee, for the period during which the real property or structure is used for a purpose for which the Federal financial assistance is extended, or for another purpose involving the provision of similar services or benefits;

(2) Any prohibition against discrimination on the basis of age under the Age Discrimination Act of 1975, as amended (42 U.S.C.: 6101-6107) which prohibits discrimination on the basis of age or with respect to otherwise qualified handicapped individuals as provided in Section 504 of the Rehabilitation Act of 1973;

(3) Executive Order 11246 as amended by Executive Orders 11375 and 12086, and the regulations issued pursuant thereto, which provide that no person shall be discriminated against on the basis of race, color, religion, sex or national origin in all

phases of employment during the performance of federal or federally assisted construction contracts; affirmative action to insure fair treatment in employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff/termination, rates of pay or other forms of compensation; and election for training and apprenticeship;

(g) The Recipient agrees to comply with the Americans With Disabilities Act (Public Law 101-336, 42 U.S.C. Section 12101 et seq.), where applicable, which prohibits discrimination by public and private entities on the basis of disability in the areas of employment, public accommodations, transportation, State and local government services, and in telecommunications;

(h) Recipient will establish safeguards to prohibit employees from using positions for a purpose that is or gives the appearance of being motivated by a desire for private gain for themselves or others, particularly those with whom they have family, business, or other ties pursuant to Section 112.313 and Section 112.3135, FS;

(i) Recipient will comply with the Anti-Kickback Act of 1986, 41 U.S.C. Section 51 which outlaws and prescribes penalties for "kickbacks" of wages in federally financed or assisted construction activities;

(j) Recipient will comply with the Hatch Act (18 USC 594, 598, 600-605), which limits the political activities of employees;

(k) Recipient will comply with the flood insurance purchase and other requirements of the Flood Disaster Protection Act of 1973 as amended, 42 USC 4002-4107, including requirements regarding the purchase of flood insurance in communities where such insurance is available as a condition for the receipt of any Federal financial assistance for construction or acquisition purposes for use in any area having special flood hazards. The phrase "Federal financial assistance" includes any form of loan, grant, guaranty, insurance payment, rebate, subsidy, disaster assistance loan or grant, or any other form of direct or indirect Federal assistance;

(l) Recipient will require every building or facility (other than a privately owned residential structure) designed, constructed, or altered with funds provided under a grant agreement to comply with the "Uniform Federal Accessibility Standards," (AS) which is Appendix A to 41 CFR Section 101-19.6 for general type buildings and Appendix A to 24 CFR Part 40 for residential structures. The Recipient will be responsible for conducting inspections to ensure compliance with these specifications by the contractor;

(m) Recipient will, in connection with its performance of environmental assessments under the National Environmental Policy Act of 1969, comply with Section 106 of the National Historic Preservation Act of 1966 (U.S.C. 470), Executive Order 11593, 24 CFR Part 800, and the Preservation of Archaeological and Historical Data Act of 1966 (16 U.S.C. 469a-1, et seq.) by:

(1) Consulting with the State Historic Preservation Office to identify properties listed in or eligible for inclusion in the National Register of Historic Places that are subject to adverse effects (see 36 CFR Section 800.8) by the proposed activity; and

(2) Complying with all requirements established by the State to avoid or mitigate adverse effects upon such properties.

(3) Abiding by the terms and conditions of the "Programmatic Agreement Among the Federal Emergency Management Agency, the Florida State Historic Preservation Office, the Florida Department of Community Affairs and the Advisory Council on Historic Preservation, (PA)" which addresses roles and responsibilities of Federal and State entities in implementing Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. 470f, and implementing regulations in 36 CFR part 800.

(4) Notifying FEMA and the state if any project may affect a historic property. When any of Recipient's projects funded under a grant agreement may affect a historic property, as defined in 36 CFR 800. (2)(e), the Federal Emergency Management Agency (FEMA) may require Recipient to review the eligible scope of work in consultation with the State Historic Preservation Office (SHPO) and suggest methods of repair or construction that will conform with the recommended approaches set out in the Secretary of Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings 1992 (Standards), the Secretary of the Interior's Guidelines for Archeological Documentation (Guidelines) (48 Federal Register 44734-37), or any other applicable Secretary of Interior standards. If FEMA determines that the eligible scope of work will not conform with the Standards, Recipient agrees to participate in consultations to develop, and, after execution by all parties, to abide by, a written agreement that establishes mitigation and recondition measures, including but not limited to, impacts to archeological sites, and the salvage, storage, and reuse of any significant architectural features that may otherwise be demolished.

(5) Notifying FEMA and the state if any project funded under a grant agreement will involve ground disturbing activities, including, but not limited to: subsurface disturbance; removal of trees; excavation for footings and foundations; and installation of utilities (such as water, sewer, storm drains, electrical, gas, leach lines and septic tanks) except where these activities are restricted solely to areas previously

disturbed by the installation, replacement or maintenance of such utilities. FEMA will request the SHPO's opinion on the potential that archeological properties may be present and be affected by such activities. The SHPO will advise Recipient on any feasible steps to be accomplished to avoid any National Register eligible archeological property or will make recommendations for the development of a treatment plan for the recovery of archeological data from the property.

If Recipient is unable to avoid the archeological property, it will develop, in consultation with the SHPO, a treatment plan consistent with the Guidelines and take into account the Advisory Council on Historic Preservation (Council) publication "Treatment of Archeological Properties". Recipient shall forward information regarding the treatment plan to FEMA, the SHPO and the Council for review. If the SHPO and the Council do not object within 15 calendar days of receipt of the treatment plan, FEMA may direct Recipient to implement the treatment plan. If either the Council or the SHPO object, Recipient shall not proceed with the project until the objection is resolved.

(6) Notifying the state and FEMA as soon as practicable: (a) of any changes in the approved scope of work for a National Register eligible or listed property; (b) of all changes to a project that may result in a supplemental DSR or modify an HMGP project for a National Register eligible or listed property; (c) if it appears that a project funded under a grant agreement will affect a previously unidentified property that may be eligible for inclusion in the National Register or affect a known historic property in an unanticipated manner. Recipient acknowledges that FEMA may require Recipient to stop construction in the vicinity of the discovery of a previously unidentified property that may be eligible for inclusion in the National Register or upon learning that construction may affect a known historic property in an unanticipated manner. Recipient further acknowledges that FEMA may require Recipient to take all reasonable measures to avoid or minimize harm to such property until FEMA concludes consultation with the SHPO. Recipient also acknowledges that FEMA will require, and Recipient shall comply with, modifications to the project scope of work necessary to implement recommendations to address the project and the property.

(7) Acknowledging that, unless FEMA specifically stipulates otherwise, it shall not receive funding for projects when, with intent to avoid the requirements of the PA or the NHPA, Recipient intentionally and significantly adversely affects a historic property, or having the legal power to prevent it, allowed such significant adverse affect to occur.

(n) Recipient will comply with Title IX of the Education Amendments of 1972, as amended (20 U.S.C.: 1681-1683 and 1685 - 1686) which prohibits discrimination on the basis of sex;

(o) Recipient will comply with the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970, (42 U.S.C. 4521-45-94) relating to nondiscrimination on the basis of alcohol abuse or alcoholism;

- (p) Recipient will comply with 523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. 290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records;
- (q) Recipient will comply with Lead-Based Paint Poison Prevention Act (42 U.S.C.: 4821 et seq.) which prohibits the use of lead based paint in construction of rehabilitation or residential structures;
- (r) Recipient will comply with the Energy Policy and Conservation Act (P.L. 94-163; 42 U.S.C. 6201-6422), and the provisions of the state Energy Conservation Plan adopted pursuant thereto;
- (s) Recipient will comply with the Laboratory Animal Welfare Act of 1966, 7 U.S.C. 2131-2159, pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by an award of assistance under this agreement;
- (t) Recipient will comply with Title VIII of the Civil Rights Act of 1968, 42 U.S.C. 2000c and 42 3601-3619, as amended, relating to non-discrimination in the sale, rental, or financing of housing, and Title VI of the Civil Rights Act of 1964 (P.L. 88-352), which prohibits discrimination on the basis of race, color or nation origin;
- (u) Recipient will comply with the Clean Air Act of 1955, as amended, 42 U.S.C. 7401-7642;
- (v) Recipient will comply with the Clean Water Act of 1977, as amended, 42 U.S.C. 7419-7626;
- (w) Recipient will comply with the Endangered Species Act of 1973, 16 U.S.C. 1531-1544;
- (x) Recipient will comply with the Intergovernmental Personnel Act of 1970, 42 U.S.C. 4728-4763;
- (y) Recipient will assist the awarding agency in assuring compliance with the National Historic Preservation Act of 1966, as amended, 16 U.S.C. 270;
- (z) Recipient will comply with environmental standards which may be prescribed pursuant to the National Environmental Policy Act of 1969, 42 U.S.C. 4321-4347;
- (aa) Recipient will assist the awarding agency in assuring compliance with the Preservation of Archeological and Historical Preservation Act of 1966, 16 U.S.C. 469a, et seq;
- (bb) Recipient will comply with the Rehabilitation Act of 1973, Section 504, 29 U.S.C. 794, regarding non-discrimination;

(cc) Recipient will comply with the environmental standards that may be prescribed pursuant to the Safe Drinking Water Act of 1974, 42 U.S.C. 300f-300j, regarding the protection of underground water sources;

(dd) Recipient will comply with the requirements of Titles II and III of the Uniform Relocation Assistance and Property Acquisition Policies Act of 1970, 42 U.S.C. 4621-4638, which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally assisted programs;

(ee) Recipient will comply with the Wild and Scenic Rivers Act of 1968, 16 U.S.C. 1271-1287, related to protecting components or potential components of the national wild and scenic rivers system;

(ff) Recipient will comply with the following Executive Orders: EO 11514 (NEPA); EO 11738 (violating facilities); EO 11988 (Floodplain Management); EO 11990 (Wetlands); and EO 12898 (Environmental Justice);

(gg) Recipient will comply with the Coastal Barrier Resources Act of 1977, 16 U.S.C. 3510;

(hh) Recipient will assure project consistency with the approved State program developed under the Coastal Zone Management Act of 1972, 16 U.S.C. 1451-1464; and

(ii) Recipient will comply with the Fish and Wildlife Coordination Act of 1958; 16 U.S.C. 661-666.

(jj) With respect to demolition activities, recipient will:

1. Create and make available documentation sufficient to demonstrate that the recipient and its demolition contractor have sufficient manpower and equipment to comply with the obligations as outlined in a grant agreement.

2. Return the property to its natural state as though no improvements had ever been contained thereon.

3. Furnish documentation of all qualified personnel, licenses and all equipment necessary to inspect buildings located in Recipient's jurisdiction to detect the presence of asbestos and lead in accordance with requirements of the U.S. Environmental Protection Agency, the Florida Department of Environmental Protection and the County Health Department.

4. Provide documentation of the inspection results for each structure to indicate:

- a. Safety Hazards Present
  - b. Health Hazards Present
  - c. Hazardous Materials Present
5. Provide supervision over contractors or employees employed by Recipient to remove asbestos and lead from demolished or otherwise applicable structures.
6. Leave the demolished site clean, level and free of debris.
7. Notify the Department promptly of any unusual existing condition which hampers the contractors work.
8. Obtain all required permits.
9. Provide addresses and marked maps for each site where water wells and septic tanks are to be closed along with the number of wells and septic tanks located on each site. Provide documentation of closures.
10. Comply with mandatory standards and policies relating to energy efficiency that are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Public Law 94-163).
11. Comply with all applicable standards, orders, or requirements issued under Section 112 and 306 of the Clean Air Act (42 U.S.C. 1857 (h), Section 508 of the Clean Water Act (33 U.S. 1368), Executive Order 11738, and the U.S. Environmental Protection Agency regulations (40 CFR Part 15 and 61). This clause shall be added to any subcontracts.
12. Provide documentation of public notices for demolition activities.

# **2.0**

# **Planning Process**

## 2.1 DOCUMENTATION OF THE PLANNING PROCESS

***44 CFR 201.4(c)(1) - The Plan must contain a description of the planning process used to develop the plan, including how it was prepared, who was involved in the process and how other agencies participated.***

The Department of Community Affairs (DCA) is one of seven executive agencies that report directly to the Governor who appoint the Department Head or Secretary. The Secretary of DCA in coordination with the Governor appoints the Director of the Division of Emergency Management who by Executive Order serves as the Governor's Authorized Representative (GAR) in carrying out the responsibilities placed on the Division by the State Emergency Management Act.

The State Emergency Management Act, Chapter 252 Florida Statutes, designates the Florida Division of Emergency Management (DEM) as the State Coordinating Agency for statewide emergency management activities with the responsibility to create and maintain a comprehensive statewide program of emergency management in coordination with the federal government, other state agencies, units of local government and private sector agencies with a role in emergency management. Under Chapter 252 F.S., the statewide emergency management program must ensure that the state can adequately prepare for, respond to, recover from and **mitigate** all hazards to which the state is vulnerable.

To assist the Division in this role, Chapter 252.365 requires each executive department, as well as the executive directors of the seven water management districts and other related agencies to designate a person to serve as the agency's Emergency Coordinating Officer (ECO). The ECO is responsible for coordinating with the Division on all emergency preparedness, response, recovery, and mitigation activities.

One of the key elements of the statewide mitigation program is the State Hazard Mitigation Plan. DEM as State Coordinating Agency is responsible for developing the State Hazard Mitigation Plan, a responsibility it carries out with staff assistance from its sister divisions within DCA - the Division of Community Planning and the Division of Housing and Community Development. To further assist in the development and implementation of the Mitigation Plan, the DEM Director in his role as GAR has invited the ECOs and representatives from other private and public agencies with resources or expertise relevant to mitigation to convene as the State Hazard Mitigation Plan Advisory Council (SHMPAC).

## **State Hazard Mitigation Plan Advisory Council (SHMPAC)**

The SHMPAC is chaired by the State Hazard Mitigation Officer and represents a collaborative effort from a number of state, federal and regional agencies, local governments, the private sector and the general public. The SHMPAC is similar in function to the county Local Mitigation Strategy (LMS) Working Groups described in Section 5.2. The SHMPAC's primary function is to assist the Division with the development, implementation and maintenance of the State Mitigation Plan, and maximize the leveraging potential of all state mitigation related resources.

Membership includes state agencies through their ECOs, representatives from the Regional Planning Councils, the Florida League of Cities, the Florida Association of Counties, Water Management Districts, Local Mitigation Strategy Working Groups, private non-profit groups (PNPs) such as the Red Cross, Florida Alliance for Safe Homes (FLASH), the Florida Chapter of the American Planning Association, federal agencies and the education community. To enhance agency participation, the ECOs from state agencies with significant mitigation related activities were requested to designate an Agency Mitigation Coordinator familiar with agency mitigation activities to support the ECO 's participation. The designated Coordinator provides the Division linkage to the agency for Mitigation related activities and attends SHMPAC meetings either with or in place of the ECO. A detailed list of agencies and organizations that assisted in the planning process and a discussion of their participation is provided in Section 2.2.

Additionally, as SHMPAC matures it will:

- Coordinate the development of state mitigation goals and objectives;
- Conduct a comprehensive state agency mitigation capability analysis;
- Identify and disseminate a comprehensive list of funding sources;
- Coordinate the development of statewide mitigation projects;
- Advise on the development of post-disaster Mitigation Assessment Reports and documentation;
- Evaluate risk assessments;
- Identify mitigation opportunities;
- Document mitigation success stories;
- Foster and promote the integration of hazard mitigation principles and practices into local and state government policies and programs;
- Assist in development, maintenance and implementation of guidance and informational materials to support hazard mitigation efforts of local and state government, and private entities; and
- Advise on ways and assist with marketing mitigation principles, practices and funding sources to the general public.

Although the SHMPAC is **not** a legislatively constituted body with authority to set or enforce mitigation policy, it may examine the policies and program goals of multiple agencies and provide recommendations to the Director of the Division of Emergency

Management regarding his duty to reduce or eliminate the state's vulnerability and risk to hazards as established in Chapter 252, Florida Statutes. The Director, in turn, provides recommendations to the Governor, the Legislature, building code organizations, the public, and related interests on mitigation measures designed to reduce vulnerability and risk. Individual agencies remain responsible for implementing their specific programs; however, the SHMPAC is tasked, on an ongoing basis, to identify areas of mission overlap and make recommendations for coordinated actions that would advance the policies and program goals of identified agencies, and result in synergistic benefits for the public.

The SHMPAC met 7 times over the period from August 2002 to September 2003. A complete list of members, meeting dates and minutes is contained in the SHMPAC Appendix. SHMPAC meets quarterly, and the meetings are noticed in the Florida Administrative Weekly and are open to the public. Once the draft plan was in reviewable form it was placed on our website and public notice was widely published requesting input from the public at large by letter, E-mail or directly through attendance at a public SHMPAC meeting.

Thus far, the SHMPAC has established four functional committees: the Steering Committee, the Hazards Analysis Committee, the Policy Evaluation Committee and the Mitigation Prioritization Committee. The Agency Mitigation Coordinators, in representing their agency's interests, are asked to look for areas of mutual concern. Once identified, these mutual concerns become the basis for forming partnerships and leveraging state resources by integrating activities. To facilitate this, the Agency Mitigation Coordinators are encouraged to serve on more than one committee. A Division staff person serves as a member and provides staff support to the committees.

### **SHMPAC Support Team**

The Division staff serves as the technical support staff to the SHMPAC and is responsible for organizing and completing the narrative portion as well as drafting any reports or recommendations as provided by SHMPAC. The State Hazard Mitigation Officer appoints a lead staff person to coordinate the activities of the support team. The team includes staff from the sister Divisions within the Department of Community Affairs: the Division of Community Planning and the Division of Housing and Community Development. The primary responsibilities of the team will include:

- Facilitating Meetings;
- Research of key mitigation issues;
- Data collection, analysis and presentation;
- Preparing draft narrative reports; and
- Revising draft narrative reports based on SHMPAC comments.

At least two weeks prior to each meeting, the Support Team will provide meeting discussion materials to the SHMPAC members.

## **Mitigation Planning Process**

The most important step in the development of any hazard mitigation plan is the documentation of the planning process. This provides an overview of the rationale used by the planning team to recommend specific mitigation actions to be undertaken. The planning process utilized by the SHMPAC is as follows:

**Step 1 - Organize Resources**

**Step 2 - Develop Goals and Objectives**

**Step 3 - Review and Analyze Hazards and Risk**

**Step 4 - Identify and Analyze Existing Resources**

**Step 5 - Identify and Privatize Mitigation Alternatives**

**Step 6 - Develop Plan Maintenance Strategy**

**Step 7 –Obtain Plan Approval**

The planning process is theoretically linear but in practice, becomes a series of iterations as the planners grapple with designing a system to accommodate a pre-existing and exceedingly broad-based mitigation process. As existing programs are identified and new program ideas and recommendations generated, the goals, objectives and policies must be re-evaluated for sufficient breadth and direction to accommodate the new information. The following is an overview of the planning process employed by the State of Florida:

### **1. Organize the Planning Team**

The initial work of the support team involved identifying potential members, mailing out invitations and conducting follow-up telephone contacts to set up the SHMPAC organizational meeting. The invitees represented a variety of federal, state and local governments as well as the private sector and related non-profit agencies and the education community. The key presentation at the organizational meeting included an overview of the state's existing mitigation strategy and the potential impacts of the Disaster Mitigation Act of 2000 on this strategy. This was followed by a presentation on the justification and organizational framework for the development of the SHMPAC. The attendees were provided an Agency Capability questionnaire, which was designed to provide a measure of the agency's current plans and programs that may have a direct relationship toward reducing risk in the State of Florida. The Support Team developed a web page dedicated to the State Mitigation Plan to allow SHMPAC members to keep up to date on the development of the State Hazard Mitigation Plan.

## **2. Development of draft goals and objectives**

Next followed a series of SHMPAC meetings devoted to visioning as a prelude to setting goals and objectives. Staff from Division of Community Planning moderated these visioning sessions with assistance from the Division of Housing and Community Development. As the state office responsible for comprehensive planning, Community Planning has staff with vast experience in working with diverse groups to identify common goals and objectives and regularly conduct similar visioning exercises for communities around the state. In the first visioning meeting, SHMPAC members were provided with a set of mitigation categories developed by the Support Team as an aid in categorizing proposed mitigation activities. The categories covered broad operational categories, such as education and training, coordination between state agencies, coordination with local governments and the private sector and technical assistance. SHMPAC members were divided into two moderated groups and asked to identify problems and potential solutions under each category based on their experience. The Support Team then used the results to rough out a series of goals and objectives, which were presented to the SHMPAC at the next meeting and further refined to their current form over the next two meetings (minutes of these meetings are contained in the SHMPAC Appendix).

## **3. Review and analysis of hazards and risk**

The Support Team, in coordination with a planning and engineering firm, worked on revising the natural hazards section of the statewide Hazards Vulnerability and Risk Assessment that was part of the state's 409 Plan. The consultant, using historical data and the HAZUS-MH loss-estimation model, completed the lion's share of this work on the natural hazards analysis. A detail discussion of HAZUS-MH is provided in the Hazards and Risk Assessment section of this document. The consultant also reviewed the risk analyses found in the Local Mitigation Strategies (LMS) and the results were incorporated into the State Plan where appropriate. The State Facilities portion of the plan is being initiated by the consultant who is charged with identifying state facilities (both critical and non-critical) that are located in zones vulnerable to natural hazards. A copy of the draft Hazards Vulnerability and Risk Assessment was provided to each SHMPAC member and the consultant made a presentation at the May 21, 2003 meeting on the methodology used to develop the study. The SHMPAC was given the opportunity to discuss the study and several recommendations were made and incorporated. A Hazards Vulnerability and Risk Assessment group was formed to conduct a more detailed review of study and report its findings to SHMPAC. Also, at the May 21-22 SHMPAC meeting, a working group was formed to develop the manmade hazards report to be incorporated into the draft Hazards Vulnerability and Risk Assessment.

## **4. Identification and analysis of existing resources**

Step 4 of the planning process involves identifying existing state capability to implement a statewide comprehensive mitigation program. This will include a discussion of key state, federal and non-governmental partnerships that are integral to the implementation to mitigation programs in Florida. Mitigation, however, has proven to be a difficult concept to fully explain to SHMPAC members who have a

strong bias towards the traditional response and recovery programs. To ensure that this process is as comprehensive as possible, the SHMPAC members were asked to assist the support team by providing documentation of existing agency capabilities and resources. The support team developed and provided to each state agency and those non-governmental agencies that attended the initial SHMPAC meeting a questionnaire requesting a list of their programs, plans and/or policies that relate to mitigation. Subsequently, the questionnaire was provided to all state agencies whether or not they attended and participated in the SHMPAC meetings. This effort has the following objectives:

- To identify all agency programs that have a mitigation element so we can fulfill our role as coordinator;
- To identify agency programs that should have a mitigation component but do not so we can work with that program to include mitigation;
- To identify agency policies which have an impact on mitigation in order to revise policies with negative impacts and better support policies with positive impacts by including them in the state plan.

The response to the initial questionnaire was less than satisfactory. Therefore, for those agencies that did not respond to the questionnaire or choose to not participate in the SHMPAC, support staff provided a follow up letter to the agency head offering assistance in completing the questionnaire, as well as offering to visit the agency to discuss request for information. After exhausting this request for information from non-responsive state agencies, support staff reviewed the agencies web sites to obtain information for inclusion into the initial draft of the State Capability Assessment Report.

The initial draft of the State Capability Assessment Report, which included limited data of each state agency, was provided to the SHMPAC at the May 21-22, 2003 for review and approval. The SHMPAC was asked for recommendations for inclusion or deletion of agencies and/or programs highlighted in the report. Because of the absence of many of the key state agencies, this proved to be a difficult process, therefore, staff was directed to revise the draft report to identify the traditional key state agencies having a track record of working with the state mitigation staff as part of the State Emergency Response Team. These agencies include the state Departments of Community Affairs, Environmental Protection, Transportation, Health, State, Management Services and Agriculture and Consumer Services. The report also includes a discussion of key federal agencies, which include Department of Homeland Security-Federal Emergency Management Agency, Army Corp of Engineers, National Weather Service and Natural Resource Conservation Service. The principle FEMA related mitigation programs administered by the State include the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance Program (FMA), the National Flood Insurance Program (NFIP), Hurricane Planning and the State Dam Safety Program. In addition, the Division administers the Public

Assistance (PA) Program, and the state Emergency Management Project Assistance (EMPA) Grant Program. Lastly, a discussion of key non-governmental partners is provided. These organizations, at a minimum, will include the State University System, Federal Alliance for Safe Homes, American Red Cross, Florida Inter-Faith and the Florida Home Builders. Each of these organizations was asked to review their respective agency write up for completeness and identify any additional agency mitigation related opportunities. Upon final review and approval, the State Capability Report will be added to the draft plan.

#### **5. Identification and prioritization of mitigation actions**

Next, the SHMPAC was provided an overview of potential mitigation alternatives to address the hazards and risk detailed in the hazard vulnerability and risk assessment report and the state capability report. The SHMPAC was asked to review the goals and objectives, risk assessment and agency capability report to identify potential mitigation initiatives or projects. For each project identified, a list of potential funding sources is provided. The SHMPAC will begin working on developing criteria for prioritization and ranking of potential mitigation projects. These criteria should be directly related to the goals and objectives, and risk assessment identified in the plan. Sub committees will be developed for each goal and objective and tasked to develop this list of potential projects and any associated ranking criteria for their projects.

#### **6. Development of plan maintenance strategy**

SHMPAC worked on developing a strategy for plan maintenance that includes Implementation, monitoring and updating. The support team will develop a draft plan maintenance strategy to be presented to the full SHMPAC for recommendations and/or final approval.

#### **7. Plan approval**

Once the plan receives SHMPAC approval it will be forwarded to FEMA for review and comment. Only after FEMA's comments have been satisfactorily addressed will the plan be submitted to the relevant Agency Secretaries and the Governor for approval.

## 2.2 COORDINATION AMONG AGENCY MITIGATION PROGRAMS

***44 CFR 201.4(b) - The Plan must contain a discussion of how the planning process was coordinated with state agencies and appropriate federal agencies and interested groups.***

The Florida Department of Community Affairs (DCA) is unique in that the Governor and Legislature have designated it, as the lead state-coordinating agency for Emergency Management, State Planning and Housing and Community Development related issues. The Department continues to strive to keep the state's citizen safe, our water and air pure, our beaches pristine, our housing safe and affordable, our vulnerable coastal areas protected and our growth well planned. As such, many of the programs and activities implemented within the Department have both direct and indirect impacts on reducing the state's risk to future disasters. In some cases, the Department can be viewed as the Department of Mitigation Planning.

To complement this broad mandate over planning, DCA administers most of the traditional mitigation related programs as well as two key programs, which will have a major impact on mitigation - the Comprehensive Growth and Development program, which manages the local comprehensive planning process and the Florida Building Code Program, which oversees the statewide, unified building code. These two programs will have a major impact over the long term in that they guide new development, while the more traditional mitigation programs tend to be remedial. Coordination with other Divisions and programs within the Department are integral to our development and implementation of a statewide mitigation program as well as the State Mitigation Plan. These programs include: Small Cities Community Development Block Program, Florida Community's Trust Program, Residential Mitigation Construction Program, Affordable Housing, Rebuilding Waterfronts, the Home and SHIP Programs and Manufactured Building Program. Each of these programs have adopted a policy that all projects submitted for funding must have accompanying endorsement from the appropriate Local Mitigation Strategy Working Groups. A more detailed discussion of the Department's programs as well as the other key state agencies programs are provided in Section 4.2 in the State Capabilities Section.

The principle Federal Emergency Management Agency related mitigation programs administered by the State include the Hazard Mitigation Grant Program (HMGP), 406 mitigation under the Public Assistance Program, the Pre-Disaster Mitigation Grant Program (PDM), the Flood Mitigation Assistance (FMA) Program, the State Assistance Office for National Flood Insurance Program (NFIP), the Hurricane Planning Program and the Dam Safety Program. The State Assistance Office for the NFIP is also responsible for coordinating statewide Community Rating System, repetitive loss

properties activities and Federal Map Modernization activities. The State does not administer the Earthquake Program, given the State's low vulnerability and risk for earthquake hazards. Each of these programs have adopted a policy that all projects submitted for funding must have accompanying endorsement from Local Mitigation Strategy Mitigation Working Groups. In addition, the Division administers the Emergency Management Project Grant (EMPG) Program.

All of the above listed programs have representation on the State Hazard Mitigation Plan Advisory Council (SHMPAC) and the program objectives are reflected in the Goals and Objectives Section of this Plan. A more detailed discussion of the Federal Emergency Management Agency (FEMA) programs and their administration within the State is provided in the State Capabilities Section.

While DCA administers an array of mitigation related programs, it is not the sole contributor to mitigation in the State of Florida. The State Hazard Mitigation Officer has identified key state and federal agencies that have a direct impact in implementing mitigation related activities throughout the State of Florida. The following agencies were identified as key contributors to implementing mitigation programs:

- Department of Community Affairs
- Department of Agriculture and Consumer Services
- Department of Environmental Protection
- Department of Financial Management
- Department of Management Services
- Department of State
- Department of Transportation
- Department of Health
- Florida Department of Law Enforcement
- Water Management Districts
- Regional Planning Council
- Federal Emergency Management Agency
- US Army Corp of Engineers
- National Resources Conservation Service
- National Weather Service
- National Forest Service
- Small Business Administration

These agencies represent the core of the governmental agencies that contribute to implementing mitigation activities within the state. However, by no means are they the sole governmental agencies contributing to mitigation. Each of the above listed state agencies were invited to participate as members of the SHMPAC. Mitigation has proven to be a difficult concept to fully explain or sell to many of the state agencies invited to participate in SHMPAC. They have a strong bias toward the traditional preparedness and response programs and do not fully appreciate or understand the

hazard reduction related roles of their agencies. Therefore, several key state agencies choose not to participate in the planning process or were not invited to participate on the SHMPAC. The SHMPAC continues to identify and coordinate with all appropriate state agencies to integrate their mitigation related activities into the statewide mitigation strategy. The following agencies did not participate in the planning process; Department of Agriculture and Consumer Services, Department of Financial Management, Department of Management Services, Department of State, Department of Health and Florida Department of Law Enforcement.

The only Federal agencies invited to participate in the State Mitigation Plan Planning process were the FEMA and US Army Corp of Engineers. FEMA was an active participant in the process; however; the Corp was not able to attend due to the lateness of the state's invitation. The lack of participation by other federal agencies is a result of an oversight on the state's part, by not inviting several key federal agencies to participate in a timely manner. These agencies included the National Resources Conservation Service, National Forest Service, Small Business Administration and the National Weather Service. However, a draft copy of the State Mitigation Plan was provided to each of the above referenced agencies for review and comments. Additionally, a formal letter was provided to each agency requesting their participation in the future SHMPAC meetings.

The State Mitigation Plan activities are not limited to state and federal governmental agencies; but involves all levels of government as well as businesses, education community, non-profit agencies and the public. Toward that end, the following organizations served as members of the SHMPAC and assisted in the development of the State Mitigation Plan (SMP).

Federal Alliance for Safe Homes (FLASH)  
Florida Interfaith Networking in Disasters (FIND)  
Florida League of Cities  
Florida Association of Counties  
American Red Cross  
Florida Chapter-American Planning Association  
Florida International University-International Hurricane Center  
Florida State University  
University of Florida  
Florida Emergency Preparedness Association  
Florida Floodplain Managers Association

Each of the above listed organizations actively participated in the SHMPAC planning process with the exception of the Florida Association of Counties. The Florida Emergency Preparedness Association represented the Local Mitigation Strategy Working Groups. The following is a summary of activities completed by those federal, state, local and other non-governmental organizations that participated in the planning process to develop the SMP:

A. Each member (all agencies and organization representatives) was required to participate in a series of visioning sessions conducted by DCA's Division of Community Planning. These were facilitated working sessions designed to assist SHMPAC achieve consensus on the overall direction for the Statewide Mitigation programs. The results of the visioning sessions are the Goals and Objectives that are provided in Section 4.1 of this Plan.

B. Each member was required to complete Mitigation Questionnaire designed to obtain an overview of agency/organization programs, plans and/or policies that relate to Mitigation. Several agencies did not participate in the SHMPAC, either because they choose not to attend the meeting or were not invited to meetings. In those instances, to assure that the planning process was as comprehensive as possible, DEM mitigation staff contacted those agencies to assist in completing the questionnaire and obtaining other needed documentation for inclusion in the State Plan. Staff set up interviews with key agency personnel to obtain information on agency plans, programs and policies. Documentation provided was used to develop draft narrative for State and Local Capability Assessment.

C. The hazard analysis and risk assessment was developed by an Engineering and Planning Consultant with input from the SHMPAC. The primary role of the SHMPAC was to review the draft hazards analysis and risk assessment for consistency. The draft risk assessment was revised twice based upon comments from SHMPAC members.

D. Each member was requested to submit a list of potential mitigation measures (alternatives) that will address reducing the state's risk to hazards. The potential mitigation measures must be consistent with the goals and objectives of the plan. The potential measures must address state owned facilities and related projects that have a statewide impact on hazard reduction. These measures were integrated into Mitigation Measures in Section 4.4 of the Plan.

E. Lastly, each member was asked to assist in obtaining a letter of endorsement for plan adoption from their respective agency or organization.

Tables 2.2.1 – 2.2.3 provide a general overview of agencies and organizations participating in the State Mitigation Plan planning process.

**Table 2.2.1  
State Agencies  
Participation (Planning Process)**

<b>Level of Participation</b>	<b>FDACS</b>	<b>FDEP</b>	<b>DFM</b>	<b>FDMS</b>	<b>FDOS</b>	<b>FDOT</b>	<b>FDOH</b>	<b>FDLE</b>	<b>FWMD</b>	<b>FRPC</b>	<b>FDCA</b>
Level of Participation											
Attended initial meeting	X	X	X	X	X	X	X		X	X	X
Attended at least two additional meetings	X	X		X		X	X		X	X	X
Provided agency overview for inclusion in State Capability Section of Plan		X				X			X	X	X
Provided analysis of agency plan, policies and programs		X				X			X		X
Provided comments-oral written on plan narrative		X				X			X		X
Provided general discussion on agency pre- and post-disaster mitigation operations		X				X			X		X
Provided list of mitigation initiatives for inclusion in state plan		X				X			X		X
Obtained letter of endorsement for plan adoption											

Second row appears to be unnecessary.

**Table 2.2.2  
Non-Governmental Organizations  
Participation (Planning Process)**

<b>Level of Participation</b>	<b>FLASH</b>	<b>FIND</b>	<b>FLOC</b>	<b>FAOC</b>	<b>ARC</b>	<b>FAPA</b>	<b>FEPA</b>	<b>FIU</b>	<b>FSU</b>
Level of Participation									
Attended initial meeting	X	X	X		X	X	X	X	X
Attended at least two additional meetings	X	X	X		X	X	X	X	
Provided agency overview for inclusion in State Capability Section of Plan	X	X	X		X	X		X	
Provided analysis of agency plan, policies and programs	X	X	X		X	X		X	
Provided comments-oral written on plan narrative	X	X	X		X	X	X	X	X
Provided general discussion on agency pre- and post-disaster mitigation operations	X	X	X		X	X	X	X	
Provided list of mitigation initiatives for inclusion in state plan	X	X	X		X	X		X	
Obtained letter of endorsement for plan adoption									

Second row appears to be unnecessary.

**Table 2.2.3  
Federal Agencies  
Participation (Planning Process)**

Level of Participation	DHS-FEMA	CORP	NWS	NRCS	SBA	NFS
Level of Participation	X					
Attended initial meeting	X					
Attended at least two additional meetings	X					
Provided agency overview for inclusion in State Capability Section of Plan	X					
Provided analysis of agency plan, policies and programs	X					
Provided comments-oral written on plan narrative	X					
Provided general discussion on agency pre- and post-disaster mitigation operations	X					
Provided list of mitigation initiatives for inclusion in state plan						
Obtained letter of endorsement for plan adoption						

Second row appears to be unnecessary.

## **2.3 INTEGRATION WITH OTHER PLANNING EFFORTS**

***44CFR 201.4(b) – The plan must discuss how the planning process was integrated with other ongoing state planning efforts as well as other FEMA mitigation programs and measures.***

Three primary on-going state planning effects have been integrated with the State Mitigation Plan development planning process. They are as follows:

- State Comprehensive Planning
- State Comprehensive Emergency Management Plan
- Emergency Management Accreditation Program

**State Comprehensive Planning**

The Division of Emergency Management (DEM) in partnership with the Division of Community Planning (DCP) has initiated a number of activities to integrate hazard mitigation objectives consistent with the State Mitigation Plan and Local Mitigation Strategies into state and local government comprehensive plans. The Florida Growth Management Act (Chapter 163, Part II, Florida Statutes) requires all of Florida's 67 counties and 476 municipalities to adopt Local Government Comprehensive Plans that guide future growth and development. Comprehensive plans contain chapters or elements that address future land use, housing, transportation, infrastructure, coastal management, conservation, recreation and open space, intergovernmental coordination, and capital improvements. The Act requires the Department to review and approve comprehensive plans and plan amendments for compliance with the Act. Other agencies, including the Regional Planning Councils, Water Management Districts, the Department of State, Transportation, Environmental Protection and Agriculture and the Florida Fish and Wildlife Conservation Commission, review Comprehensive Plans and amendments and issue recommended objections to the Department. Many of these agencies have representation on the State Hazard Mitigation Plan Advisory Council.

Additionally, Florida is one of the few states in the nation that has a direct relationship between growth management, land use planning, development decisions and public safety. Rule 9J-2 and 9J-5 of the Florida Administrative Code, in the review of growth management plans, impose requirements on developments in hurricane vulnerable areas to reduce the effect of development on evacuation and other public safety concerns. The linkage between land use and emergency management provides a powerful tool to mitigate the impacts of development on public safety. DEM has worked very closely with the State Land Planning Agency, (DEM's parent agency, the Department of Community Affairs) in the review of development plans to mitigate the impacts of new dwellings and other land uses on a community's ability to safely evacuate from hurricanes and other natural hazards.

It is for this reason that DEM through the State of Florida Hurricane Planning Program insisted that the transportation analysis performed as part of the Hurricane Evacuation Studies (HES) include an abbreviated transportation model (ATM). These ATMs allow

emergency management and planners to assess the increase in clearance time caused by a development in a surge vulnerable area, or one with mobile homes. Additionally, land use/mitigation collaborations between land use planners and emergency management include the assessment of impact fees on developments that create additional shelter demand; emergency management service impact fees; safe-room and shutter requirements for non-surge vulnerable developments; community centers as shelters for mobile home and multi-family developments; density restrictions in surge vulnerable areas; roadway improvement impact fees based on evacuation demand; and the limitation of new development permits based on clearance time thresholds as determined by the local hurricane evacuation study, transportation analysis.

DCP requires all local comprehensive plans to be revised every seven years through the Evaluation and Appraisal Report (EAR) process. DCP has agreed to coordinate the EAR updates with revisions to the Local Mitigation Strategy (plans) required by Disaster Mitigation Act of 2000 to promote greater implementation of those strategies through local comprehensive plans. There is no specific requirement that the comprehensive plans be revised based on the findings and recommendations in the local mitigation strategies. In order to provide incentives for local governments to integrate the local mitigation into the comprehensive plan, the Division with the assistance of outside contractors will assist in evaluation and recommendations and facilitate discussions between local government planning officials and emergency management planners. The intent is to focus on the use of comprehensive planning and other land use strategies to reduce overall state risk to future damages to property and public infrastructure as well as to avoid development in hazardous areas. This integration is an on-going activity.

### **State Comprehensive Emergency Management Plan**

The DEM has also initiated integration of portions of the State Mitigation Plan activities into the state's existing Comprehensive Emergency Management Plan (CEMP). Chapter 252, Florida Statutes, (State Emergency Management Act) mandates the development of the Florida CEMP. The plan is operations oriented and establishes a framework through which the State of Florida prepares for, responds to, recovers from, and mitigates the impacts of a wide variety of hazards that could adversely affect people and property. The CEMP was developed using an all-hazards planning approach to standardize the functional framework under which strategies and resources are used to minimize the consequences of an event.

It unifies the effects of state agencies, special districts, local governments and voluntary organizations for a comprehensive approach to maximize the use of all resources with the state. The plan also provides an integrated and coordinated local, state, and federal response. The State Hazard Mitigation Plan Advisory Council (SHMPAC) in coordination with the DEM Planning and Response Unit is currently working on integrating the Hazards Analysis and Risk Assessment data developed in the State Mitigation in to the state's CEMP. The State Mitigation Plan Hazards Analysis and Risk Assessment will serve as the state's single point document on hazards and risk. This is an on-going activity that is schedules to be completed in June 2004. This is consistent with the goals and objectives of the State Mitigation Plan. Understanding the importance that the state has place on mitigation, the SHMPAC has recommended that the State Mitigation Plan be integrated in the State's CEMP as an Appendix. Since December 2000, the State Mitigation Plan has been listed in the CEMP as a supporting document and provides a reference for other state agencies, special districts, local governments and voluntary agencies seeking guidance and information on Statewide Hazard mitigation goals and objectives. The state is fully committed to a comprehensive and effective statewide strategy.

### **Emergency Management Accreditation Program**

The Emergency Management Accreditation Program (EMAP) is a voluntary review process for state, territorial and local emergency management programs. EMAP was created by a group of national organizations to foster continuous improvement in emergency management capabilities. EMAP provides emergency management programs the opportunity to be recognized for compliance with national standards, to demonstrate accountability, and to focus attention on areas and issues where resources are needed.

EMAP creates a structure for the review of strategic plans, coupled with a methodical and verified assessment done by experienced peers from other jurisdictions, resulting in stronger capabilities and accountability. The EMAP process evaluates emergency management programs on compliance with 54 standards covering 14 program elements, including: planning; resource management; training; exercises, evaluations and corrective actions; and communications and warning. The *EMAP Standard* is the set of criteria by which programs that apply for EMAP accreditation will be measured. The *EMAP Standard* is based on the NFPA 1600 Standard on Disaster/Emergency Preparedness and Business Continuity Programs, 2000 edition, with language added to clarify many elements' meanings for emergency management accreditation purposes

In April 2003, the state invited a team of trained EMAP assessors from a variety of other states and localities to review its materials and to verify compliance with all criteria in the EMAP Standard. On September 5, 2003, EMAP granted the state of Florida's emergency management program full accreditation. Accreditation is a means of demonstrating, through self-assessment, documentation and peer review, that a program meets national standards for emergency management programs. From the coordination of preparedness and response activities, plans and procedures,

communications and warning capabilities, to training and exercise programs, Florida's Division of Emergency Management has demonstrated that it is in possession of the tools and wherewithal to become the first state in the nation to achieve this milestone.

The Mitigation Section, working in concert with the State Hazard Mitigation Plan Advisory Council (SHMPAC) integrated 17 of the 54 EMAP standards into the State Hazard Mitigation Plan planning process. These standards included review of hazard vulnerability and risk assessment; state and local mitigation plans; mitigation grant management; program financial management and other related mitigation issues. To demonstrate the state's mitigation capability, the Mitigation Section provided a host of information from existing documents, which included: the state's pre-Disaster Mitigation Act of 2000 (DMA2K) 409 Plan (the draft State Hazard Mitigation Plan), the Mitigation Section's Grant Administration Plan as well as the Mitigation Section's Standard Operating Guidelines. Overall, the EMAP Assessors were very complementary of the state's mitigation strategy including the LMS process in particular

### **Other on-going mitigation related activities**

To ensure the state's strategy is truly comprehensive, a number of on-going Federal Emergency Management Agency mitigation programs and measures has been integrated into the planning process. Arguably, the most important is the National Flood Insurance Program (NFIP). The State NFIP Coordinator has assisted the SHMPAC in integrating flood plain management activities into the overall state mitigation strategy. The State Assistance Officer for the NFIP is charged with coordinating the NFIP activities through the Community Assistance Program (CAP). This includes NFIP statewide coordination, the Community Rating System Program, Dam Safety Program through Florida Department of Environmental Protection (DEP) and the Map Modernization activities, including the Cooperating Technical Communities' Initiative. The State NFIP Coordinator in conciliation with other state agencies and local governments and the State Water Management Districts will determine the priority and funding required to produce improved digitalized flood hazard data. These recommendations will be provided to the FEMA Regional Office who may suggest modifying priorities and funding recommendations when necessary, to: (1) Improve Flood Map Modernization Program performance, (2) Comply with Congressional recommendations, (3) Comply with adjusted program funding, and (4) Resolve differences between state and local recommendations. The state is coordinating with FEMA on a GIS conversion Repetitive Loss Properties project. This project involves verifying and cataloging into GIS format; repetitive loss properties in high policy count areas. The data is provided to state and local agencies to assist in their mitigation related planning efforts. Prior to the creation of the SHMPAC, many of the SHMPAC members had little or no knowledge of programs implemented by the State Assistance Office for the NFIP.

The state administers several FEMA mitigation grant related programs, which include; Hazard Mitigation Grant Program, Flood Mitigation Assistance Program, Disaster Unmet Needs funding and the Pre-Disaster Mitigation Grant Program. These programs

provide a sufficient portion of the mitigation funding resources provided to state, local and community based organizations to implement mitigation activities. The state also uses funding from Emergency Management Performance Grants (EMPG) to support statewide mitigation activities. Section 4.5 provides a general overview of EMPG activities. In 1998 and 1999, funding from FMA and HMGP programs was used as seed monies to assist Florida local governments in developing their Local Mitigation Strategies. FMA funds were made available to seven communities to assist with the development of flood hazard identification and risk reduction measures. HMGP funds along with the US Department of Energy and the Economic Development Administration funds were used to develop all-hazard mitigation plans for local communities. Currently, HMGP 7% funds are being utilized in 47 local governments to assist with updating existing Local Mitigation Strategies to comply with the DMA2K. PDM funds are being utilized in 20 local governments in the state to assist with updating existing Local Mitigation Strategies to comply with the DMA2K. Pre-Disaster Mitigation funds are also being utilized by the SHMPAC to assist in the development and updating of the State Mitigation Plan. Initially, PDM funds were used to outsource the development of the state's Hazard Identification and Risk Assessment Section. This Section of the plan was completed using the new FEMA HAZU-MH Multi-hazard methodology for estimating potential future losses. Additionally, PDM and HMGP planning funds are being used to reproduce the State Plan as well as for administrative expenses associated by plan development and the SHMPAC meetings.

No point in Florida is further than 65 miles from the coast. This means that although 35 counties are official "Coastal" all 67 of them can experience category 3 winds or greater. Florida has over 8.1 million people living in category 1 through 5 evacuation zones and in mobile homes. The results of that staggering number is many local and regional clearance times far exceed the best warning. The magnitude of the hurricane problem in Florida requires a constant and concerted year round effort to address all of the issues associated with hurricane impacts, pre and post-landfall. The state's ability to respond to and mitigate the impacts of hurricanes as well as other natural and man made hazards, continues to progress by integrating the National Hurricane Planning program activities into the State Mitigation Strategy. These activities include addressing the statewide shelter deficit, complex evacuation and related clearance times, traffic issues along with reverse laning, updating hurricane studies that include; Hurricane Evacuation Study (HES) and Sea, Lake and overland Surges from Hurricanes (SLOSH), and providing a liaison with the National Hurricane Center.

Florida has implemented a statewide program called "Florida Prepares." This Program was designed to build upon the many successes of the FEMA Project Impact Initiative by seeking to promote building disaster resistant communities through the formation of community-based partnerships. These partnerships include the local emergency management program, the local business community, faith based and other community based organizations. These partners focus on developing mitigation, response, preparedness and recovery strategies, or measures that foster and encourage total community involvement throughout all phases of emergency management. The community and faith based initiatives are represented on the SHMPAC by Florida

Interfaith Network in Disasters (FIND). Florida Prepares also builds upon the Governor's Front Porch Initiative as a vehicle to provide information and related assistance to low income and minority communities on emergency management related issues. The Division continues to work with the Governor's Office Front Porch staff by providing direct educational and outreach materials and assisting communities in developing working relationships with their respective LMS Working Groups to that community and faith based mitigation projects are included in the LMS. The Florida Prepares Coordinator is an active member of the SHMPAC and assisted in assuring Florida Prepares Initiative activities are integrated with other state mitigation planning activities.

# **3.0**

# **Risk Assessment**

## 3.1 IDENTIFYING HAZARDS

**44 CFR 201.4(c)(2)(i) – The risk assessment shall include an overview of the type of all natural hazards that can affect the State.**

This section of the State Plan presents a list of potential hazards that that make likely impact the state. Due to the state's unique geographical setting it is vulnerable to a wide array of hazards that threaten its communities, businesses, and environment. To determine the hazards that posses the greatest threat to the state, the Support Team conducted a visioning session with the SHMPAC discuss potential hazards that impact the state. During this session, the SHMPAC was provided a comprehensive list of potential hazards that can impact the state. This list included a combination of hazards that were derived from:

- (1) Review of the state's most recent 409 Plan and Comprehensive Emergency Management Plan;
- (2) Review of historical data of events that occurred over the past 30 years;
- (3) Review of recent research data compiled by Researchers at the University of Florida on the impact of various hazards on Florida and several South American countries;
- (4) Review of hazards identified in guidance materials provided by the FEMA Regional Office on identifying hazards; and
- (5) Review of the vulnerability and risk analyses contained in the sixty-seven Local Mitigation Strategies.

Many of the identified hazards are interrelated (i.e., hurricanes can cause flooding and tornadoes), and some consist of hazardous elements that are not listed separately (i.e., severe thunderstorms can cause lightning; hurricanes can cause coastal erosion). Therefore, the SHMPAC revised the list by consolidating several hazards and eliminating others based upon their probability of impacting the state. The Support Team then used the results to rough out a draft list of hazards. This draft list of hazards was presented to the SHMPAC at the next meeting and further refined to their current form (minutes of these meetings is contained in the SHMPAC Appendix). Although included on the list contained in the abovementioned FEMA guidelines, Volcanoes and Earthquakes were omitted with FEMA's concurrence. Landslides are described in this section but were ultimately dropped from consideration for lack of any historical record of occurrence. Erosion and Sinkholes were added because there is an historical record of occurrence. Additionally, the state is vulnerable to other non-natural hazards. Therefore, the State Plan will also include a general discussion of technological and

societal hazards. The SHMPAC using the hazards assessment has determined that the State Plan will address the following hazards:

- **Flooding, including related potential for dam failure**
- **Hurricanes & Coastal Storms**
- **Severe Storms and Tornadoes**
- **Wildfire**
- **Drought/Extreme Heat**
- **Winter Storms and Freezes**
- **Erosion**
- **Sinkholes, Landslide and Seismic Events**
- **Terrorism**
- **Technological**
- **Mass Migration**

## **Data Sources**

**American Society of Civil Engineers (ASCE), “Facts About Windstorms.”**

Website: [www.windhazards.org/facts.cfm](http://www.windhazards.org/facts.cfm)

**Bureau of Reclamation, U.S. Department of the Interior**

Website: [www.usbr.gov](http://www.usbr.gov)

**Federal Emergency Management Agency (FEMA)**

Website: [www.fema.gov](http://www.fema.gov)

**Florida Division of Emergency Management**

Website: [www.dca.state.fl.us/fdem/index.htm](http://www.dca.state.fl.us/fdem/index.htm)

**Florida Geological Survey**

Website: <http://www.dep.state.fl.us/geology/default.htm>

**National Climatic Data Center (NCDC), U.S. Department of Commerce, National Oceanic and Atmospheric Administration**

Website: <http://lwf.ncdc.noaa.gov/oa/ncdc.html>

**National Drought Mitigation Center, University of Nebraska-Lincoln**

Website: [www.drought.unl.edu/index.htm](http://www.drought.unl.edu/index.htm)

**National Severe Storms Laboratory (NSSL), U.S. Department of Commerce, National Oceanic and Atmospheric Administration**

Website: [www.nssl.noaa.gov](http://www.nssl.noaa.gov)

**National Weather Service (NWS), U.S. Department of Commerce, National Oceanic and Atmospheric Administration**

Website: [www.nws.noaa.gov](http://www.nws.noaa.gov)

**Storm Prediction Center (SPC), U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service**

Website: [www.spc.noaa.gov](http://www.spc.noaa.gov)

**The Tornado Project, St. Johnsbury, Vermont**

Website: [www.tornadoproject.com](http://www.tornadoproject.com)

## 3.2 PROFILING HAZARD EVENTS

44 CFR 201.4(c)(2)(i) – The risk assessment shall include an overview of the location of all natural hazards that can affect the State, including information on previous occurrences of hazard events, as well as the probability of future hazard events, using maps where appropriate.

Florida continues to be one of the fastest growing state and is currently the fourth largest state based on population. This trend, coupled with the fact that a great majority of the population lives within 10 miles of the coastline, makes Florida, population extremely vulnerable to the impacts of natural, technological and man-made hazards. This section of the plan will provide an overview of the specific natural, technological and man-made hazards that can affect the state, including information on historical occurrences and the probability of future occurrences. It is not intended as a quantitative risk analysis, nor is it intended to take the place of the in-depth hazards analysis that are being done at the local level as part of the Local Mitigation Strategy.

Table 3.2.1 is the Statewide Hazard and Risk Assessment for the State of Florida. To determine the hazards that posses the greatest threat, a “Hazard and Risk Assessment” was completed. In the assessment, numerical values were assigned for the following factors: **a) Frequency of Occurrence** (i.e., (1) Annual Event, (2) Every 5 years or less, (3) Every 5 - 10 years or less, (4) Every 11 - 30 years or less, and (5) Greater than 30 years); **b) Vulnerability Factors** (i.e., (1) Low, (2) Moderate, (3) High, (4) Extreme, and (5) Catastrophic), and; **c) Vulnerability Impact Areas** (Population, Property, Environment, and State Government Operations). Based on the “Hazard and Risk Assessment,” a total of 11 hazards, were identified as having the greatest impact on the State

**TABLE 3.2.1 Statewide Hazard and Risk Assessment Summary**

Hazard Category	Frequency of Occurrence	Vulnerability impacts			
		Population	Property	Environment	Government Operations
<b>Flood &amp; Dam Failures</b>	<b>2)</b> - Flooding occurs every year in Florida. In 1998, the worst flooding in Florida's history occurred in the Panhandle area; two years later flooding paralyzed 8 Miami-Dade communities for almost 10 days. Three flooding events were declared federal disasters totaling \$789 million since 1992.	<b>M</b>	<b>M</b>	<b>H</b>	<b>L</b>
<b>Hurricane &amp; Coastal Storms</b>	<b>(2)</b> – Sixty (60) land falling Hurricanes from 1900 through 2002. Between 1992 and 2001, the State of Florida has received 14 Presidential Declarations for tropical cyclones; totaling over \$1.8 billion in federal funds.	<b>C</b>	<b>C</b>	<b>C</b>	<b>H</b>
<b>Severe Storms &amp; Tornadoes</b>	<b>(1)</b> - Severe Weather impacts Florida everyday during the summer. Also, extensive severe weather events occur about 5 times annually, mostly in the Spring and Fall. In 1998, three events (El Nino, Groundhog Day Storm, and the Pinellas Tornadoes were declared Presidential disaster, totaling over \$115 million in federal funds.  42 people were killed and more than 200 injured during the tornado event.	<b>M</b>	<b>M</b>	<b>H</b>	<b>L</b>
<b>Wildfire</b>	<b>(1)</b> - Wildfires occur annually in Florida. In 2001, the Mallory Swamp fire burned almost 500,000 acres of woodland. In 1998, Flagler County was totally evacuated due to wildfires; that year over 1 million acres burned along with 100 structures of various sizes. Presidential declarations were issued in 1998, 1999, 1999, 2000, and 2001 for wildfires, totaling over \$ 55 million.	<b>M</b>	<b>M</b>	<b>H</b>	<b>L</b>
<b>Drought Extreme Heat</b>	<b>Drought</b> - Vulnerability and impacts are contingent upon the duration of the drought period and area of impact. Florida averages 12 heat related fatalities annually. In 1993 241 fatalities and 1999 68 fatalities were the result of heat waves impacting the southeastern United States. Since 1900, 9 drought cycles (typically of two year periods) have occurred in Florida. Most often, the area of impact was regional rather than the State as a whole	<b>L</b>	<b>L</b>	<b>L</b>	<b>L</b>
<b>Erosion</b>	Since 1989, the Florida Department of Environmental Protection has identified over 329.9 miles of critical beach erosion, 9.1 miles critical inlet shoreline erosion, 107.7 miles of non-critical beach erosion, and 3.7 miles of non-critical inlet shoreline erosion statewide.	<b>L</b>	<b>M</b>	<b>M</b>	<b>L</b>
<b>Sinkholes, Landslides and Seismic Events</b>	Florida has more sinkholes than any other state in the nation. The average sinkhole size range from 3 to 4 feet across and 4 to 5 feet deep. Based upon data from Florida Geological Survey, there are currently 2360-recorded sinkholes in the state.	<b>L</b>	<b>M</b>	<b>M</b>	<b>L</b>
<b>Terrorism</b>	<b>(4)</b> - On September 11, 2001, terrorist attacked the United States. Florida has many targets of opportunity for terrorists - political, industrial, historical, and military. South Florida experienced an Anthrax outbreak in 2001.	<b>H</b>	<b>H</b>	<b>H</b>	<b>L</b>

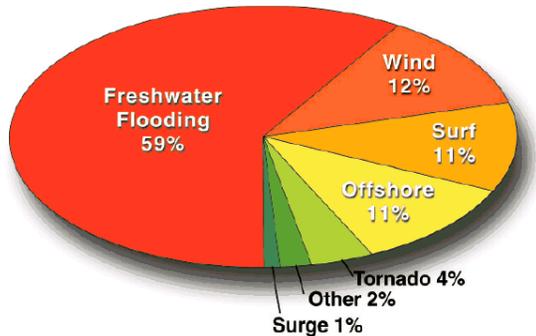
Hazard Category	Frequency of Occurrence	Vulnerability impacts			
		Population	Property	Environment	Government Operations
<b>Technological</b>	(2) - Over 1000 hazardous materials events were reported to the State Warning Point. Approximately eleven percent required an evacuation from the area of impact. No nuclear power plant event has reach the General or Site Area classification in Florida.	M	M	M	L
<b>Mass Migration</b>	(3) – In 1994, Florida responded to two major mass migration incidents involving approximately 100 Haitian and 700 Cuban refugees. While enforcement of immigration laws is a federal responsibility, it is anticipated that joint jurisdictional support of any operation will involve the State and the impacted local government.	L	L	L	L
Frequency of Occurrence	Numerical Value	Vulnerability Factory	Numerical Value		
Annual Event	(1)	Low	L		
Every 5 Years or Less	(2)	Moderate	M		
Every 10 Years or Less	(3)	High	H		
Every 30 Years or Less	(4)	Extensive	E		
Greater Than 30 Years	(5)	Catastrophic	C		



## 1. Flooding: Coastal and Riverine, including Dam Failure

Florida is affected by a large number of tropical weather systems. Although storm surge has the greatest potential for loss of life, recent research indicates that inland flooding was responsible for the greatest number of fatalities over the last 30 years. Studies show that 59 percent of the tropical cyclone deaths in the United States resulted from severe inland flooding.

Leading Causes of Tropical Cyclone Deaths in the U.S 1970-1999



Source: Edward Rappaport—Chief, Technical Support Branch, Tropical Prediction Center

Flood or flooding refers to the general or temporary conditions of partial or complete inundation of normally dry land areas of surface water runoff from any source. Floodplains are defined as any land areas susceptible to being inundated by water from any flooding source.

In Florida, several variations of flooding occur due to the different effects of severe thunderstorms, hurricanes, seasonal rain and other weather-related conditions and is a natural part of the earth's hydrologic system. Based on frequency, floods are the most destructive category of natural hazards in the United States. The loss of life, personal property, crops, business facilities, utilities, and transportation are major impacts of flooding. Additional losses and economic hardships ensue when supplies or supply routes are damaged or destroyed. Flood waters present an additional hazard as a public health problem when they inundate drinking water facilities, chemical and waste storage facilities, waste water treatment facilities and solid waste disposal sites. In general, flooding can be divided into two major categories: **Coastal and Riverine**. In Florida the same hazard, such as a hurricane or severe storm, can result in both types of flooding, sometimes in different area, but many areas of Florida are susceptible to flooding from both storm surge and watershed runoff.

**Coastal flooding** is usually the result of a severe weather system such as a tropical cyclone, hurricane, tropical storm or "northeaster" which contain the element of high winds. The extent and nature of coastal flooding is related to physiographic features of the terrain and the characteristics of the adjoining body of water. The damaging effects of coastal floods are caused by a combination of higher water levels of the storm surge, the winds, rains, erosion and battering by debris. Flood waters are usually driven

ashore by the wind, an event known as storm surge. Loss of life and property damage are often more severe since it involves velocity wave action and accompanying winds. The velocity and range of coastal floods vary in part with the severity of the storm that induces them.

Florida's low-lying topography combined with its subtropical climate makes it highly vulnerable to **inland or riverine flooding**. Riverine flooding is associated with a river's watershed, which is the natural drainage basin that conveys water runoff from rain. Riverine flooding occurs when the flow of runoff is greater than the carrying capacities of the natural drainage systems. Rainwaters that are not absorbed by soil or vegetation seek surface drainage lines following natural topography lines. These line merge to form a hierarchical systems of rills, creeks, streams, and rivers. Generally, floods can be slow or fast rising, depending on the size of the river or stream. The rivers in north Florida drain portions of Alabama and Georgia, and excessive rainfall in those states often cause flood conditions in Florida.

One of the consequences of flooding is repetitive loss properties. A repetitive loss property is one for which two or more NFIP losses of at least \$1000 each have been paid since over a rolling 10 year period. Repetitive loss properties account for about 2% of all insured properties and 33% of the flood insurance claims paid out since 1987. Table 3.2 provides a listing of repetitive loss properties and their accompanying dollar losses paid out by county. As of April 2004, Florida has 9008 repetitive loss properties totaling \$420,389,550. Broward, Dade, Pasco and Pinellas Counties represents over 49% of the total repetitive loss properties in the State.

**Table 3.2.2 Repetitive Loss Properties By County**

<b>County</b>	<b>Number of Repetitive Loss Properties</b>	<b>Dollar Value of Losses</b>
Alachua	1	47,804.00
Baker	4	128,479.59
Bay	174	25,008,565.58
Bradford	5	86,275.56
Brevard	22	622,978.07
Broward	431	16,382,742.24
Calhoun	9	602,846.42
Charlotte	118	3,853,979.03
Citrus	311	17,623,450.14
Clay	47	1,997,461.66
Collier	34	1,152,886.8
Colombia	12	275,122.99
Dade	2626	114,105,908.32
DeSoto	22	1,089,979.39
Dixie	63	2,491,906.78
Duval	157	11,126,888.2
Escambia	396	25,596,733.95
Flagler	1	10,697.24
Franklin	119	4,167,233.91
Gadsden	2	42,836.36
Gilchrist	19	375,042.26
Glades	0	0
Gulf	42	2,197,924.78
Hamilton	15	271,947.03
Hardee	0	0
Hendry	4	216,525.05
Hernando	114	5,508,990.06
Highlands	1	11,216.86
Hillsborough	348	13,197,510.49

County	Number of Repetitive Loss Properties	Dollar Value of Losses
Holmes	21	855,519.91
Indian River	16	781,384.34
Jackson	0	0
Jefferson	0	0
Lafayette	19	585,166.01
Lake	1	19,385.26
Lee	172	4,648,908.77
Leon	45	2,465,392.45
Levy	67	3,102,435.3
Liberty	0	0
Madison	8	312,846.8
Manatee	366	13,371,626.94
Marion	1	44,025.67
Martin	53	2,301,993.64
Monroe	224	8,372,111.82
Nassau	11	566,681.16
Okaloosa	93	7,006,278.89
Okeechobee	0	0
Orange	7	241,466.08
Osceola	3	22,888.34
Palm Beach	154	6,136,884.55
Pasco	598	27,641,074.42
Pinellas	1327	58,643,278.84
Polk	12	756,997.54
Putnam	5	147,496.06
Santa Rosa	124	6,062,014.45
Sarasota	318	14,848,409.69
Seminole	4	201,864.81
St. Johns	46	2,002,938.7
St. Lucie	22	989,771.9
Sumter	1	36,659.54

<b>County</b>	<b>Number of Repetitive Loss Properties</b>	<b>Dollar Value of Losses</b>
Suwannee	10	240,755.72
Taylor	17	632,527.98
Union	1	70,947.17
Volusia	50	1,471,272.54
Wakulla	91	2,694,960.04
Walton	61	3,874,639.47
Washington	5	221,516.82
Statewide Totals	9008	420,389,550

Through Florida has never executed an inventory of dams, a database has been developed using numerous resources to provide dam statistics. Currently, there are 778 dams officially counted, though there may potentially be 3,000 dams throughout the state. Approximately 46% of those dams officially counted are either high hazard (will cause at least 1 life loss if failure were to occur) or significant hazard (may cause loss of life if failure were to occur) dams. After a comprehensive count is complete, it is expected that low hazard dams will make up the majority of dams in the state.

## Previous Occurrences

**July 1994:** Tropical Storm Alberto formed in the southeast Gulf of Mexico on July 1 and moved north at 10 mph. The center crossed the Florida panhandle near Destin. River flooding in Georgia and Alabama spread into the Florida panhandle, along with 6 to 14 inches of additional rain from the remnants of Alberto, causing extensive flooding. Flood crests exceeded 100-year events on the Apalachicola and Chipola Rivers. The flooding caused 3,000 people to evacuate to Red Cross shelters. Damage to buildings, roads, water systems and other public property was estimated at \$40 million. Insured losses to buildings and vehicles were estimated at \$15 million. Agricultural losses were estimated at \$25 million, including up to 50% of the peanut, cotton, soybean and corn crops. Animal losses included 300,000 chickens, 125 steers and hogs, and 90% of the oysters in Apalachicola Bay. The tourist industry is estimated to have lost several million dollars in potential revenue.

**June 1995:** Eight to fourteen inches of rain in less than 24 hours over parts of west-central and southwest Florida caused river and flash flooding. Counties hardest hit were DeSoto, Sarasota, Charlotte, and Lee, all of which suffered significant homesite/roadway flooding with downstream reaches of Horse Creek and the Myakka River experiencing minor flooding. Overall property damage was \$10 million.

**October 1995:** Heavy rainfall caused several roads and a few residences to be flooded in northern sections of Naples. Tree farms and nurseries in north Naples suffered up to \$2 million in damage. Crop losses from this and earlier flooding are estimated at \$35 million. The rainfall was also responsible for property damage of \$50,000.

**March 1998:** Calhoun, Franklin, Gadsden, Gulf, Holmes, Walton, and Jackson counties were declared federal disaster areas. In 1998, the inland flood caused overall property damage estimate of \$367 million.

- In Bay County, nearly 6 inches of rain from March 8-9 caused urban/small stream flooding in Bayou George and much of the north and northwest of the county. In Calhoun County, 28 county roads and State Road 69 were closed due to flooding. Approximately 400 homes and businesses sustained flood damage (57 in Blountstown). The Chipola River at Altha crested near 31.2 feet on March 14. The Apalachicola River at Blountstown crested near 27.2 feet (third highest) on March 13. In Dixie County, rising waters along the Suwannee River forced the evacuation of 200 residents. Numerous county and secondary roads were flooded.

- In Franklin County, rising waters along the Apalachicola River flooded 40 to 50 homes near Fort Gadsden and Bay City.
- In Gadsden County, floodwaters closed State Road 12 near Concord. In Gulf County, nearly 600 homes sustained flood damage and more than 60 county and secondary roads were closed where water was four feet deep in places. Howard Creek (pop. 400) experienced the worst flooding. More than 2000 people were evacuated.
- In Holmes County, flooding along the Choctawhatchee River forced evacuations in Westville, New Hope, and Cerro Gordo. Numerous county and secondary roads were closed.
- In Walton County, the Choctawhatchee and Shoal rivers overflowed their banks which closed 37 roads and damaged 200 homes at Red Bay and Steel Field.
- In Jackson County, 75 to 100 families fled floodwaters as the Chipola River overflowed its banks. An estimated 140 residences were damaged and 40 roads were closed. The worst flooding was along State Highway 2 near Campbellton. The Chipola River at Marianna crested near 24.1 feet on March 11.
- In Lafayette County, the Suwannee River crested near 33.9 feet at Branford and 14.9 feet at Wilcox on March 9. Floodwaters engulfed High Smith Park and portions of Dowling Park as well as railroad tracks and a municipal park in Branford.
- In Leon County, Fairbanks Ferry Road (CR 12) as well as 11 other roads became flooded. Minor flooding was observed along Munson Slough. The Ochlockonee River crested near 21.6 feet at Bloxham on March 12. In Liberty County, minor flooding was observed along the Apalachicola River from Bristol to Lewis.
- In Madison County, water covered some unpaved roads where the Withlacoochee and Suwannee rivers merge. The Withlacoochee River crested near 82 feet at Pinetta on March 15. The Suwannee River crested near 61.7 feet at Ellaville on March 18. Portions of the Suwannee River State Park were closed due to high water.
- In Taylor County, lowland flooding was observed in Perry where 3 to 5 inches of rain fell within a 48-hour period.
- In Wakulla County, a few roads and residences were flooded in Sopchoppy when the river crested on March 11. The St. Marks River crested near 8.7 feet at Newport. Portions of Natural Bridge Road and lowlands were flooded. In Jefferson County, widespread lowland flooding occurred as the Aucilla River crested between 12.5 and 13 feet at Lamont.
- In Washington County, approximately 50 to 60 homes and businesses were damaged in Caryville and Ebro. Numerous county and secondary roads were closed. The Choctawhatchee River crested near 19.7 feet at Caryville on March 12.

**March 1998, El Nino Effect:** On March 1<sup>st</sup>, Alachua, Baker, Bradford, Citrus, Clay, Columbia, DeSoto, Duval, Flagler, Gilchrist, Hamilton, Hillsborough, Marion, Nassau, Pasco, Putnam, St. Johns, Suwannee, Union counties are flooded. More than 2,800 homes and over 175 businesses were destroyed and total property damage totaled \$25.5 million. Flooding is claimed to be related to El Nino.

**October 1999, Hurricane Irene:** Widespread flooding from Hurricane Irene inundated most of the metropolitan areas of Miami-Dade, Broward and Palm Beach counties. This flood was responsible for property damage of \$205 million as well as \$290 million of crop damage.

**October 2000:** On October 2 and 3, 2000 a broad area of low pressure in the Gulf of Mexico off the southwest Florida coast moved northeast across central Florida and eventually became subtropical depression number 1 then tropical storm Leslie off of the northeast Florida coast. Some flood waters lingered for up to a week. Flood damage was particularly severe in the communities of Sweetwater, West Miami, Hialeah, Opa Locka and Pembroke Park. An estimated 93,000 houses with about 214,000 persons were isolated by floodwaters. Power was cut to 13,000 people. There were three indirect deaths, including two males who drove vehicles into canals and one man who fell from a roof while repairing a leak. Total property damage and crop damage estimates were \$450 million and \$500 million, respectively.

**September 2001, Tropical Storm Gabrielle:** Heavy rainfall of six to eight inches with isolated pockets in excess of nine inches associated with Tropical Storm Gabrielle occurred over most of Manatee and southern portions of Pinellas and Hillsborough counties. Widespread road, home and business flooding occurred over large portions of Manatee County, mainly from Anna Maria east across Bradenton to Parrish. Minor to moderate road and home flooding occurred over southern Pinellas and Hillsborough counties, mainly along the coast and low-lying areas. In Pasco County, rainfall of five to eight inches occurred over a broad portion of the county with most of the road and residential flooding occurring along the U.S. Highway 301 corridor from Dade City south to Zephyrhills. Overall property damage estimate was \$26 million.

## **Current and Future Exposure**

The primary sources of flooding for the majority of the state are hurricanes and storms that generally occur from June to October, which is the rainy season in tropical and subtropical areas such as Florida. Most of Northern Florida and the panhandle are crisscrossed with rivers and streams that have their headwaters in Georgia and Alabama. Heavy rains in Georgia and Alabama cause flooding to areas of Florida. The Spring rains are a significant of riverine flooding particularly in North Florida.

Many of Florida's coastal counties have large population concentrations which are vulnerable to the effects of coastal flooding. Dade County, for example, has 537,320 persons requiring evacuation in the event of a Category III hurricane. Other examples are Broward County with 155,705; Palm Beach with 271,993; Hillsborough with

295,636; Pinellas with 474,504; and Lee with 378,593. More than fifty percent of the state's population reside in six coastal counties: Dade, Broward, Duval, Pinellas, Hillsborough, and Palm Beach. Approximately 3.62 million people (twenty-three percent of the state's population) reside in areas that are subject to coastal flooding. Additionally, approximately 40 % of all National Flood Insurance Program policies in the nation are in Florida. Table 3.3 below provides an overview of the total number of NFIP policies and the associated premiums dollar value by county in Florida, as of April 30, 2004. Broward County has more policies than any other state in the nation. The top five counties with 100,000 or more in-forced policies are: Broward (406,534), Dade (352,846), Lee (125,008), Palm Beach (148,394) and Pinellas (125,647).

**Table 3.2.3 National Flood Insurance Program In-Force Policies By County**

<b>County</b>	<b>Number of Policies</b>	<b>Premium Dollar Value</b>
Alachua	1412	622,730
Baker	84	30,188
Bay	20,623	6,093,192
Bradford	298	108,731
Brevard	47,294	13,023,637
Broward	406,534	112,421,390
Calhoun	133	56,992
Charlotte	34,782	15,871,598
Citrus	6519	3,257,173
Clay	3260	1,199,327
Collier	74,490	27,644,765
Colombia	408	171,803
Dade	352,846	101,374,551
DeSoto	420	156,853
Dixie	590	392,501
Duval	22,672	7,975,465
Escambia	13,121	5,188,479
Flagler	6600	1,869,771
Franklin	3038	2,700,577
Gadsden	90	31,486
Gilchrist	200	87,898
Glades	513	164,636
Gulf	1392	718,386
Hamilton	45	16,735
Hardee	99	37,242
Hendry	945	382,138
Hernando	3452	2,187,854
Highlands	810	236,709
Hillsborough	46,655	23,025,864
Holmes	118	40,653
Indian River	21,922	7,651,620
Jackson	123	52,390
Jefferson	53	21,735
Lafayette	151	67,392
Lake	2725	923,187

<b>County</b>	<b>Number of Policies</b>	<b>Premium Dollar Value</b>
Lee	125,008	52,083,328
Leon	2696	1,090,994
Levy	1306	955,882
Liberty	15	4987
Madison	63	26,138
Manatee	39,229	17,135,912
Marion	1143	387,112
Martin	17,861	6,261,195
Monroe	37,032	24,568,064
Nassau	8380	2,957,231
Okaloosa	16,736	4,551,620
Okeechobee	1633	456,445
Orange	13,869	4,368,123
Osceola	5713	1,757,202
Palm Beach	148,394	40,638,782
Pasco	29,810	14,971,031
Pinellas	125,647	55,243,133
Polk	5721	1,940,007
Putnam	1157	410,342
Santa Rosa	5610	2,469,339
Sarasota	51,989	21,022,689
Seminole	4836	1,630,264
St. Johns	28,290	9,598,811
St. Lucie	18,904	4,636,657
Sumter	507	154,296
Suwannee	390	158,219
Taylor	586	377,590
Union	35	14,274
Volusia	41,351	10,542,637
Wakulla	1368	1,110,138
Walton	11,780	3,636,169
Washington	81	26,581
Statewide Totals	1,821,559	620,690,840

As Florida's population has rapidly changed since 1960, so has the shape of the state's landscape. Rapid urbanization has manifested itself in the form of increased impervious surface areas. The design of urban drainage systems in the past has concentrated on disposing of stormwater as a rapidly and efficiently as possible in a concentrated area. Often stormwater is collected and transported elsewhere without a comprehensive strategy for dealing with it as a system. As a result, drainage in many of Florida's urbanized areas is often "piecemeal" and lacking comprehensive design. This piecemeal approach to drainage has attributed to the large number of repetitive loss structures (9008) discussed in Table 3.2.2. Therefore, Florida continues to be susceptible to flooding both coastal and riverine.

## **2. Hurricanes And Coastal Storms**

In general terms a hurricanes is a cyclone. A cyclone is any closed circulation developing around a low pressure center in which the winds rotates counterclockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and whose diameter average 10 to 30 miles across. A tropical cyclone refers to any such circulation that develops over tropical waters. They act as a safety-valve that limits the build-up of heat and energy in tropical regions by maintaining the atmospheric heat and moisture balance between the tropics and the pole ward latitudes.

Winds are the primary component associated with a cyclone. It is the movement of a storm cell over warm water, which leaves to the development of a cyclone and sets up the winds. As a developing center moves over warm water, pressure (measured in mill bars or inches) in the center of the storm drops. As the pressure drops, the system becomes better organized and the winds began to rotate around the low pressure, pulling the warm and moist ocean air. It is this cycle that causes the wind (and rain) associated with a tropical cyclone. If all of the conditions are right (warm ocean water and favorable high altitude winds), the system could build to a point where it has winds in excess of 155 miles per hour. It is the speeds, which define the storm. Tropical cyclone are not named unless they reach at least tropical storm strength.

Tropical Depression: The formative stages of a tropical cyclone in which the maximum sustained (1-min mean) surface winds is  $\leq 39$  mph.

Tropical Storm: A warm core tropical cyclone in which the maximum sustained surface wind (1-min mean) ranges from 39 to  $< 79$  mph.

Hurricane: A warm core tropical cyclone in which the maximum sustained surface wind (1-min mean) is at least 74 mph.

Table 3.2.4 is the Saffir/Simpson scale which is used to define and describe the intensity of hurricane. The pressure of the hurricanes is measured in Mill bars or inches, but the wind speed is more significant in determining the category of the storm. The wind is tied to the amount and kind of damages, either directly by wind or indirectly through storm surge. Apart from the winds, another distinctive feature of tropical cyclones includes torrential rain over a large area.

**Table 3.2.4 - The Saffir/Simpson Scale for Hurricanes**

<b>Category</b>	<b>Millibars</b>	<b>Inches</b>	<b>Winds (MPH)</b>
1	> 979	28.94	74-95
2	965-979	28.91-28.5	96-110
3	945-964	28.47- 27.91	111-130
4	920-944	27.88- 27.17	131-155
5	< 920	< 27.17	> 155

Storm surge (storm tide) is perhaps the most dangerous aspect of a hurricane. It is a phenomenon that occurs when the winds and forward motion associated with hurricane piles water up in front as it moves toward shore. Storm surge heights, and associated waves, are dependent upon the configuration of the continental shelf (narrow or wide) and the depth of the ocean bottom (bathymetry). A narrow shelf, or one that drops steeply from the shoreline and subsequently produces deep water in close proximity to the shoreline, tends to produce a lower surge but higher and more powerful storm waves. This is the situation along most of the Atlantic Ocean side of the state. However, the Gulf Coast of Florida has a long gently sloping shelf and shallow water depths, and can expect a higher surge but smaller waves (up to 38 feet in the Apalachee Bay area of Florida). South Dade County is somewhat of an exception to these general rules due to Biscayne Bay (wide shelf and shallow depth). In this instance, a hurricane has a larger area to “pile up” water in advance of its landfall. Nowhere is the threat of storm surge more prevalent than in the Apalachee Bay Region. The Big Bend region of the state extends out into the Gulf of Mexico creating a naturally enclosed pocket. This area has some of the highest computer projected storm surge heights in the entire nation. During the Winter Storm of 1993 a storm surge, as high as twelve feet in some areas, inundated much of the Apalachee Bay Area.

Tornadoes are the final threat associated with severe storms and hurricanes. Tornadoes have been associated with the majority of tropical cyclones in Florida. In every case, they were documented in the outer portion of the hurricane circulation and not near the central vortex. Tornadoes tend to develop on the leading edge of hurricanes of those moving northward and on the north edge of those moving westward. The great majority of tornadoes that occur with hurricanes are off a weaker variety from those that occur in the Midwest. In recent years, it has been found that much of the wind damage in hurricanes attributed to tornadoes has, in reality, been the result of “down bursts”.

### **Previous Occurrences**

**October 11-20, 1906 Hurricane:** A hurricane moved across the Florida Keys and passed over Miami on October 18, resulting in the loss of 134 lives.

**September 6-22, 1926 Hurricane:** The eye of the hurricane moved directly over Miami on the morning of September 18, leaving approximately 100 dead. The storm continued northwestward across south Florida and entered the Gulf of Mexico at Fort Myers. Northeast winds from the storm raised Lake Okeechobee water levels above the low dike on the south end of the lake near Moore Haven. Approximately three miles of dike failed, sending 10 to 12 foot floodwaters into Moore Haven and at least five-foot deep floodwaters into Clewiston, 16 miles to the southeast.

**September 6-20, 1928 Hurricane: Okeechobee 1928:** A Category 4 hurricane that made landfall near Palm Beach on September 16 with a central pressure of 929 mb. The center passed near Lake Okeechobee, causing the lake to overflow its banks and inundate the surrounding area to a depth of 6 to 9 ft. 1,836 people died in Florida,

primarily due to the lake surge. An additional 312 people died in Puerto Rico, and 18 more were reported dead in the Bahamas. Damage to property was estimated at \$50M in Puerto Rico and \$25M in Florida.

**August 31-September 8, 1935 Labor Day Hurricane:** This hurricane is considered to be one of the most severe hurricanes ever recorded in Florida. With winds in excess of 200 miles per hour, the storm passed over the Florida Keys on September 2 with a minimum barometric pressure of 26.35 inches. Three relief-work camps, inhabited by veterans of World War I, were destroyed. The Red Cross estimated that 408 lives were lost.

**September 9-12, 1964 Hurricane Dora:** Hurricane Dora crossed Florida from east to west during September 9-12 before turning to southern Georgia. On September 13-16, Dora produced over 20 inches of rainfall and caused flooding throughout one-third of the state of Florida, extensively affecting the St. Mary's, Santa Fe and Steinhatchee River basins. An estimated \$150 million in losses were reported, affecting residential, commercial and agricultural operations.

**September 23, 1969 Tropical Storm:** A tropical storm centered over Havana and Quincy in North Florida, producing up to 23.4 inches of rainfall during a 72 hour period. Flooding was confined mainly to the Ochlockonee River basin, causing extensive damage to roads and bridges.

**July 28-31, 1975 Hurricane Eloise:** Hurricane Eloise dumped nearly 20 inches of rain on the western Panhandle, resulting in severe flooding in some areas of the Choctawhatchee and Escambia River basins.

**1979 Hurricanes David and Frederic:** Hurricane David, a category two storm, made landfall north of Palm Beach and caused an estimated \$476 million in damages. Hurricane David was not declared a disaster. However, Category 3 Hurricane Frederic followed behind David, threatening northwest Florida before making landfall in Alabama/Mississippi, causing nearly \$3 billion in damage.

**1985 Hurricane Elena, Tropical Storm Juan, and Hurricane Kate:** Around Labor Day, Hurricane Elena threatened Florida's West Coast and Panhandle before finally making landfall in Louisiana. Losses were estimated at over \$100 million and four lives were lost. Two months after Elena, Tropical Storm Juan caused another \$4.4 million in damages to already weakened coastal structures. Finally, Hurricane Kate entered the Gulf of Mexico on November 30, eventually making landfall at Mexico Beach. Hurricane Kate caused extensive damage to coastal highways and seawalls. The primary impact of these three storms was due to storm surge and wave activity.

**September 10-11, 1990 Hurricane Donna:** Hurricane Donna was the only hurricane of record to produce hurricane-force winds in Florida, the Mid-Atlantic states, and New England. Sombrero Key, Florida reported 128 mph sustained winds with gusts to 150 mph. Donna caused storm surges of up to 13 ft in the Florida Keys and 11 ft surges

along the southwest coast of Florida. Heavy rainfalls of 10 to 15 inches occurred in Puerto Rico, 6 to 12 inches in Florida, and 4 to 8 inches elsewhere along the path of the hurricane. The landfall pressure of 27.46 inches makes Donna the fifth strongest hurricane of the record to hit the United States. It was responsible for 50 deaths in the United States. One hundred and fourteen deaths were reported from Leeward Islands to the Bahamas, including 107 in Puerto Rico caused by flooding from the heavy rains. The hurricane caused \$387 million in damage in the United States and \$13 million elsewhere along its path.

**August 24, 1992 Hurricane Andrew:** Hurricane Andrew made a memorable landfall in South Dade County, causing an estimated \$26.5 billion in damages. Andrew produced approximately seven inches of rain, 165 mph sustained winds, a maximum storm tide of 16 feet and a total of 96 deaths (including Louisiana). In all, Andrew destroyed 25,000 homes and significantly damaged more than 100,000 others in South Florida. Two weeks after the hurricane, the U.S. military deployed nearly 22,000 troops to aid in the recovery efforts, the largest military rescue operation in U.S. history. When Hurricane Andrew hit southeast Miami-Dade County, Fla., flying debris in the storm's winds knocked out most ground-based wind measuring instruments, and widespread power outages caused electric-based measuring equipment to fail. The winds were so strong many wind-measuring tools were incapable of registering the maximum winds. Surviving wind observations and measurements from aircraft reconnaissance, surface pressure, satellite analysis, radar, and distribution of debris and structural failures were used to estimate the surface winds. Though originally classified as a Category 4 storm, extensive post-impact research led to the reclassification of Andrew as a Category 5 storm in 2002.

**August 2, 1995 Hurricane Erin:** Erin, a minimum category one hurricane, moved onshore near Vero Beach, Florida then slowly weakened to tropical storm strength as it moved west northwest over Central Florida. Erin slowly reintensified to minimal hurricane strength well after moving offshore of West Central Florida into the northeast Gulf of Mexico. Twenty-four hour rainfall totals averaged between 2.5 and 3.5 inches from the Tampa metro area north to Levy County. Extensive wind damage was experienced in Santa Rosa and Escambia Counties and extensive storm water flooding occurred in Brevard County.

**October 3-4, 1995 Hurricane Opal: Opal 1995:** Hurricane Opal made landfall near Pensacola Beach, Florida as Category 3 hurricane. The storm caused extensive storm surge damage from Pensacola Beach to Mexico Beach (a span of 120 miles) with a maximum storm tide of 24 feet, recorded near Fort Walton Beach. A combination of storm surge and breaking waves inundated portions of the western Florida Panhandle coast to a depth of 10 to 20 ft. The surge was responsible for the bulk of the \$3 billion in damage attributed to Opal in the United States. Opal caused 9 deaths in the United States, including 8 from falling trees and one from a tornado. Opal was responsible for 50 deaths in Mexico and Guatemala due to flooding caused by heavy rains. Almost 300 homes were destroyed with another 1000 homes suffered major damage.

**March 10-11 1996 Nor'easter:** A strong Nor'easter with winds of 50 to 60 mph caused beach erosion damage at Amelia Island, Atlantic Beach, St. Augustine Beach and Flagler Beach.

**October 7-8, 1996 Tropical Storm Josephine:** Tropical Storm Josephine impacted Florida's West Coast with 70 mph winds before exiting through the northeast portion of the state. Sixteen counties experienced extensive damage, with losses estimated near \$45 million.

**September 2-3, 1998 Hurricane Earl:** A Category 1 hurricane, Earl made landfall near Panama City causing minor flooding, moderate beach erosion, numerous tornadoes and power outages. Property damage was estimated at over \$7 million.

**September 15-29, 1998 Hurricane Georges:** Hurricane Georges hit the Florida Keys with 105 mph winds, destroying mobile homes in the area before moving into the Panhandle, creating storm surge and flood damage. This storm caused nearly \$255 million in damages in South Florida.

**November 1998 Tropical Storm Mitch:** Tropical Storm Mitch, once a powerful Category 5 storm, crossed South Florida at Monroe and Palm Beach counties at tropical storm strength. The storm caused gusty winds, severe thunderstorms, tornadoes and beach erosion. Property damage was estimated at \$30 million.

**September 13-22, 1999 Hurricane Floyd:** Hurricane Floyd was an enormous Category 4 storm, threatening Florida's east coast from Nassau to Miami-Dade County. Floyd's unpredictable path led to the largest peacetime evacuation in U.S. history as over a million people sought refuge. Floyd did not make landfall in Florida, but created flooding, beach erosion, and resulted in nearly \$68 million in property damages.

**October 14-20, 1999 Hurricane Irene:** Hurricane Irene was a Category 1 storm as it made landfall in Monroe and Miami-Dade Counties, moving southwest to northeast. The storm caused major flooding due to 9-18 inches of rainfall, beach erosion, and minor wind damages. Property damages exceeded \$327 million statewide.

**September 16-17, 2000 Tropical Storm Gordon:** Tropical Storm Gordon formed in the Gulf of Mexico and moved northeast, briefly intensified to hurricane strength, then moved ashore in the Big Bend area of Florida as a tropical storm. The outer fringes of Gordon moved across South Florida, producing flooding as well as numerous funnel clouds and waterspouts.

**September 21-22, 2000 Tropical Storm Helene:** Tropical Storm Helene made landfall near Fort Walton Beach before weakening to a tropical depression as it accelerated northeast into southeast Alabama. The storm caused flooding, numerous tornadoes and power outages in Florida.

**August 4-6, 2001 Tropical Storm Barry:** Tropical Storm Barry made landfall between Panama City and Destin, Florida. After landfall, Barry rapidly weakened to a tropical depression over southwest Alabama. Scattered wind damage, flooding and power outages were reported. Numerous county and secondary roads across Walton, Washington, and Bay counties were closed to floodwaters.

**September 13-14, 2001 Tropical Storm Gabrielle:** Tropical Storm Gabrielle formed in the eastern Gulf of Mexico moved east northeast, with the center crossing the Florida west coast near Venice. Gabrielle caused over \$20 million in property damage due to wind damage, storm surge, minor beach erosion and flooding.

### **Current and Future Exposure**

Hurricanes have always been a threat to Florida, however, that threat has been converted into an increased level of vulnerability over the years as more people have moved into the state and chosen to live in proximity to the coast. Florida is the most vulnerability state in the nation to the impacts hurricanes, approximately 33 percent of the total state population lives within 20 miles of the coast. As population grows, those who have had major hurricane experience declines. The majority of the state's residents are not hurricane experienced and that the amount of insured property at risk (based on trends from 1980-2003) is increasing at a phenomenal rate.

Of the state's 67 counties, 35 have coastlines, which either front the Atlantic Ocean or the Gulf of Mexico. These counties comprise approximately 1350 miles of general coastline and 8,436 miles of tidal inlets, bays and waterways. The proximity of the Atlantic Ocean or the Gulf of Mexico, coupled with the generally low coastal elevations and the fact that almost 78 percent of the state's population resides in the 35 coastal counties, also contributes to the state's vulnerability.

Between 1906 and 1996, there have been 24 major (Category 3 or higher) hurricanes, which have impacted the state. Of all the hurricanes, which have affected the state this century, 58 have made landfall within the state and the majority have been Category 1 hurricanes. Generally, the lower intensity hurricanes have made landfall in the northwest portion of the state.

The vulnerability of the state to hurricanes varies with the progression of the hurricane season. Early and late in the season (June and October), the region of maximum hurricane activity is in the Gulf of Mexico and the western Caribbean. Most of those systems that move into Florida approach that state from the south or southwest, entering the keys or along the West Coast. Mid-season (August and most of September) tropical cyclones develop off the coast of Africa. These systems are known as Cape Verde Storms, and approach the state from the east or southeast. Most of the hurricanes making landfall on the West Coast have originated in the Gulf of Mexico or Caribbean. The Keys and the southeastern Florida Coast are in path of storms originating in both the Atlantic Ocean and the Caribbean Sea.

As is evident from the preceding discussion, the population and property of the state is extremely vulnerable to hurricanes. The primary need to minimize this vulnerability is the ability to control the residential and structural densities in highly vulnerable coastal areas, and the ability to ensure that residential structures and hurricane evacuation shelters provide a reasonably acceptable degree of safety to its occupants. In addition, there is a great need to ensure that the citizens of the state are informed about the hazards to enable them to make informed decisions about their behavior relative to an approaching storm.

### **3. Severe Storms and Tornadoes**

A Tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. Tornadoes occur in connection with thunderstorms and frequently are accompanied or followed by lighting and sometimes heavy rain or hail. Tornadoes are form at the base of a cloud bank and form a spinning column. Tornadoes inflict damage because of a combination of extremely high winds and low air pressure. Tornadoes wind speed normally range from 40 to more than 300 miles per hour. They normally touchdown only for a brief period of time, however, in a short period they can inflict extremely severe damage. Waterspouts are weak tornadoes that form over warm water and are most common along the Gulf Coast and the Southeastern States. Waterspouts occasionally move inland becoming tornadoes causing damage and injuries. Florida is extremely vulnerable from high winds. There are current no place in the state which is not safe from the effects of tornadoes.

Tornadoes develop under three scenarios: (1) along a squall line ahead of an advancing cold front moving from the north; (2) in connection with thunderstorms squall lines during hot, humid weather; and (3) in the outer portion of a tropical cyclone. Tornadoes of all three types occur in Florida. Because the temperature contrast between air masses is generally less than pronounced in the state, the first types are less severe in Florida than in other parts of the country. Usually, those that do reach the ground remain in contact for only a short period of time.

The most common and usually the least destructive tornadoes in Florida are warm season ones. They occur most frequently during the months of May through August and June is the month of peak activity. The cool season tornadoes are sometimes very destructive; they account for a disproportionately large share of the tornadoes fatalities in Florida. They are most common in October through April. They are caused by large-scale weather disturbances and sometimes occur in groups of six or more along fast moving squall lines. They form most frequently along the Gulf Coast, and commonly move southwest to northwest direction. The tornadoes associated with tropical storms are most frequent in September and October when the incidents of tropical storms is greatest. This type of tornado usually occurs around the perimeter of the leading edge of the storm and sometimes results in the outbreak of several tornadoes. They generally move in an easterly direction.

**Thunderstorms**, nature's awesome mix of fire and rain, disrupt daily lives more than any other form of weather. The three key elements of a thunderstorm are wind, water and lightning. In a typical thunderstorm, a critical relationship exists between several processes, which are occurring simultaneously as an interdependent system. Worldwide each year, billions more dollars go for fixing televisions, computers, homes, and aircraft fried or mangled by such storms than are spent repairing damage from hurricanes. On top of that, in the United States, thousands of acres of crops are heavily damaged or destroyed by storm-borne hail each year. Tampa has the highest incidences of thunderstorms in the United States and the Kennedy Center is not far behind. When lightning threatens anywhere within five miles of the Cape, almost all outside work is halted immediately.

Thunderstorms are also deadly. Florida leads the nation in lightning related deaths, and is among the top ten states prone to devastation from tornadoes – the thunderstorm most vicious offspring. Typically, tornadoes can generate higher winds than any hurricane on record. Thunderstorms deliver most of the state's rainfall. Their winds help invigorate sluggish environments in ponds, lakes and estuaries, and break apart oil spills.

### **Previous Occurrences**

#### **The 1998 Central Florida Tornadoes:**

*Source: FDEM, 2002.*

On February 22 and 23, 1998, a line of severe thunderstorms associated with El Nino crossed Northern and Central Florida causing excessive rainfall (up to 4.5 inches), high winds and tornadoes. The tornadoes caused 45 deaths across Seminole, Orange, Osceola and Volusia counties. Most of the deaths occurred in mobile home and RV parks. Injuries in the affected area totaled 258 and 357 homes were destroyed. Another 753 homes sustained major damage and 1,211 homes sustained minor damage. This was the most deadly tornado outbreak in Florida's history.

#### **Other Significant Tornado Events in Florida:**

*Source: The Tornado Project, 2002.*

**September 10, 1882** (5 deaths, 8 injuries): A hurricane-generated tornado destroyed tenant homes near Quincy, Gadsden County.

**April 5, 1925** (5 deaths, 35 injuries): A tornado moved northeast from the Everglades, southwest of Hialeah, to eight miles north of Miami, Dade County.

**January 18, 1936** (7 deaths, 25 injuries): Six people were killed when a farmhouse was "obliterated" south of Vernon, Washington County.

**March 30, 1939** (4 deaths, 8 injuries): Four workers were killed at a turpentine plant ten miles northwest of Jacksonville, Duval County.

**May 26, 1951** (3 deaths, 0 injuries): A waterspout overturned a small boat, drowned three fishermen, and went ashore near Pensacola.

**March 31, 1962** (17 deaths, 100 injuries): About 75 small homes were destroyed on the northwest side of Milton, Santa Rosa County; 200 homes were damaged.

**April 4, 1966** (11 death, 350 injuries): A tornado outbreak hit the Tampa area, Hillsborough County (three deaths), Polk county (seven deaths) and crossed the entire state.

**May 4, 1978** (3 deaths, 94 injuries): This tornado formed over the Gulf of Mexico and hit the High Point Elementary School in Clearwater, Pinellas County.

**April 9, 1983** (3 deaths, 2 injuries): Near Inverness in Citrus County, trailers and a gas station were destroyed; all deaths were in a car.

**April 19, 1988** (4 deaths, 18 injuries): Seventeen homes were destroyed along with many college buildings in Madison, Madison County.

**June 8, 1989** (3 dead, 4 injuries): A waterspout moved from Apalachicola Bay and passed through Eastpoint, Franklin County; three died in a home.

**October 3, 1992** (3 dead, 75 injuries): A tornado moved north-northeast in Pinellas Park in Pinellas County, hitting a mobile home park and several homes.

**March 12, 1993** (3 dead, 10 injuries): A tornado in Chiefland, Levy County struck a home which collapsed, pinning occupants under a fallen wall.

### **Current and Future Exposure**

Florida has averaged approximately 75 tornadoes per year since 1950, with an average of 3 deaths and 60 injured per year. According to the National Climatic Data Center, the state experienced 3,983 tornado events from 1950 through February of 2003. These events caused 183 deaths, 3,183 injured, and a total of approximately \$1,148,782,000 in property damage (NCDC, 2003). **Table 3.2.5** shows the number of tornadoes documented between 1950 and February 2003 for each Florida county.

**TABLE 3.2.5. Florida Tornadoes By County, 1950 – February 2003**

County	Number of Events*	Deaths	Injured	Property Damage
Alachua	45	1	19	\$11,666,000
Baker	8	25	1	\$354,000
Bay	62	2	109	\$15,634,000
Bradford	14	0	2	\$438,000
Brevard	128	1	139	\$102,849,000
Broward	225	1	90	\$78,095,000
Calhoun	17	0	17	\$3,425,000
Charlotte	55	2	8	\$13,536,000
Citrus	52	3	10	\$9,643,000
Clay	23	0	7	\$4,293,000
Collier	114	2	26	\$11,115,000
Colombia	17	0	6	\$3,410,000
Dade	158	0	132	\$22,543,000
DeSoto	30	0	10	\$1,482,000
Dixie	4	0	0	\$150,000
Duval	77	1	12	\$15,387,000
Escambia	93	25	208	\$5,602,000
Flagler	33	0	0	\$586,000
Franklin	53	6	9	\$3,763,000
Gadsden	25	2	5	\$1,938,000
Gilchrist	6	0	4	\$2,523,000
Glades	23	0	10	\$5,433,000
Gulf	26	0	3	\$930,000
Hamilton	9	0	0	\$396,000
Hardee	10	0	5	\$5,361,000
Hendry	36	1	10	\$1,196,000
Hernando	35	0	4	\$1,337,000
Highlands	40	2	23	\$9,984,000
Hillsborough	142	1	129	\$24,172,000
Holmes	9	1	2	\$938,000
Indian River	26	0	0	\$1,286,000
Jackson	30	0	16	\$8,290,000
Jefferson	8	0	1	\$168,000
Lafayette	9	0	5	\$2,878,000
Lake	53	2	77	\$12,875,000
Lee	118	1	28	\$26,012,000

County	Number of Events*	Deaths	Injured	Property Damage
Leon	17	0	0	\$2,620,000
Levy	17	3	11	\$55,901,000
Liberty	7	0	0	\$75,000
Madison	14	5	23	\$25,309,000
Manatee	92	0	20	\$3,630,000
Marion	54	2	69	\$65,200,000
Martin	35	0	3	\$1,486,000
Monroe	518	0	76	\$54,562,000
Nassau	27	0	4	\$1,628,000
Okaloosa	85	4	109	\$37,989,000
Okeechobee	18	2	30	\$13,575,000
Orange	61	4	162	\$40,916,000
Osceola	31	25	174	\$111,550,000
Palm Beach	276	1	78	\$22,733,000
Pasco	85	0	45	\$8,383,000
Pinellas	170	11	315	\$80,391,000
Polk	129	9	535	\$67,224,000
Putnam	39	2	16	\$3,647,000
Santa Rosa	67	17	108	\$5,160,000
Sarasota	86	2	68	\$37,009,000
Seminole	24	12	50	\$34,140,000
St. Johns	48	0	16	\$2,537,000
St. Lucie	35	2	27	\$4,188,000
Sumter	11	0	6	\$3,481,000
Suwannee	34	0	6	\$4,044,000
Taylor	13	0	7	\$581,000
Union	5	0	0	\$2,505,000
Volusia	93	2	52	\$37,998,000
Wakulla	16	0	3	\$815,000
Walton	41	0	7	\$5,109,000
Washington	22	1	36	\$4,708,000
<b>TOTAL</b>		<b>183</b>	<b>3,183</b>	<b>\$1,148,782,000</b>

\* Events include F-0 through F-5 tornadoes, including funnel clouds and waterspouts.

Source: National Climatic Data Center, 2003

All areas of the state are vulnerable to severe storms and tornadoes. The potential for damage and loss of life increases as a function of population density. As the number of structures and population increase, the probability that a tornado will cause property damage or human casualties also increases. When compared with other states, Florida ranks #4 in the number of tornado events; #19 in tornado deaths; #11 in tornado injuries; and #18 in damages. These rankings are based upon data collected for all states and territories for tornado events between 1950-1995 (SPC, 2002). The northern portion of the state's Gulf Coast (between Tampa and Tallahassee) along with the Panhandle region have generally experienced more tornadoes than other areas of the state, primarily due to the high frequency of thunderstorms making their way east through the Gulf of Mexico.

Florida's susceptibility to wind disasters is further compounded by the fact that certain areas of the state has a large concentration of mobile home residents. Mobile home are extremely susceptible to wind damage due to light construction materials, flat sides and roofs, and lack of permanent foundations. Mobile homes are an attractive prospect for many individuals residing in the state due to their affordability. There are over 850,000 mobile homes within the state and more than 500,000 are located in coastal counties.

Based upon historical trends, Florida can expect over 50 tornadoes and two deaths attributed to tornadoes in any given year. Florida remains one of the fastest growing states in the country and with this rapid growth comes the realization that the state's risk exposure will increase with this population. Common damages from tornadoes include fallen trees, downed power lines, damage to automobiles and boats and destruction of mobile homes and recreational vehicles. The most common type of damages to conventional homes result from a loss of ancillary structures (porches, patios, etc.), roofs damage and the failure of windows and doors.

As Florida is the thunderstorm capital of the United States, it is a rare occasion when thunderstorms are not observed somewhere in the state during the summer rainy season generally the end of May through the beginning of October. Any thunderstorm can produce a lightning bolt or bolts which can be fatal. Although the Midwest has the reputation for the worst tornadoes, Florida is the state, which experiences the most number of tornadoes per square mile of all states. Based upon the National Weather Service, Florida averaged 52 tornadoes reported per year since 1961, with an average two fatalities per year.

#### **4. Wildfire**

A wildfire is any fire occurring in wildlands (i.e., grasslands, forest, brush land\_ except a fire under prescription. Prescription burning is the process of igniting fires under selected conditions, in accordance with strict parameters. Wildfires have burned across the woodlands of Florida for centuries and are part of the natural management of much of Florida's ecosystems. Forest fires from natural causes such as lightning account for only a very small percentage of Florida's wildfires, whereas, man is by far the leading cause of wildfires.

Forest land is continuously susceptible to destruction by wildfires. There are three types of forest fires: surface, ground and crown. A surface fire is the most common type and burns along the floor of the forest, moving slowly while killing or damaging trees. Ground fires (muck fires), which are usually started by carelessness, burn on or below the forest floor. These fires are hard to detect, and even harder to extinguish. Crown fires are spread rapidly by the wind and move fastest of all types of fires by jumping along the tops of trees.

Of Florida's approximately 36,349,091 acres, about 19 percent is urban, industrial or wetland and another 31 percent is agricultural including crops, pasture and range. Forest lands account for 50 percent, including woodland brush and grassland. Approximately 25,264,579 acres were reported as protected forest and wildland by the Florida Division of Forestry. Protected acreage is any wildland or forest which is not in a city or municipality. The protected forest acreage does not include acreage under federal jurisdiction. Forest land areas of Florida are a valuable and vulnerable resource. In 1991, Florida's forest products at the retail level were estimated to value \$6.1 billion. However, Florida's total acreage of commercial forest land is slowly declined due to other more profitable land uses, primarily residential commercial development. The total area of commercial forest land has decreased from 16,261,200 million acres in 1970 to 15,714,200 million acres in 1980. By 1992, there were 14,982,607 million acres of commercial forest in Florida.

The Urban/Wildland interface situation is largely the result of development in areas once considered wildlands and the desire of people to live in a more natural woodland setting. Natural landscaping which allows natural vegetation to grow and accumulate near homes is a hazardous trend which invites an invasion by wildfire. Wildfires near developed areas can threaten human life, structures and wildland resource values. Many subdivision layouts with numerous dead end streets and cul-de-sacs give rise to access and departure problems for fire-fighting equipment.

Urban/wildland interface areas can be classified into the following types:

- a. The mixed interface contains structures that are scattered throughout rural areas. Usually, there are isolated homes surrounded by larger or smaller areas of land.
- b. An occluded interface is characterized by isolated (either large or small) areas within an urban area. An example may be a city park surrounded by urban homes trying to preserve some contact with a natural setting.
- c. A class interface is where homes, especially those crowded onto smaller lots in new subdivisions, press along the wild land vegetation along a broad front. Vast adjacent wild land areas can propagate a massive flame front during a wildfire, and numerous homes are put at risk by a single fire.

## Previous Occurrences

**From 1981 through 1996**, an average of 6,080 wildfires occurred per year, burning 219,725 acres. Because of changing weather conditions, the yearly figures range from a low of 3,985 wildfires (86,944 acres burned) in 1991 to a record high of 14,042 wildfires (587,400 acres burned) in 1981. Florida experienced a record high (645,326 acres burned) in 1989 as a result of drought conditions around the state.

**The beginning months of 1998** brought widespread flooding. After the rain stopped, severe drought conditions developed and lasted from April thru June of 1998. As a result of the extreme drought conditions, high temperatures and buildup of flammable wildland fuels, the 1998 wildfires began. The first fire broke out on May 25, 1998 in the Apalachicola National Forest. In a two month period, almost 500,000 acres of the state had burned in approximately 2,300 separate wildfires. The cost of this event reached over \$160 million. The Wildfires of 1998 damaged or destroyed over 300 homes and the value of lost timber exceeded \$300 million.

**In 1989**, there were a record number of acres burned (645,326) as a result of 7,291 fires. A large percentage of the acres burned were located in the Everglades. A record number of wildfires occurred in 1981, with 14,042 fires that burned 587,400 acres as a result of a drought which started in July of 1980 and continued throughout 1981. In 1985, another drought stricken year, there were 8,261 fires which burned 443,811 acres.

**In the Spring of 1985**, a drought which had been underway in the state since August 1984, created numerous spot fires around the state. On May 16, 1985, a wildfire was discovered west of the Palm Coast Development in Flagler County. Palm Coast is a 42,000 acre planned community situated in the coastal plain flat woods along the East Coast of Florida. A wildfire burned through Palm Coast and destroyed 100 homes, damaged 200 more and burned 13,000 acres. This disaster was mixed wildland urban interface fire associated with urban sprawl type development where the hydroperiod is drastically altered and cutting the land into many unmanaged tracts of fire vulnerable wildlands.

## Current and Future Exposure

Florida's typical fire season is from January to May. During relatively dry months, the potential for wildfires increases dramatically. The driest months, combined with low humidity and high wind, have the highest number of fires reported (January, February and March). During these months, fine fuels (i.e., grass, leaves, pine needles) are in optimal burning condition. The largest number of lightning-caused fires occur in July. This, of course, coincides with the peak of the thunderstorm season.

All forested and open areas of the state are vulnerable to forest fires and wildfires. The northwest, northeast, and central regions of the state are the major forested areas. South Florida's protect land has more of a potential threat for the fire due to the humus material in the soil and the type of vegetation. However, damages in this area are not expected to be as costly as the threat of forest land. With more commercial forest land located in the northern portions of the state, the chances of a forest fire causing financial damage are greater in this part of state. Grasslands, marshes, and muck lands in and near the Everglades (approximately 4.3 million acres) have their own unique conditions that lead to increased threat from fire damage. These lands are exceptionally vulnerable during drought conditions that lead to increased threat from fire damage. These lands are exceptionally vulnerable during drought conditions because the soils are rich in humus material that, when dry, are readily combustible. When drought conditions, prevail, the soil, as well as the vegetation are prone to combustion.

Each wildfire, especially near settled areas, can threaten human life, structures and resource values. Urban development has moved into wildland areas (pine plantations, drained swamps and coastal plains) where the hazard is more severe and fire control is difficult. Many individual homes and cabins, sub-divisions, resorts, recreational areas, organizational camps, businesses and industries are located within high fire hazard areas. The increasing demand for outdoor recreation means great numbers of people are in the wildlands during holidays, weekends and vacation periods. Additionally, the southern part of the state has also experienced rapid growth in population. This, coupled with extensive drainage problems, has severely altered the characteristics of the water table and increased the potential for disastrous fires in this area. Therefore, the probability that a fire will occur depends on local weather conditions, outdoor activities (i.e., persons present because of hunting, debris burning, construction work in the area) and the degree of cooperation from the general public with fire prevention measures. Drought conditions increase the probability of wildfires.

## **5. Drought and Extreme Heat**

From 1891 to 1989, there were 54 recorded instances of drought in Florida. Four major hydrologic droughts have affected Florida. Areas of the state most severely affected by these droughts were the Panhandle and South-Central peninsula from 1932-1935; the entire state from 1949-1957 and again from 1980-1982; and the peninsula from 1970-1977.

The most extreme drought of record occurred during 1954-1956 when runoff was 8 inches below normal, causing extensive loss of crops and timber. The drought of 1980-1982 was caused by rainfall deficiencies ranging from 22.1 to 31.3 inches, causing water levels at Lake Okeechobee to reach lowest levels ever recorded.

In July 1997, a high temperature of 97 degrees was recorded at Orlando International Airport. Though this temperature was only six degrees above normal, the heat claimed one life.

In June 1998, a deep high pressure ridge persisted across the Gulf of Mexico and Florida throughout most of the June and into early July, resulting in several long stretches of record breaking high temperatures and claiming one life. Melbourne had 22 days, Orlando had 12 days and Daytona Beach had 13 days where high temperature records were either tied or broken. Melbourne had four 100 degree or greater days, Orlando had three and Daytona Beach had nine. It was also very dry during this period, with Melbourne only receiving 3 percent of its normal rainfall, Orlando received 22 percent and Daytona received 14 percent of its normal rainfall.

July 2000 was the hottest month ever recorded in Northwest Florida. The average temperature in Pensacola for the month was 85.6 degrees, breaking the old record of 85.4 degrees. The temperature also reached 100 degrees or higher seven days during the month. The highest temperature during the month at the Pensacola airport was 103 degrees. Milton had five days of 100 degrees or higher, with the highest being 102 degrees. Niceville had six days of 100 degrees or higher during the month, with the highest temperature being 103 degrees. In addition to being hot, it was also dry. July 2000 was the seventh driest July in the past 120 years.

A 13-month period of below normal rainfall ended on May 20, 2001 with the beginning of the rainy season. Rainfall amounts since May 2000 over interior and southwest portions of south Florida and over all of Palm Beach County averaged about 30% below normal. Lake Okeechobee fell to an historic low level of 9.1 feet. Sugar cane and other crops were adversely impacted as well as marine life around Lake Okeechobee.

## **6. Winter Storms And Freezes**

Florida does not have an extensive history of winter storms, but is quite susceptible to freezes. A freeze is marked by low temperatures, especially those below the freezing point. Florida's agricultural production is seriously affected when temperatures remain below the freezing point. A moderate freeze may be expected in Florida every one to two years. Severe freezes, where the greatest numbers of winter crops are lost, may be expected on average once every 15 to 20 years. Florida has a history of severe freezes. Since December 1889, there have been at least 20 recorded severe freezes.

### **Previous Occurrences**

**December 24-25, 1989:** A presidential disaster declaration was issued and crop losses exceeded \$18 million. Hardest hit counties were Lake, Alachua, Marion and Polk. The freeze affected over two million acres of agricultural and citrus crops.

**February 5, 1996:** Cold temperatures caused \$74.9 million in damage to fruit and vegetable crops in south Florida. Especially hard hit were tomatoes, bell peppers and

melons in Collier and Hendry counties and sugar cane in Palm Beach County. Minimum temperatures were in the upper 20s in Glades, Hendry and Collier counties, and in the lower to mid 30s over the remainder of the south Florida peninsula. Strong winds caused wind chill values in the teens and disrupted electrical service to over 20,000 customers.

**January 19, 1997:** Extreme cold in Collier, Dade, Glades, Hendry, and Palm Beach counties caused 200 million in crop damage.

**January 6, 1999:** Temperatures fell below freezing for up to twelve hours in the winter crop producing counties of Polk, Highlands, Hardee, DeSoto, Hillsborough and Manatee, causing \$200,000 in property damage and \$475,000 in crop damage to tomato, squash and strawberry crops. Also, minimum temperatures in the farming areas of Collier County reached 27 to 32 degrees for about four hours, causing approximately \$100,000 in widely scattered damage to vegetable crops.

**December 20, 2000:** Freezing temperatures were observed over a large portion of West Central Florida during the predawn through late morning hours, causing an estimated \$1 million in crop damage. Freezing temperatures in Citrus County damaged an estimated one hundred acres of the local citrus crop. In Polk, Hillsborough, Hardee and Highlands counties, low temperatures dropped into the upper 20s and lower 30s and remained below freezing for durations of two to four hours.

**December 30, 2000:** Widespread freezing temperatures were observed across most of West Central and Southwest Florida during the late evening of December 30th through the mid-morning hours of December 31st, 2000, causing 4.5 million in crop damage. In Manatee and Hillsborough counties, freezing temperatures may have caused an estimated two million dollars worth of damage to the tropical fish industry. In eastern Charlotte, eastern Lee and extreme northern Pinellas counties, temperatures dropped into the lower 30s and remained below freezing for periods of two to five hours. The freeze caused an estimated 25 to 50 percent damage to tomato, pepper and squash crops in Lee and Charlotte counties. Temperatures fell into the mid-20s over Glades, Hendry, eastern Collier, and western portions of Palm Beach and Broward counties and fell to 32 degrees in the farming areas of south Miami-Dade County. Approximately 2 million in damage to vegetable crops occurred in Hendry and Glades counties.

**January 1, 2001:** The second and coldest night of a two-night freeze in south Florida saw minimum air temperatures ranging from 25 to 30 degrees over interior sections of the peninsula. In the metropolitan areas of Miami-Dade, Broward and Palm Beach counties temperatures were in the middle 30s over the western suburbs. An estimated \$6 million in crop damage included losses to corn and newly planted sugar cane in Palm Beach County, and to certain vegetables in Hendry and eastern Collier counties. An additional \$5.1 million in crop damage was caused by widespread freezing temperatures across most of West Central and Southwest Florida. In Lee County, the freeze caused nearly three million dollars in damage to the squash and cucumber crop.

In Charlotte County, the freeze caused at least 100 thousand dollars damage to the pepper crop.

**January 5, 2001:** A freeze occurred throughout the interior sections of South Florida, causing an estimated \$78 million in damage to certain crops. Hardest hit were certain vegetable crops with 75% losses in Hendry and east Collier counties and 30% losses in the farming areas of south Miami-Dade County. Other crops that were damaged included newly planted sugar cane, ornamentals, and tropical fruits. Widespread freezing temperatures were also observed across most of West Central and Southwest Florida during the pre-dawn and mid-morning hours, causing \$6.9 million in crop damage. In Levy, Sumter, Citrus, Hernando and Pasco counties, low temperatures dropped into the upper teens and lower 20s with durations below freezing for up to nine hours. In Hillsborough, Polk, Hardee, DeSoto, and Highlands counties, low temperatures ranged from the low to middle 20s with durations below freezing for up to eight hours. The freeze caused nearly four million dollars worth of damage to the tropical fish crop in Hillsborough County. In Lee County, the freeze caused nearly 2.6 million dollars worth of damage to the squash and cucumber crops. In Charlotte County, the freeze caused nearly 250 thousand dollars in damage to the pepper crop.

**January 10, 2001:** Freezing temperatures were observed over most of West Central and parts of Southwest Florida during the pre-dawn through mid-morning hours. In Levy, Sumter and Citrus counties, low temperatures dropped into the middle teens to the lower 20s with durations below freezing for up to nine hours. In mainly inland Hernando, Pasco, Hillsborough, Manatee and western Polk counties, low temperatures dropped into lower to middle 20s with durations below freezing for up to seven hours. In Hillsborough County, the freeze caused nearly four million dollars worth of damage to the tropical fish crop.

**January 23-25, 2003:** A strong cold front ushered in cold temperatures and gusty northwest winds into the Florida peninsula, which created some of the coldest weather in several years. Wind chill temperatures ranged from 10 to 15 in Bronson, around 20 in Tampa and Lakeland, to 20 to 25 degrees in Fort Myers. Overnight low temperatures ranged from near 20 in the inland counties north to the upper 20s in the inland counties south, to the lower 30s along the coast near Fort Myers. A hard freeze (temperatures of 27 degrees or less for three or more hours) reached south into northeast Hillsborough and northern Polk counties. Citrus crops fared well because the freeze did not last long enough, but strawberries took a \$4.5 million loss and tropical fish a \$4 million loss. Early morning low temperatures on January 24th dropped well below freezing across east central Florida. Temperatures ranged from 24 degrees in Leesburg and 25 in Daytona Beach to 29 in Melbourne and 27 in Orlando. To the south, Ft. Pierce and Vero Beach reported lows near 30. Later that morning, winds shifted off the ocean producing a few snowflakes in the coastal communities from Daytona Beach to Ft. Pierce. On January 25, arctic high pressure settled over the southeastern United States that maintained the clear and cold weather across the Florida peninsula. Overnight lows of 19 to 24 occurred from Bronson to Brooksville with temperatures in the 30s

farther south. Northeast winds of 10 to 15 mph produced wind chills down to 25 degrees from Tampa to Lakeland to Fort Myers.

## **Current and Future Exposure**

Florida will continue to be impacted by freezes and with adequate warning steps will be taken to reduce the loss of crops and the tropical fish industry. However, the SHMPAC has determined that the state's vulnerability as it relates to population and structures is very low.

## **7. Erosion**

In 1986, the Florida Department of Natural Resources, Division of Beaches and Shores (now the Department of Environmental Protection, Bureau of Beaches and Coastal Systems) was tasked to identify those beaches of the state which are critically eroding and to develop and maintain a comprehensive long-term management plan for their restoration. In 1989, a first list of erosion areas was developed based upon an abbreviated definition of critical erosion. This list included 217.6 miles of critical erosion and another 114.8 miles of non-critical erosion statewide.

In 1990, the erosion areas list was revised to include minor changes in the erosion problem areas for Nassau, Martin, and Gulf Counties plus major changes for Monroe County as a result of a more detailed study of the Keys beaches conducted during 1989. A 1991 revision included minor changes in Nassau, Brevard, Sarasota, Charlotte, Lee, and Collier Counties and major changes in Pinellas County as a result of new studies conducted during 1990 and 1991. Notably, Anclote Key was divided between Pinellas and Pasco Counties and the recent barrier islands of Three Rooker Bar, North Bunces Key and South Bunces Key were included. In addition, due to action taken by the 1991 Florida Legislature, an eastern portion of Escambia County was added to Santa Rosa County. The 1991 list included 227.5 miles of critical erosion and 122.1 miles of non-critical erosion statewide.

In 1992, the erosion areas list was revised to include beaches that had been authorized for restoration. This change had the effect of adding some peripheral segments and gaps between identified problem areas that, although they were stable or slightly eroded, require nourishment for the design integrity of an authorized beach restoration project. The major changes at the time included the Manatee County projects on Anna Maria Island and Longboat Key. Also added to the 1992 revision are a peripheral erosion area in Martin County and an erosion gap segment in St. Lucie County. The 1993 revision included minor changes in Wakulla, Taylor, Hernando, Levy, and Sarasota Counties as a result of new studies in 1993. The 1993 list included 232.9 miles of critical erosion and 122.6 miles of non-critical erosion statewide.

Major storms in 1994 and 1995 and again in 1998 caused significant changes in Florida's shoreline. Three tropical storms and a tropical depression impacted Florida in 1994 and three hurricanes and a tropical storm caused more impact in 1995. Following

Hurricane Opal on October 4, 1995, an updated listing was put together for northwest Florida that specifically identified areas which not only had critical erosion but where there remained a high degree of post-storm vulnerability.

An updated critical erosion list was finalized in October 1998, as a result of new investigations conducted in 1997 and 1998. Subsequently, a post-Hurricane Earl and Georges Recovery Plan was prepared in January 1999. The March 1999 critical erosion list included changes resulting from the impacts of Hurricanes Opal, Earl and Georges, and other less impactful storms. The 2000 critical erosion list was the result of continued investigations in 1999 including the significant effects from Hurricanes Floyd and Irene, and Tropical Storm Harvey. Only a couple additions were made in Palm Beach County in 2001, however, Tropical Storm Gabrielle caused erosion in the fall of 2001 prompting the addition of critical areas in Flagler and Charlotte Counties in 2002. Due to recovery in the Panhandle since the hurricanes of 1995 and 1998, a few areas in Okaloosa, Bay, and Gulf Counties were removed from the critical list.

Some discretion was applied when identifying the open water coastal beaches of Florida. Only those beaches were included which were exposed to the open water of the Gulf of Mexico, Atlantic Ocean, or Straits of Florida, and were not sheltered by a coastal barrier or island shoal. The Gulf fronting beaches of Monroe County including the Cape Sable region and the distal sand keys west of Key West (e.g., Marquesas Keys, Tortugas Keys) have insufficient historical data to identify the erosion problem areas at this time. The current 2002 list includes 329.9 miles of critical beach erosion, 9.1 miles of critical inlet shoreline erosion, 107.7 miles of non-critical beach erosion, and 3.7 miles of non-critical inlet shoreline erosion statewide.

## **8. Sinkholes, Landslide and Seismic Events**

Sinkholes are of interest to Florida because they are one of the predominant land form features of the state. Their development may be sudden and may result in property damage or loss of life. Florida has more sinkholes than any other state in the nation. Florida's average sinkhole size is 3 to 4 feet across, 4 to 5 feet deep. There are four areas of sinkholes occurrence in Florida:

Area I: Cover material ranges in thickness from less than a foot to about 25 feet. The cover material is generally permeable, not unlike bare limestone exposed to weathering. Area I experiences mostly solution sinkholes, but reportedly has very few collapse sinkholes which are usually very shallow and broad and develop slowly. Area I includes Jackson County, South Florida, and the Big Bend area

Area II: Cover material is 30 to 200 feet thick, consisting mainly of non-cohesive and permeable sand. Sinkholes develop gradually and are small, shallow and few. Cover subsidence sinkholes are most prevalent in this area. Area II includes most of the eastern coast north of Lake Okechobee through Volusia County, as well as portions of Western Peninsula counties.

Area III: Cover material is 30 to 200 feet thick and consists mainly of cohesive clay-like sediments of low permeability. Cover-collapse sinkholes occur most frequently and sinkholes are numerous, vary in size and develop quickly. Area III covers scattered areas across the Central and Northern Peninsula and Panhandle.

Area IV: Cover material is more than 200 feet thick, consisting of cohesive sediments with inter-layered discontinuous carbonate beds. Numerous sinkholes occur in this area, and several large diameter deep holes do occur. Area IV includes a good portion of the Panhandle, the Northeastern tip of the state, and the Western Central portion of the Peninsula.

There is no historical evidence of landslide events in the state of Florida. Though earthquakes are not likely to occur in Florida, their effects have been felt throughout the state.

### **Previous Occurrences**

Perhaps the most famous **sinkhole** in recent US history is the one formed in May 1981 at Winter Park, Florida near Orlando. The sinkhole is roughly circular but elongated, (approximately 300 feet by 300 feet in size) and swallowed one house and shed, half of the municipal swimming pool, a Porsche sports car, several large oak trees, a section of the crossing street and adjoining street, and an estimated 4 million cubic feet of soil. The sinkhole also damaged three other Porsche sports cars and a pick-up camper that slid into the crater, caused the rear of an auto shop to crack open, and exposed or damaged various utility lines in the vicinity.

Lake Jackson in Tallahassee, a nationally known bass fishing lake, experienced a sinkhole on September 16, 1999 that suddenly drained more than half the lake of every last gallon of water, not to mention every last fish and alligator.

On July 12, 2001, emergency officials for Hernando County investigated 18 confirmed sinkholes that hit in one day across the area, affecting a 15 to 16 block residential area and causing extensive damage to one house. One of the largest holes measured between 50 and 100 feet deep.

In June 2002, a 150-foot-wide sinkhole forced the evacuation of part of a 450-unit apartment building in Orlando, and a Spring Hill woman saw a 40-foot wide hole open in a retention area behind her uninsured home.

Of the **earthquakes** felt in Florida, only six are thought to have had epicenters in Florida. The following list has been compiled from numerous sources which cite Campbell (1943), USGS, and accounts from local newspapers as sources:

<b>Date of Occurrence</b>	<b>Modified Mercalli Intensity (if known)</b>	<b>Description</b>
10/29/1727	VI	A severe quake was reported in St. Augustine (unofficial).
2/6/1780		A mild tremor was felt in Pensacola.
5/8/1781		A severe tremor that shook ammunition racks from barracks walls and leveled houses was felt in Pensacola.
2/8/1843		Earthquake in the West Indies was felt in the United States, intensity unknown.
1/12/1879	VI	Earthquake felt through north and central Florida from Fort Myers to Daytona on the south, to a line drawn from Tallahassee to Savannah, Georgia on the north (25,000 square miles).
1/22-23/1880	VII	Earthquake in Cuba, about 120 miles east of Havana felt in Florida.
1/27/1880	VII- VIII	Several shocks were felt in Key West resulting from a disastrous earthquake at Vuelta Abajo, about 80 miles west of Havana, Cuba.
8/31/1886	V-VI	The great earthquake in Charleston, South Carolina (MMX) was felt all over Florida., ringing bells in St. Augustine. Also felt in Tampa.
9/1-9/1886	IV	Jacksonville felt more aftershocks from the Charleston quake.
11/5/1886		Jacksonville felt another aftershock from the Charleston quake.
6/20/1893	IV	Jacksonville felt a tremor
10/31/1900	V	Shock at Jacksonville, recorded by US Coast and Geodetic Survey.
6/12/1912		Strong shock felt in Savannah, felt in Florida
6/20/1912	V	Strong shock felt in Savannah probably associated with 6/12 quake, felt in north Florida.
6/1930	V	(Exact date unknown) A tremor was felt over a wide area in central Florida neat LaBelle, Fort Myers and Marco Island.
11/13/1935	IV or V	Two short tremors were felt at Palatka and another shock was felt at St. Augustine and on nearby Anastasia Island.
1/19/1942	IV	Several shocks felt on the south coast of Florida, with some shocks felt near Lake Okeechobee and in the Fort Myers area.
1/5/1945		Windows shook violently in the DeLand courthouse, Volusia County.
12/22/1945	I - III	Shock felt in the Miami Beach – Hollywood area.
11/8/1948		A sudden jar, accompanied by sounds like distant explosions, rattled doors and windows on Captiva Island, west of Fort Myers.
11/18/1952		A slight tremor rattled windows and doors at Quincy, about 20 miles northwest of Tallahassee.
3/26/1953	IV	Two shocks were felt in the Orlando area.
10/27/1973	V	Shock felt in central east coastal area of Seminole, Volusia, Orange and Brevard counties
12/4/1975	IV	Shock felt in Daytona and Orlando areas
1/13/1978		Two shocks reported by residents in eastern Polk County south of Haines were about one minute apart and each lasted 15 seconds, shaking doors and rattling windows.
11/13/1978		Tremors felt in parts of northwest Florida near Lake City, origination believed to be in the Atlantic Ocean.

## Current and Future Exposure

The Florida Geological Survey maintains a database of sinkholes reported throughout the state. This database currently has 2,360 entries. Table 3.2.6 lists the number of sinkholes recorded by county.

**Table 3.2.6 Recorded Sinkholes in Florida**

County Name	Number of Recorded Sinkholes
Alachua	50
Citrus	302
Clay	3
Columbia	27
Dade	1
Dixie	11
Duval	3
Gadsden	2
Gilchrist	17
Hamilton	9
Hardee	16
Hendry	1
Hernando	187
Highlands	4
Hillsborough	333
Holmes	1
Indian River	4
Jackson	8
Jefferson	2
Lafayette	1
Lake	86
Lee	2
Leon	56
Levy	54
Madison	4
Manatee	3
Marion	187
Monroe	1
Orange	173
Osceola	5
Palm Beach	1
Pasco	228
Pinellas	48
Polk	224
Putnam	2
Sarasota	5
Seminole	123
Sumter	16
Suwannee	51
Taylor	15
Volusia	64
Wakulla	27
Walton	1
Washington	2
<b>TOTAL</b>	<b>2,360</b>



Based on historical evidence, the most vulnerable counties to sinkholes are located mostly in the center portion of the peninsula: Hillsborough, Citrus, Pasco, Polk, Hernando, Marion, and Orange Counties. The least vulnerable counties, as assumed by historical evidence, are found mostly in the panhandle and the Southern peninsula: Dade, Hendry, Holmes, Lafayette, Monroe, and Walton Counties.

## **9. Tsunami**

Though tsunamis are more likely to affect Pacific Rim states, historical evidence does show that tsunamis have affected the Eastern United States, including Florida. Forty tsunamis and tsunami-like waves have been documented in the Eastern United States since 1600.

### **Previous Occurrences**

The following data on tsunami activity in Florida is presented by the National Geophysical Data Center:

**August 31, 1886:** A tsunami associated with the Charleston earthquake hit Jacksonville and Mayport (a suburb of Jacksonville). The Florida Times Union newspaper reported, "There was a brief calm on the river; then a sudden wave dashed high over the beach and a rumbling noise was heard, the earth and houses shook like the leaves on trees."

**August 4, 1946:** An earthquake occurred off the northeast coast of the Dominican Republic, sending a wave recorded at Daytona Beach. Travel time from the earthquake epicenter was 4 hours.

**August 8, 1946:** An aftershock of the August 4 earthquake produced a small tsunami recorded at Daytona Beach. Travel time from the earthquake epicenter was 4 hours.

**July 3-4, 1992:** At midnight, a ten-foot wave suddenly surged onto Daytona Beach, injuring 75 people, damaging 100 vehicles and causing property damage. The wave lasted one minute. It was recorded on the tide gage at St. Augustine, 75 miles north of Daytona Beach, and was reported to have extended as far south as New Smyrna Beach. The wave has been explained as meteorologically induced, forced by a spreading squall line.

### **Current and Future Exposure**

The evidence on Tsunami occurrence in Florida is very limited, therefore it was determined by the SHMPAC that the state's vulnerability to this event is very low.

## **10. Technological Hazards**

Technological hazards are those that are caused by tools, machines and substances that we use in our everyday life. The major technological hazards that will be discussed in this section are Hazardous Materials and Radiological Accidents. "Hazardous Materials" refers generally to hazardous substances, petroleum, natural gas, synthetic gas, and acutely toxic chemicals. The term Extremely Hazardous Substance (EHS) is used in Title III of the Superfund Amendments and Reauthorization Act of 1986 to refer to those chemicals that could cause serious health effects following short-term exposure from accidental releases. With the passage of the Federal Emergency Planning and Community Right-To-Know Act (EPCRA) in 1986, the Division began implementation of a statewide Hazardous Materials Emergency Planning Program. For the first time, passage of EPCRA allowed emergency planners, responders and the public access to facility specific information regarding the identification, location and quantity of hazardous materials at fixed sites. The law requires facilities with threshold quantities of federally mandated substances to report annually to state and local emergency officials. In addition, facilities must immediately notify officials of any releases of harmful chemicals that have the potential to result in off-site consequences. This information is utilized to prepare emergency plans for hazardous materials incidents; to allow responders to receive training based on specific known threats; and to inform and educate the public regarding the chemical present in their communities. Florida has more than 4500 fixed facility locations that report the presence of an EHS in federally mandated threshold amounts.

Nuclear power generating facilities have the greatest concentration of radioactive materials of any private source. Florida has three nuclear power plants located at Crystal River in Citrus County, Turkey Point in Dade County, and St. Lucie on Hutchinson Island – St. Lucie on Hutchinson Island – St. Lucie County (see Figure 16). Florida is also in the Ingestion Pathway Zone (50 mile zone around each site) for the Farley Plant, in Dothan, Alabama. In order to be in compliance with federal regulations, there must be a demonstrated ability to respond to any event that could occur at a site. Therefore, the State of Florida has had a proactive REP program for many years. There have been many training courses and instruction given both to those counties within the immediate area of the plants (within 10 miles), and those who are in the ingestion pathway of the plant (within 50 miles). DEM is involved in either a practice or evaluated exercise of each plan every year. Although extensive safeguards are required, accidents can occur. These could affect large population through the accidental release of radiation. Other sources do radiological accidents can occur through transportation of radioactive materials and the launching of spacecraft from Kennedy Space Center.

### **Previous Occurrences**

**From 1996 – 2003** an average of 1,700 incidents involving hazardous materials were reported to the State Warning Point, second only to weather incidents in frequency of reports.

## **Current and Future Exposures**

**Hazardous Materials**-Major disasters like that in Bhopal, India in December 1984, which resulted in 2000 deaths and over 200,000 injuries, are rare. Reports of hazardous material spill and releases, however, are increasingly commonplace. Thousands of new chemicals are developed each year. Citizens and officials are concerned about accidents (e.g., highway incidents, warehouse fires, train derailment, industrial incidents) happening in their communities. Major chemicals spills can occur at any facility that produces, use, or store chemicals. These include chemical manifesting plants, laboratories, shipyards, railroad yards, warehouses, or chemical disposal areas. Illegal dumpsites can appear anywhere. Recent evidence shows that hazardous materials incidents are considered by many to be the most significant threat facing local jurisdictions

**Radiological Accidents** - Areas at risk are normally designated as (1) within the plume emergency planning zone (EPZ) of such facilities (jurisdiction located within a 10-mile radius of a nuclear clear power plant) or (2) within the ingestion emergency planning zone (IPZ) (jurisdictions within a 50-mile radius of a nuclear power plant). The transportation and disposal of radioactive materials and waste creates problems because of the long life of radioactive materials. Although precautions are taken in packaging the materials there is still concern that transportation accidents and other hazards, such as hurricanes near disposal sites, could cause radiation exposure or pollution. The launch of spacecraft from the Kennedy Space also represents a significant threat to the state for launch vehicles carrying Radioisotope Thermoelectric Generators (RTG). The primary threat is an in-flight explosion within the first two minutes of vehicle lift-off.

### **11. Man-Made Hazards**

Other man-made hazards are those hazards caused by direct human intervention and create a potential threat to the health, safety and welfare of the state's citizens. The major man-made hazards that will be discussed in this section are civil disturbances, mass immigration and terrorism.

#### **Civil Disturbances**

Civil disturbances are public crisis, which occur with or without warning and which may impact adversely on significant portions of the population. These disturbances may be the actions of any number of persons causing disruption of the populace.

#### **Mass Immigration**

Florida's location to the Caribbean basin makes it a vulnerable point of entry of a massive influx of refugees entering the United States illegally. Even though all of Florida's counties are subject to receiving illegal arrivals, the most vulnerable counties are Monroe, Dade, Broward, Palm Beach, Martin, St. Lucie, Indian River, Lee and

Collier. The consequences of a mass arrival of illegal entrants include the threat of health, safety and welfare if they are detained in mass for an extended length of time. Also, law enforcement capabilities would be overwhelmed while protecting Florida's boundaries and waterways. The state has participated with the federal government in the department of a Federal Mass Immigration. The state has developed a Mass Immigration Incident Annex which bridges components of the Federal Mass Immigration Plan the Federal Response Plan. A full scale Mass Immigration Exercise was held June 13-15, 1995 in South Florida.

## **Terrorism**

Terrorism is the systematic use of violence to achieve a political goal. While the methods of terrorists may vary, the intent is to create intense fear and to force someone into taking a course of action.

Terrorism actually is a form of warfare conducted by individuals or small groups who seek political change through intimidation. In this kind of war, the terrorists do not have sufficient strength to fight on a battlefield or even to sustain a guerilla war against the opposing forces. Instead terrorists usually threaten or attach government facilities, businesses, and even ordinary citizens of the target countries.

Terrorists tactics are often designed to obtain maximum news coverage to publicize their demands and to magnify the nature of the threat if their demands are not met. The terrorists intend to create so much anxiety and fear that the citizens will insist that their leaders meet the terrorist's demands. To create this climate of fear, terrorists attack the most vulnerable people.

## **Mass Casualty Incidents**

Mass Casualty Incidents occur as result injuries or death to numerous individuals at the same time. Examples include imassive building structural failure, airplane crashes, or bus crashes, and multiple collisions on interstate highways. The Value Jet Crash in May of 1996 is a good example of how a mass casualty incident can over tax the resources of even the largest and most urbanized local governments within the state.

## **Historical Summary**

Over the past decade, Florida has not had any civil disturbances or terrorism attacks. In 1994, the state responded to two major mass immigration incidents. In August 1994, there was an influx of 700 Cuban Refugees, and in May 1994, there was an influx of 100 Haiti Refuges. The state and the U.S. Department of Justice worked together to minimize the impact of these immigration emergencies.

## **Current and Future Exposure**

Man-made hazards can and do occur anywhere and at anytime. In most cases they result in injuries, possible loss of life and the threat of further violence. Because of the importance of international tourism and trade to the state's economy and culture diversification of the state's population, the threats of man-made hazards will continue to exist. Local, State and Federal law enforcement officials continually monitor suspended terrorist and threats of mass immigration and civil disturbances.

Florida has a long history of recovering from disasters and receiving federal assistance to help recover from a variety of types of weather related incidents. Table 3.2.7 provides a brief overview of the Residentially Declared events in Florida since 1992.

**Table 3.2.7 Florida Presidential Declarations Since 1992**

Disaster Number	Disaster Name	Date of Declaration	Counties Declared	Type of Assistance
952	S. W. FI Floods	August 12, 1992	Charlotte, DeSoto, Manatee, Sarasota	PA & IA PA & IA PA & IA
955	Andrew	August 24, 1992	Broward, Collier, Miami-Dade, Monroe	PA & IA
966	Tornados	October 8, 1992	Baker, Clay, Duval, Hillsborough, Nassau, Pinellas, Union	PA & IA
982	Winter Storm	March 13, 1993	Alachua, Baker, Bay, Bradford, Brevard, Broward, Calhoun, Charlotte, Citrus, Clay, Collier, Columbia, Miami-Dade, DeSoto, Dixie, Duval, Escambia, Flagler, Franklin, Gilchrist, Glades, Gulf, Hamilton, Hardee, Hernando, Highland, Hillsborough, Holmes, Jackson, Lafayette, Lake, Liberty, Leon, Levy, Madison, Manatee, Marion, Nassau, Okaloosa, Okeechobee, Osceola, Pasco, Pinellas, Polk, Putnam, Santa Rosa, Sarasota, Seminole, St. Johns, Sumter, Suwannee, Taylor, Union, Volusia, Walton, Wakulla	PA & IA
1035	T. S. Alberto	July 10, 1994	Martin, Palm Beach, St. Lucie	PA & IA
1043	T. S. Gordon	October 27, 1994	Brevard, Volusia	PA & IA
1062	Erin	August 10, 1995	Bay, Brevard, Escambia, Okaloosa, Santa Rosa, Walton	PA & IA
1069	Opal	October 4, 1995	Bay, Calhoun, Collier, Escambia, Franklin, Gulf, Holmes, Jackson, Lee, Okaloosa, Santa Rosa, Taylor, Wakulla, Walton, Washington	PA & IA
1074	S. E. FI Floods	October 27, 1995	Martin, Palm Beach, St. Lucie	PA & IA
1141	T. S. Josephine	October 15, 1996	Baker, Citrus, Clay, Columbia, Dixie, Duval, Hernando, Hillsborough, Levy, Manatee, Nassau, Pasco, Pinellas, Putnam,	PA & IA

Disaster Number	Disaster Name	Date of Declaration	Counties Declared	Type of Assistance
			Sarasota, Taylor, Volusia.	
1195	El Nino	January 6, 1998	Alachua, Baker, Bay, Bradford, Brevard, Broward, Calhoun, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Gulf, Hamilton, Holmes, Jackson, Lafayette, Lake, Lee, Levy, Liberty, Madison, Marion, Nassau Okaloosa, Orange, Osceola, Pasco, Putnam, Seminole, St. Johns, Sumter, Suwannee, Taylor, Union, Volusia, Walton, Washington	PA & IA
1204	Groundhog Day	February 12, 1998	Broward, Miami-Dade, Monroe	PA & IA
1223	Wildfires	June 18, 1998	Alachua, Baker, Bay, Bradford, Brevard, Calhoun, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Gulf, Hamilton, Hernando, Holmes, Jackson, Lafayette, Lake, Lee, Levy, Liberty, Madison, Marion, Nassau Okaloosa, Orange, Osceola, Pasco, Putnam, Seminole, St. Johns, Sumter, Suwannee, Taylor, Union, Volusia, Walton, Washington	PA & IA
1241	Earl	September 4, 1998	Bay, Calhoun, Dixie, Franklin, Gilchrist, Jackson, Jefferson, Lafayette, Leon, Levy, Liberty, Madison, Walton, Washington, Gulf, Taylor, Wakulla	PA & IA
1249	Georges	September 28, 1998	Bay, Calhoun, Columbia, Escambia, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson, Liberty, Monroe, Okaloosa, Santa Rosa, Suwannee, Walton, Washington	PA & IA
1259	Mitch	November 6, 1998	Palm Beach, Monroe	IA-only
1300*	Floyd	September 22, 1999	Brevard, Broward, Duval, Flagler, Indian River,	PA & IA

Disaster Number	Disaster Name	Date of Declaration	Counties Declared	Type of Assistance
			Martin, Miami-Dade, Nassau, Palm Beach, St. Johns, St. Lucie, Volusia	
1306*	Irene	October 20, 1999	Brevard, Broward, Collier, Glades, Hendry, Highland, Indian River, Martin, Dade, Monroe, Okeechobee, Orange, Osceola, Palm Beach, Polk, St. Lucie, Seminole, Volusia	PA & IA
1344	Helene	October 3, 2000	Bay, Calhoun, Escambia, Franklin, Gulf, Jefferson, Leon, Okaloosa, Wakulla	PA & IA
1345*	S. F. Floods	October 5, 2000	Broward, Collier, Monroe Miami-Dade	PA & IA
1359	Freezes	February 6, 2001	Collier, Duval, Glades, Highland, Hillsborough, Martin, Palm Beach and Taylor	Disaster Unemployment
1381	Allison	June 17, 2001	Bay, Calhoun, Gadsden, Holmes, Jefferson, Leon, Liberty, Wakulla, Washington	PA & IA
1393	Gabrielle	September 28, 2001	Charlotte, Collier, DeSoto, Flagler, Hardee, Highlands, Lee, Manatee, Putnam, Sarasota, St. Johns	PA
1460	Miami Tornadoes	August 25, 2003	Miami-Dade	IA-only
1481	CW & SW Storm	July 29, 2003	Charlotte, Citrus, DeSoto, Hardee, Hernando, Levy, Manatee, Pasco, Sarasota,	PA

## Data Sources

**American Society of Civil Engineers (ASCE), "Facts About Windstorms."**

Website: [www.windhazards.org/facts.cfm](http://www.windhazards.org/facts.cfm)

**Federal Emergency Management Agency (FEMA)**

Website: [www.fema.gov](http://www.fema.gov)

**Florida Division of Emergency Management**

Website: [www.dca.state.fl.us/fdem/index.htm](http://www.dca.state.fl.us/fdem/index.htm)

**Florida Geological Survey**

Website: <http://www.dep.state.fl.us/geology/default.htm>

**National Climatic Data Center (NCDC), U.S. Department of Commerce, National Oceanic and Atmospheric Administration**

Website: <http://lwf.ncdc.noaa.gov/oa/ncdc.html>

**National Geophysical Data Center, "Tsunamis and Tsunami-Like Waves of the Eastern United States"**

Website: <http://www.ngdc.noaa.gov/seg/hazard/tsu.shtml>

**National Hurricane Center, National Oceanic & Atmospheric Administration (NOAA)**

Website: <http://www.nhc.noaa.gov/>

**National Severe Storms Laboratory (NSSL), U.S. Department of Commerce, National Oceanic and Atmospheric Administration**

Website: [www.nssl.noaa.gov](http://www.nssl.noaa.gov)

**National Weather Service (NWS), U.S. Department of Commerce, National Oceanic and Atmospheric Administration**

Website: [www.nws.noaa.gov](http://www.nws.noaa.gov)

**Storm Prediction Center (SPC), U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service**

Website: [www.spc.noaa.gov](http://www.spc.noaa.gov)

**The Tornado Project, St. Johnsbury, Vermont**

Website: [www.tornadoproject.com](http://www.tornadoproject.com)

## 3.3 ASSESSING VULNERABILITY BY JURISDICTION

***44 CFR 201.4(c)(2)(ii) - The risk assessment shall include an overview and analysis of the State's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in local risk assessments. The State shall describe vulnerability in term of the jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard events.***

Exposure and loss estimates provided herein used available data and the methodologies applied resulted in an approximation of risk. These estimates should be used to understand relative risk from hazards and potential losses. Uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning natural hazards and their effects on the built environment. Uncertainties also result from approximations and simplifications that are necessary for a comprehensive analysis (such as incomplete inventories, demographics, or economic parameters).

To conduct the risk assessment effort, two distinct hazard risk assessment methodologies were applied, utilizing HAZUS-MH; FEMA's loss estimation software, and a statistical risk assessment methodology. Each approach provided estimates for the potential impact by using a common, systematic framework for evaluation. **At this time, the Risk Assessment only includes information from the overall statewide risk assessment and does not include risk information from local jurisdictions. This comes from a determination made by SHMPAC that the data is the existing Local Mitigation Strategies has not been validated and in many cases is not good. Additionally, the SHMPAC determine that at this time (April 2004) no local plans were approved by FEMA and the integration of local risk assessment data into the state plan was premature. Therefore, in the plan next update, the SHMPAC will incorporate the new and better risk assessment data from all FEMA approved Local Mitigation Strategies into the state plan.**

The HAZUS-MH risk assessment methodology is parametric, in that distinct hazard and inventory parameters (wind speed and building types) were modeled using the HAZUS-MH software to determine the impact (damages and losses) on the built environment. The HAZUS-MH software was used to estimate losses from wind (hurricane and tornado) and flood hazards.

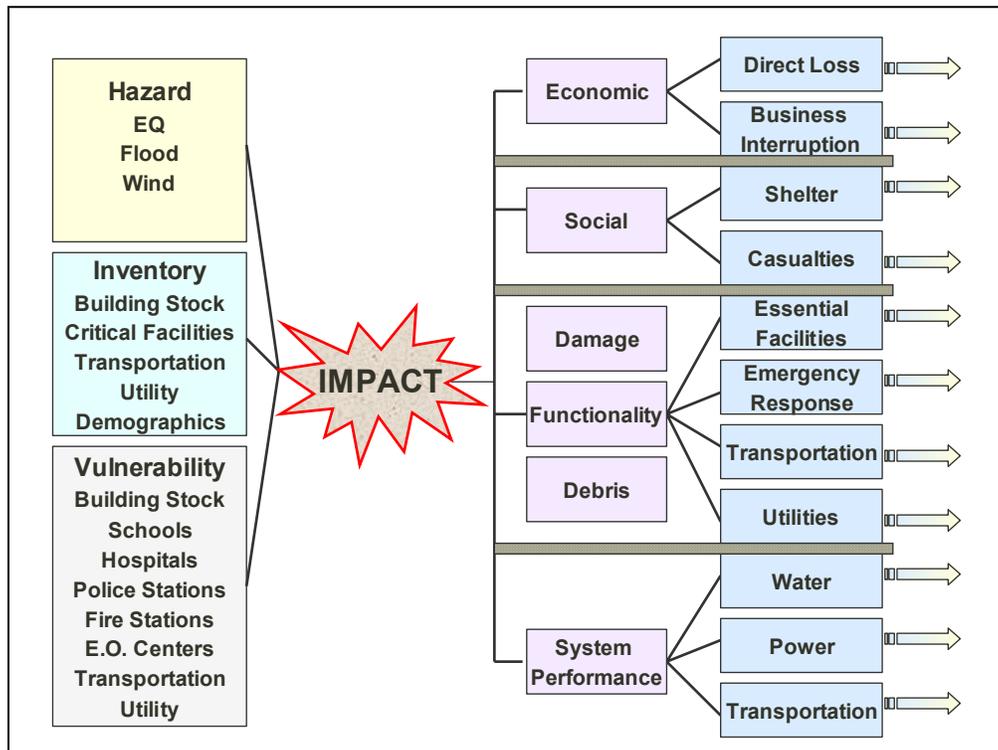
The statistical risk assessment methodology was applied to analyze hazards of concern that are outside the scope of the HAZUS-MH software. The HAZUS-MH driven methodology uses a statistical approach and mathematical modeling of risk to predict a

hazard's frequency of occurrence and estimated impacts based on recorded or historic damage information.

## HAZUS-MH Risk Assessment Methodology

HAZUS-MH is FEMA's standardized loss estimation software program built upon an integrated Geographic Information System (GIS) platform (Figure 3.3.1). This risk assessment applied HAZUS-MH to produce regional profiles and estimate losses for four hazards.

**Figure 3.3.1. Conceptual Model of HAZUS-MH Methodology**



## Statistical Risk Assessment Methodology

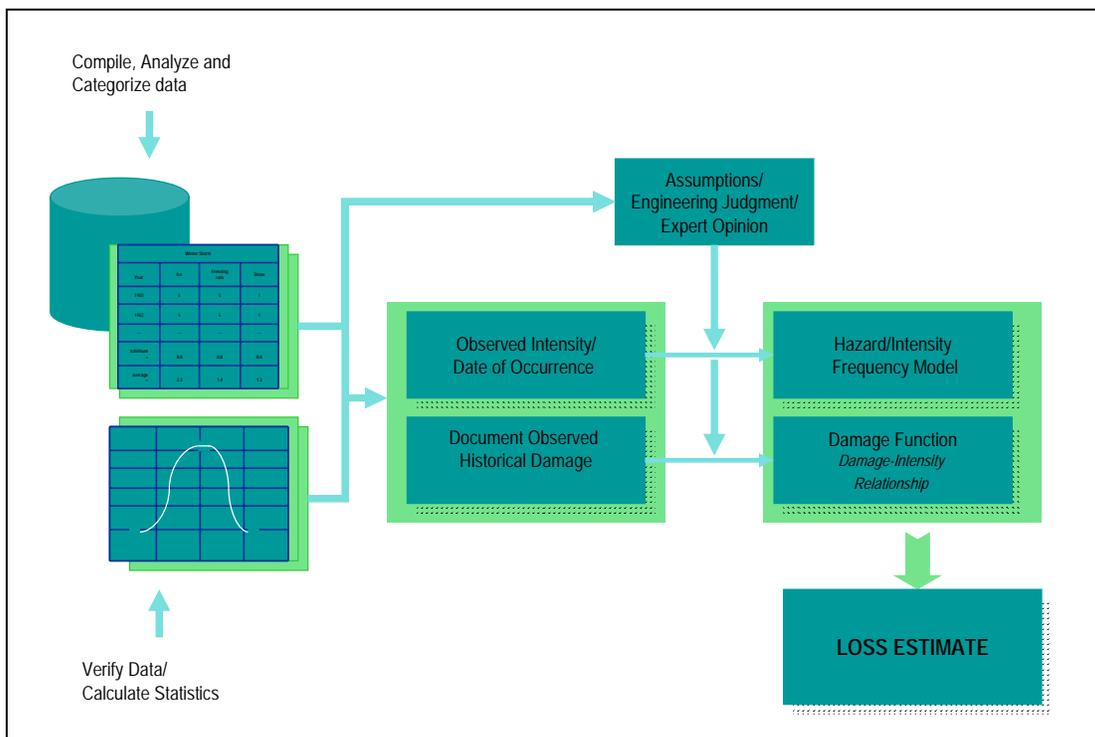
Risks associated with other natural hazards were analyzed using a statistical assessment methodology developed and used specifically for this effort. This approach is based on the same principals as HAZUS-MH, but does not rely on readily available automated software. Historical data for each hazard are used and statistical evaluations are performed using manual calculations. The general steps used in the statistical risk assessment methodology are summarized below:

- Compile data from national and local sources
- Conduct statistical analysis of data to relate historical patterns within data to existing hazard models (minimum, maximum, average, and standard deviation)
- Categorize hazard parameters for each hazard to be modeled (e.g., tornado)

- Develop model parameters based on analysis of data, existing hazard models, and risk engineering judgment
- Apply hazard model including:
  - Analysis of frequency of hazard occurrence
  - Analysis of intensity and damage parameters of hazard occurrence
  - Development of intensity and frequency tables and curves based on observed data
  - Development of simple damage function to relate hazard intensity to a level of damage (*for example, one flood = \$ in estimated damages*)
  - Development of exceedence and frequency curves relating a level of damage for each hazard to an annual probability of occurrence
  - Development of loss estimate

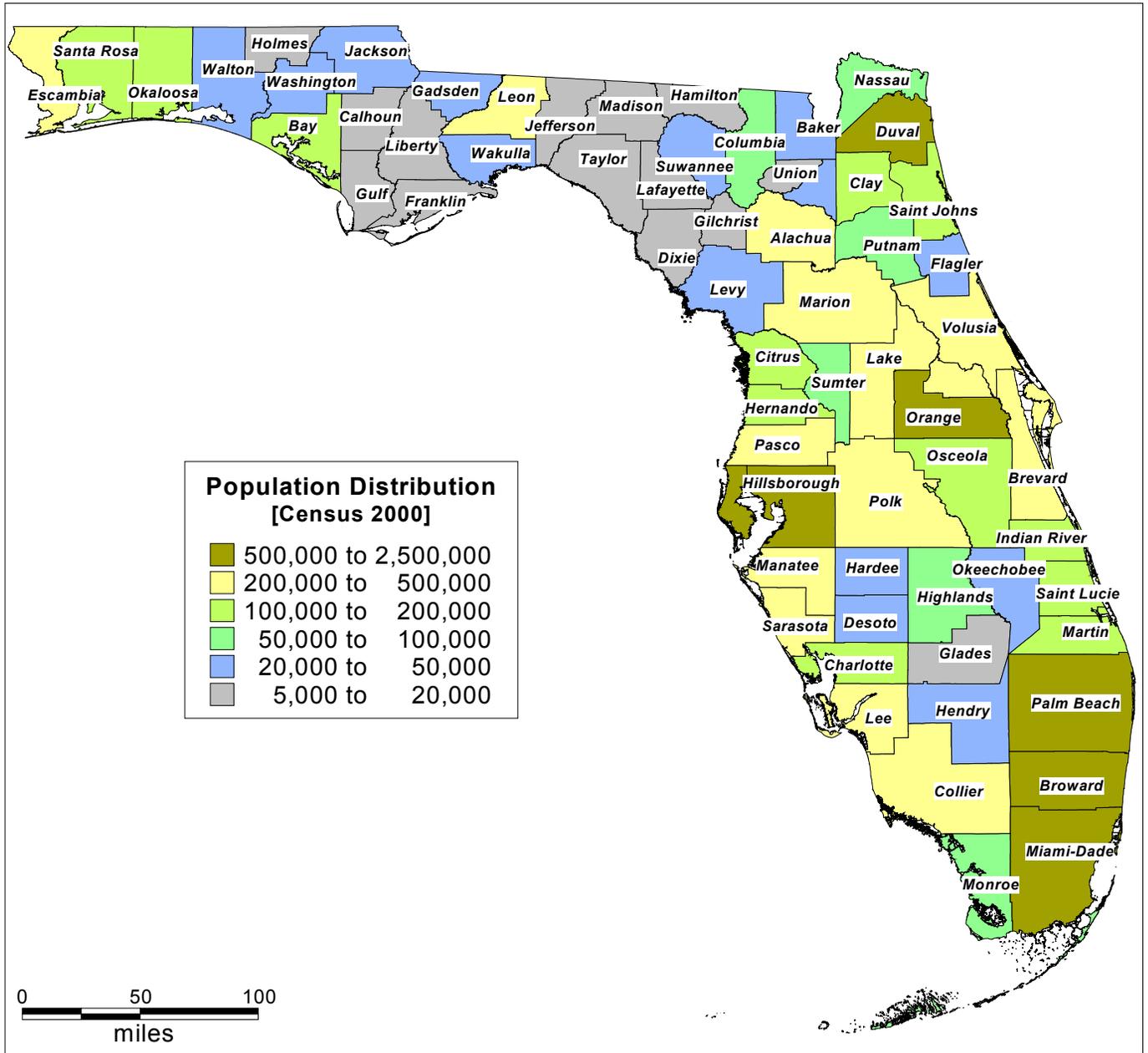
**Figure 3.3.2** illustrates a conceptual model of the statistical risk assessment methodology as applied to the State of Florida.

**Figure 3.3.2 Risk Assessment Model**



This section provides information on hazard vulnerability in Florida by jurisdiction (county). **Figure 3.3.3** shows the demographic distribution at the county level (based on Census 2000).

**Figure 3.3.3**



**Table 3.3.1** provides a breakdown by county of the estimated dollar exposure for various categories, which is the basis of the risk assessment presented in section 3.5. This information was derived from HAZUS-MH, thus any values not available in the current version of HAZUS-MH are not shown.

**Table 3.3.1. Estimated Values for the Key Occupancies (Uses) for the State of Florida  
(\$M, 2003 Valuations)**

COUNTY	Residential	Commercial-Medical	Medical	Industrial	Agricultural	Education	General Government	Emergency Response	Total
Alachua	17,094	2,710	941	446	60	7,680	85	25	29,041
Baker	1,166	131	7	56	8	6	13	6	1,394
Bay	13,193	2,114	388	310	17	55	50	4	16,131
Bradford	1,498	183	15	68	5	12	17	0	1,799
Brevard	42,635	5,805	642	1,435	94	234	105	30	50,980
Broward	138,092	26,766	3,946	5,502	249	726	281	56	175,617
Calhoun	769	128	14	33	6	14	12	0	976
Charlotte	14,170	1,393	299	190	24	20	14	9	16,119
Citrus	9,961	1,093	165	184	24	30	9	5	11,471
Clay	10,762	1,323	220	242	32	45	8	9	12,641
Collier	26,364	4,262	471	737	117	70	137	50	32,208
Columbia	3,295	522	81	282	23	87	19	2	4,311
DeSoto	1,918	264	19	33	32	10	6	3	2,285
Dixie	828	90	4	25	4	1	12	3	967
Duval	64,112	11,503	1,909	2,464	110	404	132	33	80,668
Escambia	24,191	3,610	1,051	701	41	468	100	11	30,174
Flagler	4,424	436	76	154	17	5	6	6	5,125
Franklin	1,256	131	13	32	2	9	5	0	1,447
Gadsden	2,757	310	20	133	28	31	17	7	3,303
Gilchrist	691	55	4	9	5	6	3	0	774
Glades	643	30	1	9	4	0	0	0	686
Gulf	1,205	113	8	18	1	0	5	2	1,352
Hamilton	674	68	0	26	7	9	11	4	799
Hardee	1,473	144	16	43	19	6	5	0	1,706
Hendry	1,833	257	30	68	41	11	13	0	2,254
Hernando	10,527	1,157	275	222	32	12	53	0	12,279
Highlands	7,233	672	208	123	53	25	7	4	8,326
Hillsborough	81,700	15,475	2,607	3,306	238	2,147	170	22	105,664
Holmes	1,183	113	5	17	6	4	7	0	1,336
Indian River	10,810	1,892	295	234	134	31	10	4	13,410
Jackson	3,082	371	29	82	7	13	23	5	3,612
Jefferson	794	106	10	26	12	2	5	3	957
Lafayette	378	40	5	27	15	1	8	0	474

COUNTY	Residential	Commercial-Medical	Medical	Industrial	Agricultural	Education	General Government	Emergency Response	Total
Lake	16,615	2,280	486	601	579	45	18	3	20,625
Lee	43,310	6,139	757	1,165	102	143	49	27	51,691
Leon	20,391	3,283	468	359	43	433	439	27	25,442
Levy	1,944	265	19	81	11	20	12	7	2,360
Liberty	422	23	2	43	1	6	9	0	506
Madison	1,077	114	10	59	13	10	12	2	1,297
Manatee	23,626	2,979	491	1,049	94	80	31	11	28,361
Marion	18,827	2,680	401	1,042	139	53	22	50	23,215
Martin	12,577	2,113	331	423	55	39	18	21	15,577
Miami-Dade	156,571	37,868	5,272	6,787	404	1,504	462	121	208,988
Monroe	9,324	1,932	154	203	23	30	68	15	11,749
Nassau	4,611	558	60	148	14	24	18	2	5,436
Okaloosa	15,108	2,630	370	399	35	50	268	12	18,872
Okeechobee	1,973	343	72	34	29	7	8	2	2,468
Orange	72,557	16,415	1,664	3,409	620	499	231	37	95,431
Osceola	13,004	2,059	148	324	76	53	12	4	15,680
Palm Beach	110,540	19,133	3,595	2,995	324	533	340	62	137,521
Pasco	27,893	3,165	562	660	83	206	22	80	32,671
Pinellas	84,368	12,740	1,877	3,638	208	279	114	71	103,294
Polk	35,331	5,485	799	2,165	156	446	130	5	44,517
Putnam	4,383	490	57	174	16	15	22	6	5,162
Saint Johns	12,104	1,890	161	335	37	201	26	12	14,765
Saint Lucie	16,027	1,778	164	341	69	44	19	5	18,447
Santa Rosa	9,509	1,121	174	220	35	34	17	0	11,108
Sarasota	34,927	5,113	827	1,228	78	99	32	7	42,311
Seminole	32,628	5,716	725	1,515	114	168	88	37	40,991
Sumter	3,615	248	32	74	15	18	27	0	4,029
Suwannee	1,996	254	24	60	15	17	7	6	2,380
Taylor	1,309	160	9	71	4	3	11	5	1,571
Union	552	53	5	10	5	0	29	0	654
Volusia	38,232	5,288	716	1,170	112	150	147	27	45,842
Wakulla	1,356	134	10	32	2	11	7	5	1,556
Walton	4,392	477	29	100	13	16	19	11	5,056
Washington	1,356	137	39	13	2	11	6	3	1,567
<b>Totals</b>	<b>1,333,167</b>	<b>228,331</b>	<b>34,284</b>	<b>48,165</b>	<b>4,992</b>	<b>17,417</b>	<b>4,087</b>	<b>980</b>	<b>1,671,423</b>

**Table 3.3.2** below provides a breakdown by county with the following estimated information:

- Population
- Number of households
- Households with income less that \$20,000
- Population over 65 years of age
- Buildings constructed before 1970
- Total number of buildings
- Student Population

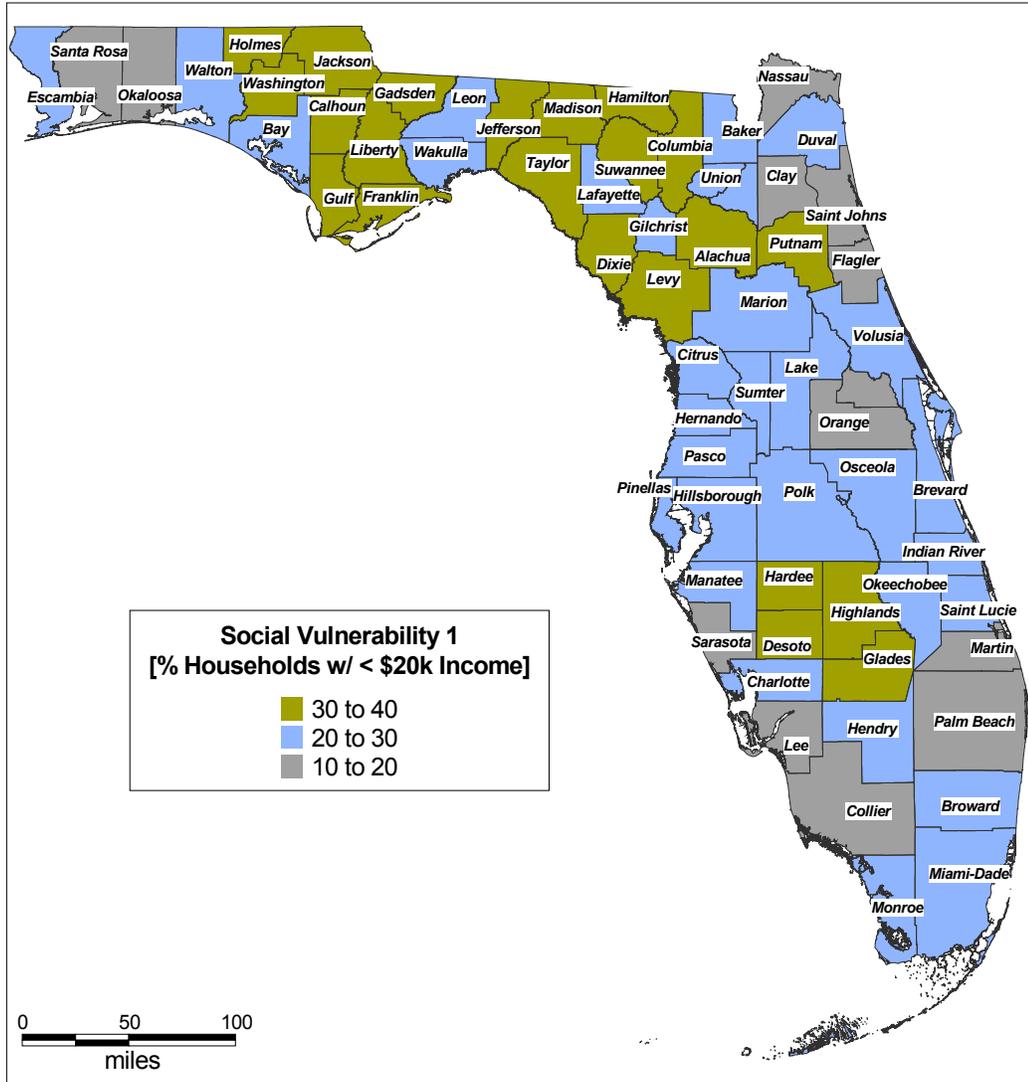
**Table 3.3.2**

COUNTY NAME	Population	Households	Households/w Income Less \$20k	Population 65 Over	Buildings Built before 1970	Total Buildings	Students
Alachua	217,955	87,509	28,915	20,705	23,131	93,980	42,381
Baker	22,259	7,043	1,615	1,993	1,448	7,384	2,614
Bay	148,217	59,597	15,013	19,613	18,757	77,345	16,794
Bradford	26,088	8,497	2,329	3,347	3,119	9,302	2,977
Brevard	476,230	198,195	41,990	94,648	64,348	220,036	53,195
Broward	1,623,018	654,445	144,262	260,932	217,242	737,926	187,070
Calhoun	13,017	4,468	1,584	1,728	1,648	4,949	1,322
Charlotte	141,627	63,864	14,157	49,032	10,917	78,294	9,804
Citrus	118,085	52,634	14,688	38,017	6,787	60,767	8,866
Clay	140,814	50,243	6,760	13,700	7,936	53,207	18,813
Collier	251,377	102,973	15,807	61,258	13,963	144,106	21,226
Columbia	56,513	20,925	6,541	7,869	5,494	23,144	6,563
DeSoto	32,209	10,746	3,262	6,177	3,292	13,396	2,809
Dixie	13,827	5,205	1,998	2,327	1,546	7,074	1,356
Duval	778,879	303,747	64,851	81,209	135,887	327,683	96,310
Escambia	294,410	111,049	28,967	39,137	45,103	123,395	36,733
Flagler	49,832	21,294	3,942	14,246	1,232	23,871	4,111
Franklin	11,057	4,096	1,429	1,737	2,390	6,924	899
Gadsden	45,087	15,867	4,962	5,475	6,022	17,475	5,388
Gilchrist	14,437	5,021	1,505	1,940	937	5,688	1,724
Glades	10,576	3,852	1,211	2,011	968	5,683	989
Gulf	13,332	4,931	1,506	2,160	2,412	7,334	1,440
Hamilton	13,327	4,161	1,626	1,424	1,386	4,745	1,395
Hardee	26,938	8,166	2,468	3,633	3,267	9,593	3,128
Hendry	36,210	10,850	3,166	3,408	2,367	12,072	4,730
Hernando	130,802	55,425	13,958	40,547	4,746	61,822	10,700
Highlands	87,366	37,471	11,312	28,991	9,200	47,692	6,607
Hillsborough	998,948	391,357	84,434	119,730	128,390	423,605	123,273
Holmes	18,564	6,921	2,486	2,673	2,292	7,549	2,028
Indian River	112,947	49,137	10,604	32,991	10,657	56,934	9,989
Jackson	46,755	16,620	5,370	6,786	7,044	18,771	5,228
Jefferson	12,902	4,695	1,478	1,862	1,674	5,097	1,418

COUNTY NAME	Population	Households	Households/w Income Less \$20k	Population 65 Over	Buildings Built before 1970	Total Buildings	Students
Lafayette	7,022	2,142	605	801	637	2,468	646
Lake	210,528	88,413	20,419	55,616	20,729	101,304	18,384
Lee	440,888	188,599	37,340	111,724	37,034	243,280	37,605
Leon	239,452	96,521	26,753	19,872	23,115	103,280	42,349
Levy	34,450	13,867	4,737	6,025	2,493	15,803	3,398
Liberty	7,021	2,222	720	691	929	3,023	700
Madison	18,733	6,629	2,585	2,632	2,638	7,487	2,209
Manatee	264,002	112,460	24,642	65,971	37,682	136,986	23,718
Marion	258,916	106,755	29,463	63,342	18,799	119,985	23,891
Martin	126,731	55,288	10,562	35,795	9,303	64,853	11,230
Miami-Dade	2,253,362	776,774	220,979	300,540	373,393	848,099	295,824
Monroe	79,589	35,086	7,109	11,549	16,190	51,169	6,717
Nassau	57,663	21,980	4,062	7,156	4,978	25,480	6,233
Okaloosa	170,498	66,269	11,777	20,518	18,479	77,685	20,727
Okeechobee	35,910	12,593	3,697	5,873	2,688	15,156	3,983
Orange	896,344	336,286	66,584	89,935	95,269	358,942	115,163
Osceola	172,493	60,977	12,789	19,472	8,234	71,525	21,358
Palm Beach	1,131,184	474,175	91,146	263,872	113,616	553,906	115,035
Pasco	344,765	147,566	39,540	92,418	26,565	171,826	30,745
Pinellas	921,482	414,968	99,277	208,474	195,576	478,213	84,941
Polk	483,924	187,233	45,399	88,629	63,199	224,026	51,999
Putnam	70,423	27,839	9,361	12,687	8,652	32,472	7,283
Saint Johns	123,135	49,614	8,436	19,467	10,215	57,363	13,913
Saint Lucie	192,695	76,933	17,843	43,624	13,341	89,842	19,222
Santa Rosa	117,743	43,793	8,552	12,762	8,663	48,391	14,824
Sarasota	325,957	149,937	28,528	102,760	45,702	181,037	24,869
Seminole	365,196	139,572	20,144	38,549	23,908	146,156	45,518
Sumter	53,345	20,779	5,780	14,659	3,952	24,721	4,323
Suwannee	34,844	13,460	4,489	5,860	3,491	15,170	3,570
Taylor	19,256	7,176	2,313	2,609	3,025	9,240	2,114
Union	13,442	3,367	809	936	780	3,572	1,492
Volusia	443,343	184,723	46,047	98,073	58,177	209,619	47,583
Wakulla	22,863	8,450	1,756	2,265	1,533	9,432	2,722
Walton	40,601	16,548	4,677	6,348	4,525	28,488	3,753
Washington	20,973	7,931	2,782	3,136	2,421	9,033	2,148

Utilizing the information in **Table 3.3.2**, **Figure 3.3.3** illustrates graphically the percentage of households with incomes less than \$20,000.

**Figure 3.3.3**



## Inland Flooding

The total exposure potentially at risk from riverine flooding is over \$650 billion (or about one third of the total building exposure). **Table 3.3.3** provides estimates of dollar exposure of residential and commercial buildings, and people at risk due to freshwater/closed basin (riverine) flooding, broken down by county.

**Table 3.3.3**

County	Residential Exposure at Risk from Riverine Flooding [\$M]	Commercial Exposure at Risk from Riverine Flooding[\$M]	Number of People at Risk from Riverine Flooding (1,000)
Alachua	1,577	337	20
Baker	130	15	2
Bay	2,709	514	30
Brevard	7,570	1,145	85
Broward	113,422	25,226	1,333
Calhoun	32	6	1
Charlotte	7,733	923	77
Citrus	2,495	315	30
Clay	2,032	291	27
Collier	17,109	3,071	163
DeSoto	275	41	5
Duval	7,239	1,514	88
Escambia	2,241	432	27
Flagler	771	89	9
Franklin	65	7	1
Gadsden	30	4	0
Gilchrist	240	21	5
Glades	234	11	4
Gulf	486	49	5
Hardee	494	54	9
Hendry	1,474	231	29
Hernando	21,493	2,925	267
Highlands	4,871	593	59
Hillsborough	10,622	2,351	130
Holmes	26,462	2,635	415
Indian River	2,111	427	22
Lake	1,411	235	18
Lee	13,892	2,212	141
Leon	4,038	743	47
Levy	1,229	180	22
Liberty	2,899	167	48
Manatee	78,766	11,568	880
Marion	7,339	1,201	101
Martin	3,916	761	39
Miami-Dade	38,463	10,598	554

<b>County</b>	<b>Residential Exposure at Risk from Riverine Flooding [\$M]</b>	<b>Commercial Exposure at Risk from Riverine Flooding[\$M]</b>	<b>Number of People at Risk from Riverine Flooding (1,000)</b>
Monroe	2,896	648	25
Nassau	7,679	1,030	96
Okaloosa	1,847	367	21
Okeechobee	34,235	7,200	623
Orange	8,273	2,061	102
Osceola	22,731	3,857	302
Palm Beach	36,325	7,469	372
Pasco	5,010	669	62
Pinellas	15,676	2,716	171
Polk	4,003	712	55
Putnam	526	66	8
Saint Johns	8,251	1,398	84
Saint Lucie	4,948	600	59
Santa Rosa	388	53	5
Sarasota	5,855	996	55
Seminole	4,865	960	54
Sumter	443	34	7
Suwannee	160	22	3
Volusia	3,282	515	38
Wakulla	154	16	3
Walton	11	1	0
Washington	1	0	0
	<b>553,429</b>	<b>102,283</b>	<b>6,838</b>

## Coastal Flooding

**Table 3.3.4** and **Table 3.3.5** provides the population at risk and the dollar exposure of residential and commercial structures due to a Category 2 and Category 5 Hurricanes, respectively.

**Table 3.3.4 Coastal Flood Exposure Category 2**

<b>NAME</b>	<b>POPULATION</b>	<b>Value of Residential structures Exposed to Cat 2</b>	<b>Value of Commercial Structures Exposed to Cat 2</b>
Bay	127,823	11,842,003	2,373,356
Brevard	44,243	5,001,117	437,372
Broward	187,569	20,744,749	4,955,470
Charlotte	84,560	8,976,474	1,262,178
Citrus	18,281	1,646,332	312,343
Clay	5,670	556,480	49,151
Collier	117,608	14,096,497	2,577,091
Duval	117,015	10,861,694	1,796,898
Escambia	18,518	1,916,128	308,317
Franklin	11,057	1,255,515	143,468
Gulf	13,332	1,205,311	120,448
Hernando	10,336	1,066,343	227,140
Hillsborough	155,016	13,294,486	3,185,363
Indian River	20,328	3,203,183	462,992
Lee	227,358	25,019,624	3,553,837
Levy	2,992	231,750	24,420
Manatee	69,245	6,736,340	790,844
Martin	19,549	2,591,210	226,873
Miami-Dade	190,581	16,625,394	3,956,832
Monroe	37,849	4,715,420	765,393
Nassau	17,522	2,021,629	224,004
Okaloosa	63,481	6,522,174	1,510,612
Palm Beach	131,547	15,304,825	4,531,157
Pasco	69,319	6,358,254	1,476,748
Pinellas	300,507	29,228,780	5,755,806
Putnam	21,546	1,500,657	265,053
Saint Johns	38,023	4,761,847	779,061
Saint Lucie	23,515	2,440,698	339,922
Santa Rosa	62,687	5,237,485	763,845
Sarasota	68,045	8,607,569	1,361,418
Volusia	27,138	3,218,300	529,312
Walton	24,377	3,350,132	408,787
	<b>2,326,637</b>	<b>240,138,400</b>	<b>45,475,511</b>

**Table 3.3.5 Coastal Flood Exposure Category 5**

<b>NAME</b>	<b>POPULATION</b>	<b>Value of Residential Structures Exposed to Cat 5</b>	<b>Value of Commercial Structures Exposed to Cat 5</b>
Bay	127,823	11,842,003	2,373,356
Brevard	150,021	14,831,878	2,278,001
Broward	655,575	57,513,801	14,432,549
Charlotte	129,621	13,327,706	1,627,174
Citrus	23,730	2,018,592	337,995
Clay	5,670	556,480	49,151
Collier	216,684	24,090,185	4,489,893
Dixie	3,675	317,644	17,704
Duval	244,804	21,669,172	4,545,051
Escambia	50,556	4,998,105	684,785
Flagler	16,220	1,668,065	162,921
Franklin	11,057	1,255,515	143,468
Gulf	13,332	1,205,311	120,448
Hernando	31,072	3,034,030	386,821
Hillsborough	285,347	24,080,669	6,815,168
Indian River	28,298	3,974,819	1,280,326
Lee	419,572	40,589,773	6,746,665
Levy	6,470	495,623	48,431
Manatee	142,700	12,824,469	1,705,571
Martin	26,368	3,319,379	353,357
Miami-Dade	691,084	55,375,685	10,388,382
Monroe	57,323	6,797,489	1,111,747
Nassau	32,175	3,281,351	385,099
Okaloosa	76,044	7,798,868	1,734,267
Palm Beach	176,118	19,874,440	6,354,313
Pasco	176,969	15,619,835	2,298,762
Pinellas	507,500	46,577,039	9,426,567
Putnam	21,546	1,500,657	265,053
Saint Johns	57,982	6,870,202	1,115,697
Saint Lucie	23,515	2,440,698	339,922
Santa Rosa	62,687	5,237,485	763,845
Sarasota	187,419	21,125,091	3,739,097
Taylor	4,670	334,944	47,091
Volusia	185,322	16,842,814	3,408,019
Wakulla	5,642	332,341	48,128
Walton	24,377	3,350,132	408,787
	<b>4,878,968</b>	<b>456,972,290</b>	<b>90,433,611</b>

## Hurricane Winds

Due to Florida's geographic location, the entire state is vulnerable to damage from hurricane winds and impact from coastal storms. Coastal counties are more vulnerable than inland areas. The Southern tip of the Peninsula and the Florida Keys are especially vulnerable. **Table 3.3.6** shows the exposure from hurricane winds for residential and commercial structure and the population at risk.

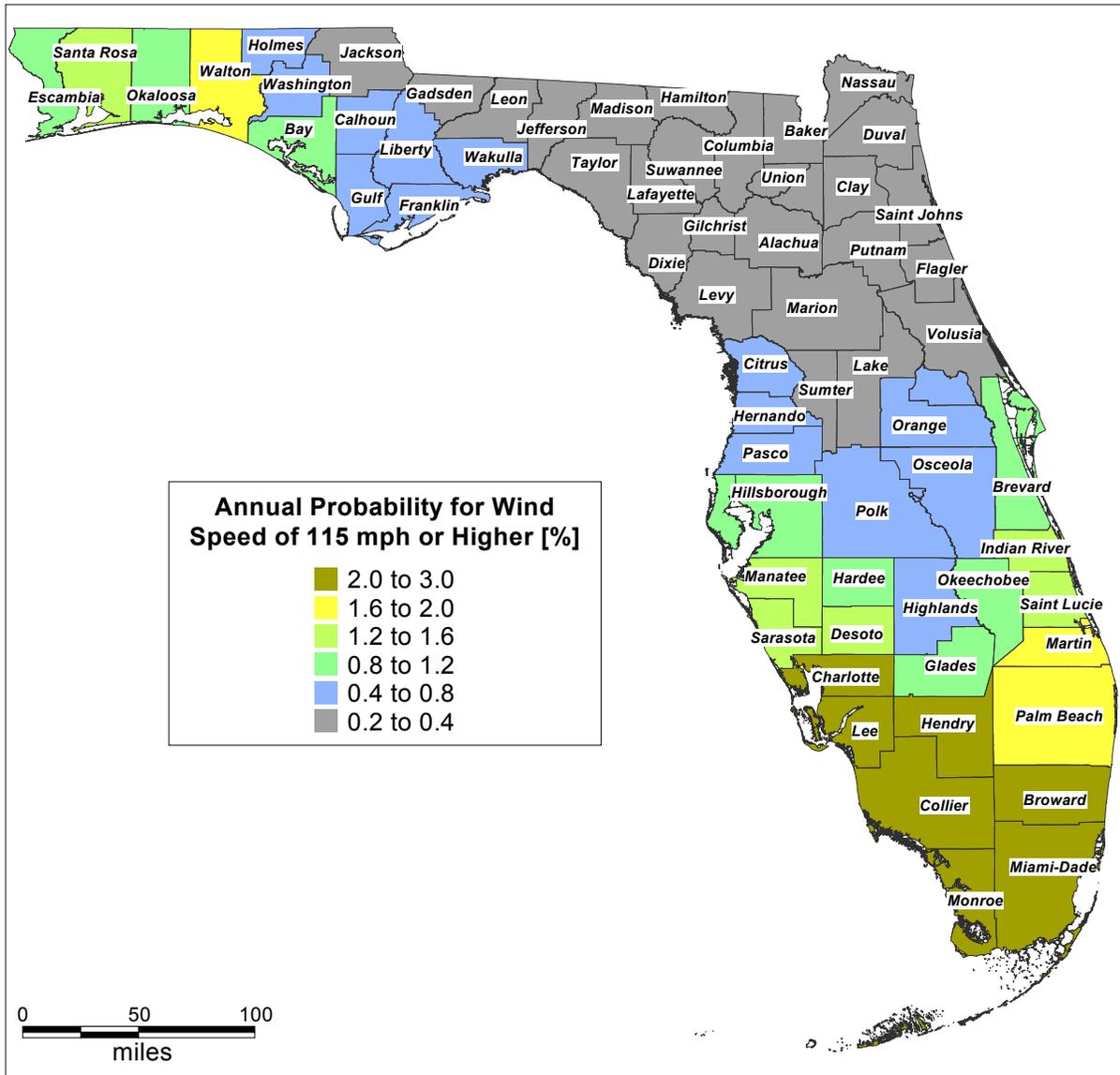
**Table 3.3.6 Hurricane Wind Exposure to Population and Buildings**

County Name	Residential Exposure at Risk from Hurricane [\$M]	Commercial Exposure at Risk from Hurricane [\$M]	People at Risk from Hurricanes
Alachua	17,094	3,651	217,955
Baker	1,166	138	22,259
Bay	13,193	2,502	148,217
Bradford	1,498	198	26,088
Brevard	42,635	6,448	476,230
Broward	138,092	30,713	1,623,018
Calhoun	769	142	13,017
Charlotte	14,170	1,692	141,627
Citrus	9,961	1,258	118,085
Clay	10,762	1,543	140,814
Collier	26,364	4,733	251,377
Columbia	3,295	604	56,513
DeSoto	1,918	283	32,209
Dixie	828	94	13,827
Duval	64,112	13,412	778,879
Escambia	24,191	4,661	294,410
Flagler	4,424	512	49,832
Franklin	1,256	143	11,057
Gadsden	2,757	331	45,087
Gilchrist	691	60	14,437
Glades	643	31	10,576
Gulf	1,205	120	13,332
Hamilton	674	68	13,327
Hardee	1,473	160	26,938
Hendry	1,833	288	36,210
Hernando	10,527	1,433	130,802
Highlands	7,233	880	87,366
Hillsborough	81,700	18,082	998,948
Holmes	1,183	118	18,564
Indian River	10,810	2,187	112,947

County Name	Residential Exposure at Risk from Hurricane [\$M]	Commercial Exposure at Risk from Hurricane [\$M]	People at Risk from Hurricanes
Jackson	3,082	399	46,755
Jefferson	794	116	12,902
Lafayette	378	45	7,022
Lake	16,615	2,765	210,528
Lee	43,310	6,896	440,888
Leon	20,391	3,752	239,452
Levy	1,944	285	34,450
Liberty	422	24	7,021
Madison	1,077	124	18,733
Manatee	23,626	3,470	264,002
Marion	18,827	3,081	258,916
Martin	12,577	2,444	126,731
Miami-Dade	156,571	43,140	2,253,362
Monroe	9,324	2,085	79,589
Nassau	4,611	618	57,663
Okaloosa	15,108	3,000	170,498
Okeechobee	1,973	415	35,910
Orange	72,557	18,079	896,344
Osceola	13,004	2,207	172,493
Palm Beach	110,540	22,728	1,131,184
Pasco	27,893	3,727	344,765
Pinellas	84,368	14,617	921,482
Polk	35,331	6,284	483,924
Putnam	4,383	547	70,423
Saint Johns	12,104	2,050	123,135
Saint Lucie	16,027	1,942	192,695
Santa Rosa	9,509	1,295	117,743
Sarasota	34,927	5,941	325,957
Seminole	32,628	6,441	365,196
Sumter	3,615	280	53,345
Suwannee	1,996	278	34,844
Taylor	1,309	169	19,256
Union	552	57	13,442
Volusia	38,232	6,004	443,343
Wakulla	1,356	143	22,863
Walton	4,392	506	40,601
Washington	1,356	176	20,973
<b>Total</b>	<b>1,333,167</b>	<b>262,615</b>	<b>15,982,378</b>

Figure 3.3.4 shows the annual probability (in percent) for wind speed of 115 mph or higher for each county.

**Figure 3.3.4 Annual Probability Wind Speed Map**



**Tornado**

Historical evidence shows that most of the state is vulnerable to tornadic activity. This hazard can result from severe thunderstorm activity or may occur during a major tropical storm or hurricane.

Table 3.3.7 provides estimates of residential building, commercial building, and critical facility exposure due to tornado, broken down by county. Table 3.3.8 provides the total exposure of structures and people and the assessed vulnerability by county.

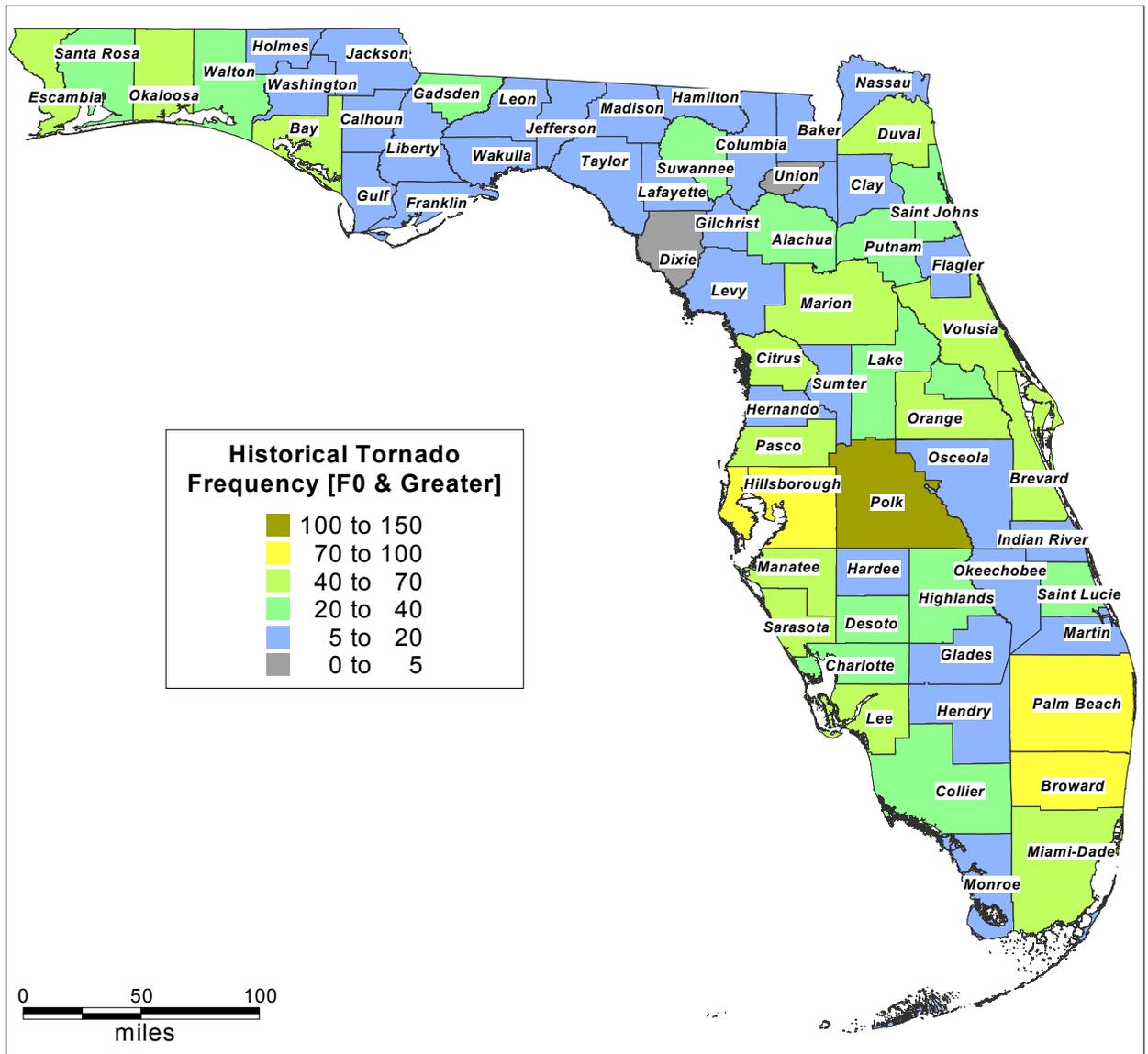
**Table 3.3.7 Population and Buildings at Risk to Tornado**

<b>County</b>	<b>Population at Risk from Tornadoes</b>	<b>Residential Exposure at Risk from Tornadoes [\$M]</b>	<b>Commercial Exposure at Risk from Tornadoes [\$M]</b>
Alachua	217,955	17,094	3,651
Baker	22,259	1,166	138
Bay	148,217	13,193	2,502
Bradford	26,088	1,498	198
Brevard	476,230	42,635	6,448
Broward	1,623,018	138,092	30,713
Calhoun	13,017	769	142
Charlotte	141,627	14,170	1,692
Citrus	118,085	9,961	1,258
Clay	140,814	10,762	1,543
Collier	251,377	26,364	4,733
Columbia	56,513	3,295	604
DeSoto	32,209	1,918	283
Dixie	13,827	828	94
Duval	778,879	64,112	13,412
Escambia	294,410	24,191	4,661
Flagler	49,832	4,424	512
Franklin	11,057	1,256	143
Gadsden	45,087	2,757	331
Gilchrist	14,437	691	60
Glades	10,576	643	31
Gulf	13,332	1,205	120
Hamilton	13,327	674	68
Hardee	26,938	1,473	160
Hendry	36,210	1,833	288
Hernando	130,802	10,527	1,433
Highlands	87,366	7,233	880
Hillsborough	998,948	81,700	18,082
Holmes	18,564	1,183	118
Indian River	112,947	10,810	2,187
Jackson	46,755	3,082	399
Jefferson	12,902	794	116
Lafayette	7,022	378	45
Lake	210,528	16,615	2,765
Lee	440,888	43,310	6,896
Leon	239,452	20,391	3,752
Levy	34,450	1,944	285
Liberty	7,021	422	24
Madison	18,733	1,077	124

County	Population at Risk from Tornadoes	Residential Exposure at Risk from Tornadoes [\$M]	Commercial Exposure at Risk from Tornadoes [\$M]
Manatee	264,002	23,626	3,470
Marion	258,916	18,827	3,081
Martin	126,731	12,577	2,444
Miami-Dade	2,253,362	156,571	43,140
Monroe	79,589	9,324	2,085
Nassau	57,663	4,611	618
Okaloosa	170,498	15,108	3,000
Okeechobee	35,910	1,973	415
Orange	896,344	72,557	18,079
Osceola	172,493	13,004	2,207
Palm Beach	1,131,184	110,540	22,728
Pasco	344,765	27,893	3,727
Pinellas	921,482	84,368	14,617
Polk	483,924	35,331	6,284
Putnam	70,423	4,383	547
Saint Johns	123,135	12,104	2,050
Saint Lucie	192,695	16,027	1,942
Santa Rosa	117,743	9,509	1,295
Sarasota	325,957	34,927	5,941
Seminole	365,196	32,628	6,441
Sumter	53,345	3,615	280
Suwannee	34,844	1,996	278
Taylor	19,256	1,309	169
Union	13,442	552	57
Volusia	443,343	38,232	6,004
Wakulla	22,863	1,356	143
Walton	40,601	4,392	506
Washington	20,973	1,356	176
<b>Total</b>	<b>15,982,378</b>	<b>1,333,167</b>	<b>262,615</b>

Based on historical data, **Figure 3.3.5** shows the number of tornadoes in each county over the period of record from 1950 to 2002.

Figure 3.3.5 Frequency of Tornadoes



## **Erosion**

Early statewide inventories of critical erosion areas included only those erosion problem areas where the threat existed to development or recreational interests. The current inventory of critical erosion areas (March 1999/April 2002) was formulated based upon an updated and modified definition of critical erosion. The following definition has been adopted by the Florida Department of Environmental Protection's Bureau of Beaches and Coastal Systems, to identify areas of critical erosion:

*Critical erosion area is a segment of the shoreline where natural processes or human activity have caused or contributed to erosion and recession of the beach or dune system to such a degree that upland development, recreational interests, wildlife habitat, or important cultural resources are threatened or lost. Critical erosion areas may also include peripheral segments or gaps between identified critical erosion areas which, although they may be stable or slightly Eros ional now, their inclusion is necessary for continuity of management of the coastal system or for the design integrity of adjacent beach management projects.*

For erosion problem area to be critical there must exist a threat to or loss of one of four specific interests; upland development, recreation, wildlife habitat, or important cultural resources. Of all the erosion problem areas around Florida, many have significant erosion conditions, yet the erosion processes do not currently threaten public or private interests. These areas are therefore designated as non-critical erosion areas and require close monitoring in case conditions become critical.

In contrast, some areas erosion processes are not particularly significant except to the extent that adjacent public or private interests may be threatened. Whether erosion is critical, results from the existence of a threat to interests is in need of protection. Lacking any threat, an erosion condition is not a critical problem.

The following table (3.3.8) summarizes the number of critical and non-critical erosion areas by county (coastal counties only):

**Table 3.3.8. Number of Critical and Non-critical Erosion Areas by County**

<b>County</b>	<b># Critical Areas</b>	<b>Miles at risk</b>	<b># Non-critical Areas</b>	<b>Miles at Risk</b>
Bay	3	20.8	3	10.1
Brevard	2	25	2	12.3
Broward	3	21.3	0	0
Charlotte	4	5.5	1	0.4
Citrus	0	0	0	0
Collier	6	11	5	9.5
Dade	3	17	3	1.7
Dixie	3	0.6	0	0
Duval	3	11.1	1	2
Escambia	2	8.6	2	11.7
Flagler	4	3.5	0	0
Franklin	5	10.4	10	18.5
Gulf	2	3.5	4	13.3
Hernando	0	0	1	0.5
Hillsborough	1	1.6	0	0
Indian River	5	9.1	4	4.7
Jefferson	0	0	0	0
Lee	12	20.7	7	6.1
Levy	2	0.7	1	1.2
Manatee	2	12.1	0	0
Martin	3	15.8	0	0
Monroe	8	7.7	3	2.9
Nassau	3	10	0	0
Okaloosa	3	5.8	1	1.7
Palm Beach	9	31.5	2	0.9
Pasco	1	0.2	1	1.1
Pinellas	6	21.1	2	4.4
Santa Rosa	1	3.4	0	0
Sarasota	9	22.5	0	0
St. Johns	3	7.6	1	0.5
St. Lucie	1	2.3	1	6.4
Taylor	1	0.2	0	0
Volusia	3	17.3	1	1.1
Wakulla	2	1.3	1	0.4
Walton	3	9.2	0	0
<b>TOTAL</b>	<b>118</b>	<b>338.4</b>	<b>57</b>	<b>111.4</b>

Additional information of the erosion areas for each coastal county fronting on the Atlantic Ocean, Gulf of Mexico, and Straits of Florida is available from Florida Department of Environmental Protection, Bureau of Beaches and Wetland Systems. The listing of critical and non-critical erosion areas in are identified by the Bureau's reference movement system (R numbers) or by virtual stations (V numbers). A few areas are not identified by either the R or V numbers because they are not included in the coastal construction control line program nor have virtual stations been designated. These areas without R or V numbers are usually inlet shoreline areas, Florida Keys erosion areas, Coastal Bend erosion areas, and a few barrier islands in Pinellas, Hillsborough, and Collier Counties.

- Approximately 167.5 miles of critical beach and 27.3 miles of non-critical beach exist along the Atlantic Coast. Over thirty percent (30%) of the critical beach areas are located in Palm Beach County and Broward County.
- In April 2002, Florida's most recent inventory of erosion areas provided the following conclusions:
- Approximately 154.7 miles of critical beach and 77.5 miles of non-critical beach exist along the Gulf Coast. Nearly forty percent (40%) of these critical beach areas are located in Pinellas, Sarasota, and Lee Counties along the Central Peninsula.
- Approximately 4.5 miles of critical inlet and 1.4 miles of non-critical inlet exist along the Gulf Coast.
- Approximately 4.6 miles of critical inlet and 2.3 miles of non-critical inlet exist along the Atlantic Coast.
- Approximately 7.7 miles of critical beach and 2.9 miles of non-critical beach exist along the Florida Keys. There are no critical or non-critical inlet areas in the Florida Keys.
- Statewide, there are 329.9 miles of critical beach areas and 107.7 miles of non-critical beach areas, as well as 9.1 miles of critical inlets and 3.7 miles of non-critical inlets. All miles, critical and non-critical, must be closely monitored in order to mitigate future erosion problems that may threaten lives or property.

## **Other Hazards**

Though Florida recognizes that it is vulnerable to other hazards such as wildfire, drought/extreme heat, winter storms/freezes, dam/levee failure, sinkholes/seismic events, a high-level detailed vulnerability and risk assessment was not completed due to the low level of risk for these hazards compared to other hazards (wind, and flood). Currently the State for Florida, Division of Forestry has developed a detailed Risk Assessment Model, which will be made available to counties and local governments to assess the risk of wild fires based on existing and future conditions. Extreme heat, draughts and freezes are coordinated and assessed through programs developed by the Florida Department of Agriculture.

## 3.4 ASSESSING VULNERABILITY OF STATE FACILITIES

***44 CFR 201.4(c)(2)(ii) – The risk assessment shall include an overview and analysis of the State’s vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in the State risk assessment. State owned or operated critical facilities located in the identified hazard areas shall also be addressed.***

As the State of Florida remains vulnerable to natural hazards, state-owned facilities are equally at risk to incur damages due to hazard occurrences. However, the state’s resources, both monetary and fixed assets, depend heavily upon these facilities and their continuity. Florida Department of Financial Management maintains a database of all State owned facilities. This database includes critical and non-critical facilities and state owned infrastructure. The State plan, however, does not include a detailed description of each facility nor identification as to a critical or non-critical facility or as infrastructure. DEM has received a copy of the database, however, due to the size and format it was not possible to include in this plan. It is maintained as a separate document. The list of state critical facilities and infrastructure was compiled as part of the State’s Homeland Security initiative. Due to the nature of information included in list, detailed information of facility may be classified and cannot be included in this plan. Information from that list is made available as needed and with limited access. A total of 16,285 state facilities with an estimated total value of about \$4.5 billion were analyzed in this section. The state facilities are from the state agencies shown on **Table 3.4.1**, which also include the acronym that is used throughout the study.

**Table 3.4.1 – State Agencies**

<b>Acronym</b>	<b>State Agency</b>
AHCA	Agency for Health Care Administration
AWI	Agency for Workforce Innovation
CITRU	Department of Citrus
DCF	Department of Children and Families
DEP	Department of Environmental Protection
DJJ	Department of Juvenile Justice
DMA	Department of Military Affairs
DMS	Department of Management Services
DACS	Department of Agriculture and Consumer Services
DOC	Department of Corrections
DOE	Department of Education
DOH	Department of Health
DOI	Department of Insurance (now in Department of Financial Services -DFS)
DOS	Department of State
DOT	Department of Transportation
DVA	Department of Veteran's Affairs
EDUC	Department of Education (don't know why DOI carries two files on this)
FDLE	Florida Department of Law Enforcement
FWCC	Fish and Wildlife Conservation Commission
HSMV	Department of Highway Safety and Motor Vehicles
JUD	Judiciary (Courts)
UNIV	University System

Figure 3.4.1 shows the location and cluster of state facilities throughout Florida and Table 2 summarizes the number of facilities by county.

Figure 3.4.1

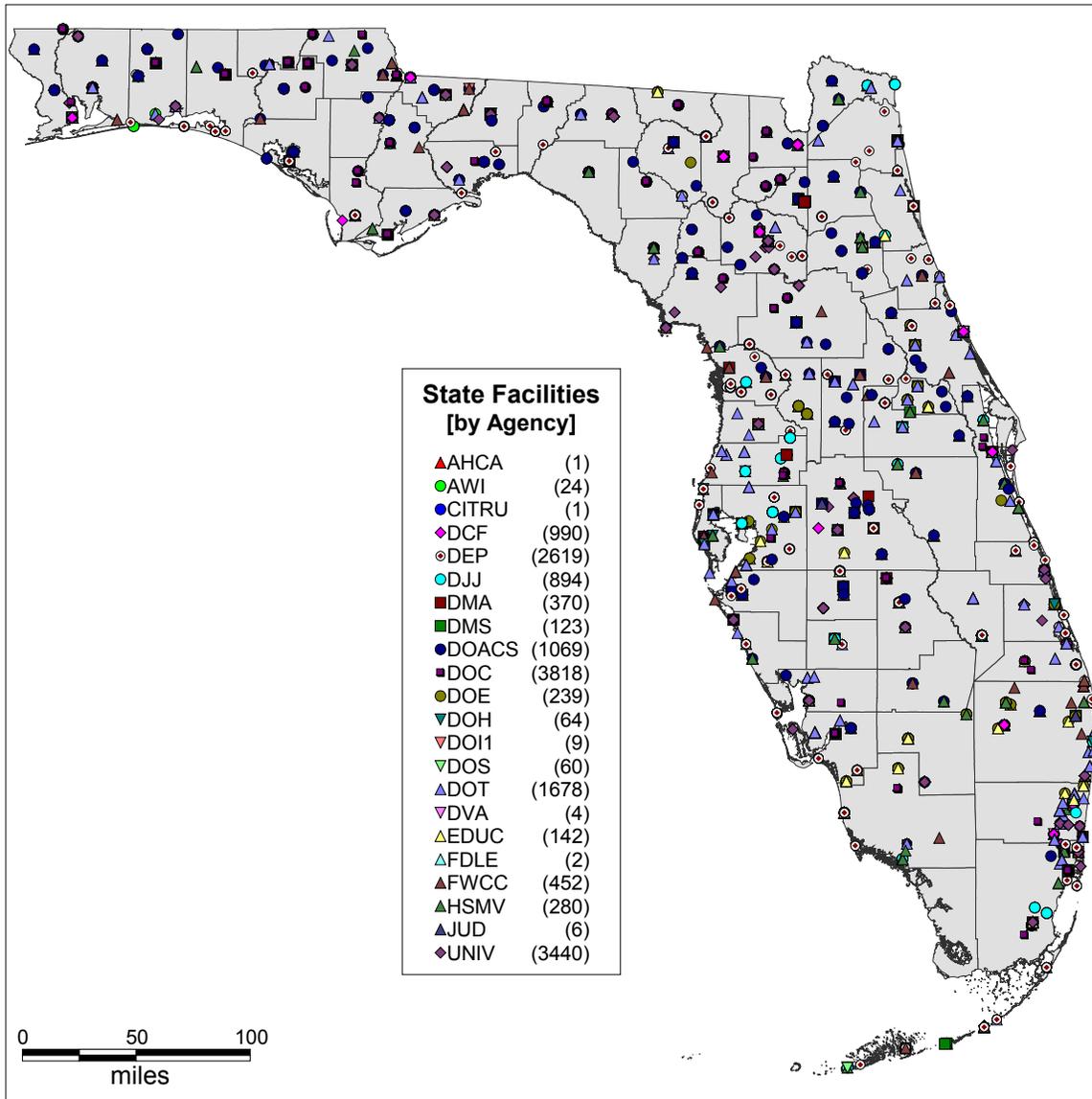


Table 3.4.2 Number of State Facilities by County

County	Number of State Owned Facilities	County	Number of State Owned Facilities
Alachua	1,590	Lee	318
Baker	179	Leon	885
Bay	192	Levy	137
Bradford	419	Liberty	102
Brevard	208	Madison	103
Broward	397	Manatee	157
Calhoun	71	Marion	383
Charlotte	100	Martin	192
Citrus	130	Miami-Dade	766
Clay	68	Monroe	193
Collier	226	Nassau	84
Columbia	207	Okaloosa	202
DeSoto	258	Okeechobee	183
Dixie	116	Orange	450
Duval	312	Osceola	90
Escambia	330	Palm Beach	554
Flagler	79	Pasco	119
Franklin	110	Pinellas	213
Gadsden	443	Polk	401
Gilchrist	88	Putnam	106
Glades	12	Saint Johns	247
Gulf	172	Saint Lucie	211
Hamilton	164	Santa Rosa	220
Hardee	149	Sarasota	191
Hendry	88	Seminole	98
Hernando	152	Sumter	158
Highlands	300	Suwannee	83
Hillsborough	608	Taylor	145
Holmes	89	Union	304
Indian River	115	Volusia	274
Jackson	551	Wakulla	115
Jefferson	93	Walton	196
Lafayette	75	Washington	136
Lake	178	<b>TOTAL</b>	<b>16,285</b>

**Table 3** Provides the number of facilities and the Dollar Exposure by State Agency.

**Table 3.4.3**

<b>State Agency</b>	<b>Number of Facilities</b>	<b>Estimated Exposure [\$1,000]</b>
AHCA	1	55
AWI	24	35,371
CITRU	1	2,805
DCF	990	416,017
DEP	2,619	134,473
DJJ	894	430,279
DMA	370	115,933
DMS	123	851,875
DOACS	1,069	81,449
DOC	3,818	1,236,879
DOE	239	96,331
DOH	64	105,926
DOI1	9	6,756
DOS	60	24,776
DOT	1,678	603,444
DVA	4	40,517
EDUC	142	5,285
FDLE	2	11,366
FWCC	452	58,085
HSMV	280	67,311
JUD	6	36,100
UNIV	3,440	126,969
<b>Total</b>	<b>16,285</b>	<b>4,488,002</b>

## **Flooding**

The State of Florida is extremely vulnerable to flooding, both riverine and coastal, placing billions of dollars in property at risk. DEP owns more at-risk facilities vulnerable to flooding (riverine and coastal) than any other state agency.

Utilizing Q3 data, Tables 3.4.4 and Table 3.4.5 presents a breakdown of the number of state-owned facilities at risk from flooding (riverine and coastal). **Table 3.4.4** Provides the distribution of state facilities vulnerable to flooding by State Agency per county. **Table 3.4.5** provides the number of facilities and estimated annualized exposure of facilities by agency for flooding.



**Table 3.4.4**

<b>State Agency</b>	<b>County</b>	<b>Number of Facilities</b>
AWI	Broward	1
AWI	Duval	1
AWI	Volusia	1
DCF	Duval	18
DCF	Escambia	7
DCF	Lee	68
DCF	Miami-Dade	74
DCF	Pinellas	6
DCF	Volusia	4
DEP	Broward	2
DEP	Charlotte	9
DEP	Citrus	52
DEP	Collier	63
DEP	DeSoto	9
DEP	Duval	58
DEP	Escambia	60
DEP	Flagler	32
DEP	Hillsborough	38
DEP	Indian River	1
DEP	Lake	24
DEP	Lee	74
DEP	Manatee	8
DEP	Marion	33
DEP	Martin	67
DEP	Miami-Dade	92
DEP	Monroe	155
DEP	Nassau	28
DEP	Palm Beach	1
DEP	Pasco	5
DEP	Pinellas	6
DEP	Saint Johns	52
DEP	Saint Lucie	5
DEP	Volusia	1
DEP	Wakulla	6
DJJ	Collier	6
DJJ	Duval	18
DJJ	Escambia	6
DJJ	Lee	10
DJJ	Manatee	24
DJJ	Martin	9
DJJ	Miami-Dade	29

State Agency	County	Number of Facilities
DJJ	Monroe	1
DJJ	Nassau	5
DJJ	Pinellas	3
DJJ	Saint Johns	4
DJJ	Volusia	12
DMA	Broward	1
DMA	Citrus	2
DMA	Duval	2
DMA	Escambia	5
DMA	Hardee	2
DMA	Lee	2
DMA	Manatee	2
DMA	Miami-Dade	3
DMA	Pinellas	2
DMA	Saint Johns	20
DMA	Volusia	3
DMS	Duval	6
DMS	Escambia	1
DMS	Lee	2
DMS	Miami-Dade	9
DMS	Monroe	3
DMS	Pinellas	2
DMS	Volusia	1
DOACS	Broward	1
DOACS	Calhoun	1
DOACS	Charlotte	10
DOACS	Citrus	4
DOACS	Clay	7
DOACS	Collier	2
DOACS	Duval	5
DOACS	Escambia	2
DOACS	Hardee	6
DOACS	Lake	5
DOACS	Lee	24
DOACS	Manatee	9
DOACS	Marion	3
DOACS	Miami-Dade	10
DOACS	Monroe	3
DOACS	Palm Beach	2
DOACS	Polk	1
DOACS	Saint Johns	5
DOACS	Volusia	4
DOACS	Wakulla	2

State Agency	County	Number of Facilities
DOC	Broward	1
DOC	Calhoun	61
DOC	Charlotte	49
DOC	Collier	12
DOC	Duval	15
DOC	Escambia	2
DOC	Lake	48
DOC	Lee	6
DOC	Manatee	18
DOC	Martin	79
DOC	Miami-Dade	109
DOC	Monroe	6
DOC	Pinellas	26
DOC	Volusia	77
DOE	Charlotte	1
DOE	Collier	3
DOE	Hardee	5
DOE	Hillsborough	3
DOE	Lee	7
DOE	Manatee	3
DOE	Martin	3
DOE	Miami-Dade	4
DOE	Palm Beach	3
DOE	Saint Johns	64
DOE	Volusia	10
DOH	Duval	12
DOH	Escambia	3
DOH	Miami-Dade	1
DOH	Pinellas	3
DOS	Miami-Dade	1
DOS	Monroe	4
DOS	Saint Johns	30
DOT	Brevard	5
DOT	Broward	9
DOT	Calhoun	3
DOT	Charlotte	5
DOT	Collier	20
DOT	DeSoto	1
DOT	Duval	56
DOT	Escambia	24
DOT	Flagler	4
DOT	Lake	5
DOT	Lee	32

State Agency	County	Number of Facilities
DOT	Manatee	3
DOT	Martin	2
DOT	Miami-Dade	84
DOT	Monroe	3
DOT	Palm Beach	16
DOT	Pinellas	9
DOT	Saint Johns	28
DOT	Sarasota	1
DOT	Volusia	3
DVA	Volusia	1
EDUC	Collier	3
EDUC	Hardee	5
EDUC	Hillsborough	3
EDUC	Lee	6
EDUC	Manatee	3
EDUC	Martin	3
EDUC	Miami-Dade	4
EDUC	Palm Beach	3
FWCC	Charlotte	15
FWCC	Citrus	3
FWCC	Collier	3
FWCC	Duval	3
FWCC	Escambia	3
FWCC	Lee	4
FWCC	Manatee	7
FWCC	Marion	1
FWCC	Miami-Dade	1
FWCC	Monroe	9
FWCC	Palm Beach	17
FWCC	Pasco	1
FWCC	Pinellas	27
FWCC	Saint Johns	6
FWCC	Volusia	1
HSMV	Brevard	3
HSMV	Charlotte	1
HSMV	Clay	1
HSMV	Collier	4
HSMV	Duval	10
HSMV	Escambia	7
HSMV	Lake	1
HSMV	Lee	10
HSMV	Manatee	7
HSMV	Miami-Dade	9

<b>State Agency</b>	<b>County</b>	<b>Number of Facilities</b>
HSMV	Monroe	4
HSMV	Palm Beach	2
HSMV	Pinellas	2
HSMV	Saint Johns	3
HSMV	Volusia	3
JUD	Miami-Dade	1
JUD	Volusia	1
UNIV	Calhoun	3
UNIV	Charlotte	3
UNIV	Duval	101
UNIV	Escambia	130
UNIV	Hillsborough	5
UNIV	Lee	44
UNIV	Manatee	48
UNIV	Miami-Dade	171
UNIV	Palm Beach	107
UNIV	Pinellas	24
UNIV	Saint Johns	5

**Table 3.4.5**

<b>AGENCY</b>	<b>Number of Facilities</b>	<b>Total Annualized Exposure [\$1,000]</b>
AWI	3	6,242
DCF	177	89,467
DEP	881	45,423
DJJ	127	121,070
DMA	44	38,860
DMS	24	166,979
DOACS	106	7,432
DOC	509	188,484
DOE	106	91,370
DOH	19	62,837
DOS	35	13,479
DOT	313	107,888
DVA	1	8,225
EDUC	30	1,099
FWCC	101	26,490
HSMV	67	12,751
JUD	2	17,417
UNIV	641	25,816
<b>Total</b>	<b>3,186</b>	<b>1,031,330</b>



## **Coastal Flooding**

The vulnerability analysis and determining the exposure value from for coastal flooding was based on the SLOSH maps. Tables 3.4.6A and 3.4.6B present a breakdown of the number of state-owned facilities and the value of the risk from a Category 2 and Category 5 Hurricane, respectively. The tables provide the facility ratio, which is the ratio of the number of facilities exposed over the total number of facilities in the county and the value ratio, which is the ratio of the value exposed over the total value of the facilities in the county.

**Table 3.4.6A - Category 2 Surge Exposure**

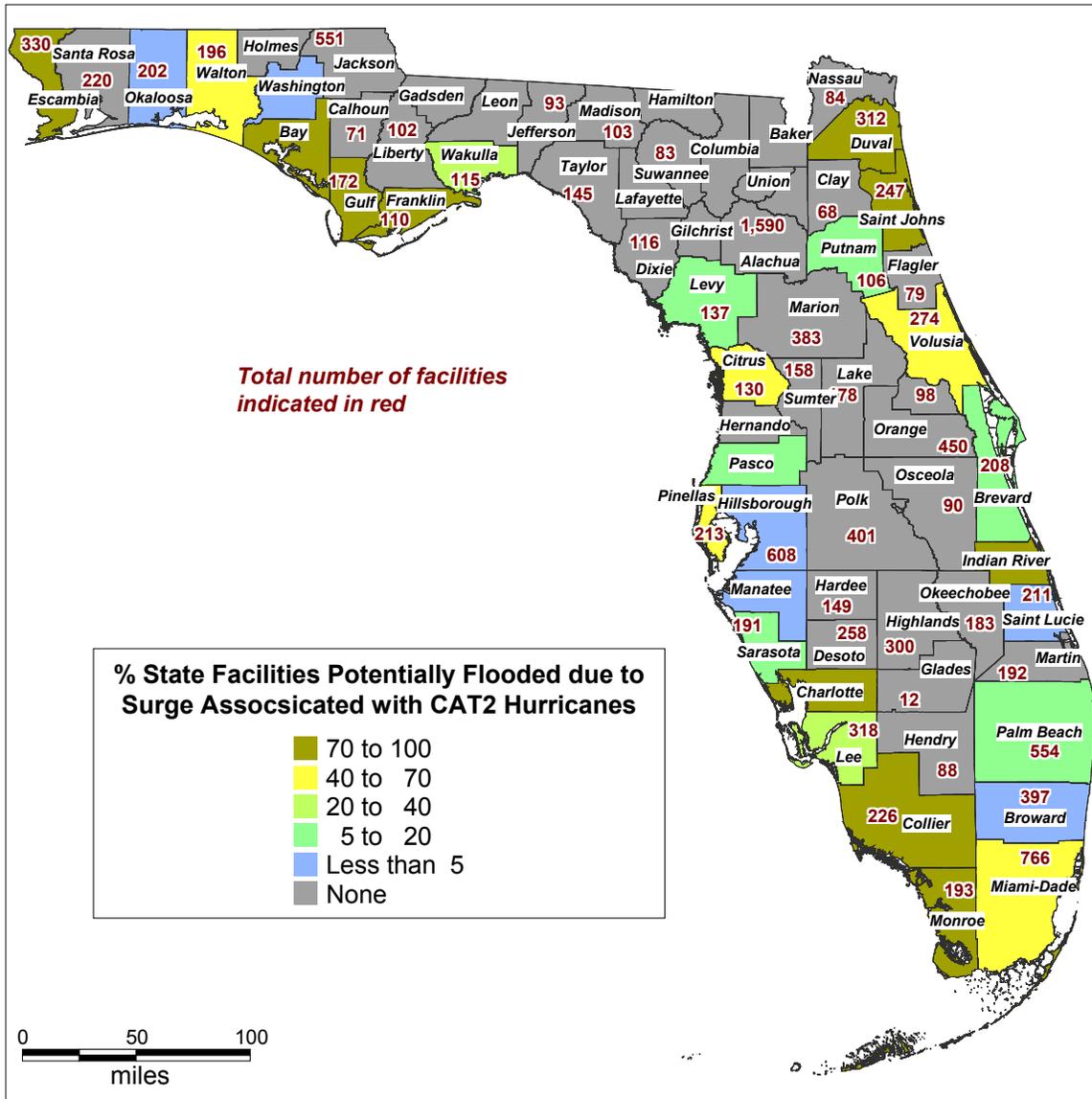
<b>County</b>	<b>Number of Facilities at Risk</b>	<b>Exposed Value (\$1,000)</b>	<b>Facility Ratio</b>	<b>Value ratio</b>	<b>Risk Factor</b>
Bay	192	20,631	100.00%	100.00%	High
Brevard	23	1,931	11.06%	5.20%	Low
Broward	12	4,742	3.02%	2.75%	Low
Charlotte	95	27,781	95.00%	98.69%	High
Citrus	61	6,762	46.92%	41.57%	Low
Collier	195	33,965	94.20%	51.84%	High
Duval	308	128,284	98.72%	99.66%	High
Escambia	250	34,651	75.76%	65.00%	High
Franklin	100	8,895	90.91%	96.49%	High
Gulf	172	39,630	100.00%	100.00%	High
Hillsborough	13	303	2.14%	0.21%	Low
Indian River	104	16,929	90.43%	98.60%	High
Lee	82	4,234	25.79%	4.59%	Low
Levy	11	1,592	8.03%	17.71%	Low
Manatee	7	99	4.46%	0.57%	Low
Miami-Dade	364	249,558	47.52%	67.43%	Low
Monroe	104	9,358	53.89%	22.60%	High
Okaloosa	3	422	1.49%	1.45%	Low
Palm Beach	28	6,143	5.05%	4.27%	Low
Pasco	6	119	5.04%	0.28%	Low
Pinellas	109	64,443	51.17%	73.03%	High
Putnam	17	998	16.04%	7.27%	Low
Saint Johns	217	121,413	87.85%	99.11%	High
Saint Lucie	5	122	2.37%	0.28%	Low
Sarasota	10	576	5.24%	4.04%	Low
Volusia	121	68,296	44.16%	67.41%	Low
Wakulla	26	1,192	22.61%	5.31%	Low
Walton	90	5,884	45.92%	26.20%	Low
Washington	2	8	1.47%	0.02%	Low
<b>Total</b>	<b>2,727</b>	<b>858,960</b>			

**Table 4.3B - Category 5 Surge Exposure**

<b>County</b>	<b>Number of Facilities at Risk</b>	<b>Exposed Value (\$1,000)</b>	<b>Facility Ratio</b>	<b>Value ratio</b>	<b>Risk Factor</b>
Bay	192	20631	100.00%	100.00%	High
Brevard	23	1931	11.06%	5.20%	Low
Broward	55	13219	13.85%	7.66%	Low
Charlotte	100	28150	100.00%	100.00%	High
Citrus	61	6762	46.92%	41.57%	Low
Collier	195	33965	94.20%	51.84%	High
Dixie	2	266	1.72%	1.64%	Low
Duval	308	128284	98.72%	99.66%	High
Escambia	250	34651	75.76%	65.00%	High
Flagler	36	2005	45.57%	51.24%	Low
Franklin	110	9219	100.00%	100.00%	High
Gulf	172	39630	100.00%	100.00%	High
Hernando	1	1	0.66%	0.01%	Low
Hillsborough	429	119266	70.56%	84.66%	High
Indian River	104	16929	90.43%	98.60%	High
Lee	318	92229	100.00%	100.00%	High
Levy	11	1592	8.03%	17.71%	Low
Manatee	144	16385	91.72%	94.41%	High
Miami-Dade	563	315401	73.50%	85.22%	High
Monroe	173	30251	89.64%	73.04%	High
Nassau	33	4607	39.29%	22.96%	Low
Okaloosa	3	422	1.49%	1.45%	Low
Palm Beach	140	14501	25.27%	10.09%	Low
Pasco	10	2117	8.40%	4.98%	Low
Pinellas	117	66566	54.93%	75.44%	High
Putnam	17	998	16.04%	7.27%	Low
Saint Johns	217	121413	87.85%	99.11%	High
Saint Lucie	5	122	2.37%	0.28%	Low
Santa Rosa	147	36911	66.82%	90.69%	High
Sarasota	36	1670	18.85%	11.73%	Low
Volusia	147	70015	53.65%	69.10%	High
Wakulla	99	21988	86.09%	97.95%	High
Walton	90	5884	45.92%	26.20%	Low

Figures 3.4.3 present an illustration of the percent of facilities within the county that are vulnerable to Storm Surge from a Category 2 Hurricane.

Figure 3.4.3



**Table 3.4.7** provides a breakdown of the number of facilities per state agency by county and the exposure value from coastal flooding.

**Table 3.4.7**

AGENCY	County	Number of Facilities	Value (\$1,000)
AWI	Bay	1	541
AWI	Broward	1	2,297
AWI	Duval	1	3,227
AWI	Volusia	1	719
DCF	Bay	7	1,737
DCF	Duval	18	14,872
DCF	Escambia	7	1,095
DCF	Gulf	26	1,530
DCF	Miami-Dade	5	5,105
DCF	Pinellas	6	3,193
DCF	Volusia	4	1,144
DEP	Bay	72	3,594
DEP	Brevard	14	736
DEP	Broward	2	139
DEP	Charlotte	9	177
DEP	Citrus	52	3,780
DEP	Collier	63	3,510
DEP	Duval	61	2,189
DEP	Escambia	60	2,734
DEP	Franklin	52	2,870
DEP	Gulf	41	2,025
DEP	Indian River	31	2,856
DEP	Lee	70	3,398
DEP	Miami-Dade	53	3,852
DEP	Monroe	91	3,828
DEP	Okaloosa	2	372
DEP	Palm Beach	18	1,803
DEP	Pasco	5	117
DEP	Pinellas	6	62
DEP	Saint Johns	52	1,459
DEP	Saint Lucie	5	122
DEP	Volusia	1	9
DEP	Wakulla	24	1,188
DEP	Walton	90	5,884
DJJ	Bay	10	3,669
DJJ	Collier	6	4,105
DJJ	Duval	18	12,978
DJJ	Escambia	6	968
DJJ	Miami-Dade	19	62,023
DJJ	Pinellas	3	1,330

AGENCY	County	Number of Facilities	Value (\$1,000)
DOC	Indian River	43	12,950
DOC	Miami-Dade	104	59,385
DOC	Pinellas	26	2,699
DOC	Volusia	77	21,598
DOE	Charlotte	1	20
DOE	Collier	3	152
DOE	Hillsborough	4	92
DOE	Lee	4	162
DOE	Saint Johns	64	82,358
DOE	Volusia	10	7,873
DOH	Duval	12	41,663
DOH	Escambia	3	5,079
DOH	Miami-Dade	1	8,091
DOH	Pinellas	3	8,004
DOS	Miami-Dade	1	7,500
DOS	Saint Johns	30	3,742
DOT	Bay	14	2,794
DOT	Brevard	5	928
DOT	Broward	6	1,377
DOT	Charlotte	7	848
DOT	Collier	20	3,358
DOT	Duval	56	6,681
DOT	Escambia	24	6,296
DOT	Gulf	2	79
DOT	Indian River	5	270
DOT	Lee	2	365
DOT	Manatee	1	2
DOT	Miami-Dade	68	39,215
DOT	Monroe	1	2,342
DOT	Palm Beach	6	4,109
DOT	Pinellas	8	8,336
DOT	Saint Johns	28	7,570
DOT	Sarasota	6	337
DOT	Volusia	3	910
DVA	Volusia	1	8,225
EDUC	Collier	3	152
EDUC	Hillsborough	4	92
EDUC	Lee	4	162
FWCC	Bay	13	1,172
FWCC	Charlotte	15	387

AGENCY	County	Number of Facilities	Value (\$1,000)
DJJ	Saint Johns	4	6,292
DJJ	Volusia	12	5,956
DMA	Bay	2	2,511
DMA	Broward	1	826
DMA	Citrus	2	1,992
DMA	Duval	2	3,655
DMA	Escambia	5	1,945
DMA	Franklin	3	767
DMA	Miami-Dade	1	3,261
DMA	Pinellas	2	1,753
DMA	Saint Johns	20	19,254
DMA	Volusia	3	1,756
DMS	Duval	6	34,985
DMS	Escambia	1	9,191
DMS	Miami-Dade	7	44,984
DMS	Monroe	1	181
DMS	Pinellas	2	20,348
DMS	Volusia	1	10,377
DOACS	Bay	19	874
DOACS	Broward	1	100
DOACS	Charlotte	10	207
DOACS	Citrus	4	37
DOACS	Collier	2	28
DOACS	Duval	5	264
DOACS	Escambia	2	33
DOACS	Franklin	16	1,712
DOACS	Gulf	10	298
DOACS	Indian River	7	409
DOACS	Levy	4	1,354
DOACS	Miami-Dade	5	280
DOACS	Okaloosa	1	50
DOACS	Putnam	17	998
DOACS	Saint Johns	5	157
DOACS	Sarasota	1	8
DOACS	Volusia	3	133
DOACS	Wakulla	2	5
DOACS	Washington	1	6
DOC	Bay	9	367
DOC	Broward	1	4
DOC	Charlotte	49	26,115
DOC	Collier	91	21,968
DOC	Duval	15	1,278
DOC	Escambia	2	313
DOC	Franklin	15	3,214
DOC	Gulf	91	35,478

AGENCY	County	Number of Facilities	Value (\$1,000)
FWCC	Citrus	3	953
FWCC	Collier	3	7
FWCC	Duval	3	785
FWCC	Escambia	3	390
FWCC	Franklin	4	67
FWCC	Gulf	1	188
FWCC	Levy	1	4
FWCC	Manatee	6	98
FWCC	Monroe	8	2,302
FWCC	Palm Beach	4	231
FWCC	Pasco	1	2
FWCC	Pinellas	27	17,588
FWCC	Saint Johns	6	188
FWCC	Volusia	1	2
FWCC	Washington	1	2
HSMV	Bay	9	2,206
HSMV	Brevard	3	265
HSMV	Charlotte	1	9
HSMV	Collier	4	686
HSMV	Duval	10	2,522
HSMV	Escambia	7	752
HSMV	Franklin	3	117
HSMV	Gulf	1	31
HSMV	Levy	4	219
HSMV	Miami-Dade	7	3,884
HSMV	Monroe	3	705
HSMV	Pinellas	2	35
HSMV	Saint Johns	3	235
HSMV	Sarasota	3	231
HSMV	Volusia	3	503
JUD	Miami-Dade	1	8,325
JUD	Volusia	1	9,093
UNIV	Bay	36	1,166
UNIV	Brevard	1	1
UNIV	Charlotte	3	18
UNIV	Duval	101	3,185
UNIV	Escambia	130	5,854
UNIV	Franklin	7	148
UNIV	Hillsborough	5	119
UNIV	Indian River	18	444
UNIV	Lee	2	148
UNIV	Levy	2	16
UNIV	Miami-Dade	92	3,654
UNIV	Pinellas	24	1,096
UNIV	Saint Johns	5	159

## **Wind (Hurricane and Tornado)**

All of the 16,285 state-owned facilities are currently exposed to potentially damaging winds due to hurricanes and tornadoes. **Table 3.4.8** shows the number of vulnerable facilities owned by various state agencies.

**Table 3.4.8 - Number of State Facilities by Agency Vulnerable to Wind**

<b>State Agency</b>	<b>Number of Facilities</b>
AHCA	1
AWI	24
CITRU	1
DCF	990
DEP	2619
DJJ	894
DMA	370
DMS	123
DOACS	1069
DOC	3818
DOE	239
DOH	64
DOI1	9
DOS	60
DOT	1678
DVA	4
EDUC	142
FDLE	2
FWCC	452
HSMV	280
JUD	6
UNIV	3440

Alachua County has the most at-risk state-owned facilities (1,590) with potential for wind damage due to tornado or hurricane. State facilities are fewest in Glades County, where only 12 facilities are located. **Table 3.4.9** Provides the number of state facilities and the dollar exposure vulnerable to wind.

**Table 3.4.9**

County	Agency	Number of Facilities	Total Exposure [\$x1,000]
Alachua	AWI	1	1,259
Alachua	DCF	199	69,771
Alachua	DEP	162	7,302
Alachua	DJJ	9	3,806
Alachua	DMS	2	8,147
Alachua	DOACS	45	3,916
Alachua	DOC	36	6,646
Alachua	DOE	1	54
Alachua	DOH	2	5,947
Alachua	DOT	74	18,877
Alachua	EDUC	1	54
Alachua	FWCC	9	1,760
Alachua	HSMV	15	649
Alachua	UNIV	1,034	37,212
Baker	DCF	84	53,431
Baker	DEP	4	297
Baker	DOACS	5	184
Baker	DOC	79	25,105
Baker	DOT	7	2,553
Bay	AWI	1	541
Bay	DCF	7	1,737
Bay	DEP	72	3,594
Bay	DJJ	10	3,669
Bay	DMA	2	2,511
Bay	DOACS	19	874
Bay	DOC	9	367
Bay	DOT	14	2,794
Bay	FWCC	13	1,172
Bay	HSMV	9	2,206
Bay	UNIV	36	1,166
Bradford	DJJ	16	371
Bradford	DMA	248	22,387
Bradford	DMS	5	969
Bradford	DOACS	9	528
Bradford	DOC	125	47,184
Bradford	DOT	1	3
Bradford	FWCC	7	116
Bradford	HSMV	7	191

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]
Leon	DMS	78	565,115
Leon	DOACS	45	5,213
Leon	DOC	13	1,236
Leon	DOE	2	23
Leon	DOH	1	3,600
Leon	DOS	23	8,560
Leon	DOT	36	10,386
Leon	FDLE	1	85
Leon	FWCC	13	9,022
Leon	HSMV	16	31,824
Leon	JUD	2	10,898
Leon	UNIV	529	25,573
Levy	DEP	50	1,515
Levy	DOACS	28	1,997
Levy	DOC	16	1,928
Levy	DOT	26	1,053
Levy	FWCC	6	2,019
Levy	HSMV	4	219
Levy	UNIV	7	257
Liberty	DEP	18	460
Liberty	DJJ	3	6,497
Liberty	DOACS	10	95
Liberty	DOC	69	11,645
Liberty	FWCC	2	19
Madison	DJJ	3	2,212
Madison	DOACS	6	87
Madison	DOC	53	10,766
Madison	DOT	9	15,525
Madison	HSMV	5	160
Madison	UNIV	27	542
Manatee	DEP	19	1,110
Manatee	DJJ	25	8,696
Manatee	DMA	4	1,631
Manatee	DOACS	13	367
Manatee	DOC	18	1,037
Manatee	DOE	5	118
Manatee	DOT	6	917
Manatee	EDUC	5	118

County	Agency	Number of Facilities	Total Exposure [\$x1,000]
Bradford	UNIV	1	52
Brevard	AWI	1	716
Brevard	DCF	10	1,177
Brevard	DEP	22	1,684
Brevard	DJJ	16	3,135
Brevard	DMA	2	601
Brevard	DOACS	6	52
Brevard	DOC	65	18,216
Brevard	DOE	3	59
Brevard	DOH	1	1,951
Brevard	DOT	44	6,299
Brevard	FWCC	7	955
Brevard	HSMV	9	1,706
Brevard	UNIV	22	545
Broward	AWI	8	7,141
Broward	DCF	43	14,604
Broward	DEP	57	4,453
Broward	DJJ	18	17,799
Broward	DMA	6	1,869
Broward	DMS	2	21,614
Broward	DOACS	14	2,995
Broward	DOC	64	20,334
Broward	DOE	10	300
Broward	DOH	1	1,985
Broward	DOT	111	59,768
Broward	DVA	1	14,071
Broward	EDUC	10	300
Broward	FWCC	2	2,050
Broward	HSMV	5	2,189
Broward	UNIV	45	986
Calhoun	DOACS	4	313
Calhoun	DOC	61	12,957
Calhoun	DOT	3	381
Calhoun	UNIV	3	54
Charlotte	DEP	9	177
Charlotte	DOACS	10	207
Charlotte	DOC	50	26,440
Charlotte	DOE	1	20
Charlotte	DOT	11	892
Charlotte	FWCC	15	387
Charlotte	HSMV	1	9
Charlotte	UNIV	3	18
Citrus	DEP	85	6,278
Citrus	DJJ	4	5,955
Citrus	DMA	2	1,992

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]
Manatee	FWCC	7	425
Manatee	HSMV	7	1,232
Manatee	UNIV	48	1,705
Marion	AWI	1	1,324
Marion	DCF	3	1,114
Marion	DEP	71	5,231
Marion	DJJ	26	13,042
Marion	DMA	2	1,887
Marion	DOACS	17	268
Marion	DOC	140	43,430
Marion	DOI1	8	5,184
Marion	DOT	42	4,432
Marion	FWCC	35	1,429
Marion	HSMV	7	600
Marion	UNIV	31	904
Martin	DCF	3	1,323
Martin	DEP	78	3,436
Martin	DJJ	14	2,407
Martin	DOACS	1	50
Martin	DOC	79	40,525
Martin	DOE	5	118
Martin	DOT	9	5,740
Martin	EDUC	3	75
Miami-Dade	DCF	74	27,436
Miami-Dade	DEP	100	5,726
Miami-Dade	DJJ	47	76,861
Miami-Dade	DMA	3	4,358
Miami-Dade	DMS	9	54,719
Miami-Dade	DOACS	25	8,001
Miami-Dade	DOC	197	101,243
Miami-Dade	DOE	4	196
Miami-Dade	DOH	1	8,091
Miami-Dade	DOS	1	7,500
Miami-Dade	DOT	117	54,557
Miami-Dade	EDUC	4	196
Miami-Dade	FWCC	2	1,502
Miami-Dade	HSMV	10	4,646
Miami-Dade	JUD	1	8,325
Miami-Dade	UNIV	171	6,728
Monroe	DEP	155	8,737
Monroe	DJJ	1	9,840
Monroe	DMS	3	9,139
Monroe	DOACS	3	160
Monroe	DOC	6	4,928
Monroe	DOS	4	2,237

County	Agency	Number of Facilities	Total Exposure [\$x1,000]
Citrus	DOACS	22	286
Citrus	DOT	9	791
Citrus	FWCC	8	963
Clay	DEP	49	2,384
Clay	DOACS	10	338
Clay	DOT	8	602
Clay	HSMV	1	329
Collier	DEP	63	3,510
Collier	DJJ	15	6,405
Collier	DOACS	20	2,540
Collier	DOC	92	21,986
Collier	DOE	4	182
Collier	DOT	20	3,357
Collier	EDUC	4	182
Collier	FWCC	4	13
Collier	HSMV	4	686
Columbia	DCF	3	1,059
Columbia	DEP	27	1,103
Columbia	DMA	2	1,070
Columbia	DOACS	20	746
Columbia	DOC	77	33,929
Columbia	DOE	2	87
Columbia	DOT	54	18,898
Columbia	DVA	1	7,332
Columbia	FWCC	13	671
Columbia	HSMV	8	625
DeSoto	DEP	9	367
DeSoto	DJJ	105	58,861
DeSoto	DMA	2	782
DeSoto	DOACS	6	487
DeSoto	DOC	111	47,788
DeSoto	DOE	2	30
DeSoto	DOT	17	569
DeSoto	EDUC	2	30
DeSoto	HSMV	4	448
Dixie	DEP	3	130
Dixie	DOACS	9	287
Dixie	DOC	94	15,225
Dixie	DOT	3	274
Dixie	FWCC	1	1
Dixie	HSMV	5	303
Dixie	UNIV	1	7
Duval	AWI	1	3,227
Duval	DCF	18	14,871
Duval	DEP	62	2,191

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]
Monroe	DOT	3	3,118
Monroe	FWCC	10	2,381
Monroe	HSMV	4	872
Monroe	UNIV	4	2
Nassau	DEP	28	3,115
Nassau	DJJ	8	2,363
Nassau	DOACS	19	1,730
Nassau	DOT	26	11,824
Nassau	HSMV	3	1,034
Okaloosa	AWI	3	434
Okaloosa	DEP	31	1,311
Okaloosa	DJJ	22	8,112
Okaloosa	DMA	1	581
Okaloosa	DOACS	28	672
Okaloosa	DOC	59	15,252
Okaloosa	DOT	24	1,700
Okaloosa	FWCC	1	8
Okaloosa	HSMV	3	269
Okaloosa	UNIV	30	808
Okeechobee	DEP	14	705
Okeechobee	DJJ	91	25,434
Okeechobee	DOACS	8	890
Okeechobee	DOC	43	27,305
Okeechobee	DOE	3	160
Okeechobee	DOT	14	10,588
Okeechobee	EDUC	3	160
Okeechobee	FWCC	5	317
Okeechobee	HSMV	2	44
Orange	DEP	76	2,361
Orange	DJJ	34	21,145
Orange	DMA	4	1,913
Orange	DMS	5	50,270
Orange	DOACS	13	437
Orange	DOC	64	46,100
Orange	DOH	1	1,295
Orange	DOT	51	40,325
Orange	FWCC	9	13
Orange	HSMV	6	1,006
Orange	UNIV	187	7,043
Osceola	DEP	1	9
Osceola	DJJ	4	1,572
Osceola	DOACS	6	468
Osceola	DOC	10	559
Osceola	DOT	35	19,258
Osceola	FWCC	31	315

County	Agency	Number of Facilities	Total Exposure [\$x1,000]
Duval	DJJ	18	12,978
Duval	DMA	2	3,655
Duval	DMS	6	34,985
Duval	DOACS	5	264
Duval	DOC	15	1,278
Duval	DOH	12	41,663
Duval	DOT	59	7,122
Duval	FWCC	3	785
Duval	HSMV	10	2,522
Duval	UNIV	101	3,185
Escambia	DCF	8	2,595
Escambia	DEP	60	2,734
Escambia	DJJ	17	1,267
Escambia	DMA	5	1,945
Escambia	DMS	1	9,191
Escambia	DOACS	10	225
Escambia	DOC	59	16,835
Escambia	DOH	3	5,079
Escambia	DOT	24	6,296
Escambia	FWCC	4	391
Escambia	HSMV	7	752
Escambia	UNIV	132	5,998
Flagler	DEP	53	1,392
Flagler	DOACS	12	350
Flagler	DOT	11	2,165
Flagler	FWCC	3	5
Franklin	DEP	58	3,021
Franklin	DMA	3	767
Franklin	DOACS	16	1,712
Franklin	DOC	15	3,214
Franklin	FWCC	4	67
Franklin	HSMV	3	117
Franklin	UNIV	11	321
Gadsden	DCF	293	128,753
Gadsden	DMA	2	2,214
Gadsden	DOACS	25	699
Gadsden	DOC	36	9,822
Gadsden	DOE	1	15
Gadsden	DOI1	1	1,573
Gadsden	DOT	24	5,467
Gadsden	EDUC	1	15
Gadsden	FWCC	17	834
Gadsden	HSMV	2	222
Gadsden	UNIV	41	1,331
Gilchrist	DEP	2	153

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]
Osceola	HSMV	3	271
Palm Beach	DCF	4	2,998
Palm Beach	DEP	20	1,837
Palm Beach	DJJ	16	19,192
Palm Beach	DMA	2	4,196
Palm Beach	DMS	1	7,611
Palm Beach	DOACS	4	320
Palm Beach	DOC	111	31,060
Palm Beach	DOE	20	932
Palm Beach	DOH	34	18,317
Palm Beach	DOT	67	36,165
Palm Beach	EDUC	20	932
Palm Beach	FWCC	64	5,993
Palm Beach	HSMV	18	1,807
Palm Beach	JUD	1	5,549
Palm Beach	UNIV	172	6,796
Pasco	DEP	6	132
Pasco	DJJ	27	5,768
Pasco	DMA	3	599
Pasco	DOACS	10	495
Pasco	DOC	45	19,114
Pasco	DOE	2	76
Pasco	DOT	19	4,888
Pasco	DVA	1	10,889
Pasco	FWCC	4	6
Pasco	HSMV	2	512
Pinellas	AWI	1	699
Pinellas	DCF	6	3,193
Pinellas	DEP	50	2,745
Pinellas	DJJ	12	9,221
Pinellas	DMA	4	2,775
Pinellas	DMS	2	20,347
Pinellas	DOC	35	3,425
Pinellas	DOH	5	15,187
Pinellas	DOT	38	11,317
Pinellas	FWCC	27	17,588
Pinellas	HSMV	9	641
Pinellas	UNIV	24	1,096
Polk	AWI	2	1,392
Polk	CITRU	1	2,805
Polk	DCF	5	1,758
Polk	DEP	35	1,080
Polk	DJJ	38	9,754
Polk	DMA	6	5,401
Polk	DMS	2	8,141

County	Agency	Number of Facilities	Total Exposure [\$x1,000]
Gilchrist	DOACS	16	1,224
Gilchrist	DOC	68	15,903
Gilchrist	DOT	1	22
Gilchrist	HSMV	1	19
Glades	DOACS	8	386
Glades	FWCC	3	9
Glades	HSMV	1	6
Gulf	DCF	26	1,530
Gulf	DEP	41	2,025
Gulf	DOACS	10	298
Gulf	DOC	91	35,478
Gulf	DOT	2	79
Gulf	FWCC	1	188
Gulf	HSMV	1	31
Hamilton	DEP	48	4,940
Hamilton	DJJ	9	2,225
Hamilton	DOACS	20	3,171
Hamilton	DOC	72	24,443
Hamilton	DOE	2	37
Hamilton	DOT	11	5,988
Hamilton	EDUC	1	25
Hamilton	FWCC	1	3
Hardee	DEP	10	583
Hardee	DMA	2	1,911
Hardee	DOACS	7	1,825
Hardee	DOC	59	27,270
Hardee	DOE	15	522
Hardee	EDUC	15	522
Hardee	UNIV	41	1,020
Hendry	DJJ	1	70
Hendry	DOACS	9	103
Hendry	DOE	9	587
Hendry	DOT	16	520
Hendry	EDUC	9	587
Hendry	HSMV	2	36
Hendry	UNIV	42	895
Hernando	DEP	3	84
Hernando	DMA	4	6,811
Hernando	DOACS	73	2,505
Hernando	DOC	16	4,526
Hernando	DOT	31	4,917
Hernando	FWCC	3	117
Hernando	HSMV	5	438
Hernando	UNIV	17	510
Highlands	DCF	3	875

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]
Polk	DOACS	56	4,476
Polk	DOC	96	30,512
Polk	DOE	2	16
Polk	DOH	1	292
Polk	DOT	60	35,323
Polk	EDUC	2	16
Polk	FWCC	21	1,854
Polk	HSMV	11	1,052
Polk	JUD	1	2,235
Polk	UNIV	62	2,006
Putnam	DEP	14	900
Putnam	DMA	2	1,087
Putnam	DOACS	30	2,170
Putnam	DOC	36	6,688
Putnam	DOT	12	1,734
Putnam	FWCC	7	530
Putnam	HSMV	5	621
Saint Johns	DEP	59	1,772
Saint Johns	DJJ	5	6,294
Saint Johns	DMA	20	19,254
Saint Johns	DOACS	5	157
Saint Johns	DOE	66	82,510
Saint Johns	DOS	30	3,742
Saint Johns	DOT	30	7,584
Saint Johns	EDUC	2	152
Saint Johns	FWCC	10	281
Saint Johns	HSMV	3	235
Saint Johns	UNIV	17	518
Saint Lucie	DEP	46	2,193
Saint Lucie	DJJ	10	51
Saint Lucie	DMA	3	827
Saint Lucie	DMS	1	7,663
Saint Lucie	DOACS	25	5,302
Saint Lucie	DOC	9	573
Saint Lucie	DOE	13	410
Saint Lucie	DOH	1	2,518
Saint Lucie	DOT	44	23,007
Saint Lucie	EDUC	11	367
Saint Lucie	HSMV	2	300
Saint Lucie	UNIV	46	832
Santa Rosa	DCF	6	3,375
Santa Rosa	DEP	6	181
Santa Rosa	DJJ	28	5,236
Santa Rosa	DOACS	70	3,035
Santa Rosa	DOC	53	26,188

County	Agency	Number of Facilities	Total Exposure [\$x1,000]
Highlands	DEP	43	1,842
Highlands	DJJ	29	13,780
Highlands	DMA	2	810
Highlands	DOACS	12	643
Highlands	DOC	142	25,056
Highlands	DOE	8	311
Highlands	DOT	18	538
Highlands	EDUC	8	311
Highlands	HSMV	6	204
Highlands	UNIV	29	497
Hillsborough	AWI	1	4,266
Hillsborough	DCF	13	11,089
Hillsborough	DEP	61	3,118
Hillsborough	DJJ	60	19,059
Hillsborough	DMA	6	7,870
Hillsborough	DMS	2	14,802
Hillsborough	DOACS	21	5,762
Hillsborough	DOC	34	4,995
Hillsborough	DOE	20	823
Hillsborough	DOH	1	0
Hillsborough	DOS	2	2,737
Hillsborough	DOT	86	41,444
Hillsborough	EDUC	18	523
Hillsborough	FDLE	1	11,281
Hillsborough	FWCC	2	521
Hillsborough	HSMV	13	2,461
Hillsborough	UNIV	267	10,123
Holmes	DEP	10	319
Holmes	DMA	1	480
Holmes	DOACS	14	1,770
Holmes	DOC	56	12,453
Holmes	DOT	7	108
Holmes	HSMV	1	19
Indian River	DEP	36	2,998
Indian River	DOACS	7	409
Indian River	DOC	43	12,950
Indian River	DOT	6	271
Indian River	FWCC	3	62
Indian River	UNIV	20	479
Jackson	DCF	88	26,282
Jackson	DEP	50	2,021
Jackson	DJJ	80	18,781
Jackson	DMA	2	946
Jackson	DMS	1	564
Jackson	DOACS	7	606

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]
Santa Rosa	DOT	7	1,082
Santa Rosa	FWCC	11	676
Santa Rosa	HSMV	2	152
Santa Rosa	UNIV	37	774
Sarasota	AWI	1	1,844
Sarasota	DEP	68	3,400
Sarasota	DJJ	10	1,298
Sarasota	DMA	2	2,303
Sarasota	DOACS	3	35
Sarasota	DOT	43	2,399
Sarasota	FWCC	1	1
Sarasota	HSMV	4	496
Sarasota	UNIV	59	2,472
Seminole	DEP	10	242
Seminole	DJJ	5	1,942
Seminole	DMA	1	579
Seminole	DOACS	17	1,003
Seminole	DOE	5	63
Seminole	DOT	33	4,885
Seminole	EDUC	3	17
Seminole	UNIV	24	449
Sumter	DEP	24	1,146
Sumter	DOACS	16	454
Sumter	DOC	71	46,568
Sumter	DOE	10	318
Sumter	DOT	11	10,510
Sumter	EDUC	8	245
Sumter	FWCC	17	632
Sumter	UNIV	1	90
Suwannee	DEP	28	760
Suwannee	DMA	2	867
Suwannee	DOACS	20	1,386
Suwannee	DOE	1	12
Suwannee	DOT	17	1,944
Suwannee	FWCC	1	3
Suwannee	UNIV	14	492
Taylor	DEP	19	1,007
Taylor	DOACS	15	581
Taylor	DOC	76	22,494
Taylor	DOT	19	3,791
Taylor	FWCC	12	78
Taylor	HSMV	4	168
Union	DJJ	5	3,293
Union	DOACS	5	537
Union	DOC	292	108,598

County	Agency	Number of Facilities	Total Exposure [\$x1,000]
Jackson	DOC	238	44,256
Jackson	DOT	40	26,636
Jackson	FWCC	11	224
Jackson	HSMV	5	194
Jackson	UNIV	29	804
Jefferson	DEP	6	65
Jefferson	DJJ	1	1,530
Jefferson	DOACS	11	318
Jefferson	DOC	49	8,384
Jefferson	DOT	8	989
Jefferson	FWCC	3	6
Jefferson	UNIV	15	191
Lafayette	DOACS	6	131
Lafayette	DOC	69	24,742
Lake	DEP	59	2,547
Lake	DMA	5	1,614
Lake	DOACS	14	325
Lake	DOC	48	14,586
Lake	DOT	41	8,308
Lake	FWCC	8	768
Lake	HSMV	3	413
Lee	DCF	68	41,727
Lee	DEP	100	4,500
Lee	DJJ	10	4,648
Lee	DMA	2	579
Lee	DMS	2	28,219
Lee	DOACS	24	3,281
Lee	DOC	6	980
Lee	DOE	8	297
Lee	DOT	32	4,287
Lee	EDUC	7	277
Lee	FWCC	5	746
Lee	HSMV	10	663
Lee	UNIV	44	2,025
Leon	AHCA	1	55
Leon	AWI	2	11,809
Leon	DCF	21	3,805
Leon	DEP	90	4,492
Leon	DJJ	11	8,619
Leon	DMA	1	2,728

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]
Union	DOT	2	24
Volusia	AWI	1	719
Volusia	DCF	4	1,144
Volusia	DEP	92	5,209
Volusia	DJJ	12	5,956
Volusia	DMA	6	2,632
Volusia	DMS	1	10,377
Volusia	DOACS	18	792
Volusia	DOC	77	21,598
Volusia	DOE	14	8,025
Volusia	DOT	30	25,714
Volusia	DVA	1	8,225
Volusia	EDUC	4	152
Volusia	FWCC	4	25
Volusia	HSMV	9	1,658
Volusia	JUD	1	9,093
Wakulla	DEP	42	1,543
Wakulla	DOACS	12	130
Wakulla	DOC	44	20,313
Wakulla	DOT	1	2
Wakulla	UNIV	16	461
Walton	DEP	91	5,954
Walton	DJJ	8	148
Walton	DMA	2	615
Walton	DOACS	6	198
Walton	DOC	59	14,065
Walton	DOT	27	1,298
Walton	FWCC	1	148
Walton	HSMV	2	35
Washington	DCF	1	370
Washington	DEP	14	351
Washington	DJJ	11	992
Washington	DMA	2	886
Washington	DOACS	9	184
Washington	DOC	68	16,381
Washington	DOE	1	30
Washington	DOT	27	21,138
Washington	EDUC	1	30
Washington	FWCC	1	2
Washington	HSMV	1	20

## **Other Hazards**

Though Florida recognizes that it is vulnerable to other hazards such as wildfire, drought/extreme heat, winter storms/freezes, dam/levee failure, sinkholes/seismic events, terrorism, technological and migration, a high-level detailed risk assessment was not completed due to the low level of risk for these compared to other hazards (flood and wind). Currently, the State for Florida, Division of Forestry has developed a detailed Risk Assessment Model, which will be made available to counties and local governments to assess the risk of wild fires based on existing and future conditions. Extreme heat, draughts and freezes are coordinated and assessed through programs developed by the Florida Department of Agriculture.

## 3.5 ESTIMATING POTENTIAL LOSSES BY JURISDICTION

***44 CFR 201.4(c)(2)(iii) – The risk assessment shall include an overview and analysis of potential losses to identified vulnerable structures, based on estimates provided in local risk assessments.***

The economic loss results are presented here using two interrelated risk indicators:

- 1) The Annualized Loss (AL), which is the estimated long-term value of losses to the general building stock in any single year in a specified geographic area (i.e., county)
- 2) The Annualized Loss Ratio (ALR), which expresses estimated annualized loss as a fraction of the building inventory replacement value

The estimated Annualized Loss (AL) addresses the two key components of risk: the probability of the hazard occurring in the study area and the consequences of the hazard, largely a function of building construction type and quality, and of the intensity of the hazard event. By annualizing estimated losses, the AL factors in historic patterns of frequent smaller events with infrequent but larger events to provide a balanced presentation of the risk.

The Annualized Loss Ratio (ALR) represents the AL as a fraction of the replacement value of the local building inventory. This ratio is calculated using the following formula:

$$ALR = \frac{\textit{Annualized Losses}}{\textit{Total Exposure at Risk}}$$

The annualized loss ratio gauges the relationship between average annualized loss and building replacement value. This ratio can be used as a measure of relative risk between areas and, since it is normalized by replacement value, it can be directly compared across different geographic units such as metropolitan areas or counties.

In general, presenting results in the annualized form serves on three fronts:

1. Contributing potential losses from all future disasters accounted for with this approach
2. Different hazards are readily comparable and hence easier to rank
3. With respect to evaluating mitigation alternatives, utilization of annualized losses is the most objective approach to serve for this purpose.

## **Flooding**

Using FEMA Q3 flood data, along with the modeling approach as described in Section 3.3, losses were estimated using return period events ranging from 10 year to 500-year events. Assumptions based on engineering judgment were made where data were not readily available, namely related to the extent of flooded areas and the depth of flooding. With this approach, annualized losses were calculated by accounting for the losses from different return period events and their respective annual probabilities of occurrence (e.g., the annual probability of observing a 100-year flood is 1%).

**Table 3.5.1** provides annualized loss estimates of residential building, commercial building, and the number of people at risk per county from coastal and riverine flooding.

**Table 3.5.1 Annualized Loss from Flooding by County**

County	Residential Exposure at Risk from Flooding[\$M]	Commercial Exposure at Risk from Flooding[\$M]	Number of People at Risk from Flooding[1,000]	Annualized Residential Loss [\$1,000]	Annualized Commercial Loss [\$1,000]
Alachua	1,577	337	20,000	356	76
Baker	130	15	2,000	31	4
Bay	2,709	514	30,000	610	116
Brevard	7,570	1,145	85,000	2,106	319
Broward	113,422	25,226	1,333,000	25,832	5,745
Calhoun	32	6	1,000	8	1
Charlotte	7,733	923	77,000	1,730	207
Citrus	2,495	315	30,000	585	74
Clay	2,032	291	27,000	462	66
Collier	17,109	3,071	163,000	5,410	971
DeSoto	275	41	5,000	77	11
Duval	7,239	1,514	88,000	1,802	377
Escambia	2,241	432	27,000	620	119
Flagler	771	89	9,000	292	34
Franklin	65	7	1,000	12	1
Gadsden	30	4	0	16	2
Gilchrist	240	21	5,000	2	0
Glades	234	11	4,000	91	4
Gulf	486	49	5,000	15	2
Hardee	494	54	9,000	39	4
Hendry	1,474	231	29,000	173	27
Hernando	21,493	2,925	267,000	163	22
Highlands	4,871	593	59,000	477	58
Hillsborough	10,622	2,351	130,000	5,740	1,270
Holmes	26,462	2,635	415,000	2	0
Indian River	2,111	427	22,000	991	200
Lake	1,411	235	18,000	690	115
Lee	13,892	2,212	141,000	8,838	1,407
Leon	4,038	743	47,000	230	42
Levy	1,229	180	22,000	158	23
Liberty	2,899	167	48,000	14	1
Manatee	78,766	11,568	880,000	1,804	265
Marion	7,339	1,201	101,000	283	46
Martin	3,916	761	39,000	1,924	374
Miami-Dade	38,463	10,598	554,000	23,991	6,610
Monroe	2,896	648	25,000	1,823	408
Nassau	7,679	1,030	96,000	419	56
Okaloosa	1,847	367	21,000	6	1

County	Residential Exposure at Risk from Flooding[\$M]	Commercial Exposure at Risk from Flooding[\$M]	Number of People at Risk from Flooding[1,000]	Annualized Residential Loss [\$1,000]	Annualized Commercial Loss [\$1,000]
Okeechobee	34,235	7,200	623,000	0	0
Orange	8,273	2,061	102,000	2,403	599
Osceola	22,731	3,857	302,000	814	138
Palm Beach	36,325	7,469	372,000	21,776	4,477
Pasco	5,010	669	62,000	2,860	382
Pinellas	15,676	2,716	171,000	8,405	1,456
Polk	4,003	712	55,000	1,193	212
Putnam	526	66	8,000	179	22
Saint Johns	8,251	1,398	84,000	1,281	217
Saint Lucie	4,948	600	59,000	851	103
Santa Rosa	388	53	5,000	119	16
Sarasota	5,855	996	55,000	3,699	629
Seminole	4,865	960	54,000	1,123	222
Sumter	443	34	7,000	100	8
Suwannee	160	22	3,000	87	12
Volusia	3,282	515	38,000	2,044	321
Wakulla	154	16	3,000	98	10
Walton	11	1	0	7	1
Washington	1	0	0	1	0
<b>Total</b>	<b>553,429</b>	<b>102,283</b>	<b>6,838,000</b>	<b>135,000</b>	<b>28,000</b>

## **Hurricane Winds**

Due to Florida's geographic location, the entire state is vulnerable to damage from hurricane winds and impact from coastal storms. Coastal counties are more vulnerable than inland areas. The Southern tip of the Peninsula and the Florida Keys are especially vulnerable. **Table 3.5.2** provides estimates of residential building, and commercial building losses and the people at from hurricane wind, broken down by county.

**Table 3.5.2 Annualized Losses from Hurricane Wind by County**

<b>County</b>	<b>Residential Exposure at Risk from Hurricane [\$M]</b>	<b>Commercial Exposure at Risk from Hurricane [\$M]</b>	<b>People at Risk from Hurricanes</b>	<b>Annualized Residential Loss [\$ M]</b>	<b>Annualized Commercial Loss [\$ M]</b>	<b>Percent Loss Ratio [%]</b>
Alachua	17,094	3,651	217,955	21	5	0.124
Baker	1,166	138	22,259	1	0	0.068
Bay	13,193	2,502	148,217	56	11	0.422
Bradford	1,498	198	26,088	1	0	0.058
Brevard	42,635	6,448	476,230	152	23	0.356
Broward	138,092	30,713	1,623,018	1,508	335	1.092
Calhoun	769	142	13,017	2	0	0.254
Charlotte	14,170	1,692	141,627	91	11	0.644
Citrus	9,961	1,258	118,085	16	2	0.16
Clay	10,762	1,543	140,814	8	1	0.075
Collier	26,364	4,733	251,377	247	44	0.938
Columbia	3,295	604	56,513	2	0	0.054
DeSoto	1,918	283	32,209	10	1	0.507
Dixie	828	94	13,827	1	0	0.123
Duval	64,112	13,412	778,879	58	12	0.09
Escambia	24,191	4,661	294,410	150	29	0.62
Flagler	4,424	512	49,832	7	1	0.167
Franklin	1,256	143	11,057	3	0	0.207
Gadsden	2,757	331	45,087	3	0	0.099
Gilchrist	691	60	14,437	1	0	0.14
Glades	643	31	10,576	3	0	0.451
Gulf	1,205	120	13,332	3	0	0.22
Hamilton	674	68	13,327	0	0	0
Hardee	1,473	160	26,938	6	1	0.377
Hendry	1,833	288	36,210	9	1	0.493
Hernando	10,527	1,433	130,802	23	3	0.222
Highlands	7,233	880	87,366	15	2	0.203
Hillsborough	81,700	18,082	998,948	255	56	0.312
Holmes	1,183	118	18,564	2	0	0.169
Indian River	10,810	2,187	112,947	49	10	0.455
Jackson	3,082	399	46,755	5	1	0.147
Jefferson	794	116	12,902	1	0	0.109
Lafayette	378	45	7,022	0	0	0
Lake	16,615	2,765	210,528	15	3	0.092
Lee	43,310	6,896	440,888	332	53	0.766
Leon	20,391	3,752	239,452	18	3	0.089
Levy	1,944	285	34,450	3	0	0.151
Liberty	422	24	7,021	1	0	0.256
Madison	1,077	124	18,733	1	0	0.096
Manatee	23,626	3,470	264,002	110	16	0.464
Marion	18,827	3,081	258,916	16	3	0.087
Martin	12,577	2,444	126,731	90	17	0.714

County	Residential Exposure at Risk from Hurricane [\$M]	Commercial Exposure at Risk from Hurricane [\$M]	People at Risk from Hurricanes	Annualized Residential Loss [\$ M]	Annualized Commercial Loss [\$ M]	Percent Loss Ratio [%]
Miami-Dade	156,571	43,140	2,253,362	2,048	564	1.308
Monroe	9,324	2,085	79,589	137	31	1.472
Nassau	4,611	618	57,663	5	1	0.116
Okaloosa	15,108	3,000	170,498	72	14	0.477
Okeechobee	1,973	415	35,910	8	2	0.427
Orange	72,557	18,079	896,344	142	35	0.196
Osceola	13,004	2,207	172,493	25	4	0.19
Palm Beach	110,540	22,728	1,131,184	995	205	0.9
Pasco	27,893	3,727	344,765	62	8	0.222
Pinellas	84,368	14,617	921,482	351	61	0.417
Polk	35,331	6,284	483,924	70	12	0.198
Putnam	4,383	547	70,423	5	1	0.104
Saint Johns	12,104	2,050	123,135	21	4	0.174
Saint Lucie	16,027	1,942	192,695	85	10	0.532
Santa Rosa	9,509	1,295	117,743	42	6	0.444
Sarasota	34,927	5,941	325,957	203	35	0.583
Seminole	32,628	6,441	365,196	57	11	0.175
Sumter	3,615	280	53,345	6	0	0.171
Suwannee	1,996	278	34,844	2	0	0.091
Taylor	1,309	169	19,256	1	0	0.073
Union	552	57	13,442	0	0	0
Volusia	38,232	6,004	443,343	71	11	0.187
Wakulla	1,356	143	22,863	2	0	0.123
Walton	4,392	506	40,601	16	2	0.37
Washington	1,356	176	20,973	3	0	0.211
<b>Total</b>	<b>1,333,167</b>	<b>262,615</b>	<b>15,982,378</b>	<b>7,724</b>	<b>1,665</b>	<b>0.588</b>

## Tornado

Historical evidence shows that most of the state is vulnerable to tornadic activity. This hazard can result from severe thunderstorm activity or may occur during a major tropical storm or hurricane. **Table 3.5.3** provides estimates of residential building, and commercial building losses, and population at risk due to tornado, broken down by county.

**Table 3.5.3 Annualized Loss from Tornadoes by County**

County	Population at Risk from Tornadoes	Residential Exposure at Risk from Tornadoes[\$M]	Commercial Exposure at Risk from Tornadoes [\$M]	Annualized Tornado Wind Loss [\$ M]
Alachua	217,955	17,094	3,651	1.2
Baker	22,259	1,166	138	0.03
Bay	148,217	13,193	2,502	0.3
Bradford	26,088	1,498	198	0.06
Brevard	476,230	42,635	6,448	1.08
Broward	1,623,018	138,092	30,713	0.82
Calhoun	13,017	769	142	0.01
Charlotte	141,627	14,170	1,692	0.15
Citrus	118,085	9,961	1,258	0.11
Clay	140,814	10,762	1,543	0.06
Collier	251,377	26,364	4,733	0.4
Columbia	56,513	3,295	604	0.07
DeSoto	32,209	1,918	283	0.02
Dixie	13,827	828	94	0.01
Duval	778,879	64,112	13,412	0.34
Escambia	294,410	24,191	4,661	0.54
Flagler	49,832	4,424	512	0.02
Franklin	11,057	1,256	143	0.02
Gadsden	45,087	2,757	331	0.05
Gilchrist	14,437	691	60	0.02
Glades	10,576	643	31	0
Gulf	13,332	1,205	120	0.02
Hamilton	13,327	674	68	0.01
Hardee	26,938	1,473	160	0.01
Hendry	36,210	1,833	288	0.02
Hernando	130,802	10,527	1,433	0.11
Highlands	87,366	7,233	880	0.07
Hillsborough	998,948	81,700	18,082	1.38
Holmes	18,564	1,183	118	0.02
Indian River	112,947	10,810	2,187	0.18
Jackson	46,755	3,082	399	0.05
Jefferson	12,902	794	116	0.02
Lafayette	7,022	378	45	0.01
Lake	210,528	16,615	2,765	0.78

County	Population at Risk from Tornadoes	Residential Exposure at Risk from Tornadoes[\$M]	Commercial Exposure at Risk from Tornadoes [\$M]	Annualized Tornado Wind Loss [\$ M]
Lee	440,888	43,310	6,896	0.57
Leon	239,452	20,391	3,752	0.64
Levy	34,450	1,944	285	0.07
Liberty	7,021	422	24	0.01
Madison	18,733	1,077	124	0.02
Manatee	264,002	23,626	3,470	0.34
Marion	258,916	18,827	3,081	0.78
Martin	126,731	12,577	2,444	0.2
Miami-Dade	2,253,362	156,571	43,140	0.91
Monroe	79,589	9,324	2,085	1.56
Nassau	57,663	4,611	618	0.02
Okaloosa	170,498	15,108	3,000	0.39
Okeechobee	35,910	1,973	415	0.02
Orange	896,344	72,557	18,079	2.1
Osceola	172,493	13,004	2,207	0.3
Palm Beach	1,131,184	110,540	22,728	0.65
Pasco	344,765	27,893	3,727	0.33
Pinellas	921,482	84,368	14,617	1.28
Polk	483,924	35,331	6,284	0.46
Putnam	70,423	4,383	547	0.02
Saint Johns	123,135	12,104	2,050	0.07
Saint Lucie	192,695	16,027	1,942	0.19
Santa Rosa	117,743	9,509	1,295	0.22
Sarasota	325,957	34,927	5,941	0.55
Seminole	365,196	32,628	6,441	0.99
Sumter	53,345	3,615	280	0.14
Suwannee	34,844	1,996	278	0.04
Taylor	19,256	1,309	169	0.02
Union	13,442	552	57	0.01
Volusia	443,343	38,232	6,004	0.87
Wakulla	22,863	1,356	143	0.03
Walton	40,601	4,392	506	0.1
Washington	20,973	1,356	176	0.02
<b>Total</b>	<b>15,982,378</b>	<b>1,333,167</b>	<b>262,615</b>	<b>22</b>

## **Erosion**

Early statewide inventories of critical erosion areas included only those erosion problem areas where the threat existed to development or recreational interests. The current inventory of critical erosion areas (March 1999/April 2002) was formulated based upon an updated and modified definition of critical erosion. The following definition has been adopted by the Florida Department of Environmental Protection's Bureau of Beaches and Coastal Systems, to identify areas of critical erosion:

Critical erosion area is a segment of the shoreline where natural processes or human activity have caused or contributed to erosion and recession of the beach or dune system to such a degree that upland development, recreational interests, wildlife habitat, or important cultural resources are threatened or lost. Critical erosion areas may also include peripheral segments or gaps between identified critical erosion areas that, although they may be stable or slightly erosional now, their inclusion is necessary for continuity of management of the coastal system or for the design integrity of adjacent beach management projects.

For erosion problem area to be critical there must exist a threat to or loss of one of four specific interests; upland development, recreation, wildlife habitat, or important cultural resources. Of all the erosion problem areas around Florida, many have significant erosion conditions, yet the erosion processes do not currently threaten public or private interests. These areas are therefore designated as non-critical erosion areas and require close monitoring in case conditions become critical.

In contrast, some areas erosion processes are not particularly significant except to the extent that adjacent public or private interests may be threatened. Whether erosion is critical, results from the existence of a threat to interests is in need of protection. Lacking any threat an erosion condition is not a critical problem.

Table 9 summarizes the number of critical and non-critical erosion areas by county (coastal counties only):

**Table 9. Number of Critical and Non-critical Erosion Areas by County**

County	# Critical Areas	Miles at risk	# Non-critical	Miles at Risk
Bay	3	20.8	3	10.1
Brevard	2	25	2	12.3
Broward	3	21.3	0	0
Charlotte	4	5.5	1	0.4
Citrus	0	0	0	0
Collier	6	11	5	9.5
Dade	3	17	3	1.7
Dixie	3	0.6	0	0
Duval	3	11.1	1	2
Escambia	2	8.6	2	11.7
Flagler	4	3.5	0	0
Franklin	5	10.4	10	18.5
Gulf	2	3.5	4	13.3
Hernando	0	0	1	0.5
Hillsborough	1	1.6	0	0
Indian River	5	9.1	4	4.7
Jefferson	0	0	0	0
Lee	12	20.7	7	6.1
Levy	2	0.7	1	1.2
Manatee	2	12.1	0	0
Martin	3	15.8	0	0
Monroe	8	7.7	3	2.9
Nassau	3	10	0	0
Okaloosa	3	5.8	1	1.7
Palm Beach	9	31.5	2	0.9
Pasco	1	0.2	1	1.1
Pinellas	6	21.1	2	4.4
Santa Rosa	1	3.4	0	0
Sarasota	9	22.5	0	0
St. Johns	3	7.6	1	0.5
St. Lucie	1	2.3	1	6.4
Taylor	1	0.2	0	0
Volusia	3	17.3	1	1.1
Wakulla	2	1.3	1	0.4
Walton	3	9.2	0	0
<b>TOTAL</b>	<b>118</b>	<b>338.4</b>	<b>57</b>	<b>111.4</b>

Additional information of the erosion areas for each coastal county fronting on the Atlantic Ocean, Gulf of Mexico, and Straits of Florida is available from Florida Department of Environmental Protection, Bureau of Beaches and Wetland Systems. The listing of critical and non-critical erosion areas are identified by the Bureau's reference movement system (R numbers) or by virtual stations (V numbers). A few areas are not identified by either the R or V numbers because they are not included in the coastal construction control line program nor have virtual stations been designated. These areas without R or V numbers are usually inlet shoreline areas, Florida Keys erosion areas, Coastal Bend erosion areas, and a few barrier islands in Pinellas, Hillsborough, and Collier Counties.

- Approximately 167.5 miles of critical beach and 27.3 miles of non-critical beach exist along the Atlantic Coast. Over thirty percent (30%) of the critical beach areas are located in Palm Beach County and Broward County.

In April 2002, Florida's most recent inventory of erosion areas provided the following conclusions:

- Approximately 154.7 miles of critical beach and 77.5 miles of non-critical beach exist along the Gulf Coast. Nearly forty percent (40%) of these critical beach areas are located in Pinellas, Sarasota, and Lee Counties along the Central Peninsula.
- Approximately 4.5 miles of critical inlet and 1.4 miles of non-critical inlet exist along the Gulf Coast.
- Approximately 4.6 miles of critical inlet and 2.3 miles of non-critical inlet exist along the Atlantic Coast.
- Approximately 7.7 miles of critical beach and 2.9 miles of non-critical beach exist along the Florida Keys. There are no critical or non-critical inlet areas in the Florida Keys.
- Statewide, there are 329.9 miles of critical beach areas and 107.7 miles of non-critical beach areas, as well as 9.1 miles of critical inlets and 3.7 miles of non-critical inlets. All miles, critical and non-critical, must be closely monitored in order to mitigate future erosion problems that may threaten lives or property.

## **Other Hazards**

Though Florida recognizes that it is vulnerable to other hazards such as wildfire, drought/extreme heat, winter storms/freezes, dam/levee failure, sinkholes/seismic events, terrorism, technological and mass migration, a high-level detailed vulnerability and risk assessment was not completed due to the low level of risk for these hazards compared to other hazards (wind, and flood). Currently the State for Florida, Division of Forestry has developed a detailed Risk Assessment Model, which will be made available to counties and local governments to assess the risk of wild fires based on existing and future conditions. Extreme heat, draughts and freezes are coordinated and assessed through programs developed by the Florida Department of Agriculture.

## 3.6 ESTIMATING POTENTIAL LOSSES OF STATE FACILITIES

***44 CFR 201.4(c)(2)(iii) – The risk assessment shall include the following: an overview and analysis of potential losses to identified vulnerable structures, based on estimates provided in the State risk assessment. The State shall estimate the potential dollar losses to State-owned or operated buildings, infrastructure, and critical facilities located in the identified hazard areas.***

Based upon the risk assessment and loss estimation methodologies described in Section 3.3, potential losses for State of Florida-owned facilities were calculated and are presented below. However, as provided in Section 3.4, the State plan, however, does not include a detailed description of each facility nor identification as to a critical or non-critical facility or as infrastructure. DEM has received a copy of the database, however, due to the size and format it was not possible to include in this plan. It is maintained as a separate document. The list of state critical facilities and infrastructure was compiled as part of the State's Homeland Security initiative. Due to the nature of information included in list, detailed information of facility may be classified and cannot be included in this plan.

## Flooding

The State of Florida is extremely vulnerable to flooding, both riverine and coastal, placing billions of dollars in property at risk. Over \$1 billion in state-owned facilities are at risk for damage due to flooding. The **Table 1-1** shows the total exposure and estimated losses from flooding (riverine and coastal) of state owned facilities by agency.

**Table 3.6.1 Estimated Flood Loss by Agency**

<b>AGENCY</b>	<b>Number of Facilities</b>	<b>Total Exposure [\$x1,000]</b>	<b>Annualized Flooding Loss [\$]</b>
AWI	3	6,242	2,784
DCF	177	89,467	39,902
DEP	881	45,423	20,258
DJJ	127	121,070	53,997
DMA	44	38,860	17,331
DMS	24	166,979	74,473
DOACS	106	7,432	3,315
DOC	509	188,484	84,064
DOE	106	91,370	40,751
DOH	19	62,837	28,025
DOS	35	13,479	6,012
DOT	313	107,888	48,118
DVA	1	8,225	3,668
EDUC	30	1,099	490
FWCC	101	26,490	11,815
HSMV	67	12,751	5,687
JUD	2	17,417	7,768
UNIV	641	25,816	11,514
<b>Total</b>	<b>3,186</b>	<b>1,031,330</b>	<b>459,973</b>

**Table 3.6.2** shows the total exposure and estimated losses from flooding (riverine and coastal) of state owned facilities by agency for each county.

**Table 3.6.2. Estimated Flood Loss by Agency, by County**

Agency	County	Number of Facilities	Exposure [x\$1,000]	Annualized Loss (\$)
AWI	Broward	1	2,297	1,024
AWI	Duval	1	3,227	1,439
AWI	Volusia	1	719	320
DCF	Duval	18	14,871	6,633
DCF	Escambia	7	1,095	488
DCF	Lee	68	41,727	18,610
DCF	Miami-Dade	74	27,436	12,236
DCF	Pinellas	6	3,193	1,424
DCF	Volusia	4	1,144	510
DEP	Broward	2	139	62
DEP	Charlotte	9	177	79
DEP	Citrus	52	3,780	1,686
DEP	Collier	63	3,510	1,565
DEP	DeSoto	9	367	164
DEP	Duval	58	1,476	658
DEP	Escambia	60	2,734	1,219
DEP	Flagler	32	975	435
DEP	Hillsborough	38	2,048	913
DEP	Indian River	1	90	40
DEP	Lake	24	1,291	576
DEP	Lee	74	3,417	1,524
DEP	Manatee	8	482	215
DEP	Marion	33	2,570	1,146
DEP	Martin	67	3,000	1,338
DEP	Miami-Dade	92	5,327	2,376
DEP	Monroe	155	8,737	3,897
DEP	Nassau	28	3,115	1,389
DEP	Palm Beach	1	11	5
DEP	Pasco	5	117	52
DEP	Pinellas	6	62	28
DEP	Saint Johns	52	1,459	651
DEP	Saint Lucie	5	122	54
DEP	Volusia	1	9	4
DEP	Wakulla	6	407	182
DJJ	Collier	6	4,105	1,831
DJJ	Duval	18	12,978	5,788
DJJ	Escambia	6	968	432
DJJ	Lee	10	4,648	2,073
DJJ	Manatee	24	4,870	2,172

Agency	County	Number of Facilities	Exposure [x\$1,000]	Annualized Loss (\$)
DJJ	Martin	9	567	253
DJJ	Miami-Dade	29	68,023	30,338
DJJ	Monroe	1	9,840	4,389
DJJ	Nassau	5	1,493	666
DJJ	Pinellas	3	1,330	593
DJJ	Saint Johns	4	6,292	2,806
DJJ	Volusia	12	5,956	2,656
DMA	Broward	1	826	368
DMA	Citrus	2	1,992	889
DMA	Duval	2	3,655	1,630
DMA	Escambia	5	1,945	867
DMA	Hardee	2	1,911	852
DMA	Lee	2	579	258
DMA	Manatee	2	830	370
DMA	Miami-Dade	3	4,358	1,944
DMA	Pinellas	2	1,752	782
DMA	Saint Johns	20	19,254	8,587
DMA	Volusia	3	1,756	783
DMS	Duval	6	34,985	15,603
DMS	Escambia	1	9,191	4,099
DMS	Lee	2	28,219	12,586
DMS	Miami-Dade	9	54,719	24,405
DMS	Monroe	3	9,139	4,076
DMS	Pinellas	2	20,347	9,075
DMS	Volusia	1	10,377	4,628
DOACS	Broward	1	100	45
DOACS	Calhoun	1	30	13
DOACS	Charlotte	10	207	92
DOACS	Citrus	4	37	16
DOACS	Clay	7	185	82
DOACS	Collier	2	28	13
DOACS	Duval	5	264	118
DOACS	Escambia	2	33	15
DOACS	Hardee	6	1,818	811
DOACS	Lake	5	103	46
DOACS	Lee	24	3,281	1,463
DOACS	Manatee	9	313	140
DOACS	Marion	3	34	15
DOACS	Miami-Dade	10	401	179
DOACS	Monroe	3	160	71
DOACS	Palm Beach	2	130	58
DOACS	Polk	1	12	5
DOACS	Saint Johns	5	157	70
DOACS	Volusia	4	136	61
DOACS	Wakulla	2	5	2

Agency	County	Number of Facilities	Exposure [x\$1,000]	Annualized Loss (\$)
DOC	Broward	1	4	2
DOC	Calhoun	61	12,957	5,779
DOC	Charlotte	49	26,115	11,647
DOC	Collier	12	251	112
DOC	Duval	15	1,278	570
DOC	Escambia	2	313	140
DOC	Lake	48	14,586	6,505
DOC	Lee	6	980	437
DOC	Manatee	18	1,037	463
DOC	Martin	79	40,525	18,074
DOC	Miami-Dade	109	61,212	27,301
DOC	Monroe	6	4,928	2,198
DOC	Pinellas	26	2,699	1,204
DOC	Volusia	77	21,598	9,633
DOE	Charlotte	1	20	9
DOE	Collier	3	152	68
DOE	Hardee	5	244	109
DOE	Hillsborough	3	66	29
DOE	Lee	7	242	108
DOE	Manatee	3	71	32
DOE	Martin	3	75	33
DOE	Miami-Dade	4	196	88
DOE	Palm Beach	3	74	33
DOE	Saint Johns	64	82,358	36,732
DOE	Volusia	10	7,873	3,512
DOH	Duval	12	41,663	18,582
DOH	Escambia	3	5,079	2,265
DOH	Miami-Dade	1	8,091	3,608
DOH	Pinellas	3	8,004	3,570
DOS	Miami-Dade	1	7,500	3,345
DOS	Monroe	4	2,237	998
DOS	Saint Johns	30	3,742	1,669
DOT	Brevard	5	928	414
DOT	Broward	9	3,292	1,468
DOT	Calhoun	3	381	170
DOT	Charlotte	5	539	240
DOT	Collier	20	3,357	1,497
DOT	DeSoto	1	3	1
DOT	Duval	56	6,681	2,980
DOT	Escambia	24	6,296	2,808
DOT	Flagler	4	1,030	459
DOT	Lake	5	524	234
DOT	Lee	32	4,287	1,912
DOT	Manatee	3	142	63
DOT	Martin	2	1,934	863

Agency	County	Number of Facilities	Exposure [x\$1,000]	Annualized Loss (\$)
DOT	Miami-Dade	84	47,390	21,136
DOT	Monroe	3	3,118	1,391
DOT	Palm Beach	16	11,045	4,926
DOT	Pinellas	9	8,337	3,718
DOT	Saint Johns	28	7,570	3,376
DOT	Sarasota	1	124	55
DOT	Volusia	3	910	406
DVA	Volusia	1	8,225	3,668
EDUC	Collier	3	152	68
EDUC	Hardee	5	244	109
EDUC	Hillsborough	3	66	29
EDUC	Lee	6	222	99
EDUC	Manatee	3	71	32
EDUC	Martin	3	75	33
EDUC	Miami-Dade	4	196	88
EDUC	Palm Beach	3	74	33
FWCC	Charlotte	15	387	172
FWCC	Citrus	3	953	425
FWCC	Collier	3	7	3
FWCC	Duval	3	785	350
FWCC	Escambia	3	390	174
FWCC	Lee	4	744	332
FWCC	Manatee	7	425	189
FWCC	Marion	1	2	1
FWCC	Miami-Dade	1	1,500	669
FWCC	Monroe	9	2,305	1,028
FWCC	Palm Beach	17	1,213	541
FWCC	Pasco	1	2	1
FWCC	Pinellas	27	17,588	7,844
FWCC	Saint Johns	6	188	84
FWCC	Volusia	1	2	1
HSMV	Brevard	3	265	118
HSMV	Charlotte	1	9	4
HSMV	Clay	1	329	147
HSMV	Collier	4	686	306
HSMV	Duval	10	2,522	1,125
HSMV	Escambia	7	752	336
HSMV	Lake	1	179	80
HSMV	Lee	10	663	296
HSMV	Manatee	7	1,232	549
HSMV	Miami-Dade	9	4,289	1,913
HSMV	Monroe	4	872	389
HSMV	Palm Beach	2	179	80
HSMV	Pinellas	2	35	16
HSMV	Saint Johns	3	235	105

Agency	County	Number of Facilities	Exposure [x\$1,000]	Annualized Loss (\$)
HSMV	Volusia	3	503	224
JUD	Miami-Dade	1	8,325	3,713
JUD	Volusia	1	9,093	4,055
UNIV	Calhoun	3	54	24
UNIV	Charlotte	3	18	8
UNIV	Duval	101	3,185	1,421
UNIV	Escambia	130	5,854	2,611
UNIV	Hillsborough	5	119	53
UNIV	Lee	44	2,025	903
UNIV	Manatee	48	1,705	760
UNIV	Miami-Dade	171	6,728	3,001
UNIV	Palm Beach	107	4,873	2,174
UNIV	Pinellas	24	1,096	489
UNIV	Saint Johns	5	159	71
	<b>TOTAL</b>	<b>3,186</b>	<b>1,031,330</b>	<b>459,973</b>

## Wind (Hurricane and Tornado)

Nearly \$4.5 billion worth of state-owned facilities are exposed to potentially damaging winds due to hurricanes and tornadoes. Because DOC has the highest number of at-risk properties for wind damage at 3,818, it also has over \$1 billion worth of exposure combined among those properties. **Table 3.6.3** shows the estimated wind losses due to tornado or hurricane by state agency.

**Table 3.6.3. Estimated Wind Loss by Agency**

<b>AGENCY</b>	<b>Number of Facilities</b>	<b>Total Exposure [\$x1,000]</b>	<b>Annualized Tornado Wind Loss [\$]</b>	<b>Annualized Hurricane Wind Loss [\$]</b>
AHCA	1	55	1	46
AWI	24	35,371	414	126,182
CITRU	1	2,805	25	5,190
DCF	990	416,017	6,553	1,191,183
DEP	2619	134,473	2,513	575,732
DJJ	894	430,279	4,817	2,392,477
DMA	370	115,933	1,566	320,041
DMS	123	851,875	12,465	2,177,435
DOACS	1069	81,449	1,006	324,655
DOC	3818	1,236,879	18,501	4,324,879
DOE	239	96,331	420	182,011
DOH	64	105,926	735	439,212
DOI1	9	6,756	193	5,707
DOS	60	24,776	410	147,176
DOT	1678	603,444	6,941	2,688,498
DVA	4	40,517	377	189,775
EDUC	142	5,285	43	28,807
FDLE	2	11,366	100	33,352
FWCC	452	58,085	913	248,101
HSMV	280	67,311	939	208,613
JUD	6	36,100	372	182,103
UNIV	3440	126,969	2,234	371,129
<b>Total</b>	<b>16,285</b>	<b>4,488,002</b>	<b>61,540</b>	<b>16,162,304</b>

**Table 3.6.4** shows the total exposure and estimated losses due to wind from tornado and hurricane by state agency for each county.

**Table 3.6.4. Estimated Wind Loss by County, by Agency**

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Alachua	AWI	1	1,259	41	1,108
Alachua	DCF	199	69,771	2,253	61,398
Alachua	DEP	162	7,302	236	6,426
Alachua	DJJ	9	3,806	123	3,349
Alachua	DMS	2	8,147	263	7,169
Alachua	DOACS	45	3,916	126	3,446
Alachua	DOC	36	6,646	215	5,848
Alachua	DOE	1	54	2	48
Alachua	DOH	2	5,947	192	5,233
Alachua	DOT	74	18,877	609	16,612
Alachua	EDUC	1	54	2	48
Alachua	FWCC	9	1,760	57	1,549
Alachua	HSMV	15	649	21	571
Alachua	UNIV	1,034	37,212	1,201	32,747
Baker	DCF	84	53,431	875	27,250
Baker	DEP	4	297	5	152
Baker	DOACS	5	184	3	94
Baker	DOC	79	25,105	411	12,803
Baker	DOT	7	2,553	42	1,302
Bay	AWI	1	541	8	2,222
Bay	DCF	7	1,737	26	7,139
Bay	DEP	72	3,594	54	14,773
Bay	DJJ	10	3,669	55	15,080
Bay	DMA	2	2,511	38	10,319
Bay	DOACS	19	874	13	3,591
Bay	DOC	9	367	5	1,507
Bay	DOT	14	2,794	42	11,484
Bay	FWCC	13	1,172	18	4,818
Bay	HSMV	9	2,206	33	9,068
Bay	UNIV	36	1,166	17	4,792
Bradford	DJJ	16	371	12	286
Bradford	DMA	248	22,387	723	17,238
Bradford	DMS	5	969	31	746
Bradford	DOACS	9	528	17	406
Bradford	DOC	125	47,184	1,523	36,332
Bradford	DOT	1	3	0	2
Bradford	FWCC	7	116	4	90
Bradford	HSMV	7	191	6	147
Bradford	UNIV	1	52	2	40

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Brevard	AWI	1	716	11	2,464
Brevard	DCF	10	1,177	18	4,047
Brevard	DEP	22	1,684	25	5,792
Brevard	DJJ	16	3,135	47	10,783
Brevard	DMA	2	601	9	2,069
Brevard	DOACS	6	52	1	179
Brevard	DOC	65	18,216	274	62,664
Brevard	DOE	3	59	1	201
Brevard	DOH	1	1,951	29	6,711
Brevard	DOT	44	6,299	95	21,670
Brevard	FWCC	7	955	14	3,286
Brevard	HSMV	9	1,706	26	5,870
Brevard	UNIV	22	545	8	1,876
Broward	AWI	8	7,141	19	74,978
Broward	DCF	43	14,604	40	153,340
Broward	DEP	57	4,453	12	46,760
Broward	DJJ	18	17,799	48	186,891
Broward	DMA	6	1,869	5	19,628
Broward	DMS	2	21,614	59	226,947
Broward	DOACS	14	2,995	8	31,442
Broward	DOC	64	20,334	55	213,512
Broward	DOE	10	300	1	3,150
Broward	DOH	1	1,985	5	20,848
Broward	DOT	111	59,768	162	627,569
Broward	DVA	1	14,071	38	147,748
Broward	EDUC	10	300	1	3,150
Broward	FWCC	2	2,050	6	21,525
Broward	HSMV	5	2,189	6	22,985
Broward	UNIV	45	986	3	10,353
Calhoun	DOACS	4	313	5	707
Calhoun	DOC	61	12,957	194	29,283
Calhoun	DOT	3	381	6	860
Calhoun	UNIV	3	54	1	122
Charlotte	DEP	9	177	1	1,122
Charlotte	DOACS	10	207	2	1,313
Charlotte	DOC	50	26,440	193	167,631
Charlotte	DOE	1	20	0	127
Charlotte	DOT	11	892	7	5,657
Charlotte	FWCC	15	387	3	2,451
Charlotte	HSMV	1	9	0	57
Charlotte	UNIV	3	18	0	114
Citrus	DEP	85	6,278	55	9,983
Citrus	DJJ	4	5,955	52	9,468
Citrus	DMA	2	1,992	17	3,168
Citrus	DOACS	22	286	3	455

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Citrus	DOT	9	791	7	1,258
Citrus	FWCC	8	963	8	1,531
Clay	DEP	49	2,384	7	1,692
Clay	DOACS	10	338	1	240
Clay	DOT	8	602	2	428
Clay	HSMV	1	329	1	234
Collier	DEP	63	3,510	26	31,800
Collier	DJJ	15	6,405	47	58,033
Collier	DOACS	20	2,540	19	23,016
Collier	DOC	92	21,986	160	199,191
Collier	DOE	4	182	1	1,649
Collier	DOT	20	3,357	25	30,419
Collier	EDUC	4	182	1	1,649
Collier	FWCC	4	13	0	119
Collier	HSMV	4	686	5	6,211
Columbia	DCF	3	1,059	17	550
Columbia	DEP	27	1,103	18	573
Columbia	DMA	2	1,070	18	556
Columbia	DOACS	20	746	12	388
Columbia	DOC	77	33,929	556	17,643
Columbia	DOE	2	87	1	45
Columbia	DOT	54	18,898	309	9,827
Columbia	DVA	1	7,332	120	3,813
Columbia	FWCC	13	671	11	349
Columbia	HSMV	8	625	10	325
DeSoto	DEP	9	367	3	1,712
DeSoto	DJJ	105	58,861	516	274,290
DeSoto	DMA	2	782	7	3,643
DeSoto	DOACS	6	487	4	2,271
DeSoto	DOC	111	47,788	419	222,691
DeSoto	DOE	2	30	0	140
DeSoto	DOT	17	569	5	2,653
DeSoto	EDUC	2	30	0	140
DeSoto	HSMV	4	448	4	2,087
Dixie	DEP	3	130	2	167
Dixie	DOACS	9	287	5	370
Dixie	DOC	94	15,225	249	19,640
Dixie	DOT	3	274	4	353
Dixie	FWCC	1	1	0	1
Dixie	HSMV	5	303	5	390
Dixie	UNIV	1	7	0	9
Duval	AWI	1	3,227	10	2,775
Duval	DCF	18	14,871	45	12,789
Duval	DEP	62	2,191	7	1,884
Duval	DJJ	18	12,978	39	11,161

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Duval	DMA	2	3,655	11	3,143
Duval	DMS	6	34,985	105	30,087
Duval	DOACS	5	264	1	227
Duval	DOC	15	1,278	4	1,099
Duval	DOH	12	41,663	126	35,831
Duval	DOT	59	7,122	21	6,125
Duval	FWCC	3	785	2	675
Duval	HSMV	10	2,522	8	2,169
Duval	UNIV	101	3,185	10	2,739
Escambia	DCF	8	2,595	39	15,415
Escambia	DEP	60	2,734	41	16,239
Escambia	DJJ	17	1,267	19	7,527
Escambia	DMA	5	1,945	29	11,552
Escambia	DMS	1	9,191	137	54,594
Escambia	DOACS	10	225	3	1,338
Escambia	DOC	59	16,835	252	100,003
Escambia	DOH	3	5,079	76	30,171
Escambia	DOT	24	6,296	94	37,397
Escambia	FWCC	4	391	6	2,323
Escambia	HSMV	7	752	11	4,469
Escambia	UNIV	132	5,998	90	35,629
Flagler	DEP	53	1,392	4	2,242
Flagler	DOACS	12	350	1	564
Flagler	DOT	11	2,165	7	3,485
Flagler	FWCC	3	5	0	9
Franklin	DEP	58	3,021	49	6,043
Franklin	DMA	3	767	13	1,534
Franklin	DOACS	16	1,712	28	3,423
Franklin	DOC	15	3,214	53	6,427
Franklin	FWCC	4	67	1	134
Franklin	HSMV	3	117	2	234
Franklin	UNIV	11	321	5	642
Gadsden	DCF	293	128,753	2,109	110,727
Gadsden	DMA	2	2,214	36	1,904
Gadsden	DOACS	25	699	11	601
Gadsden	DOC	36	9,822	161	8,447
Gadsden	DOE	1	15	0	13
Gadsden	DOI1	1	1,573	26	1,352
Gadsden	DOT	24	5,467	90	4,702
Gadsden	EDUC	1	15	0	13
Gadsden	FWCC	17	834	14	717
Gadsden	HSMV	2	222	4	191
Gadsden	UNIV	41	1,331	22	1,145
Gilchrist	DEP	2	153	5	126
Gilchrist	DOACS	16	1,224	40	1,004

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Gilchrist	DOC	68	15,903	513	13,040
Gilchrist	DOT	1	22	1	18
Gilchrist	HSMV	1	19	1	16
Glades	DOACS	8	386	3	1,424
Glades	FWCC	3	9	0	33
Glades	HSMV	1	6	0	24
Gulf	DCF	26	1,530	23	3,411
Gulf	DEP	41	2,025	30	4,517
Gulf	DOACS	10	298	4	665
Gulf	DOC	91	35,478	531	79,116
Gulf	DOT	2	79	1	177
Gulf	FWCC	1	188	3	420
Gulf	HSMV	1	31	0	69
Hamilton	DEP	48	4,940	81	2,964
Hamilton	DJJ	9	2,225	36	1,335
Hamilton	DOACS	20	3,171	52	1,903
Hamilton	DOC	72	24,443	400	14,666
Hamilton	DOE	2	37	1	22
Hamilton	DOT	11	5,988	98	3,593
Hamilton	EDUC	1	25	0	15
Hamilton	FWCC	1	3	0	2
Hardee	DEP	10	583	5	1,965
Hardee	DMA	2	1,911	17	6,441
Hardee	DOACS	7	1,825	16	6,152
Hardee	DOC	59	27,270	239	91,901
Hardee	DOE	15	522	5	1,759
Hardee	EDUC	15	522	5	1,759
Hardee	UNIV	41	1,020	9	3,439
Hendry	DJJ	1	70	1	313
Hendry	DOACS	9	103	1	460
Hendry	DOE	9	587	4	2,623
Hendry	DOT	16	520	4	2,322
Hendry	EDUC	9	587	4	2,623
Hendry	HSMV	2	36	0	162
Hendry	UNIV	42	895	7	4,000
Hernando	DEP	3	84	1	180
Hernando	DMA	4	6,811	60	14,575
Hernando	DOACS	73	2,505	22	5,360
Hernando	DOC	16	4,526	40	9,685
Hernando	DOT	31	4,917	43	10,523
Hernando	FWCC	3	117	1	250
Hernando	HSMV	5	438	4	938
Hernando	UNIV	17	510	4	1,090
Highlands	DCF	3	875	7	1,681
Highlands	DEP	43	1,842	15	3,536

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Highlands	DJJ	29	13,780	114	26,458
Highlands	DMA	2	810	7	1,555
Highlands	DOACS	12	643	5	1,234
Highlands	DOC	142	25,056	208	48,108
Highlands	DOE	8	311	3	597
Highlands	DOT	18	538	4	1,032
Highlands	EDUC	8	311	3	597
Highlands	HSMV	6	204	2	391
Highlands	UNIV	29	497	4	955
Hillsborough	AWI	1	4,266	37	12,585
Hillsborough	DCF	13	11,089	97	32,711
Hillsborough	DEP	61	3,118	27	9,198
Hillsborough	DJJ	60	19,059	167	56,225
Hillsborough	DMA	6	7,870	69	23,217
Hillsborough	DMS	2	14,802	130	43,665
Hillsborough	DOACS	21	5,762	50	16,998
Hillsborough	DOC	34	4,995	44	14,735
Hillsborough	DOE	20	823	7	2,427
Hillsborough	DOH	1	0	0	0
Hillsborough	DOS	2	2,737	24	8,073
Hillsborough	DOT	86	41,444	363	122,260
Hillsborough	EDUC	18	523	5	1,542
Hillsborough	FDLE	1	11,281	99	33,280
Hillsborough	FWCC	2	521	5	1,537
Hillsborough	HSMV	13	2,461	22	7,260
Hillsborough	UNIV	267	10,123	89	29,864
Holmes	DEP	10	319	5	607
Holmes	DMA	1	480	7	912
Holmes	DOACS	14	1,770	26	3,363
Holmes	DOC	56	12,453	186	23,661
Holmes	DOT	7	108	2	205
Holmes	HSMV	1	19	0	37
Indian River	DEP	36	2,998	25	13,250
Indian River	DOACS	7	409	3	1,809
Indian River	DOC	43	12,950	107	57,240
Indian River	DOT	6	271	2	1,200
Indian River	FWCC	3	62	1	274
Indian River	UNIV	20	479	4	2,118
Jackson	DCF	88	26,282	393	34,429
Jackson	DEP	50	2,021	30	2,647
Jackson	DJJ	80	18,781	281	24,603
Jackson	DMA	2	946	14	1,239
Jackson	DMS	1	564	8	739
Jackson	DOACS	7	606	9	794
Jackson	DOC	238	44,256	662	57,975

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Jackson	DOT	40	26,636	398	34,893
Jackson	FWCC	11	224	3	294
Jackson	HSMV	5	194	3	254
Jackson	UNIV	29	804	12	1,053
Jefferson	DEP	6	65	1	60
Jefferson	DJJ	1	1,530	25	1,423
Jefferson	DOACS	11	318	5	296
Jefferson	DOC	49	8,384	137	7,797
Jefferson	DOT	8	989	16	920
Jefferson	FWCC	3	6	0	6
Jefferson	UNIV	15	191	3	178
Lafayette	DOACS	6	131	2	125
Lafayette	DOC	69	24,742	405	23,505
Lake	DEP	59	2,547	82	2,165
Lake	DMA	5	1,614	52	1,372
Lake	DOACS	14	325	10	276
Lake	DOC	48	14,586	471	12,398
Lake	DOT	41	8,308	268	7,062
Lake	FWCC	8	768	25	653
Lake	HSMV	3	413	13	351
Lee	DCF	68	41,727	305	310,452
Lee	DEP	100	4,500	33	33,477
Lee	DJJ	10	4,648	34	34,585
Lee	DMA	2	579	4	4,311
Lee	DMS	2	28,219	206	209,951
Lee	DOACS	24	3,281	24	24,411
Lee	DOC	6	980	7	7,294
Lee	DOE	8	297	2	2,210
Lee	DOT	32	4,287	31	31,896
Lee	EDUC	7	277	2	2,061
Lee	FWCC	5	746	5	5,547
Lee	HSMV	10	663	5	4,930
Lee	UNIV	44	2,025	15	15,063
Leon	AHCA	1	55	1	46
Leon	AWI	2	11,809	193	9,920
Leon	DCF	21	3,805	62	3,196
Leon	DEP	90	4,492	74	3,773
Leon	DJJ	11	8,619	141	7,240
Leon	DMA	1	2,728	45	2,292
Leon	DMS	78	565,115	9,255	474,696
Leon	DOACS	45	5,213	85	4,379
Leon	DOC	13	1,236	20	1,039
Leon	DOE	2	23	0	19
Leon	DOH	1	3,600	59	3,024
Leon	DOS	23	8,560	140	7,190

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Leon	DOT	36	10,386	170	8,724
Leon	FDLE	1	85	1	71
Leon	FWCC	13	9,022	148	7,579
Leon	HSMV	16	31,824	521	26,732
Leon	JUD	2	10,898	178	9,155
Leon	UNIV	529	25,573	419	21,481
Levy	DEP	50	1,515	49	2,015
Levy	DOACS	28	1,997	64	2,656
Levy	DOC	16	1,928	62	2,565
Levy	DOT	26	1,053	34	1,401
Levy	FWCC	6	2,019	65	2,686
Levy	HSMV	4	219	7	291
Levy	UNIV	7	257	8	342
Liberty	DEP	18	460	8	833
Liberty	DJJ	3	6,497	106	11,759
Liberty	DOACS	10	95	2	171
Liberty	DOC	69	11,645	191	21,077
Liberty	FWCC	2	19	0	35
Madison	DJJ	3	2,212	36	1,969
Madison	DOACS	6	87	1	77
Madison	DOC	53	10,766	176	9,582
Madison	DOT	9	15,525	254	13,817
Madison	HSMV	5	160	3	142
Madison	UNIV	27	542	9	482
Manatee	DEP	19	1,110	10	4,919
Manatee	DJJ	25	8,696	76	38,524
Manatee	DMA	4	1,631	14	7,227
Manatee	DOACS	13	367	3	1,627
Manatee	DOC	18	1,037	9	4,594
Manatee	DOE	5	118	1	523
Manatee	DOT	6	917	8	4,060
Manatee	EDUC	5	118	1	523
Manatee	FWCC	7	425	4	1,882
Manatee	HSMV	7	1,232	11	5,457
Manatee	UNIV	48	1,705	15	7,553
Marion	AWI	1	1,324	43	1,112
Marion	DCF	3	1,114	36	936
Marion	DEP	71	5,231	169	4,394
Marion	DJJ	26	13,042	421	10,955
Marion	DMA	2	1,887	61	1,585
Marion	DOACS	17	268	9	225
Marion	DOC	140	43,430	1,402	36,481
Marion	DOI1	8	5,184	167	4,354
Marion	DOT	42	4,432	143	3,723
Marion	FWCC	35	1,429	46	1,200

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Marion	HSMV	7	600	19	504
Marion	UNIV	31	904	29	759
Martin	DCF	3	1,323	11	9,118
Martin	DEP	78	3,436	28	23,672
Martin	DJJ	14	2,407	20	16,583
Martin	DOACS	1	50	0	345
Martin	DOC	79	40,525	336	279,218
Martin	DOE	5	118	1	810
Martin	DOT	9	5,740	48	39,551
Martin	EDUC	3	75	1	513
Miami-Dade	DCF	74	27,436	74	342,951
Miami-Dade	DEP	100	5,726	16	71,569
Miami-Dade	DJJ	47	76,861	208	960,758
Miami-Dade	DMA	3	4,358	12	54,477
Miami-Dade	DMS	9	54,719	148	683,992
Miami-Dade	DOACS	25	8,001	22	100,017
Miami-Dade	DOC	197	101,243	274	1,265,535
Miami-Dade	DOE	4	196	1	2,453
Miami-Dade	DOH	1	8,091	22	101,132
Miami-Dade	DOS	1	7,500	20	93,750
Miami-Dade	DOT	117	54,557	148	681,966
Miami-Dade	EDUC	4	196	1	2,453
Miami-Dade	FWCC	2	1,502	4	18,774
Miami-Dade	HSMV	10	4,646	13	58,080
Miami-Dade	JUD	1	8,325	23	104,061
Miami-Dade	UNIV	171	6,728	18	84,102
Monroe	DEP	155	8,737	838	124,770
Monroe	DJJ	1	9,840	944	140,515
Monroe	DMS	3	9,139	877	130,507
Monroe	DOACS	3	160	15	2,285
Monroe	DOC	6	4,928	473	70,377
Monroe	DOS	4	2,237	215	31,951
Monroe	DOT	3	3,118	299	44,529
Monroe	FWCC	10	2,381	228	34,001
Monroe	HSMV	4	872	84	12,457
Monroe	UNIV	4	2	0	29
Nassau	DEP	28	3,115	9	3,333
Nassau	DJJ	8	2,363	7	2,528
Nassau	DOACS	19	1,730	5	1,851
Nassau	DOT	26	11,824	36	12,651
Nassau	HSMV	3	1,034	3	1,106
Okaloosa	AWI	3	434	6	1,980
Okaloosa	DEP	31	1,311	20	5,980
Okaloosa	DJJ	22	8,112	121	36,989
Okaloosa	DMA	1	581	9	2,651

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Okaloosa	DOACS	28	672	10	3,066
Okaloosa	DOC	59	15,252	228	69,550
Okaloosa	DOT	24	1,700	25	7,751
Okaloosa	FWCC	1	8	0	38
Okaloosa	HSMV	3	269	4	1,227
Okaloosa	UNIV	30	808	12	3,686
Okeechobee	DEP	14	705	6	2,968
Okeechobee	DJJ	91	25,434	211	107,079
Okeechobee	DOACS	8	890	7	3,745
Okeechobee	DOC	43	27,305	226	114,953
Okeechobee	DOE	3	160	1	674
Okeechobee	DOT	14	10,588	88	44,574
Okeechobee	EDUC	3	160	1	674
Okeechobee	FWCC	5	317	3	1,333
Okeechobee	HSMV	2	44	0	184
Orange	DEP	76	2,361	35	4,391
Orange	DJJ	34	21,145	318	39,329
Orange	DMA	4	1,913	29	3,557
Orange	DMS	5	50,270	756	93,502
Orange	DOACS	13	437	7	812
Orange	DOC	64	46,100	693	85,746
Orange	DOH	1	1,295	19	2,410
Orange	DOT	51	40,325	606	75,004
Orange	FWCC	9	13	0	25
Orange	HSMV	6	1,006	15	1,872
Orange	UNIV	187	7,043	106	13,101
Osceola	DEP	1	9	0	16
Osceola	DJJ	4	1,572	24	2,877
Osceola	DOACS	6	468	7	857
Osceola	DOC	10	559	8	1,022
Osceola	DOT	35	19,258	289	35,241
Osceola	FWCC	31	315	5	577
Osceola	HSMV	3	271	4	496
Palm Beach	DCF	4	2,998	8	26,143
Palm Beach	DEP	20	1,837	5	16,016
Palm Beach	DJJ	16	19,192	52	167,352
Palm Beach	DMA	2	4,196	11	36,593
Palm Beach	DMS	1	7,611	21	66,370
Palm Beach	DOACS	4	320	1	2,790
Palm Beach	DOC	111	31,060	84	270,840
Palm Beach	DOE	20	932	3	8,123
Palm Beach	DOH	34	18,317	50	159,723
Palm Beach	DOT	67	36,165	98	315,360
Palm Beach	EDUC	20	932	3	8,123
Palm Beach	FWCC	64	5,993	16	52,261

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Palm Beach	HSMV	18	1,807	5	15,756
Palm Beach	JUD	1	5,549	15	48,386
Palm Beach	UNIV	172	6,796	18	59,262
Pasco	DEP	6	132	1	284
Pasco	DJJ	27	5,768	51	12,400
Pasco	DMA	3	599	5	1,288
Pasco	DOACS	10	495	4	1,064
Pasco	DOC	45	19,114	167	41,095
Pasco	DOE	2	76	1	164
Pasco	DOT	19	4,888	43	10,510
Pasco	DVA	1	10,889	95	23,410
Pasco	FWCC	4	6	0	14
Pasco	HSMV	2	512	4	1,101
Pinellas	AWI	1	699	6	2,789
Pinellas	DCF	6	3,193	28	12,741
Pinellas	DEP	50	2,745	24	10,954
Pinellas	DJJ	12	9,221	81	36,793
Pinellas	DMA	4	2,775	24	11,074
Pinellas	DMS	2	20,347	178	81,186
Pinellas	DOC	35	3,425	30	13,666
Pinellas	DOH	5	15,187	133	60,595
Pinellas	DOT	38	11,317	99	45,156
Pinellas	FWCC	27	17,588	154	70,176
Pinellas	HSMV	9	641	6	2,557
Pinellas	UNIV	24	1,096	10	4,374
Polk	AWI	2	1,392	12	2,575
Polk	CITRU	1	2,805	25	5,190
Polk	DCF	5	1,758	15	3,252
Polk	DEP	35	1,080	9	1,998
Polk	DJJ	38	9,754	85	18,044
Polk	DMA	6	5,401	47	9,993
Polk	DMS	2	8,141	71	15,061
Polk	DOACS	56	4,476	39	8,281
Polk	DOC	96	30,512	267	56,447
Polk	DOE	2	16	0	30
Polk	DOH	1	292	3	541
Polk	DOT	60	35,323	310	65,347
Polk	EDUC	2	16	0	30
Polk	FWCC	21	1,854	16	3,430
Polk	HSMV	11	1,052	9	1,946
Polk	JUD	1	2,235	20	4,136
Polk	UNIV	62	2,006	18	3,711
Putnam	DEP	14	900	3	819
Putnam	DMA	2	1,087	3	989
Putnam	DOACS	30	2,170	7	1,975

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Putnam	DOC	36	6,688	20	6,086
Putnam	DOT	12	1,734	5	1,578
Putnam	FWCC	7	530	2	482
Putnam	HSMV	5	621	2	565
Saint Johns	DEP	59	1,772	5	2,941
Saint Johns	DJJ	5	6,294	19	10,448
Saint Johns	DMA	20	19,254	58	31,961
Saint Johns	DOACS	5	157	0	260
Saint Johns	DOE	66	82,510	249	136,966
Saint Johns	DOS	30	3,742	11	6,211
Saint Johns	DOT	30	7,584	23	12,589
Saint Johns	EDUC	2	152	0	252
Saint Johns	FWCC	10	281	1	467
Saint Johns	HSMV	3	235	1	391
Saint Johns	UNIV	17	518	2	860
Saint Lucie	DEP	46	2,193	18	11,313
Saint Lucie	DJJ	10	51	0	264
Saint Lucie	DMA	3	827	7	4,265
Saint Lucie	DMS	1	7,663	63	39,541
Saint Lucie	DOACS	25	5,302	44	27,357
Saint Lucie	DOC	9	573	5	2,957
Saint Lucie	DOE	13	410	3	2,116
Saint Lucie	DOH	1	2,518	21	12,994
Saint Lucie	DOT	44	23,007	191	118,718
Saint Lucie	EDUC	11	367	3	1,894
Saint Lucie	HSMV	2	300	2	1,550
Saint Lucie	UNIV	46	832	7	4,294
Santa Rosa	DCF	6	3,375	50	14,580
Santa Rosa	DEP	6	181	3	783
Santa Rosa	DJJ	28	5,236	78	22,618
Santa Rosa	DOACS	70	3,035	45	13,110
Santa Rosa	DOC	53	26,188	392	113,130
Santa Rosa	DOT	7	1,082	16	4,676
Santa Rosa	FWCC	11	676	10	2,919
Santa Rosa	HSMV	2	152	2	656
Santa Rosa	UNIV	37	774	12	3,344
Sarasota	AWI	1	1,844	16	10,380
Sarasota	DEP	68	3,400	30	19,141
Sarasota	DJJ	10	1,298	11	7,306
Sarasota	DMA	2	2,303	20	12,965
Sarasota	DOACS	3	35	0	195
Sarasota	DOT	43	2,399	21	13,509
Sarasota	FWCC	1	1	0	6
Sarasota	HSMV	4	496	4	2,790
Sarasota	UNIV	59	2,472	22	13,915

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Seminole	DEP	10	242	4	406
Seminole	DJJ	5	1,942	29	3,262
Seminole	DMA	1	579	9	972
Seminole	DOACS	17	1,003	15	1,686
Seminole	DOE	5	63	1	106
Seminole	DOT	33	4,885	73	8,206
Seminole	EDUC	3	17	0	28
Seminole	UNIV	24	449	7	754
Sumter	DEP	24	1,146	37	1,765
Sumter	DOACS	16	454	15	700
Sumter	DOC	71	46,568	1,503	71,714
Sumter	DOE	10	318	10	490
Sumter	DOT	11	10,510	339	16,186
Sumter	EDUC	8	245	8	378
Sumter	FWCC	17	632	20	974
Sumter	UNIV	1	90	3	138
Suwannee	DEP	28	760	12	700
Suwannee	DMA	2	867	14	797
Suwannee	DOACS	20	1,386	23	1,275
Suwannee	DOE	1	12	0	11
Suwannee	DOT	17	1,944	32	1,788
Suwannee	FWCC	1	3	0	3
Suwannee	UNIV	14	492	8	453
Taylor	DEP	19	1,007	16	967
Taylor	DOACS	15	581	10	558
Taylor	DOC	76	22,494	368	21,595
Taylor	DOT	19	3,791	62	3,640
Taylor	FWCC	12	78	1	75
Taylor	HSMV	4	168	3	161
Union	DJJ	5	3,293	54	1,515
Union	DOACS	5	537	9	247
Union	DOC	292	108,598	1,778	49,955
Union	DOT	2	24	0	11
Volusia	AWI	1	719	11	1,293
Volusia	DCF	4	1,144	17	2,058
Volusia	DEP	92	5,209	78	9,377
Volusia	DJJ	12	5,956	90	10,721
Volusia	DMA	6	2,632	40	4,737
Volusia	DMS	1	10,377	156	18,679
Volusia	DOACS	18	792	12	1,425
Volusia	DOC	77	21,598	325	38,876
Volusia	DOE	14	8,025	121	14,446
Volusia	DOT	30	25,714	387	46,284
Volusia	DVA	1	8,225	124	14,805
Volusia	EDUC	4	152	2	274

County	AGENCY	Number of Facilities	Total Exposure [\$x1,000]	Annualized Tornado Wind Loss [\$]	Annualized Hurricane Wind Loss [\$]
Volusia	FWCC	4	25	0	45
Volusia	HSMV	9	1,658	25	2,985
Volusia	JUD	1	9,093	137	16,367
Wakulla	DEP	42	1,543	25	1,744
Wakulla	DOACS	12	130	2	147
Wakulla	DOC	44	20,313	333	22,953
Wakulla	DOT	1	2	0	2
Wakulla	UNIV	16	461	8	521
Walton	DEP	91	5,954	89	21,019
Walton	DJJ	8	148	2	521
Walton	DMA	2	615	9	2,169
Walton	DOACS	6	198	3	699
Walton	DOC	59	14,065	210	49,650
Walton	DOT	27	1,298	19	4,581
Walton	FWCC	1	148	2	523
Walton	HSMV	2	35	1	123
Washington	DCF	1	370	6	866
Washington	DEP	14	351	5	821
Washington	DJJ	11	992	15	2,321
Washington	DMA	2	886	13	2,073
Washington	DOACS	9	184	3	430
Washington	DOC	68	16,381	245	38,331
Washington	DOE	1	30	0	70
Washington	DOT	27	21,138	316	49,462
Washington	EDUC	1	30	0	70
Washington	FWCC	1	2	0	5
Washington	HSMV	1	20	0	47
<b>TOTAL</b>		<b>16,285</b>	<b>4,488,002</b>	<b>61,540</b>	<b>16,162,304</b>

# 4.0

# THE COMPREHENSIVE STATE MITIGATION PROGRAM

# 4.1 STATE MITIGATION STRATEGY

***44 CFR 201.4(c)(3)(i) – The State mitigation strategy shall include a description of State goals to guide the selection of activities to mitigate and reduce potential losses.***

The State of Florida's mitigation effort is geared toward ensuring that the residents, visitors, and businesses in Florida are safe and secure from natural, technological, and human induced hazards by reducing the risk and vulnerability before disaster occurs.

## **4.1.1 Mitigation Goals and Objectives**

The State Hazard Mitigation Plan Advisory Council (SHMPAC) framed the State Hazard Mitigation Goals and Objectives contained in this section during several visioning sessions moderated by staff from the Division of Community Planning. In the first meeting, Team members were provided with a set of mitigation categories developed by the SHMPAC Support Team as an aid in categorizing proposed mitigation activities. The categories covered broad classes of operational necessity such as education and training, coordination between state agencies, coordination with local governments and the private sector and technical assistance. Team members were divided into two moderated groups and asked to identify problems and potential solutions under each category based on their experience.

The Support Team then used the results to rough out a series of goals and objectives, which were presented to the SHMPAC at the next meeting and further refined to their current form over the next two meetings (minutes of these meetings is contained in the SHMPAC Appendix). The Support Team is currently matching existing mitigation programs from the Capabilities Section of the Plan with the appropriate goals and objectives. This allows testing the validity of the projects based on the goals and objectives and the validity of the goals and objectives based on the projects. Where objectives have no implementing programs new programs can be designed and where programs cannot be linked to specific objectives, new objectives can be considered.

The process of identifying mitigation projects is only just beginning with our agency-by-agency review of all programs, plans and policies described in the state capabilities section of this plan. We expect that as we work closer with agency program staff, the goals and objectives listed below will undergo continual modification.

Certain of the objectives or parts of objectives may be accomplished during the coming year. Where the Support Team has identified such objectives, they have been absorbed into the year's work plan as a current year task (see Section 6.2).

## **Goal 1: Enhance and maintain state capability to implement a comprehensive statewide hazard loss reduction strategy**

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

Lead Agency: Division of Emergency Management (DEM)

Support Agency: all agencies with programs, plans and policies that would support/enhance hazard mitigation

Timeline: Within 24 months of the initial plan approval

Objective 1.2: Incorporate State policies into the State Hazard Mitigation Plan and coordinate with Local Mitigation Strategy programs. **Current year task #1**

Lead Agency: Division of Community Planning (DCP)

Support Agency: Policy Evaluation Committee

Timeline: Within 12 months of the initial plan approval

Objective 1.3: As a means of enhancing intra and inter-governmental coordination, establish and support an on-going liaison between Federal, State, Regional and Local Governments as well as the private sector and general public through the State Hazard Mitigation Plan Advisory Team. **Current year task #2**

Lead Agency: DEM

Support Agency: SHMPAT

Timeline: designate a liaison within 6 months of the initial plan approval

Objective 1.4: Integrate the pre- and post disaster mitigation functions with the response and recovery functions of the state's existing Emergency Support Functions (ESFs). **Current year task #3**

Lead Agency: DEM

Support Agency: all agencies with existing Emergency Support Functions

Timeline: Within 12 months of the initial plan approval

Objective 1.5: Design a process for prioritizing state and local projects for mitigation related funding programs. **Current year task #4**

Lead Agency: SHMPAT

Support Agency: Mitigation Prioritization Committee

Timeline: Within 6 months of the initial plan approval

Objective 1.6: Establish a mediation process to resolve conflicts between state agencies' existing plans, programs and mitigation related policies and integrate them into the State Hazard Mitigation Plan. **Current year task #5**

Lead Agency: SHMPAT

Support Agency: Policy Evaluation Committee

Timeline: Within 6 months of the initial plan approval

Objective 1.7: Review and recommend at least annual updates of the state risk and vulnerability assessments.

Lead Agency: SHMPAT

Support Agency: Hazards Analysis Committee

Part 1.7.1: Establish criteria for risk and vulnerability assessment of state-owned critical facilities and infrastructure. **Current year task #6**

Timeline: Within 2 months of the initial plan approval

Part 1.7.2: Update the inventory of state-owned facilities. **Current year task #7**

Timeline: Within 6 months of the initial plan approval

Part 1.7.3: Inventory critical facilities and infrastructure that are leased. **Current year task #8**

Timeline: Within 6 months of the initial plan approval

Objective 1.8: Coordinate funding resources and opportunities among state agencies to assist both state and local sub-grantees to meet the non-federal match requirements for federal mitigation related funding sources

Lead Agency: Division of Emergency Management

Support Agency: all agencies with funding resources available for mitigation measures

Timeline: Ongoing

Objective 1.9: Support the development and use of disaster loss reduction related building codes and standards designed to reduce vulnerability and risk to all hazards.

Lead agency: DCA

Timeline: Ongoing

Objective 1.10: Annually review and update the existing Mitigation Resource Identification Strategy Database. **Current year task #9**

Lead Agency: DEM

Support Agency: Florida State University

Timeline: review and update within 12 month of the ending date of the current update contract

## **Goal 2: Support the development and enhancement of local capability to practice hazard mitigation**

Objective 2.1: Develop guidelines for enhancing local community risk and vulnerability assessments.

Lead Agency: Department of Insurance

Support Agency: Hazards Analysis Committee

Timeline: Within 18 months of the initial plan approval

Objective 2.2: Provide technical assistance to local governments in establishing, enhancing and implementing local-mitigation strategies, as requested.

Lead Agency: DEM

Timeline: Ongoing (DEM planners are assigned to do this on a continual basis - see Section 5.1)

Objective 2.3: Identify effective local regulatory approaches to hazard mitigation. **Current year task #10**

Lead Agency: DCA

Timeline: Within 12 months of the initial plan approval

Objective 2.4: Identify pre-and post disaster mitigation related funding opportunities to local communities throughout the state. **Current year task #11**

Lead Agency: DEM

Support Agency: all agencies with potential funding sources for mitigation measures

Timeline: Within 6 months of the initial plan adoption

Objective 2.5: Identify mitigation Best Management Practices for pre- and post disaster hazards mitigation activities.

Lead Agency: DCP

Timeline: by the ending date of the current contract between DCA and the consultant

Objective 2.6: Encourage the integration of applicable hazards mitigation objectives from the Local Mitigation Strategies into Local Comprehensive Plans.

Lead Agency: DCP

Timeline: beginning with the upcoming Evaluation and Appraisal Report (EAR) process in November 2003.

Objective 2.7: Review and recommend at least annual updates of the local risk and vulnerability assessments. **Current year task #12**

Lead Agency: DEM

Support Agency: Hazards Analysis Committee

Timeline: Within 12 months of each Local Mitigation Strategy's initial approval

**Goal 3: Increase public and private sectors awareness and support for disaster loss education practices as a means of developing a culture of hazard mitigation in Florida.**

Objective 3.1: Create an Education and Outreach Committee of the State Hazard Mitigation Plan Advisory Team to organize and develop a comprehensive statewide mitigation education and outreach strategy. **Current year task #13**

Timeline: Within 2 months of the initial plan approval

Objective 3.2: Conduct a summit for education stakeholders to present and promote statewide mitigation education program.

Lead Agency: Education and Outreach Committee

Timeline: within 18 months of the initial plan approval

Objective 3.3: Conduct a feasibility study of Web-based learning site for Hazard Mitigation.

Lead Agency: Education and Outreach Committee

Support Agency: DEM

Timeline: within 12 months of the initial plan approval

Objective 3.4: Develop a business continuity awareness program designed to educate the business community on the benefits of mitigation in reducing their vulnerabilities and risk to natural and man made hazards. **Current year task #14**

Lead Agency: Education and Outreach Committee

Support Agency: DEM; Hazards Analysis Committee

Timeline: within 12 months of the initial plan approval

Objective 3.5: Develop, and promote outreach strategies designed to educate residents and visitors of Florida's endemic hazards, their associated risk and vulnerabilities, and the applicable mitigation actions.

Lead Agency: Education and Outreach Committee

Timeline: within 24 months of the initial plan approval

Objective 3.6: Identify and incorporate available hazard mitigation education and outreach programs/products into public school education programs.

Lead Agency: Education and Outreach Committee

Timeline: within 24 months of the initial plan approval

Objective 3.7: Establish an ongoing education and outreach effort to educate elected officials on the importance of hazard mitigation to include annual report to the legislature and other appropriate officials.

Objective 3.8: Develop a public awareness campaign on the benefits of pre- and post-disaster mitigation through the dissemination of mitigation success stories.

Lead Agency: Education and Outreach Committee

Timeline: within 24 months of the initial plan approval

Objective 3.9: Develop a strategy for working with the print, electronic and broadcast media on the dissemination of mitigation education and outreach material.

Lead Agency: Education and Outreach Committee

Timeline: within 36 months of the initial plan approval

#### **Goal 4: Reduce Florida's hazard vulnerability through the application of scientific research and development.**

Objective 4.1: Establish partnerships with Florida's public and private research universities to enhance and support their efforts to secure funding, contracts, and opportunities; to develop or enhance research infrastructure; and to assess Florida's vulnerability to natural and anthropogenic hazards in order to develop the means to reduce the potential for damage from their impacts on society.

Part 4.1.1: Establish a Research Committee of SHMPAT members to establish state research needs; adopt research strategies; and formulate a review process for resource allocation. **Current year task #15**

Lead Agency: all researchers with a stake and or an interest in hazards, mitigation and any related fields

Timeline: Within 2 months of the initial plan approval

Part 4.1.2: Partner with Florida Hurricane Mitigation Alliance, a consortium of Florida public universities engaged in scientific research with the objective of developing or implementing mitigation strategies.

Lead Agency: Research Committee

Timeline: Ongoing

Part 4.1.3: Support the formation the Science and Technology Center sponsored by the Florida National Science Foundation dedicated to the study of hurricane sciences and related education and outreach.

Lead Agency: Research Committee

Timeline: Ongoing

Objective 4.2: Establish partnerships with Florida's public and private research universities and public or private science research or resource centers for the purpose of creating a comprehensive archive and a clearinghouse for scientific information, basic and applied knowledge, case studies, engineering studies and design criteria, as well as social and behavioral studies related to hazards, vulnerability and mitigation.

Part 4.2.1: Obtain archive space and dissemination services from Florida's public universities. **Current year task #16**

Lead Agency: Research Committee

Timeline: Within 6 months of the initial plan adoption

Part 4.2.2: Establish a catalog of Florida's hazards and mitigation research studies.

Lead Agency: Research Committee

Timeline: Within 18 months of the initial plan adoption

Part 4.2.3: Establish a web based electronic library.

Lead Agency: Research Committee

Timeline: Within 24 months of the initial plan adoption

Part 4.2.4: Establish access and/or interchange privileges with pertinent resource centers throughout the country and internationally.

Lead Agency: Research Committee

Timeline: Within 24 months of the initial plan adoption

Objective 4.3: Establish a comprehensive state research agenda that will integrate the work of individual research institutions in Florida for the purpose of achieving financial efficiency, promoting collaborative efforts reducing overlapping research, reducing duplication of efforts. Also, develop a review process for resource allocation.

Lead Agency: Research Committee

Timeline: Within 24 months of the initial plan adoption

Objective 4.4: Collaborate with FEMA's Emergency Management Institute and Florida's public and private universities in the development of a higher education curricula primarily designed to educate professionals in emergency management, as well as to integrate hazard mitigation curricula into existing career programs.

Part 4.4.1: Create a memorandum of collaboration with FEMA and Florida public and private universities for designing higher education curriculum for emergency management professionals, including the hazard mitigation and related fields.

Lead Agency: Research Committee

Timeline: Within 24 months of the initial plan adoption

Part 4.4.2: Participate in education program course development.

Lead Agency: Research Committee

Timeline: Ongoing

Task 4.4.3: Participate in focus groups towards the creation of textbooks and other pertinent education material.

Lead Agency: Research Committee

Timeline: Ongoing

Objective 4.5: Foster the continued development and improvement of existing research centers and laboratories within Florida's public research universities by supporting their efforts to secure funding and research contract opportunities, in order to enhance in-state capabilities for conducting hazard mitigation-related research.

Lead Agency: Research Committee

Timeline: Ongoing

## **Goal 5: Protect the state's cultural, economic and natural resources.**

Objective 5.1: Support mitigation initiative that are compatible with the protection of state's cultural, economic and natural resources.

Part 5.1.1: Promote land acquisition programs that support mitigation opportunities compatible with the protection of natural and cultural resources

Lead Agency: DEP

Support Agencies: FWCC, DCA, DFS/Bureau of Property, WMD's

Timeline: Ongoing

Objective 5.2: Encourage the development of drainage improvement systems based on their compatibility with the natural environmental system functions

Lead agency: Department of Environmental Protection (DEP)

Timeline: Ongoing

Objective 5.3: Use the state-clearing house for environmental compliance and protection of natural resources.

Lead agency: Department of Environmental Protection (DEP)

Timeline: Ongoing

## **Goal 6: Reduce the vulnerabilities of state owned facilities and infrastructure to natural and man-made hazards**

Objective 6.1: Establish hazard mitigation priorities for retrofitting of existing state critical facilities and infrastructure based upon risk and vulnerability assessment. **Current year task #17**

Lead Agency: SHMPAT

Support Agency: Mitigation Prioritization Committee

Timeline: Within 2 months of the initial plan adoption

Objective 6.2: Ensure that state facilities and infrastructure are located, designed and constructed to complement/support local priorities as defined in the Local Mitigation Strategies. **Current year task #18**

Lead Agency: Department of Management Services

Support Agency: Hazards Analysis Committee

Timeline: Within 6 months of the initial plan adoption

## **4.1.2 Concept of Operations-Integrated Mitigation Programs Concept**

### **State Primary Mitigation Programs (Pre-Disaster)**

The State of Florida has developed an integrated mitigation program concept in which several mitigation programs have been combined into a single unit. This unit is divided into two Sections; (1) Mitigation Section, which is managed by the State Hazard Mitigation Officer and (2) Floodplain Management Section, which is managed by the State NFIP Coordinator. This merging of mitigation programs helps institutionalize procedures to emphasize pre-disaster activities that mitigate the loss of life and property, as well as to identify potential post-disaster mitigation opportunities. This results in more focused programs, improved coordination, and ultimately reduced costs for safer and healthier communities. The principle ongoing mitigation programs and activities can be divided into two functional groups, pre- and post disaster. The primary pre-disaster programs are:

- 1.) State Hazard Mitigation Planning** – The State Hazard Mitigation Officer is responsible for developing and implementing a overall state strategy designed to reduce the state’s risk and vulnerability to all hazards. The State Hazard Mitigation Officer is assisted with this very important task by the State Hazard Mitigation Plan Advisory Council. The State Hazard Mitigation Plan Advisory Council’s primary function is to assist the Division with the development, implementation and maintenance of the State Mitigation Plan, and maximize the leveraging potential of all state mitigation related resources. The State Hazard Mitigation Plan is updated annually or in the aftermath of a disaster at the direction of the State Mitigation Officer. Additionally, the mitigation staff provides technical assistance to communities on the development, implementation, and maintenance of Local Mitigation Strategies. The State Mitigation Officer will review and revise the Hazard Mitigation Grant Program Administrative Plan annually and after the disaster as necessary. If no revisions are required, the State Mitigation Officer will so notify the Federal Coordinating Officer and the Deputy State Coordinating Officer. The Mitigation Section also provides ongoing technical assistance to state agencies, local governments, homeowners, business owners and the general public on mitigation related issues and opportunities. The Mitigation Section work in concert with the State Hurricane Planning Program to assure a coordinated effort in addresses ways to reduce the State’s vulnerability and risk to hurricane related hazards.

- 2.) **The National Flood Insurance Program** - The Floodplain Management Section provide technical assistance to the public and communities on the National Flood Insurance Program. The National Flood Insurance Program provides flood insurance to communities that agree to implement land use planning and construction requirements to reduce flood damage in their jurisdiction. These land use and construction requirements apply to all new construction and substantial improvements to existing structures in the community's Special Flood Hazard Areas. The Floodplain Management Section provides technical to local governments on the Map Moderation Program as well as assist the state's Dam Safety Program. Additionally, the Floodplain Management Section provides technical assistance to local communities on the Community Rating System. The Community Rating System is an integral part of the National Flood Insurance Program. Through reduced flood insurance premiums, the Community Rating System provides incentives to communities, that go beyond the minimum flood plain management requirements established through the National Flood Insurance Program.
- 3.) **The Flood Mitigation Assistance Program** - The Floodplain Management Section manages the Flood Mitigation Assistance Program. This program makes federal funds available pre-disaster to fund mitigation projects in communities participating in the National Flood Insurance Program. These funds have a 25 percent non-federal match requirement. The overall goal of the Flood Mitigation Assistance Program is to fund cost effective measures that reduce or eliminate the long-term risk of flood damage to National Flood Insurance Program insurable structures. This is accomplished through the reduction of the number of repetitively or substantially damaged structures.
- 4.) **The Pre-Disaster Mitigation Grant Program** - The Mitigation Section manages the Pre-Disaster Mitigation Grant Program. This program makes federal funds available pre-disaster to fund mitigation projects in communities participating in the National Flood Insurance Program. The overall goal of the Pre-Disaster Mitigation Grant Program is to fund cost effective measures that reduce or eliminate the long-term risk of damage from natural hazards. The program provides State funds equal to 20 percent of the total federal disaster expenditures in the aftermath of a Presidential Declared disaster. These funds have a 25 percent non-federal match requirement, and are distributed as grants to the communities affected by the disaster to implement the mitigation projects identified in the local mitigation strategy.
- 5.) **Residential Construction Mitigation Program**-The Mitigation Section manages the Residential Construction Mitigation Program. In 1999, the Florida Legislature passed the Bill Williams Residential Safety and Preparedness Act, creating the Hurricane Loss Mitigation Program,

(section 215.559, Florida Statutes), with an annual appropriation of \$10 million. This program makes state funds available pre-disaster to fund wind-related mitigation activities. The overall goal of the program is to fund activities that will improve the wind resistance of residences and mobile homes and other efforts designed to prevent losses or reduce the cost of disasters, reduce the cost of rebuilding after a disaster and its associated impact on the insurance industry.

### **State Mitigation Activities (Post-Disaster)**

Post-disaster mitigation activities at the Disaster Field Office require a well-orchestrated and coordinated effort among the various levels of governments. Under the Federal Response Plan, a Deputy Federal Coordinating Officer for Mitigation will be appointed for each Presidential Declared disaster. The Deputy Federal Coordinating Officer for Mitigation will have a staff composed of hazard mitigation and flood plain management specialists. One of the major tasks assigned to the Deputy Federal Coordinating Officer for Mitigation is to assure that mitigation disaster operations are integrated and unified with the State and local recovery efforts. The State Mitigation Officer, working under the direction of the Deputy State Coordinating Officer for Recovery should work in concert with the Deputy Federal Coordinating Officer for Mitigation to assure that the State is aware of and takes advantage of all available mitigation opportunities. The State Coordinator for the NFIP serves as the Deputy State Hazard Mitigation Officer.

- 1.) **Mitigation Preliminary Damage Assessment** - Upon request for assistance by a community, the State Mitigation Officer will assign mitigation personnel to assist the community in conducting a Mitigation Preliminary Damage Assessment. The purpose of the Mitigation Preliminary Damage Assessment is to identify the causes of specific disaster related damage in order to determine the appropriate mitigation measures. This assessment is forwarded to the appropriate Local Mitigation Strategy committee and the mitigation staff in the Disaster Field Office.
- 2.) **Mitigation Assessment Report** - The State Mitigation Officer coordinates with the Deputy Federal Coordinating Officer for Mitigation to develop a mitigation assessment report which identifies appropriate mitigation measures and highlights the mitigation priorities as determined by the local mitigation strategies in the affected counties. These priorities and measures then guide the use of State and federal funds for mitigation purposes. The Report is also the appropriate plan to identify any recommended changes to the State Hazard Mitigation Plan based on lessons learned from the disaster.
- 3.) **Hazard Mitigation Grant Program**— The Mitigation Section manages the Hazard Mitigation Grant Program. This program makes federal funds available post-disaster to fund mitigation projects in communities

participating in the National Flood Insurance Program. The overall goal of the Hazard Mitigation Grant Program is to fund cost effective measures that reduce or eliminate the long-term risk of flood damage to from natural hazards. The program provides State funds equal to 20 percent of the total federal disaster expenditures in the aftermath of a Presidential Declared disaster. These funds have a 25 percent non-federal match requirement, and are distributed as grants to the communities affected by the disaster to implement the mitigation projects identified in the local mitigation strategy.

- 4.) **Post-disaster Mitigation Technical Assistance** Coordinate with the Deputy State Coordinating Officer and the State Recovery Officer to assure that the mitigation opportunities provided under the Individual Assistance Minimization Program are realized. The Minimization Program is designed to fund low cost activities that can be used to reduce future disaster losses to a residential structure. The minimization program offers grants to eligible homeowners based on 25 percent of the total Individual and Family Grant award received by the homeowner, for a maximum award of \$5,000.
  
- 5.) **Public Assistance Program** This Program assures that the mitigation opportunities provided under Section 404 of the Stafford Act realized. Also, Section 406 of the Stafford Act provides for direct federal assistance for repairs and improvements to eligible damaged public facilities. Mitigation measures (improvements) must be identified in the Damage Survey Reports. The award of Section 406 hazard mitigation projects is at the discretion of the Federal Emergency Management Agency Regional director.  
The State Mitigation Officer will designate staff to support mitigation outreach at established Disaster Recovery Centers, and at Reconstruction Information Centers. The State Mitigation Officer will designate staff to assist communities in completing their mitigation Preliminary Damage Assessment reviewing and updating local mitigation strategies, identifying mitigation success stories, and potential mitigation grand fund projects.
  
- 6.) **Long Term Redevelopment Activities** The Department of Community Affairs administers a variety of programs that support pre-disaster, post-disaster, and mitigation activities. These programs include, but are not limited to a residential construction mitigation program and a resource identification strategy. These programs are designed to help minimize the impact of disasters and to address local unmet needs identified after a disaster.

### **4.1.3 State Repetitive Loss Properties Strategy**

The State of Florida has formulated a strategy to effectively address the significant negative impact of repetitive loss properties on Florida's families, economy and property. A repetitive loss property is a property that is covered by a NFIP insurance policy and has received two or more flood claims of at least \$1000 over a rolling ten-year period. The primary objective of this strategy is two fold; (1) eliminate or reduce the total number of repetitive loss properties in Florida, and (2) increase awareness of the negative impact of repetitive loss properties and the benefits of mitigation actions. Therefore, the state's strategy includes a two-prong approach with a primary focus on public education and mitigation. A more detail discussion of the state's strategy to address severe repetitive loss properties pursuant to Bunning-Bereuter-Blumenauer Reform Act of 2004 is provided in the Severe Repetitive Loss Appendix.

#### **Education Approach:**

- The state has developed outreach and educational materials on repetitive loss properties and the Community Rating System. This information is made available for all interested parties for display and dissemination
- The state has developed a formal workshop/presentation for local officials and homeowners on retrofitting options and opportunities for repetitive loss properties.
- The state will collaborate with interested local governments to conduct public forums and workshops for homeowner associations and related groups. These outreach activities will educate citizens on the impact of repetitive loss properties in their communities and flood insurance premiums.

#### **Mitigation Approach:**

- On an annual basis, (if funds are available) the state in coordination with local communities will make mitigation offers to high-priority target repetitive loss properties based upon FMA priorities outlined in Section 5.3.
- Provide an annual report to FEMA on the total number of repetitive and target repetitive loss properties retrofitted in the state. This report will also include a discussion on the status of offers if any made to owners of severe repetitive loss properties.

Table 4.1 provides a listing of repetitive and targeted repetitive loss properties and their accompanying dollar losses paid out by county. As of April 2004, Florida has 9008 repetitive loss properties totaling \$420,389,550. Broward, Dade, Pasco and Pinellas Counties represent over 49% of the total repetitive loss properties in the State. While Pinellas, Manatee, Sarasota and Dade Counties have over 48% of the total targeted repetitive loss structures in Florida.

Table 4.1 Repetitive and Target Repetitive Loss Properties By County

County	Number of Repetitive Loss Properties	Dollar Value of Losses	Number of Target Repetitive Loss Properties	Dollar Value of Losses
Alachua	1	47,804	0	0
Baker	4	128,480	0	0
Bay	174	25,008,566	8	462,307
Bradford	5	86,276	0	0
Brevard	22	622,978	1	220,927
Broward	431	16,382,742	38	5,749,561
Calhoun	9	602,846	1	207,6710
Charlotte	118	3,853,979	39	1,475,937
Citrus	311	17,623,450	36	1,399,2587
Clay	47	1,997,462	8	840,681
Collier	34	1,152,887	3	54,455
Colombia	12	275,123	1	32,630
Dade	2626	114,105,908	64	8,174,154
DeSoto	22	1,089,979	4	Figures not available
Dixie	63	2,491,907	3	148,177
Duval	157	11,126,888	25	3,660,549
Escambia	396	25,596,734	41	2,514,730
Flagler	1	10,697	0	0
Franklin	119	4,167,234	5	200,537
Gadsden	2	42,836	0	0
Gilchrist	19	375,042	0	0
Glades	0	0	0	0
Gulf	42	2,197,925	4	125,282
Hamilton	15	271,947	1	24,518
Hardee	0	216,525	3	147,701
Hendry	4	0	0	0
Hernando	114	5,508,990	5	516,159
Highlands	1	11,217	0	0
Hillsborough	348	13,197,510	42	2,626,427
Holmes	21	855,520	0	0
Indian River	16	781,384	0	0
Jackson	0	0	0	0

County	Number of Repetitive Loss Properties	Dollar Value of Losses	Number of Target Repetitive Loss Properties	Dollar Value of Losses
Jefferson	0	0	0	0
Lafayette	19	585,166	0	0
Lake	1	19,385	0	0
Lee	172	4,648,909	25	876,814
Leon	45	2,465,392	7	674,933
Levy	67	3,102,435	10	358,437
Liberty	0	0	0	0
Madison	8	312,847	4	53,706
Manatee	366	13,371,627	77	4,340,092
Marion	1	44,026	0	0
Martin	53	2,301,994	1	Figures not available
Monroe	224	8,372,112	15	935,314
Nassau	11	566,681	0	0
Okaloosa	93	7,006,279	3	189,725
Okeechobee	0	0	0	0
Orange	7	241,466	1	84,824
Osceola	3	22,888	0	0
Palm Beach	154	6,136,885	25	719,487
Pasco	598	27,641,074	38	2,320,853
Pinellas	1327	58,643,279	207	12,281,656
Polk	12	756,998	0	0
Putnam	5	147,496	0	0
Santa Rosa	124	6,062,014	13	531,249
Sarasota	318	14,848,410	66	2,001,270
Seminole	4	201,865	0	0
St. Johns	46	2,002,939	5	209,388
St. Lucie	22	989,772	3	392,880
Sumter	1	36,660	0	0
Suwannee	10	240,756	2	115,544
Taylor	17	632,528	2	Figures not available
Union	1	70,947	0	0
Volusia	50	1,471,273	1	97,040
Wakulla	91	2,694,960	11	348,922
Walton	61	3,874,639	8	866,324
Washington	5	221,517	1	17,521
Statewide Totals	9008	420,389,550		

## 4.2 STATE CAPABILITIES

***44 CFR 201.4(c)(3)(ii) – The State mitigation strategy shall include a description of the State's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the Area, including an evaluation of the State laws, regulations, policies and programs related to hazard mitigation as well as to development in hazard prone areas.***

The State Capabilities Section contains an analysis of the state's ability to carry out mitigation activities. This involves identifying strengths and weaknesses, and where weaknesses are identified remedial actions will be identified in the form of recommended actions and assignments made to follow up.

The first section in this analysis deals with the legal structure that enables specific mitigation actions. The next section is an analysis of state and regional agencies to identify programs and policies that have either a direct or indirect impact on mitigation. Next is the analysis section where laws, rules, programs and policies identified in the previous sections are grouped in a tabular format under the type of hazard to which they best relate. In addition, the table references the goals and objectives implemented by the program or policy, the relation to local planning and any specific analysis undertaken, a discussion of the strengths, weaknesses and any remedial actions recommended or implemented. A full description of current efforts at analysis and findings is provided in the Section 4.4 (Mitigation Measures). In addition to a description of the analysis, the table serves to demonstrate the link between the project, the vulnerability and risk analysis, the goals and objectives and local planning.

### **4.2.1 Legislation and Rules**

This section describes the appropriate legislation and rules that directly impact mitigation. Each Agency has enabling legislation that directs its activities and this legislation will be reviewed and where appropriate analyzed for effectiveness and a part of the analysis of Agency programs. As legislation is identified that has an impact, positive or negative, it will be added to this section. As a first step, the analysis focuses on legislation and rules dealing with Emergency Management and Growth and Development.

#### **Public Law 93-288, the Robert T. Stafford Act – the State Hazard Mitigation Plan (322 Plan)**

Section 322 of the Stafford Act requires states to develop a hazard mitigation plan. The Florida Hazard Mitigation Plan establishes a comprehensive program for DCA to effectively mobilize and coordinate the State's services and resources to make Florida's

communities more resistant to the human and economic impacts of disasters. This plan serves as DCA's operational and programmatic guidance to promote the national and state-based goals and objectives of the "National Mitigation Strategy," as coordinated by FEMA.

### **Chapter 161, Florida Statutes - Coastal Zone Protection**

Part III of Chapter 161, Florida Statutes, is known as the "Coastal Zone Protection Act of 1985." The Act recognizes that coastal areas play an important role in protecting the ecology and the public health, safety, and welfare of the citizens of the state; that in recent years the coastal areas have been subjected to increasing growth pressures; and that unless these pressures are controlled, the very features which make coastal areas economically, aesthetically, and ecologically rich will be destroyed. Coastal areas form the first line of defense for the mainland against both winter storms and hurricanes. The dunes of coastal areas perform valuable protective functions for public and private property, and placement of permanent structures in these protective areas may lead to increased risks to life and property and increased costs to the public. Coastal areas often protect lagoons, salt marshes, estuaries, bays, marine habitats, and the mainland from the direct action of ocean waves or storm surges; absorb the forces of oceanic activity on their seaward sides and protect calmer waters and stable shores to their landward sides; and are dynamic geologic systems with topography that is subject to alteration by waves, storm surges, flooding, or littoral currents. There is a tremendous cost to the state for post-disaster redevelopment in the coastal areas and preventive measures should be taken on a continuing basis in order to reduce the harmful consequences of natural and manmade disasters or emergencies. This Act authorizes management of the most sensitive portion of the coastal zone through the imposition of strict construction standards in order to minimize damage to the natural environment, private property, and life. This statute is applicable in both pre- and post-disaster situations.

### **Chapter 163, Florida Statutes - Local Comprehensive Planning**

Ch. 163 FS outlines the requirements and optional elements for a county's local comprehensive plan. Each of Florida's 470 local governments is to adopt a comprehensive plan to guide growth and development. The comprehensive planning process guides development and limits growth in high hazard areas, especially along the coast. Florida's growth management laws (F.S. 163.3178) require the state and local governments to have a comprehensive plan, which for coastal communities includes a coastal management element. The purpose of this element is to restrict development activities that damage or destroy coastal resources, and protect lives and property. The Legislature limits public expenditures in areas that are subject to destruction by natural disasters. All coastal management elements must have a component that outlines principles for hazard mitigation. They must consider the capability to safely evacuate the density of coastal population proposed in current and future land-use plan elements. Additionally, a designated high-hazard coastal area,

which is a Category 1 evacuation zone, needs to be identified in the coastal element. This statute is applicable in both pre- and post-disaster situations.

### **Chapter 186, Florida Statutes – State and Regional Planning**

Ch. 186 FS sets out the growth management portion of the state comprehensive plan. The legislature finds that “issues of public safety, education, health care, community and economic development and redevelopment, protection and conservation of natural and historic resources, transportation, and public facilities transcend the boundaries and responsibilities of individual units of government, and often no single unit of government can plan or implement policies to deal with these issues without affecting other units of government.” The State’s planning process provides direction for the delivery of governmental services, a means for defining and achieving the specific goals of the State, and a method for evaluating the accomplishment of those goals. Included in the State Comprehensive Plan is a Growth Management portion. This section is strategic providing guidance for state, regional, and local actions necessary to implement the state comprehensive plan with regard to the physical growth and development of the State. This statute is applicable in both pre- and post-disaster situations.

### **Chapter 187, Florida Statutes - The State Comprehensive Plan**

State Comprehensive Plan provides long-range policy guidance for the orderly social, economic, and physical growth of the state. The Florida Legislature reviews it biennially, and implementation of its policies requires legislative action unless otherwise specifically authorized by the constitution or law.

The State Comprehensive Plan is intended to be a direction-setting document. Its policies may be implemented only to the extent that financial resources are provided pursuant to legislative appropriation or grants or appropriations of any other public or private entities. The plan does not create regulatory authority or authorize the adoption of agency rules, criteria, or standards not otherwise authorized by law. The goals and policies contained in the State Comprehensive Plan shall be reasonably applied where they are economically and environmentally feasible, not contrary to the public interest, and consistent with the protection of private property rights. The plan shall be construed and applied as a whole, and no specific goal or policy in the plan shall be construed or applied in isolation from the other goals and policies in the plan. This statute is applicable in both pre- and post-disaster situations.

### **Chapter 252, Florida Statutes (State Emergency Management Act) - Comprehensive Emergency Management Plan (CEMP)**

Ch. 252 FS mandates the development of the Florida Comprehensive Emergency Management Plan (The Plan). The Plan establishes a framework through which the State of Florida prepares for; responds to; recovers from; and mitigates the impacts of a wide variety of disasters that could adversely affect the health, safety and/or general welfare of the residents of the State. The Plan provides guidance to state and local

officials on procedures, organization, and responsibilities; and provides for an integrated and coordinated local, state and federal response.

This is an operations-based plan that addresses evacuations; sheltering; post-disaster response and recovery; deployment of resources; communications, and; warning systems. The Plan calls for annual exercises to determine the ability of state and local governments to respond to emergencies. The Plan also defines the responsibilities of state agencies and volunteer organizations.

The Plan describes the basic strategies, assumptions and mechanisms through which the state will mobilize resources and conduct activities to guide and support local emergency management efforts through preparedness, response, recovery, and mitigation. To facilitate effective operations, the Plan adopts a functional approach that groups the types of assistance to be provided into 17 Emergency Support Functions. Each Emergency Support Function is headed by a lead agency or organization, which has been selected based on its authorities, resources, and capabilities in that functional area. Additionally, the Plan contains a Mitigation Annex which details state's pre- and post-disaster mitigation operations and related strategies.

The Lead Agency appoints an Emergency Coordinating Officer to manage that function in the State Emergency Operations Center. The Emergency Coordinating Officers and members of the Division of Emergency Management form the State Emergency Response Team. The State Emergency Response Team serves as the primary operational mechanism through which State assistance to local governments is managed. State assistance will be provided to impacted counties under the authority of the State Coordinating Officer, on behalf of the Governor, as head of the State Emergency Response Team. This statute is applicable in both pre- and post-disaster situations.

### **Chapter 380, Florida Statutes**

Part I of Chapter 380, Florida Statutes is known as "The Florida Environmental Land and Water Management Act of 1972." Its intent is to protect the natural resources and environment of Florida as provided in s. 7, Art. II of the State Constitution, ensure a water management system that will reverse the deterioration of water quality and provide optimum utilization of limited water resources, facilitate orderly and well-planned development, and protect the health, welfare, safety, and quality of life of the residents of this state. In order to accomplish these purposes, it was necessary for the state to establish land and water management policies to guide and coordinate local decisions relating to growth and development. Local governments Implement these state land and water management policies through existing processes for the guidance of growth and development.

Part II is called the "Florida Coastal Management Act." For planning and developing coordinated projects and initiatives for coastal resource protection and management, the coastal zone is considered to be the geographical area encompassed by the 35

Florida coastal counties listed in the Final Environmental Impact Statement for the Florida Coastal Management Program and the adjoining territorial sea. Under authority of this statute, projects landward and seaward of the 35 coastal counties are reviewed for consistency with the Florida Coastal Management Program. The program coordinates state governmental activities related to the protection, preservation, and development of Florida's natural, cultural, and economic coastal resources. A network of 10 agencies implements the program. A 15-member Governor's Coastal Advisory Committee advises the Governor and the Legislature on coastal management issues and program implementation.

Part III may be cited as the "Florida Communities Trust Act." This statute finds that the conservation of natural areas is vital to the state's economy and ecology. The creation of greenways; expansion of green spaces; enhancement of recreation areas; and protection and restoration of urban lakes, rivers, and watersheds in the urban areas of this state are necessary to link populated areas with natural areas, preserve unique cultural and heritage sites, provide land for recreational opportunities to enhance the health and well-being of the urban residents of the state and improve water quality. The Act recognizes that the primary responsibility for establishing well-planned land use rests at the local government level through the implementation of comprehensive plans. It also recognizes that many of the goals and objectives of these comprehensive plans will not be met through regulation, but require creative and innovative action to ensure their accomplishment. Therefore, the Florida Communities Trust is established as a non-regulatory agency that assists local governments in bringing local comprehensive plans into compliance and implementing the goals, objectives, and policies of the conservation, recreation and open space, and coastal elements of local comprehensive plans, or in conserving natural resources and resolving land use conflicts by:

- (a) Responding promptly and creatively to opportunities to correct undesirable development patterns, restore degraded natural areas, enhance resource values, restore deteriorated or deteriorating urban waterfronts, reserve lands for later purchase, participate in and promote the use of innovative land acquisition methods, and provide public access to surface waters.
- (b) Providing financial and technical assistance to local governments, state agencies, and nonprofit organizations to carry out projects and activities and to develop programs authorized by this part.
- (c) Involving local governments and private interests in voluntarily resolving land use conflicts and issues.
- (d) Acquiring or disposing of real and personal property or any interest therein when necessary or appropriate to protect the natural environment, provide public access or public recreational facilities, preserve wildlife habitat areas, provide access for managing acquired lands, or otherwise carry out the purposes of the Act. This statute is applicable in both pre- and post-disaster situations.

## **Rule 9B-74 - The Florida Building Code**

The 1998 Florida Legislature passed a building code reform law that mandated a single statewide Florida Building Code. On March 1, 2002, the Code replaced more than 400 local codes and is designed to make the local building process more efficient, increase accountability, bring new and safer products to the market, increase consumer confidence and better protect the residents of this natural disaster prone state. The Code integrates minimum plumbing, mechanical, gas, electrical and building codes with public school, energy and accessibility codes, and state regulations for facility licensing. The Code correlates with the fire protection and life safety requirements of the Florida Fire Protection Code. This statute is applicable in both pre- and post-disaster situations.

## **Chapter 9G-22, Florida Administrative Code**

The Hazard Mitigation Grant Program (HMGP) is a state administered federal program that helps local communities that have been damaged by natural disasters to accomplish meaningful mitigations measures. Chapter 9G-22, Florida Administrative Code, describes the process for application, project selection and distribution of funds under the HMGP. The rule requires local jurisdictions to develop a Local Mitigation Strategy (or Plan) in order to receive HMGP funding. The plan must contain a long-term recovery strategy and identify viable mitigation projects that are based on potential economic loss avoidance and overall risk reduction. The Local Mitigation Strategies in turn form the foundation of Florida's statewide mitigation program. This statute is applicable in both pre- and post-disaster situations.

## **Chapter 9J-5, Florida Administrative Code**

Rule 9J-5, FAC establishes minimum criteria for the preparation, review and compliance of comprehensive plans and amendments. Rule 9J-5, FAC, establishes criteria implementing the legislative mandate that local comprehensive plans be consistent with the appropriate strategic regional policy plan and the State Comprehensive Plan, and recognizes the major role that local government will play in accordance with the mandates in accomplishing the goals, and policies of the appropriate comprehensive policy plan and the state Comprehensive Plan. This statute is applicable in both pre- and post-disaster situations.

## **Chapter 9G-6, Florida Administrative Code**

Chapter 9G-6, FAC establishes the compliance criteria, as well as the compliance review procedures for the County and Municipal Emergency Preparedness Management Plan (CEMP) that consist of provisions addressing aspects of

preparedness, response, recovery and mitigation. Pursuant to Chapter 252.35 (b), the Chapter 9G-6 ensures that county plans (and the municipal plans for those municipalities that elect to establish emergency management programs) are coordinated and consistent with the state comprehensive emergency management plan. This statute is applicable in both pre- and post-disaster situations.

### **4.2.2 State Agency Programs and Policies**

While the Department of Community Affairs will serve in a coordinating and leadership role for the Florida Enhanced Hazard Mitigation Plan, it is emphasized that many other departments, agencies and even private organizations have programs, resources and capabilities that will be valuable to the implementation of the efforts by state government to improve the disaster resistance of Florida's communities. Some programs conducted by Florida government may not have been mandated or designed for specific hazard mitigation purposes, but are complimentary to reducing the human and economic costs of disasters. The SHMPAC, using staff from the Mitigation Section is undertaking a complete review of all state and regional agency activities to identify all programs and policies that have some impact on mitigation. To complete this task it is necessary to conduct interviews with Agency staff and is projected to require nine months from approval date of this plan to complete. As mitigation related programs and policies (and implementing legislation) are identified, they will be included in this section and SHMPAC will assign committees to carryout an analysis of their impact or effectiveness. A listing of state agencies and a general description of their missions are contained in the Agency Appendix. The agencies and/or programs described below have been identified as having mitigation impacts.

Table 4.2.2 provides an overview of State Agencies and the respective hazards for which their programs and policies impact local governments in both pre-and post-disaster situations.

**Table 4.1.2 Agency Mitigation Responsibilities by Hazards**

Agency	DACS	DCA	DEP	DFMI	DMS	DOS	DOT	DOH	FDLE
<b>Hazards</b>									
<b>Floods including Dam Failures</b>	✓	✓	✓	✓	✓	✓	✓	✓	
<b>Hurricanes and Coastal Storms</b>	✓	✓	✓	✓	✓	✓	✓	✓	
<b>Severe Storms and Tornadoes</b>	✓	✓	✓	✓	✓	✓	✓	✓	
<b>Wildfire</b>	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Drought and Extreme Heat</b>	✓	✓	✓	✓	✓	✓	✓	✓	
<b>Winter Storms and Freezes</b>	✓	✓	✓	✓	✓	✓	✓	✓	
<b>Erosion</b>	✓	✓	✓			✓	✓	✓	
<b>Sinkholes, Landslides and Seismic Events</b>	✓	✓	✓	✓	✓	✓	✓	✓	
<b>Terrorism</b>	✓	✓	✓	✓	✓		✓	✓	✓
<b>Technological</b>	✓	✓	✓	✓			✓	✓	✓
<b>Mass Immigration</b>	✓	✓	✓				✓	✓	✓

## **Department of Agriculture and Consumer Services, Division of Forestry**

The Florida Division of Forestry is responsible for the protection and management of Florida's forest resources. The Division is mandated by the State of Florida to be capable of mitigating and suppressing wildfires on over 34 million acres of state and private lands. Additionally, the Division responds to emergencies around the State such as floods, hurricanes, and other incidents. The Division is responsible for the management of 31 State Forests, which total over 890,000 acres and cooperates with other State and Local agencies for the management of an additional 518,385 acres. The agency activities discussed below are applicable in both pre- and post-disaster situations.

### **Florida Wildland Fire Risk Assessment**

The Florida Division of Forestry is developing a statewide wildland fire risk assessment for Florida. This application will be able to assist Florida's land management community in many ways, but the most important goal is to identify those areas in Florida that should be targeted for immediate fuels mitigation action on the part of the DOF, and the land management community in general. The risk assessment includes a fuels database based on the 13 fire behavior prediction models (FBPM), a comprehensive fire history database from the DOF, Department of Defense, the US Forest Service, Park Service and Fish and Wildlife Service, and values at risk, including Urban Interface areas, forest plantations, threatened and endangered species, and utility transmission lines among others. Parts of the overall database will be used to facilitate other projects. For example, now that Florida has a fuels database, a wildland fire-modeling program (Farsite) can operate to more accurately project wildland fire behavior in both prescribed fire and wildfire situations. The Wildland Fire Risk Assessment has moved Florida ahead of many states in this country by producing an assessment on a resolution that has never been done before on a statewide basis.

### **Florida Firewise Communities Program**

This program is an interagency planning and mitigation program led by the Division of Forestry to address the growing problem of wildfire in the wildland/urban interface. The objectives of the Florida Firewise Communities Program are to educate citizens and community leaders on the threat of interface fire and the need for Florida citizens at all levels to accept a certain level of responsibility as partners with the fire service community in mitigation and fire prevention. Firewise Communities workshops are held in local counties and municipalities so participants can see how to apply wildfire mitigation practices to their own communities. A Florida Firewise Communities Steering Committee coordinates statewide implementation of the program.

## **Firewise Website ([www.firewise.org](http://www.firewise.org))**

Representing a successful partnership of private and government agencies, the Division of Forestry maintains the Florida Firewise Communities website. Additional information supporting the Florida Firewise Communities program can be found on the Division of Emergency Management's website, [www.floridadisaster.org](http://www.floridadisaster.org)

## **Communication Tools such as Publications and Videos**

Firewise concepts on landscaping, building, firefighter safety and other topics are available online at [www.firewise.org](http://www.firewise.org) as well as through other outlets. The latest project is a television documentary called "Keeper of the Flame," which puts America's fire history and interface fire problem in context. A brochure titled "Are You Firewise Florida?" and posters relating to the Firewise program have been developed to spread the Firewise Communities message.

## **Technical Assistance to Communities**

As the Firewise Communities Program spreads across the state, more communities and neighborhoods are looking to the Division of Forestry as well as other local and state agencies for assistance. This includes Risk Assessment maps, which are soon to be available on line at [www.fl-dof.com](http://www.fl-dof.com). This mapping technology will show the wildfire risk in local communities.

## **Firewise Communities USA Recognition Program**

Communities (neighborhoods and organized subdivisions) can earn national recognition of their work to improve their planning and mitigation of fire hazards. Currently, there are three pilot communities (Wedgfield in Orange County; Hunters Ridge in Ormond Beach; and Palm Coast in Flagler County) in the Firewise Communities USA recognition program.

## **Workshops, Training Sessions and Demonstration Events**

The State of Florida has adopted the Firewise Communities Program and workshops as part of its overall mitigation planning efforts. The Division of Forestry is coordinating these local Firewise workshops that are tailored for and specific to Florida. Participants of these workshops include local planners, fire officials, emergency managers, developers, homeowners, insurance representatives and elected officials. Existing materials and program information are needed to support this continuing program. All of the material is readily available for purchase from the National Fire Protection Association that is the managing group for the national working team. National participants are provided with a wealth of Firewise Communities material, including workbooks, NFPA 299 *Standard for the Protection of Life and Property from Wildfire*, hazard assessment tools, community safety education products, and the computer-aided simulation exercise that engages community leaders in local decision-making for

creating a Firewise Community. These activities are focused on reducing wildfire risk to property and lives through better community design and retrofit and preparedness planning. Launched at the national level in the fall of 1999, the Firewise Communities Workshop Series provide the catalyst for local, regional, and state efforts. As of January 2002, fourteen workshops in the state of Florida, coordinated by the Division of Forestry, have already trained over 700 citizens and community leaders, fire and emergency management officials, and land use planners.

### **Wildland Fire Mitigation And Education**

Many Americans prefer to live and vacation in relatively remote surroundings, i.e. woods and range lands. These choices offer many benefits, but they also present significant risks. Most of North America is fire-prone, and every day, developed areas and home sites are extending further into natural wildlands, which increases the chances of catastrophic fire. The National Fire Plan, developed by Federal wildfire agencies, recognizes this fact. One of its components is the development and dissemination of information to help these wildland/urban interface dwellers to make sensible choices about living in such environs.

### **Hazardous Fuel Reduction**

The Division of Forestry must authorize all outdoor burning within the State of Florida (Florida Statutes, 590.125). The Division of Forestry works with private landowners, local governments, private consultants and state and federal agencies statewide to promote the use of prescribed burning that will reduce the amount wildland fuel loading and help prevent disastrous wildfires. Assistance may be given to a landowner as prescribed in a burning plan for purposes related to silviculture, wildfire management, grazing, fire hazard reduction, etc. This assistance may be as follows:

The Division of Forestry may provide personnel and equipment at designated hourly rates to assist a landowner while the landowner or their agent conducts a prescribed burn. The landowner or his/her agent assumes full responsibility for control of his/her fire and must be present during the burn. The Division reserves the right to leave the scene, after securing the fire, to respond to wildfires or other emergencies.

The Division may contract with a landowner to carry out burning as prescribed in a land management plan. Designated rates will apply to all contract burning. All prescriptions and burning must be done by a Florida certified burner. The Division of Forestry may prescribe burn any area of wildland within the State of Florida which is reasonably determined to be in danger of wildfire following proper notification of the property owner according to procedures specified in Florida Statutes, 590.125 (4).

The Division of Forestry's fifteen administrative districts routinely work with landowners and local governments to identify high-risk wildland/urban interface areas where the proximity of wildland fuels to development presents a threat to public safety. The Division of Forestry may, in these identified priority areas, prescribe burn or use mechanical treatments to reduce the accumulated wildland fuels at no cost to the landowner/homeowner. The Division of Forestry utilizes four specially equipped Wildfire Management Teams to assist the districts in hazardous fuel reduction.

### **Fireline Establishment**

In many areas, pre-suppression firelines may be plowed to reduce the wildfire risk to residences in the urban-wildland interface. Established and maintained firelines can significantly reduce the chances of a wildfire reaching populated areas, as well as, reduce the time needed to contain a wildfire thereby allowing the most effective and efficient use of resources. The Division of Forestry provides this service to landowners at specified rates.



## **Department of Community Affairs**

The Florida Department of Community Affairs (DCA) is unique in that it has been designated by the Governor, as the lead state coordinating agency for Emergency Management, State Planning and Housing and Community Development related issues. The Department continues to strive to keep the state's citizen safe, our water and air pure, our beaches pristine, our housing safe and affordable, our vulnerable coastal areas protected and our growth well planned. As such, many of the programs and activities implemented within the Department have both direct and indirect impacts on reducing the state's risk to future disasters. In some cases, the Department can be viewed as the Department of Mitigation. Coordination with other Divisions and programs within the Department are integral to our development and implementation of a statewide mitigation program as well as the State Mitigation Plan. These programs include: Small Cities Community Development Block Program, Florida Community's Trust Program, Residential Mitigation Construction Program, Florida Building Codes Program, Affordable Housing, Growth Management, Rebuilding Waterfronts, the Home and SHIP Programs and Manufactured Building Program. The agency activities discussed below are applicable in both pre- and post-disaster situations.

### **Division of Emergency Management**

The Division of Emergency Management plans for and responds to both natural and man-made disasters. These range from floods and hurricanes to incidents involving hazardous materials or nuclear power. The division prepares and implements a statewide Comprehensive Emergency Management Plan, and routinely conducts extensive exercises to test state and county emergency response capabilities.

The division is the state's liaison with federal and local agencies on emergencies of all kinds. Division staff members provide technical assistance to local governments as they prepare emergency plans and procedures. They also conduct emergency operations training for state and local governmental agencies.

After a disaster, the division conducts damage assessment surveys and advises the Governor on whether to declare an emergency and seek federal relief funds. The division maintains a primary Emergency Operations Center (EOC) in Tallahassee. The EOC serves as the communications and command center for reporting emergencies and coordinating state response activities. The division also operates the State Warning Point, a state emergency communications center staffed 24 hours each day. The center maintains statewide communications with county emergency officials.

The Division, through its bureaus, operates several mitigation programs. Bureaus with mitigation responsibilities and their programs are listed below.

## **Bureau of Preparedness and Response**

The Bureau of Preparedness and Response has three Sections: Operations; Training and Exercise; and Response Planning; and three units: the Meteorological Support Unit, Field Services Unit, and an Administrative Support Unit, all of which serve to support the state's efforts to respond effectively to emergencies regardless of size. The Response Planning Section provides oversight for the development of regional and statewide hurricane evacuation studies. In addition, information regarding evacuation routes, clearance times, shelter space and anticipated needs for effective response to hurricanes and other natural hazards is collected and disseminated. The Section develops and maintains the Comprehensive Emergency Management Plan (CEMP) and associated standard operating procedures. They also facilitate the planning efforts of the Emergency Support Functions (ESF), who staff and support the SEOC.

## **Bureau of Recovery and Mitigation**

This Bureau works to reduce or eliminate long-term risk to human life and property from disasters. Recovery from disasters is provided through the Federal and State Public Assistance, Individual Assistance, and Hazard Mitigation Programs and the State Assistance for the National Flood Insurance Program (NFIP) and the RCMP to rebuild lives and infrastructure, and to mitigate the impact of future disasters.

The Bureau also continues to provide long-term recovery efforts for Hurricane Andrew through the Hurricane Andrew Recovery and Rebuilding Trust Fund (HARRTF) for projects identified by the Legislature to assist South Florida residents and businesses. In addition, each member of the section has a separate emergency management responsibility in the event of a disaster. Some of these assignments are mitigation related, but most support the activities of other units within the DCA as well as other state agencies.

The Bureau of Recover and Mitigation has aligned its mitigation activities to better assist Florida's residents in the pre- and post-disaster environment while continuing to build upon the strengths afforded by the integrated mitigation management concept. To assist in the implementation of these principles, the Bureau has two Sections: 1) Mitigation Programs: and 2) Floodplain Management.

## **Mitigation Program Section**

The Hazard Mitigation Section of the Bureau of Recovery & Mitigation takes primary responsibility for increasing the awareness of the benefits of mitigation throughout the state. One of the most effective means for meeting this responsibility is by supporting the Local Mitigation Strategy in the planning and development of specific local projects in the private and public sector. Much of this support is carried out through the administration of four major mitigation grant programs: 1) the Hazard Mitigation Grant Program (HMGP), which provides partial funding for a wide range of structural mitigation efforts designed to improve the survivability of private or public buildings; 2)

the Pre-Disaster Mitigation Grant Program (PDM), which provides partial funding for a wide range of structural mitigation efforts designed to improve the survivability of private or public buildings; (3) the Unmet Needs Program (UNP) which provides 75 percent funding for mitigation projects not covered by the other two programs; and (4) the Residential Construction Mitigation Program (RCMP), which is a state funded grant program that provides funding for wind mitigation related projects designed to reduce the risk and exposure to losses by the insurance industry in Florida. The Section also coordinates ongoing research and evaluation necessary to direct the funding priorities of the four grant programs; develops and maintains the various plans necessary to implement those programs; and works with federal, state and local program staff to increase the effectiveness of the programs.

In May of 1998, the Division of Emergency Management was designated a Pilot Managing State to test a new concept for streamlining the grants process. Under the terms of the Memorandum of Understanding (MOU), the Division has taken over many of FEMA's traditional roles and responsibilities in the Hazard Mitigation Grant Program and the Flood Mitigation Assistance Program. This includes determining eligibility and cost-effectiveness, conducting engineering and environmental reviews, and grants management

**The Mitigation Planning Unit** conducts the ongoing research and evaluation necessary to direct the funding priorities of mitigation grant programs; develops and maintains the various plans necessary to implement those programs; and works with federal, state and local program staff to increase the effectiveness of the programs. In addition to coordinating the mitigation activities of units outside the Section, staff also maintains liaison with mitigation activities outside the department. Finally, staff works directly with local, state and federal officials to find more effective ways to spend scarce resources to reduce vulnerability. An example is the development, implementation and oversight of the Local Mitigation Strategy (LMS), a multi-jurisdictional planning document developed within every county in the state. Each plan identifies hazards posing a threat to that community, areas vulnerable to each hazard, impacts on property and appropriate mitigation measures to reduce these impacts. The result of this planning is a prioritized list of specific mitigation projects. This unit is also responsible for soliciting mitigation grant proposals from applicants through Applicant Briefings, town meetings and other forms of direct contact.

**Project Implementation Unit** is responsible for application review, contracting and contract management for federal mitigation programs. The major grant programs (Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program and Unmet Needs Program) are administered by three sub-units. These federally sponsored grant programs have complex operational guidelines, which differ widely from each other and require a great deal of program-specific expertise to manage correctly. The responsibilities for each grant sub-unit, however, are very similar. Each grant applicant is assigned a Project Manager from within the appropriate unit, who becomes the principle point of contact through the completion of the project; Project Manager continuity is basic to providing good service to the client. Key responsibilities include:

Reviewing the applications and coordinating the engineering and environmental reviews;

Preparing a report with a funding recommendation that is submitted with the application to the Federal Emergency Management Agency (FEMA) for final approval;

Managing the grant once approved through technical assistance visits, administration of the various requests for modification inherent in any construction project and final closeout; and

Maintaining the program expertise necessary to accommodate (or dispute) FEMA changes in rule or interpretation to ensure that the grant programs continue to be applied to particular mitigation needs in the broadest possible manner.

The Implementation Unit is also responsible for providing technical, fiscal, and management assistance to sub-grantees applying for funds under the rules, laws, and procedures established by the Department of Community Affairs (DCA) and the Federal Emergency Management Agency (FEMA). The unit establishes and monitors agreements and works closely with Planning to ensure projects are progressing in accordance with the time line set forth in the Budget and Scope of Work incorporated into the agreement. The unit reviews the agreement to ensure correct signature authority from the sub-grantee and provides copies of the signed agreement to staff. The unit maintains an automated logging system utilized for tracking agreements and requests for payments. The unit reviews all financial documentation pertaining to requests for reimbursement and accesses a database that creates requests for payments. Also, the unit ensures that project files are in compliance with the Memorandum of Understanding, which designates Florida as a Managing State, as well as provide quarterly reports to FEMA.

The **Technical Support Unit** is composed of engineers who provide technical services to the Hazard Mitigation Grant Program, the Flood Mitigation Assistance Program, and the Unmet Needs Program. The Technical Assistance Unit receives applications from the Project Manager in the appropriate program unit and performs an engineering review. After determining that the scope of work satisfies the need for mitigation, the engineer performs a benefit/cost analysis and makes a site visit to review and document the existing conditions. Once complete, a report is prepared and forwarded to the Project Manager with a recommendation to accept or decline the project. During construction, interim and final inspections are performed and upon completion, a final report is written with a recommendation regarding final payment. Concurrent with the engineering review, the environmental specialists of the Environmental Support Unit coordinates the environmental review required under the federal environmental laws and ensures that proper permits have been issued in accordance with state and local regulations.

## **Flood Plain Management Section**

The Floodplain Management Section administers two separate programs: the State Assistance Office for the NFIP and the Flood Mitigation Assistance Program. The State Assistance Office For the NFIP provides technical assistance to local governments, residents, and the various building trade groups on proper floodplain building and construction techniques. The office also assists local governments in maintaining compliant floodplain management programs as a means of better protecting property and human life. This includes providing information on the lack of availability of flood insurance for development in the Coastal Barrier Resource Act and otherwise protected areas. Additionally, the unit assists local governments in joining the Community Rating System (CRS) Program, and thereby implements a comprehensive floodplain management program which results in reduced annual flood insurance premiums. The unit provides technical assistance to local governments and the general public on the need to purchase and maintain flood insurance, and the Increased Cost of Compliance (ICC) coverage. The ICC provides coverage for the consequential loss to a structure brought on by a floodplain management ordinance or law (substantial damage) requirement affecting repair or reconstruction of a building after a flood event. The ICC coverage provides a maximum of \$15,000 to a policy holder to assist in elevating, flood proofing and other retrofitting activities designed to meet floodplain management ordinance or law requirement

The section also serves as the state point of contact for the Flood Mitigation Assistance (FMA) Program. The FMA is a federal funded, DCA administered grant program designed to assist states and local governments in reducing or eliminating long-term risks of flood damage to structures insurable under the National Flood Insurance Program. Flood Mitigation Assistance funds come from the flood insurance premium pool and are provided to the state on an annual basis allow eligible applicants to incorporate long-term recovery measures that will reduce future claims against the National Flood Insurance Fund. Such activities include flood mitigation planning, technical assistance and mitigation projects that reduce flood damage; priority is given to repetitively damaged or substantially damaged structures

## **Public Assistance Program**

The Public Assistance program assists local governments and non-profit agencies in rebuilding after a disaster, and is the key state agency in the provision of Federal Emergency Management Agency (FEMA) public assistance grants. The Mitigation Section work in concert with Public Assistance staff to assure that mitigation opportunities are made available under 406 Mitigation Program.

## **Human Services Program**

The Human Services unit coordinates the Bureau's initial response to emergencies, organizes damage assessment activities, and prepares requests for federal aid and

other assistance. Recovery programs managed by the unit include the FEMA Individual and Family Grant Program, Disaster Housing Assistance, Small Business Administration loans, Natural Resource Conservation Service aid, Community Relations, Agricultural disaster procedures and Business Recovery coordination. The unit also coordinates the delivery of crisis counseling, disaster unemployment assistance, emergency food stamp and other forms of direct assistance to citizens. The Mitigation Section work in concert with Human Services staff to assure that mitigation opportunities are made available under the Minimization Program.

### **Bureau of Compliance Planning & Support, Compliance Planning**

This Section provides support to the Governor's appointed State Emergency Response Commission and reviews site plans to enhance first-response efforts at facilities storing hazardous materials. Section staff assists facilities with reporting requirements, compliance verification and provide technical support to the state's 11 Local Emergency Planning Committees. The section also conducts on-site audits of county Comprehensive Emergency Management Plans (CEMP) and provides technical assistance for CEMP development.

The Florida Accidental Release Prevention and Risk Management Planning Program adds a critical prevention component to the State's Hazardous Materials Planning Program and will allow DEM to assist Florida's businesses and industries with federal regulations. With its business and industry partners, this program creates an opportunity to examine improvements, to prevent accidents and/or alleviate the potential effects of a chemical accident. Consistent with the Federal Emergency Planning Community Right-To-Know Act, the Department will maximize technical assistance and outreach efforts to assist with compliance.

The Bureau also operates the Emergency Management Competitive Grants Program (EMPG). This program provides competitive grants to state, regional, local governments, and private non-profit organizations to implement projects that will further state and local emergency management objectives. Any number of project applications may be submitted.

The Municipal Grant Competitive Grant Program provides competitive grants to municipalities that are legally constituted, have an authorized emergency management program, established, and maintained, and have signed the Statewide Mutual Aid Agreement. Also, they must have supplied all required information and documentation such that the agreement is ready to be signed by the Division as of the date of the application deadline. Each Municipal Emergency Management Program may apply for one competitive grant not to exceed \$50,000.

## **Division of Community Planning**

The Department of Community Affairs is designated by law as Florida's land planning agency and is responsible for guiding the state's growth and development. The Department's Division of Community Planning plays a lead role in implementing the state's Growth Management Act (Chapter 163, Part II, F.S., the *Local Government Comprehensive Planning and Land Development Regulation Act*), and the Developments of Regional Impact and Areas of Critical State Concern Programs (Sections 380.05 and 380.06 of Chapter 380, F.S., the *Environmental Land and Water Management Act*).

The Division of Community Planning in cooperation with the Florida Department of Agriculture and Consumer Services is producing *A Best Development Practices for Wildfire Mitigation Manual*. This manual will be developed to limit the vulnerability of life and property to wildfire that is tailored for and is specific to Florida. The *Best Development Practices for Wildfire Mitigation Manual* will specifically deal with activities that can be implemented by developers, individual homeowners, neighborhoods, communities or local governments to identify and reduce wildfire risk, while maximizing ecological benefits. The manual will include comprehensive plan policy language to guide local government land use decisions as well as model land development codes to establish local development standards and requirements.

The *Best Development Practices for Wildfire Mitigation Manual* is tailored to Florida and designed for integration into Florida's growth management system so that an individual homeowner, a community or a local government can readily implement the practices, guides, policy language, and land development codes.

To support local government planning efforts, the Division of Community Planning is preparing two additional best practices guides for hazard mitigation:

*Best Practices for Pre-Disaster Mitigation* will identify implementation activities for local governments to identify and reduce potential risk to development from hurricanes, tropical storms and inland flooding. The document will include model comprehensive plan policies for avoidance of natural hazard risks, as well as recommended local development standards.

*Best Practices for Post-Disaster Redevelopment Planning* will focus on activities local governments can take to update and improve their Post-Disaster Redevelopment Plans to reduce the exposure of life and property damage from hurricanes, tropical storms, and inland flooding. The document will include model plan policy language to guide the preparation or update of post-disaster

The Division of Community Planning has contracted with the staff of NASA and Prescott College to develop an integrated model suite to understand and characterize an area's future based on a variety of present-day land use decisions and policy options. The model suite will develop a series of future growth scenarios. The suite of models will

integrate an array of information including scenarios of a community's future growth, based on the current comprehensive plan, the impacts of disasters and the long-term fiscal, infrastructure, environmental and economic impacts to help policy makers make better and more informed land use decisions.

Using NASA technology and software, Prescott College will develop and design an integrated model for pilot communities using various new technologies. The model suite will generate growth scenarios in selected timer periods over a 50-year horizon as a function of population change, land use and other factors. The model will produce a range of disaster scenarios and superimpose or move these over current or future land use and growth scenarios to assist land use and emergency planners in strengthening a community's pre disaster mitigation planning to such events. The model also has the capability to interface with transportation, environmental, fiscal and economic models or data sets representing the impacts of development over time within the pilot communities. A unique component is for the model to interface with other models, build interactive linkages with the future growth model element and portray long-term impacts with creative visualizations. The model will have a 3 dimensional element to develop dynamic visualizations of long-term impacts of various future growth scenarios.

The NASA/Prescott College project will use the outputs from the growth model that is being run for the three pilot communities in the state, in order to evaluate the hurricane and flood hazard costs associated with different growth alternatives. For each of the pilot communities, three growth scenarios as well as wildfire impacts will be analyzed for two planning time frames. The outputs from the NASA/Prescott College growth model will be used as inputs for the TAOS hurricane/flood hazard modeling program.

To assist in the preparation for future growth as well as natural and manmade disasters, the Division of Community Planning has undertaken visioning exercises with many communities through out the state. Communities such as Pensacola, Old Homosassa, Panacea, and Oak Hill have taken advantage of the services offered by the Department. These visioning exercises assist the community to identify its vulnerable areas and plan for mitigation projects to lessen the impacts of natural and man-made disasters. Community visioning allows a local government to conduct build consensus and plan for future growth and development. Community Visioning also can include consensus building for areas included in hurricane evacuation zones prior to a natural or man-made disaster occurring.

### **Office of State Planning**

The State Planning Office within the Division Director's office administers the Areas of Critical State Concern Program. The ACSC program protects resources and public facilities of major statewide significance. Areas of Critical State Concern are located in the: City of Apalachicola, City of Key West, Florida Keys (Monroe County), Green Swamp (Lake and Polk Counties), Big Cypress Swamp (Miami-Dade, Monroe, and Collier Counties).

The State Planning Office staff reviews all local development projects within areas designated under Areas of Critical State Concern Program (ACSC) and may appeal to the Administration Commission any local development orders that are not consistent with state guidelines. The Office of State Planning is also responsible for reviewing and approving amendments to comprehensive plans and land development regulations proposed by local governments within the designated areas. The ACSC program at the Department reviews all local development projects and development orders, comprehensive plans and plan amendments. As part of the review, the Department looks at ways that the Critical Areas can improve their hazard mitigation planning activities and programs.

The Waterfronts Florida Partnership, launched by the Florida Coastal Management Program in 1997, helps participating communities revitalize, renew and promote interest in their waterfront district. Waterfront revitalization targets environmental resource protection, public access, retention of viable traditional waterfront economies, and hazard mitigation. Between 1997 and 2001, the Department designated nine Waterfronts Florida Partnership Communities, each of which received two years of technical and financial assistance. So far, the results are impressive: nearly 7,000 hours of volunteer services; \$143,362 in private donations; and \$7.4 million in other public investment that resulted in 16 capital-project completions. Waterfronts Florida, works with the participating communities to incorporate hazard mitigation planning into the local communities planning documents, including the local comprehensive plan.

### ***Integration of the county hazard mitigation plan into the local government comprehensive plan***

This update and coordination with the LMS promotes greater implementation of the mitigation strategies through the local comprehensive plan. In order to provide incentives for local governments to integrate mitigation strategies into the local comprehensive plan, the Division of Community Planning will provide assistance in the evaluation of the risks and vulnerabilities facing a community. The division staff will facilitate discussions between local government planning officials and emergency management planners regarding mitigation priorities. The intent is to focus on the use of comprehensive planning and land use strategies to reduce future damage to property and public facilities, to avoid development in hazardous areas. The evaluation will also include an emphasis on planning for adequate public shelters and reduced hurricane clearance times.

The program envisions contracting services to a consultant or consultants to conduct evaluation of 35 coastal and 32 inland county comprehensive plans based on the Local Mitigation Strategy (LMS). This evaluation will lead each county government updating their comprehensive plans and integrating hazard mitigation practices and the LMS into the local planning process. This will allow local governments to better prepare for natural disasters that impact their jurisdiction.

The Policy Planning Section staff will also be utilizing the EAR scoping meetings where possible to discuss and train the local government planner in the use of the concepts embodied in the best practices guidebooks

### ***Hazard mitigation training for local governments***

The goal of this training program is to assist local governments in the integration of the concepts, principles and best practices included in *Best Practices for Creating Enduring Florida Communities* and *Community Visioning in Hazard Mitigation and Comprehensive planning*. The Division will partner with the University of Florida GeoPlan Center in the creation of a training program for local government planning officials, local emergency managers, local planning commissioners and local elected officials. This training will work in concert with the evaluation and appraisal of the comprehensive plan.

### ***Community visioning guides for local governments***

To assist local governments and local government planners in creating disaster resistant communities, the Department will be developing a Community Visioning Guides. Community visioning in hazard mitigation and comprehensive planning a process through which a community envisions the future it wants as it relates to hazard mitigation planning, and then plans how to achieve it. The Guidebook will assist local governments in the process of bringing people together to develop a shared image of “where” they want their community to be in the future.

The guides will be specifically targeted toward providing local governments in Florida guidance to go through the visioning process to incorporate hazard mitigation practices, strategies and principles into the local government comprehensive plan.

### ***GIS intern/Web Page Development***

In order to provide GIS support for the hazard modeling and guidebooks described earlier, the Department has hired a part time GIS intern to assist in those activities. The intern position is also involved in maintaining and updating the Department’s GIS database for use by planners in evaluating flood and hurricane hazards in light of land use plan amendments and DRI’s that have been approved by local governments. Additionally, the GIS intern will provide GIS support to the division’s planners in the creation of maps to be utilized in the regulatory review of comprehensive plan amendments and DRI reviews.

To provide information to the public, the Division will continuously update the Division’s Web Page to reflect the program and progress of the Mitigation in Land Use Planning initiative.

## **Office of Comprehensive Planning**

The Office of Comprehensive Planning is responsible for review of growth management documents including comprehensive plans, and plan amendments to ensure compliance with state law. The Office also reviews Developments of Regional Impacts to identify state and regional impacts from large-scale developments.

Adopted by the 1985 Legislature, Florida's Growth Management Act requires all of Florida's 67 counties and 476 municipalities to adopt local government comprehensive plans that guide future growth and development. Comprehensive plans contain chapters or "elements" that address future land use, housing, transportation, infrastructure, coastal management, conservation, recreation and open space, intergovernmental coordination, and capital improvements. A key component of the Act is its concurrency provision that requires facilities and services to be available concurrent with the impacts of development. After a comprehensive plan has been adopted, local governments may amend the plans up to twice per year. All land development regulations and land development decisions (development orders) must be consistent with the adopted comprehensive plan.

The Florida Legislature continues to recognize the significant interests in the resources of the coastal zone in the state. Further, the Legislature also recognizes that, in the event of a natural disaster, the state may provide financial assistance to the local governments for the reconstruction of roads, sewer systems, and other public facilities. Therefore, it is the intent of the Legislature that local government comprehensive plans restrict development activities where such activities would damage or destroy coastal resources and that such plans protect human life and limit public expenditures in areas that are subject to destruction by natural disaster. The purpose of the Coastal Management Element is to plan for and where appropriate restrict development activities where such activities would damage or destroy coastal resources and protect human life and limit public expenditures in areas that are subject to destruction by natural disaster. The Coastal management element required that hurricane evacuation planning must be recognized on the future land use map series, the Coastal High Hazard Area (CHHA) to be identified, reduce or maintain hurricane evacuation clearance times, direct population concentrations away from the CHHA. Future land uses and amendments are based in part on land use suitability, including suitability regarding environmental, transportation, housing, water and sewer, and park and open space impacts, hazard suitability and mitigation.

DCA endorses the research efforts of the state university system, which are designed to:

(1) Determine the effectiveness of local growth management policies and land development regulations in mitigating the exposure and vulnerability of coastal communities to hurricane and flood damage;

(2) Identify local growth management policies, regulations, and programs that are likely to be most effective for specific local conditions; and

(3) Identify state policy initiative that can foster and enhance local growth management initiatives to reduce exposure and vulnerability.

Once the research is completed, the local mitigation capabilities that have been identified as most effective will be endorsed for statewide implementation.

To provide more effective, hands-on support for local governments, the Division has four community planning teams within the Office of Comprehensive Planning. These teams are responsible for conducting reviews of comprehensive plans, for administering the Development of Regional Impact, Florida Quality Development programs, evaluation and appraisal reports, optional sector plans and campus master plans for local governments. The Office also reviews development agreements and challenges to local land development regulations to ensure consistency with comprehensive plans. Community Planning provides technical assistance and guidance on comprehensive and mitigation planning for local governments. It establishes land-use policies, development regulations, and enforcement measures, including hazard mitigation planning efforts.

Staff review DRI's for compliance with state law and identify the regional and state impacts of large-scale developments. Impacts can include a combination of residential, office, retail, industrial, hospital, port and marina, airport, school, mining, attraction and recreation, petroleum storage, recreational vehicle, and hotel/motel developments. DCA makes recommendations to local governments for approving, suggesting mitigating conditions, or not approving proposed developments. A developer or DCA may appeal local government decisions to the Land and Water Adjudicatory Commission. The DRI provides for mitigation planning data and recommended hazard mitigation development order conditions. Information regarding health, safety, and welfare of citizens of more than one county impacted from the development is reviewed as well.

### **The Florida Communities Trust**

The Florida Communities Trust (FCT) was established as a non-regulatory agency within DCA to assist local governments in bringing local comprehensive plans into compliance and implementing the goals, objectives, and policies of the conservation, recreation and open space, and coastal elements of local comprehensive plans, or in conserving natural resources and resolving land use conflicts by:

(a) Responding promptly and creatively to opportunities to correct undesirable development patterns, restore degraded natural areas, enhance resource values, restore deteriorated or deteriorating urban waterfronts, reserve lands for later purchase, participate in and promote the use of innovative land acquisition methods, and provide public access to surface waters,

(b) Providing financial and technical assistance to local governments, state agencies, and nonprofit organizations to carry out projects and activities and to develop programs authorized by this part,

(c) Involving local governments and private interests in voluntarily resolving land use conflicts and issues, and

(d) Acquiring or disposing of real and personal property or any interest therein when necessary or appropriate to protect the natural environment, provide public access or public recreational facilities, preserve wildlife habitat areas, or provide access for managing acquired lands.

The FCT program encourages communities to combine issues such as flooding, urban revitalization, and water quality improvements with providing urban open space, protection of natural communities and providing recreational facilities. The combination of several goals being addressed in one project assists both the state and community in providing solutions to problems encountered in a growing society.

The program is helping improve the quality of life for the citizens of Florida by providing \$66 million of grant funding on an annual basis for the public acquisition of community based projects, urban open space, parks and greenways. Many of these acquisitions have a positive mitigation aspect in that the properties acquired often are within hazard areas that would otherwise be subject to development or redevelopment. In 2001-2002 alone over the program helped acquire more than 3,000 acres.

### **Policy Planning and Publication Section**

Since 1985, the Growth Management Act has required local governments to address hazard mitigation issues in their comprehensive plans' Coastal Management Elements. As Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390) provides new and revitalized approaches to mitigation planning, the Division of Community Planning within the Department of Community Affairs is initiating a number of activities to integrate hazard mitigation objectives consistent with the State Mitigation Plan and local mitigation plans into local government comprehensive plans.

Specifically, the Division will use the Evaluation and Appraisal Report (EAR) process, which requires an update of local comprehensive plans every 7 years. The first EARs are due for adoption in November 2003, and 12 to 18 months in advance of that date the Division begins providing local governments information and assistance needed to complete the EAR process. The EAR update will be coordinated with revisions to the local mitigation plans required by federal regulations and the Disaster Mitigation Act of 2000 to promote greater implementation of those strategies through local comprehensive plans. There is no specific requirement that the comprehensive plans be revised based on the findings and recommendations in the local mitigation plan. In order

to provide incentives for local governments to integrate the local mitigation plan into the comprehensive plan, the Division with the assistance of outside contractors will assist in evaluation and recommendation and facilitate discussions between local government planning officials and emergency management planners. The intent is to focus on the use of comprehensive planning and other land use strategies to reduce future damage to property and public facilities and buildings, and to avoid development in hazardous areas. Coordination and integration of pre disaster mitigation planning, post disaster redevelopment planning and the local mitigation strategy into local comprehensive plan better prepares communities for natural and man-made disasters.

### **State Initiatives Section**

The State Initiatives Section works with pilot communities and provides focused technical assistance to implement new requirements of Florida's growth management laws, including requirements for water supply planning, coordinated school planning, and public school inter-local agreements, and inter-local service delivery agreement reports. State Initiatives coordinates the Rural Lands Stewardship Area program and the review of MPO five-year work plans, and other transportation plans for consistency with local government comprehensive plans. State Initiatives conducts training, workshops and provides technical assistance to local governments as they prepare their evaluation and appraisal reports (EARs). Agreements can include mitigation practices.

### **Division of Housing and Community Development**

The Division of Housing and Community Development (HCD) serves the citizens of Florida by administering grant and loan programs to stimulate housing production and rehabilitation, neighborhood revitalization, and economic development. Millions of dollars in federal and state grants and loans are awarded to local governments and nonprofit organizations. Technical assistance and training are provided to help develop and revitalize communities.

The programs of HCD help Floridians build safe, sustainable communities through local initiatives and public/private partnerships. The Division's two bureaus provide state and federal funds and program support to local governments, nonprofits, and businesses to stimulate community development, energy conservation, affordable housing, drug control/prevention and safety and energy efficiency codes. The programs listed below have mitigation related impacts.

### **Bureau of Community Assistance**

The Community Services Block Grant (CSBG) provides grants to a network of 29 eligible entities, including one migrant and seasonal farm worker organization, for a wide range of services to low-income Floridians. Services provided include job training, education, and assistance with rent, utilities, transportation, meals, clothing, and prescription drugs. The services and activities must have a measurable and potential major impact on causes of poverty in the community i.e., a disaster.

The Low-Income Emergency Home Repair Program (LEHRP) provides grants to local agencies administering the Weatherization Assistance Program to assist low-income people, especially the elderly and physically disabled, with emergency housing repairs that affect the health and safety of residents. A 20% match is required and client households must meet 125% of the low-income poverty guidelines of the United States Department of Health and Human Services. Priority is given to persons 60 years of age or older and persons who are physically disabled. An average of \$2,600 is spent on each house to correct structural deficiencies. Eligible projects include the repair of deteriorating walls and roofs and other exterior repairs necessary for the health and safety of the resident

The Weatherization Assistance Program (WAP) provides grants to 33 local governments, nonprofits, community action agencies and federally recognized Indian Tribes to improve energy efficiency in low-income housing. Weatherization measures (up to \$1,949 per house) include attic, wall, ceiling insulation, weather stripping, and reduction of air infiltration. Enhanced measures can provide water heaters and repair heat/air systems, window glazing and caulking, weather-stripping, and repair or replace doors and windows.

### **Bureau of Community Development**

The Affordable Housing Catalyst Program (ACHP) provides local governments and community-based organizations with specialized technical assistance support to implement the HOME Investment Partnerships Program (HOME), the State Housing Initiatives Partnerships (SHIP) Program and other affordable housing programs. Technical assistance and training are offered by the Catalyst Program in the areas of but not limited to the development of affordable housing programs, the development of public/private partnerships, assist in the development of Local Housing Assistance Plans, implementing regulatory reforms, project financing, leveraging, guidance on achieving state and federal compliance, project completion. On-site technical assistance visits and workshop training sessions are available. The SHIP and HOME programs are administered by the Florida Housing Finance Agency (FHFA). The program can provide funding matches and technical assistance for mitigation projects for affordable housing, through the SHIP and HOME programs. Activities include new construction, rehabilitation, property acquisitions, retrofits, elevations, and demolitions and relocations.

The Florida Small Cities Community Development Block Grant (CDBG) Program provides grants to non-entitlement cities and counties to improve local housing, streets, utilities, and public facilities. The program also supports downtown redevelopment and creates jobs for low and moderate income Floridians. CDBG funds provide community improvement under four grant categories: Housing Rehabilitation, Neighborhood Revitalization, Commercial Revitalization, and Economic Development. In 1997, 54

cities and counties in Florida used over \$33 million in CDBG funds. The program can provide funding for acquisitions, building rehabilitation, sea wall construction, demolitions, relocations, lift stations, and flood/drainage improvements. Funds may be used to meet local match requirements for federal mitigation programs.

The Manufactured Buildings Program ensures that manufactured and modular buildings (not mobile homes) built or marketed in Florida comply with the Florida Building Code. The program certifies third-party inspection agencies to verify compliance of plans and to inspect production lines. The Department of Highway Safety and Motor Vehicles and the U.S. Department of Housing and Urban Development are responsible for regulating the construction of manufactured homes (mobile homes) installed in Florida. The program mandates and enforces a building standard for manufactured homes in the state.

### **The Florida Building Code**

The 1998 Florida Legislature passed a building code reform law mandating a unified statewide building code. The Florida Building Code became effective on March 1, 2002 and replaces more than 400 local and state building codes. The unified Florida Building Code incorporates the building, electrical, plumbing, mechanical and administrative codes as well as the accessibility, energy, coastal, manufactured buildings and state agency codes into a single set of documents to direct public and private building throughout the state. The new code focuses on public safety, increases local enforcement powers and incorporates state-of-the-art hurricane protection. Although applicable statewide, local governments now have the authority to both interpret and enforce the code and may amend the Code to be more stringent when justified by local conditions. Local governments now have the authority to conduct plan reviews and inspections of state owned building except for correctional and health care facilities. Local school boards, community colleges and universities may opt to use their local government as the code enforcement authority or may continue to enforce the Code themselves. The Code is maintained by the Florida Building Commission, which conducts major updates every three years. Although the Commission does not review or approve local amendments prior to local adoption, it does review these updates during major revisions and may include or rescind them.

The Florida Coastal Monitoring Program (FCMP) is a unique joint venture focusing on full-scale experimental methods to quantify near-surface hurricane wind behavior and the resultant loads on residential structures. The aim is to provide the data necessary to identify methods to cost-effectively reduce hurricane wind damage to residential structures. Much of this information is applicable to retrofitting existing structures, but may also become the basis for modifications to the Florida Building Code. This research is critical in a state where 85% of the rapidly increasing population resides on or near the 1200 miles of coastline vulnerable to hurricane strike.

Sponsored by the Florida Department of Community Affairs, participants include the University of Florida, Clemson University and Florida Institute of Technology. Data is gathered from portable wind towers that measure ground level wind velocity at heights of 5 and 10 meters and from 25 fully instrumented homes along the Florida coastline that measure building envelope wind forces.

This is the only program of its kind to measure both wind velocity and structural forces in full-scale, and is helping to fill critical gaps in existing data sets. Specifically, this program provides a direct quantification of the complete wind velocity - structural load - damage chain. The program evaluates structural retrofitting strategies to increase resistance to wind damage and provides data to evaluate building code provisions.

The purpose of the Triage Teams is to provide the Florida Building Commission with continual update of the Florida Building Code, as provided for in chapter 553.77 F.S. The team(s) will be deployed under the Governor's Executive Order for a declared disaster in hurricanes of category II or higher.

The Triage Team is comprised of Building Codes staff, local Building Official, industry representatives and university wind experts. Their mission is to determine whether buildings failed because of: (1) Code failure; (2) Code enforcement failure; or (3) Building material failure.

The data collected from Triage Team deployments will be housed on the same web based database as the Coastal Monitoring Program (under contract to U/F), where fully instrumented houses stand ready to accurately measure requisite weather data in the affected area.

### Mitigation Analysis

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact	Effect On Loss Reduction (✓)		
			Support	Facilitate	Hinder
Division of Emergency Management, Department of Community Affairs (The lead agency that coordinates with Federal, State and local governments, as well as private/volunteer organizations in preparing for and responding to natural and man- made disasters.)	Community Rating System (CRS)	State Assistance Office for the National Flood Insurance and Flood Mitigation Assistance Program Phone: 850-413-9959 Web-site: <a href="http://www.dca.state.fl.us/brm/nfip.htm">http://www.dca.state.fl.us/brm/nfip.htm</a>	✓		
	Hazard Mitigation Grant Program (HMGP)	Bureau of Recovery and Mitigation Phone: 850-413-9900 <a href="http://www.dca.state.fl.us/brm/hmgrp.htm">http://www.dca.state.fl.us/brm/hmgrp.htm</a>	✓		
	Flood Mitigation Assistance Program (FMA)	State Assistance Office for the National Flood Insurance and Flood Mitigation Assistance Program Phone: 850-413-9959 Web-site: <a href="http://www.dca.state.fl.us/brm/nfip.htm">http://www.dca.state.fl.us/brm/nfip.htm</a>	✓		
	Local Mitigation Strategy	Bureau of Recovery and Mitigation Phone: (850) 413-9900 Web-site: <a href="http://www.dca.state.fl.us/brm/hmgrp.htm">http://www.dca.state.fl.us/brm/hmgrp.htm</a>	✓		
	Emergency Management Competitive Grant Program	Bureau of Compliance Planning and Support, Finance and Administration, Grants Section Phone: 850-413-9942 Web-site: <a href="http://www.dca.state.fl.us/cps/grants.htm#Competitive%20Grant">www.dca.state.fl.us/cps/grants.htm# Competitive%20Grant</a>		✓	
	Municipal Grant Competitive Grant Program	<a href="http://www.dca.state.fl.us/fdcp/DCP/compplanning/comprehensiveplanning.htm">www.dca.state.fl.us/fdcp/DCP/compplanning/c omprehensiveplanning.htm</a>	✓		
	The Coastal Management Element (of the Local Comprehen- sive Plan)	<a href="http://www.dca.state.fl.us/fdcp/DCP/">www.dca.state.fl.us/fdcp/DCP/</a>			✓
Division of Community Planning (The lead agency for implementing the State's Growth Management Act	Best Practices Guide for Wildfire Mitigation		✓		
	Evaluation and Appraisal Report (EAR)				

	Process			✓	
	Best Practices Guides	<a href="http://www.dca.state.fl.us/fdcp/DCP/ear/indexear.htm">www.dca.state.fl.us/fdcp/DCP/ear/indexear.htm</a>		✓	
	NASA/ Prescott College Project	<a href="http://www.dca.state.fl.us/fdcp/DCP/">www.dca.state.fl.us/fdcp/DCP/</a>		✓	
		<a href="http://www.dca.state.fl.us/fdcp/DCP/">www.dca.state.fl.us/fdcp/DCP/</a>		✓	

## **Department of Environmental Protection**

The Department of Environmental Protection (DEP) is the lead state agency for environmental regulation, resource management and stewardship. The Department administers regulatory programs and issues permits for air, water and waste management. It also oversees the state's land acquisition and water management programs, and manages the Florida Park Service. The agency activities discussed below are applicable in both pre- and post-disaster situations.

Developed by the DEP under Section 373.036, Florida Statutes, the Florida Water Plan is the Department's principal planning tool for long-term protection of Florida's water resources. Key objectives of the plan include flood protection and floodplain management, such as minimizing damage from flooding, promoting non-structural approaches to achieve flood protection, and protecting and restoring the natural features and functions of the 100-year floodplain.

### **Division of Water Resource Management**

The Division of Water Resource Management is responsible for protecting the quality of Florida's drinking water as well as its rivers, lakes, wetlands, and beaches, and for reclaiming lands after they've been mined for phosphate and other minerals. It establishes the technical basis for setting the state's surface and groundwater quality standards and implements a variety of programs to monitor the quality of those water resources. The following six program areas under the Division of Water Resource Management have hazard mitigation implications as described below.

#### **Florida Dam Safety Program**

The Technical Support Section of the Bureau of Mine Reclamation coordinates several state regulations on dam safety, including Sections 373.403 – 373.4596, Florida Statutes, and Florida Administrative Code regulations for management and storage of surface waters by water management districts. Program activities include updating the state inventory of dams, which is then listed under the National Dam Inventory; training professional engineers, as well as government officials in current dam safety issues; and holding conferences and meetings for government officials and industry professionals to exchange information on current technologies and programs to enhance dam safety.

The state receives annual grant funds (for training programs) from the National Dam Safety Program administered by the Federal Emergency Management Agency, based on the number of dams in the state that meet the federal definition.

The Bureau is currently seeking modification of state law concerning dams to make it more consistent with federal regulations on dam safety. State law does not define a minimum size for a dam, nor are hazard classes mentioned in Florida law. The goal of

the legislation would be to establish mandatory reporting of all dam construction, alteration, or removal to the state office.

### **Environmental Resource Permit Program by Wetlands Section**

The Environmental Resource Permitting (ERP) Program regulates dredging, filling, and construction in wetlands and other surface waters, as well as storm water and surface water management systems in uplands. The program is in effect throughout the state except for the Florida Panhandle within the limits of the Northwest Florida Water Management District. The program has flood mitigation implications, because it addresses both storm water runoff *quality* and *quantity* (*i.e.*, storm water attenuation and flooding of other properties).

### **Beaches and Wetland Resources**

The BCS is responsible for administering the state's beach management program to protect and restore the state's beaches and coastal systems. BCS has four sections: Beach and Ecosystem Management, Coastal Data and Analysis, Coastal Protection and Engineering, and Environmental Permitting.

### **Florida Beach Erosion Control Program**

The Beach and Coastal Ecosystem Management Section administer the Florida Beach Erosion Control Program (Section 161.101, Florida Statutes). The program provides financial assistance to Florida's county and municipal governments for the implementation of beach erosion control activities, such as beach restoration and nourishment, project design and engineering studies, environmental studies and monitoring, inlet management planning, inlet sand transfer, and dune restoration and protection. Beach restoration/nourishment and dune restoration/protection ensure natural systems that provide storm protection to people and upland properties.

### **State of Florida Strategic Beach Management Plan**

In accordance with Sections 161.091 and 161.161, Florida Statutes, DEP has developed a Strategic Beach Management Plan, which documents the specific strategies for constructive actions at inlets and critically eroded beaches fronting the Atlantic Ocean, Gulf of Mexico and Straits of Florida for beach erosion control; beach preservation, restoration and nourishment; and storm and hurricane protection. The Plan provides a management tool for use by state, local and federal government officials in implementing those projects that contribute most significantly to addressing the state's beach erosion problems, which in turn provides natural coastal hazard mitigation functions.

## **Coastal Construction Control Line (CCCL) Program**

The Department of Environmental Protection's CCCL program is an essential element of Florida's coastal management program. It provides protection for Florida's beaches and dunes while assuring reasonable use of private property. Recognizing the value of the state's beaches, the Florida Legislature created the CCCL to protect the coastal system from improperly sited and designed structures that can destabilize or destroy the beach and dune system. Once destabilized, the valuable natural resources are lost, as are their important values for recreation, upland property protection and environmental habitat. Adoption of a CCCL establishes an area of jurisdiction in which special siting and design criteria are applied for construction and related activities. The standards may be more stringent than those already applied in the rest of the coastal building zone, because greater forces are expected to occur in the more seaward zone of the beach during a storm event.

## **Division of State Lands**

The purpose of the Division of State Lands is to acquire and dispose of lands as directed by the Board of Trustees of the Internal Improvement Trust Fund. The division administers, manages and maintains the records of all lands held by the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida. It administers and maintains the geodetic survey requirements for the State of Florida, sets boundary lines for lands owned by the Board of Trustees and identifies and sets ordinary and mean high water boundaries for purposes of sovereignty and land title. The Division also administers and disposes of Racketeer Influenced and Corrupt Organization Act (RICO) properties and controls aquatic and invasive/exotic plant species on public lands. The following six program areas under the Division of State Lands have hazard mitigation implications as described below.

## **Florida Forever Program**

In 1999, the Florida Legislature enacted the state's current program (Florida Forever) for the acquisition of lands, water areas and related resources for outdoor recreation and natural resource conservation purposes. The program succeeded the Preservation 2000 program, which acquired and preserved more than 1.25 million acres of land in the state. The public acquisition of land and conservation easements would avoid future developments in timberlands, wetlands, and coastal areas, which in turn eliminates/reduces the potential impacts of wildfire, flooding and coastal storms. DEP's Division of State Lands receives approximately \$105 million annually from the sale of Florida Forever bonds, for land acquisition purposes.

## **Office of Coastal & Aquatic Managed Areas**

The Office of Coastal & Aquatic Managed Areas (CAMA) mission is to protect, conserve, and manage Florida's coastal and aquatic ecosystems through environmental education, resource management, scientific research, environmental monitoring, and partnerships. Protection and conservation of coastal and aquatic managed areas would eliminate the potential risks to people and property caused by coastal storm surge, by preventing developments in such areas.

## **Prescribed Burn Within Greenways by the Office of Greenways and Trails**

The Office of Greenways and Trails (OGT) serves as a clearinghouse for the growing greenways and trails system in Florida and plays the leading role in implementation of the Statewide System of Greenways and Trails. It serves as staff to the Florida Greenways & Trails Council; provides technical assistance to communities, developers, and landowners; provides information regarding recreational opportunities on greenways and trails in Florida; and develops information and publications to educate the public about the benefits of greenways and trails.

The OGT has contracted with the Florida Department of Agriculture's Division of Forestry to manage the natural resources within statewide greenways and trails, which include prescribed burning of forest areas to reduce naturally occurring fuels within the areas. Reduction of forest fuels reduces the risk and loss associated with major wildfires.

## **Water Control Structures Within the Cross State Canal Trail**

DEP has a contract with the Southwest Florida Water Management District (SWFWMD) to manage water control structures at the west end of the Cross State Canal Trail, including the Inglis Dam and the Bypass Canal Dam. Proper operation and maintenance of those water control structures reduces the potential impacts of dam failure to the residents of nearby Yankee Town and the City of Inglis.

## **Division of Resource Assessment & Management**

The Division of Resource Assessment & Management provides strategic support and policy coordination for the use of information technology resources. It provides the research, data and necessary institutional memory to support the need for geology-related information and provides GIS services to the Department and the public. The Division operates laboratories that support DEP activities throughout the state and assists other local, state and federal agencies in environmental activities. The Florida Geological Survey under the Division of Resource Assessment and Management provide several programs with hazard mitigation implications as described below.

## **Florida Geological Survey**

The Florida Geological Survey (FGS) has a mission and work plan that shares the common vision and mission of DEP. In addition, FGS has specific directives mandated by the Florida Legislature (Section 377.075, Florida Statutes), which include periodical reporting of survey progress, findings, and analyses, and providing technical assistance to the general public, industry, and other local, state and federal agencies.

An FGS project that has hazard mitigation implications is the mapping of depressions, which may be used to support/update the existing map of sinkhole type, development, and distribution in Florida (see FGS Map Series No. 110). The map is available for free download (PDF format) from the FGS Web page (<http://www.dep.state.fl.us/geology/geologictopics/sinkhole.htm>.)

Another project with potential hazard mitigation implications is a USGS proposal for a feasibility study to determine whether a new technology for monitoring changes in land surface elevation is suitable for identifying sinkhole-prone areas.

FGS and the Florida Division of Emergency Management (DEM) have a working relationship that maintains a database of reported statewide sinkhole incidents. The database is available for free download (Microsoft Excel format) on the agency's Web site: (<http://www.dep.state.fl.us/geology>).

Additional FGS geologic information that has natural hazard mitigation implications and is available from the FGS includes reports on coastal erosion, earthquakes, and flood control.

## **Mitigation Analysis**

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact	Effect On Loss Reduction (✓)		
			Support	Facilitate	Hinder
Department of Environmental Protection  (DEP administers regulatory programs and issues permits for air, water and waste management.)	Florida Water Plan  Florida Dam Safety Program  Environmental	Division of Water Resource Management Office of Water Policy Phone: (850) 245-8335 Web-site: <a href="http://www.dep.state.fl.us/water/waterpolicy/index.htm">www.dep.state.fl.us/water/waterpolicy/index.htm</a>  Bureau of Mine Reclamation Phone: 850) 488-8217 Web-site: <a href="http://www.dep.state.fl.us/water/mines/damsafe.htm">www.dep.state.fl.us/water/mines/damsafe.htm</a>		✓          ✓	

Resource Permit Program	Bureau of Beaches and Wetlands Phone: 487-1262 Web-site: <a href="http://www.dep.state.fl.us/beaches/programs/envpermt.htm">www.dep.state.fl.us/beaches/programs/envpermt.htm</a>	✓		
Florida and Beach Erosion Control Program	Bureau of Beaches and Wetlands Phone: 487-1262 Web-site: <a href="http://www.dep.state.fl.us/beaches/programs/bcherosn.htm">www.dep.state.fl.us/beaches/programs/bcherosn.htm</a>		✓	
State of Florida Strategic Beach Management Plan	Bureau of Beaches and Wetlands Phone: 487-1262 Web-site: <a href="http://www.dep.state.fl.us/beaches/programs/bcherosn.htm">www.dep.state.fl.us/beaches/programs/bcherosn.htm</a>			✓
Coastal Construction Control Line Program	Bureau of Beaches and Wetlands Phone: 487-1262 Web-site: <a href="http://www.dep.state.fl.us/beaches/">www.dep.state.fl.us/beaches/</a>			
Florida Forever Program	Bureau of Beaches and Wetlands Phone: 487-1262 Web-site: <a href="http://www.dep.state.fl.us/beaches/programs/ccclprog.htm">www.dep.state.fl.us/beaches/programs/ccclprog.htm</a>	✓		
Water Control Structures within the Cross State Canal Trail	Division of State Lands Office of Environmental Services Phone: 850-245-2784 Web-site: <a href="http://www.dep.state.fl.us/lands/oes/index.htm">www.dep.state.fl.us/lands/oes/index.htm</a>	✓		
Prescribed Burn within Greenways	Contact: Jim Wolfe Phone: 245-2052 E-mail: <a href="mailto:Jim.D.Wolfe@dep.state.fl.us">Jim.D.Wolfe@dep.state.fl.us</a>	✓		
Florida Geological Survey	Contact: Laurie Wiley, Division of Forestry Phone: 352-236-7143 E-mail: <a href="mailto:wiley@doacs.state.fl.us">wiley@doacs.state.fl.us</a>	✓		
	Phone: 488-4191 Web-site: <a href="http://www.dep.state.fl.us/geology/">www.dep.state.fl.us/geology/</a>			✓

### Department of Financial Services

In 1998, Florida voters passed a constitutional amendment combining the offices of the state treasurer, who oversees the Department of Insurance and also serves as the state fire marshal, and the comptroller, who also serves as the head of the Department of Banking & Finance. Beginning January 7, 2003, the duties and responsibilities of both departments fell under the new Department of Financial Services. The agency activities discussed below are applicable in both pre- and post-disaster situations.

**Office of Insurance Regulation**

The purpose of the Office of Insurance Regulation is to ensure that insurance companies licensed to do business in Florida are financially viable; operating within the laws and regulations governing the insurance industry; and offering insurance policy products at fair and adequate rates that do not unfairly discriminate against the buying public.

**Division of Risk Management**

The mission of the Risk Management Program is to ensure that participating State of Florida agencies receive quality workers’ compensation, liability, federal civil rights, automobile liability, and property insurance coverage at reasonable rates by providing self-insurance, purchase of insurance, claims handling, and technical assistance in managing risk.

**Mitigation Analysis**

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact	Effect On Loss Reduction (✓)		
			Support	Facilitate	Hinder
Division of Risk Management, Department of Insurance (Ensures that participating State of Florida agencies receive quality insurance coverage at reasonable rates.)	Property insurance coverage		✓		

**Department of Management Services**

Services offered by the Department of Management Services (DMS) include providing workspace, communications, information systems, personnel and procurement. The Department has four major programs including Facilities, Support, and Workforce Programs, and State Technology Office. The agency activities discussed below are applicable in both pre- and post-disaster situations.

The DMS Long Range Program Plan includes the Life Safety project that addresses fire and safety issues, as one of the top priority capital improvement projects for sixty-eight (68) state facilities managed by the Department. Because the fire and safety codes are intended to reduce potential impacts of fire and related disasters to people and the property, the program does have a statewide hazard mitigation implication.

## **The Life Safety Code Compliance Projects**

The Life Safety Code Compliance Projects are a group of repair and upgrade projects included in the DMS's Fixed Capital Outlay (FCO) budget request. All of the agency repair projects are funded from a trust fund established for the operation and maintenance of DMS rental facilities, funded by rental income from these buildings. Examples of projects include fire damper installation, and fire alarm replacement, which would reduce the risks and potential losses of lives and properties from fire.

### **Mitigation Analysis**

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact	Effect On Loss Reduction (✓)		
			Support	Facilitate	Hinder
Department of Management Services  (DMS provides work space, communications, information systems, personnel and procurement)	The Life Safety Code Compliance Projects	Facilities Program Web-site: <a href="http://www.state.fl.us/dms/orgdocs/facilities.html">www.state.fl.us/dms/orgdocs/facilities.html</a>		✓	

### **Regional Planning Councils**

There are 11 regional planning councils (RPCs) in Florida. Most were created through voluntary interlocal agreements. They now operate under the laws of Chapter 189, Florida Statutes. RPCs are public organizations that bring together the state's local governments to share responsibility for the future of Florida. The agency activities discussed below are applicable in both pre- and post-disaster situations.

Each regional planning council is like a bridge between state and local governments representing an area in which mutual resources, characteristics, and issues exist. Each regional planning council includes members from the counties and municipalities located within the RPC boundaries, and gubernatorial appointees who represent the state.

The RPCs are Florida's only multi-purpose regional entity that is in a position to plan for and coordinate intergovernmental solutions to growth-related problems on greater-than-local issues, provide technical assistance to local governments, and meet other needs of the communities in each region. Issues of regional interest (e.g., natural resources, housing, emergency management, transportation, economic development) are addressed in the RPCs strategic policy plans. These plans provide a regional framework into which local government plans fit.

Because the state is increasingly vulnerable to natural as well as man-made disasters, emergency management planning is becoming a critical element of the 21<sup>st</sup> century planning paradigm. The role of RPCs in emergency management matters has been increasing over time. RPCs are involved in disaster mitigation and recovery, hazardous materials planning, multi-county hazard exercises, hazardous waste verification, local emergency planning committees and hurricane evacuation and shelter planning.

### **Mitigation Analysis**

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact	Effect On Loss Reduction (✓)		
			Support	Facilitate	Hinder
Regional Planning Councils/Local Emergency Planning Committee	Strategic Regional Policy Plan			✓	
	Local Mitigation Planning and Related Initiatives		✓	✓	

### **South Florida Water Management District**

The South Florida Water Management District (SFWMD) is a special taxing district with the authority to collect ad valorem (property) taxes from landowners within its 16-county jurisdiction. The District is the largest of the 5 Water Management Districts in Florida and encompass all or part of 16 counties, covering a total of 17,930 square miles and 6 million people. Historically, flood protection has been at the core of the District's activities since it was originally established in 1949 as the Central and Southern Florida Flood Control District. The agency activities discussed below are applicable in both pre- and post-disaster situations.

### **District Flood and Water Management System**

U.S. Congress in 1948 adopted legislation creating the Central and Southern Florida Flood Control Project for the purposes of flood control, water level control, water conservation, prevention of saltwater intrusion, and preservation of fish and wildlife. Today the system consist of approximately 1800 miles of canals and levees with 200 primary water control structures, 16 pump stations, 25 major pump stations and 2000 smaller water control structure which can move hundreds of millions of gallons of water

in and out of storage areas, providing both flood protection and water supply. The man-made water management system undergoes continuous enlargements and refinements with new construction, acquisitions and upgrades to the existing network to enhance the systems ability to provide flood control and water supply protection, as well as preserve water quality and environmental values.

### **Water Control Structure Canal/Levee Maintenance**

Water control structure maintenance includes District pump stations, project culverts and special construction projects. Canals and levees maintenance includes replacement of project culverts, bank stabilization, re-vegetation, mowing, tree removal and shoal removal. Ongoing maintenance of these structures is vital for ensuring the proper functioning of these flood control structures.

### **Equipment Maintenance**

Ongoing equipment maintenance consists of preventive and cyclic maintenance and restoration of a variety of equipment for the regional flood control systems.

### **District Water Management Plan**

Pursuant to Section 373.036, Florida Statutes (F.S.) and section 62-40.520, Florida Administrative Code (F.A.C.), the Governing Board of the SWFMD updates the District Water Management Plan (DWMP) once every 5 years. The plan addresses water supply, water quality, flood protection and floodplain management and natural systems.

The SFWMD's Flood Protection and Floodplain Management portion of the DWMP is divided into two core objective, both of which have direct mitigation implications: Core Objective FP1: Minimize damage from flooding; Core Objective FP2: Promote nonstructural approaches to achieve flood protection, and to protect and restore the natural features and functions of the 100-year floodplain.

The following flood protection and floodplain management programs are described in the DWMP 2002:

### **Big Cypress Basin Watershed Project (Big Cypress Watershed Management Plan)**

The Big Cypress Basin Watershed Management Plan includes development of a set of calibrated hydrologic-hydraulic models and ecologic assessment of an approximately 1,200-square mile area of western Collier watershed and incorporation of engineering, economic, and environmental analyses of alternative water management strategies to formulate continuing plans and road maps for capital projects in the Big Cypress Basin.

### **South Lee County Watershed Plan**

Severe flooding in 1995 raised the issue of water flows in southern Lee County. The South Lee County Watershed Plan, which was completed based in July 1999, addressed this issue. Several of the recommendations specified in the plan have either been implemented or are being implemented. River and creek systems restoration involving removal of exotic vegetation and debris has been completed. A maintenance schedule that keeps these systems clean is ongoing. Acquisition of flood plain in the east Bonita Springs area as recommended in the plan is ongoing. Finally, a Regional Flow way concept recommended by the plan is being implemented through the regulatory process.

### **C-111 Project**

The C-111 Project consists of both structural and nonstructural modifications to the existing works within the C-111 Basin to promote more natural hydroperiods in Taylor Slough and the eastern panhandle ecosystems of Everglades National Park. Flood protection within the C-111 Basin east of the L-31N and C-111 canals will be maintained. In FY 2001, 90% of the land acquisition was completed. The general reevaluation report supplement is under development.

### **Environmental Resource Permitting (ERP)**

The SFWMD and the Florida Department of Environmental Protection (FDEP) have an Operating Agreement about which agency will process ERP permits for particular projects, based on the type of land use. For example, the District processes residential and commercial developments, while the FDEP processes power plants, waste water treatment plants and single family home projects.

An ERP covers activities such as dredging and filling in wetlands, constructing flood protection facilities, providing storm water containment and treatment, site grading, building dams or reservoirs, and other activities affecting state waters.

Local Comprehensive Plan Review

Pursuant to the requirements of Chapters 373 and 163, F.S., the District reviews local government comprehensive plans and amendments, and provides water resources related technical assistance to local governments on their efforts to prepare Evaluation and Appraisal reports (EARs). Efforts to support this activity were significantly upgraded during FY 2002 in support of linking land and water planning.

### **Basin Flood Studies**

This activity consists of basin flood studies in the C-17 and C-51 Basins. The C-17 Basin Study will investigate increasing flood mitigation and conveyance capacity of the C-17 Canal and the S-44 Structure without adversely affecting the receiving water body

(Lake Worth Lagoon). The C-51 Basin Study will reevaluate the C-51 Basin Rule (surface water management permitting criteria). The C-11 and C-4 Basins are also being studied. The C-4 forward pumping station has been constructed and is currently operational.

**Land Acquisition Activities**

The South Florida Water Management District’s land acquisition program has totaled 1,407,906 acres. These lands are acquired for the purposes under the Save Our Rivers Program (SOR) and the Comprehensive Everglades Restoration Program (CERP).

**Florida Forever Work Plan**

Each water management district updates a five-year plan that identifies projects meeting specific criteria for the Florida Forever Program, which is a state-bond-supported land acquisition program to support and protect environmentally sensitive land and water resources.

The Kissimmee River Restoration Project identified in the SFWMD Florida Forever Work Plan as one of the projects eligible for Florida Forever funding in the FY 2003 – 2007 period, is an example of a project with hazard mitigation implication.

The plan specifies a Fiscal Year 2004 target to have 100% of total project areas (75,000 acres) in Kissimmee Watershed floodplain mitigated or acquired, which would support an objective to promote natural approaches to achieve flood protection and protect and restore the natural features and functions of the floodplain.

**Mitigation Analysis**

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact	Effect On Loss Reduction ( ✓ )		
			Support	Facilitate	Hinder
South Florida Water Management District	District Water Management Plan  District Flood & Water Management System	800-432-2045 for all programs	✓	✓	

	Water Control Structure Canal/Levee Maintenance		✓		
	Equipment Maintenance		✓		
	Environmental Resource Permitting		✓		
	Local Comprehensive Plan Review			✓	
	Basin Flood Studies				
	Land Acquisition Activities		✓	✓	
	Florida Forever Work Plan				✓

## **4.2.3 Federal programs and Policies**

### **Army Corps of Engineers**

#### **Flood Control**

Corps flood control efforts range from small, local protection projects (levees or non-structural flood control measures) to major dams. Today, most Corps constructed flood protection projects are owned by sponsoring cities, towns, and agricultural districts, but the Corps continues to maintain and operate 383 dams and reservoirs for flood control.

Neither the Corps nor any other agency can prevent all flood damages, but it has an impressive record. During the 10 years from 1991 through 2000 the United States suffered \$45 billion in property damage from floods. During that same period, however, Corps flood damage reduction measures prevented more than \$208 billion in damage - 82% of the damage that would have occurred if the protection were removed.

In addition to building projects, the Corps of Engineers, through its Flood Plain Management Services, advises communities, industries, and property owners on protection measures they can take themselves, such as zoning regulations, warning systems and flood proofing. Last year this service responded to more than 44,000 requests for information. The value of property protected by this program is an estimated \$6.2 billion.

#### **Environmental Stewardship**

Environmental stewardship includes compliance measures to ensure that Corps projects must meet Federal, state, and local environmental requirements. Prevention, meanwhile, focuses on eliminating pollution to the greatest extent possible. This includes reducing hazardous materials use and hazardous waste generation. Conservation includes two different types of resource management at project sites: conservation and preservation. Conservation focuses on responsibly managing Army lands to ensure long-term natural resource productivity. Preservation focuses on resource protection in stewardship of natural and cultural resources.

#### **Regulation and Permitting**

The Corps has been involved in regulating activities in navigable waterways through the granting of permits since passage of the Rivers & Harbors Act of 1899. At first, this program was meant to prevent obstructions to navigation, although an early 20th century law gave us regulatory authority over the dumping of trash and sewage. Passage of the Clean Water Act in 1972 greatly broadened this role by giving the Corps authority over dredging and filling in the "waters of the United States," including many wetlands.

## **Navigation**

The navigation program includes all of the nation's deep draft harbors which are a vital link to seaborne commerce and handle much of the nation's international trade each year, as well as hundreds of smaller harbors that serve a variety of recreational and commercial purposes. The Corps has also built an intracoastal and inland network of commercial navigation channels, and locks and dams for navigation.

## **Disaster Aid**

Throughout the Nation's history, citizens have relied on the Army to respond to their needs in disasters. In a typical year, the Corps of Engineers responds to more than 30 Presidential disaster declarations, plus numerous state and local emergencies. Emergency responses usually involve cooperation with other military elements and Federal agencies in support of State and local efforts. The Corps of Engineers conducts its emergency response activities under two basic authorities: the Flood Control and Coastal Emergency Act (P.L. 84-99, as amended) and the Stafford Disaster and Emergency Assistance Act (P.L. 93-288, as amended). Under the Stafford Act, the Corps supports the Federal Emergency Management Agency (FEMA) in carrying out the Federal Response Plan, which calls on 26 Federal departments and agencies to provide coordinated disaster relief and recovery operations. Under this plan, the Army has the lead responsibility for public works and engineering missions.

## **Shore Protection**

The Corps of Engineers looks for the most economical, environmentally sound and socially acceptable solutions to shore protection. In some cases, this will involve hard structures – jetties, seawalls, etc. In many other cases, a preferable approach is beach nourishment, the placement of sand along the beach. During storms the sand acts as a buffer and protects the structures behind the beach. Storm waves move the sand offshore, causing the waves to also break further offshore and provide less threat to property. Much of the sand that moves offshore during storms remains in the system and returns to the beaches, carried by the smaller waves prevalent during summer. Some sand will be lost from the system; yet this is often a wise investment, as the cost of replacing sand is many times less than the cost of repairing property damaged by a storm.

Corps shore protection projects are usually cost-shared with the State, the local jurisdiction where the project is located, or both. In cases where the project involves beach nourishment, the cost sharing agreement usually calls for periodic re-nourishment, often over a period of 50 years. The Federal Government has honored all

such commitments. A 1996 study commissioned by the U.S. Office of Management and Budget concluded that Corps beach nourishment projects have performed generally as designed. Actual nourishment volumes, averaged over all projects, have been within 5% of predicted volumes. Actual costs have been 1% less than predicted costs for the initial beach restoration and 10% less than predicted costs for periodic nourishment.

Requests for shore protection projects nearly always come from communities where intense development has already taken place. Federal policy that the local project sponsor provide 100% of the cost to protect undeveloped shorefront lands within an area where a Federal project has been recommended. In evaluating project performance, the Corps has found that Federal shore protection projects have had no measurable effect on encouraging more development. The Federal Government plays no role in decisions regarding land use along the shore. States and local authorities make these decisions and manage their shores.

The Corps of Engineers carries out shore protection projects at the request of local sponsors, as authorized and funded by Congress. Projects are performed only on publicly accessible beaches, and only after thorough studies have determined a positive cost to benefit ratio exists. Although Corps projects provide benefits such as shoreline protection, habitat protection and renewal, and the generation of tax dollars associated with that recreation, the primary purpose is always the protection of life and property.

**Dam safety**

The Corps of Engineers is a leader in developing engineering criteria for safe dams, and conducts an active inspection program of its own dams. The Corps has also carried out inspections at most of the dams built by others – Federal, State and local agencies and private interests.

**Mitigation Analysis**

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact	Effect On Loss Reduction (✓)		
			Support	Facilitate	Hinder
U.S. Army Corps of Engineers	Flood Control  Environmental Stewardship  Regulation and Permitting		✓	✓  ✓	

	Navigation			✓	
	Disaster Aid			✓	
	Shore Protection		✓		
	Dam Safety		✓		

**Department of Homeland Security**  
**Federal Emergency Management Agency**

**The Hazard Mitigation Grant Program (HMGP)**

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

The objectives of the Hazard Mitigation Grant Program are: 1) To promote safety; 2) To prevent future loss of life and damage to property due to disasters; 3) To implement state or local hazard mitigation plans; 4) To enable mitigation measures to be implemented during immediate recovery from a disaster; and 5) To provide funding for previously identified mitigation measures that benefit the disaster area.

**Flood Mitigation Assistance Program (FMA)**

FMA is authorized under the National Flood Insurance Reform Act. It is a partnership designed to assist states and local governments in reducing or eliminating long-term risks of flood damage to structures insurable under the National Flood Insurance Program. Flood Mitigation Assistance funds come from the flood insurance premium pool and are provided to the state on an annual basis allow eligible applicants to incorporate long-term recovery measures that will reduce future claims against the National Flood Insurance Fund. Such activities include flood mitigation planning, technical assistance and mitigation projects that reduce flood damage; priority is given to repetitively damaged or substantially damaged structures.

**Unmet Needs**

This program consists of all supplemental or special appropriations provided by Congress. These special appropriations are provided to assist communities impacted by major presidential declared disasters address their long-term unmet needs. The long-term unmet needs are mitigation related activities above and beyond those funded by the traditional post-disaster recovery and mitigation programs.

**The Pre Disaster Mitigation Grant Program (PDM)**

Disaster Mitigation Act of 2000 authorizes the PDM. It is a partnership designed to assist states, local governments, private non-profit organizations and Indian Tribes in implementing pre-disaster long-term hazard mitigation measures following a major disaster declaration.

The objectives of the PDM Program are: 1) To promote safety; 2) To prevent future loss of life and damage to property due to disasters; 3) To implement state or local hazard mitigation plans; 4) To enable mitigation measures to be implemented during immediate recovery from a disaster; and 5) To provide funding for previously identified mitigation measures that benefit the disaster area.

### Mitigation Analysis

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact	Effect On Loss Reduction (✓)		
			Support	Facilitate	Hinder
DHS/FEMA	HMGP  FMA  Unmet Needs		✓  ✓  ✓		

## National Drought Mitigation Center

The National Drought Mitigation Center (NDMC) helps people and institutions develop and implement measures to reduce societal vulnerability to drought, stressing preparedness and risk management rather than crisis management. Most of the NDMC's services are directed to state, federal, regional, and tribal governments that are involved in drought and water supply planning.

The NDMC, established in 1995, is based in the School of Natural Resource Sciences at the University of Nebraska–Lincoln. The NDMC's activities include maintaining an information clearinghouse; drought monitoring; drought planning and mitigation; drought policy; advising policy makers; collaborative research; K–12 outreach; workshops for federal, state, and international governments and organizations; organizing and conducting seminars, workshops, and conferences; and providing data to and answering questions for the media and the general public.

### Mitigation Analysis

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact	Effect On Loss Reduction (✓)		
			Support	Facilitate	Hinder
National Drought Mitigation Center					
	Monitoring, Planning and Education	P.O. Box 830749 Lincoln, NE 68583– 0749 phone: (402) 472– 6707 fax: (402) 472–6614	✓		

## **4.2.4 Non-Government Programs and Policies**

### **American Red Cross**

The concept of mitigation is not new to the American Red Cross. In fact, its Congressional Charter issued in 1905 states that the purpose of the American Red Cross is to *"continue and carry on a system of national and international relief in time of peace and apply the same in mitigating the sufferings caused by pestilence, famine, fire, floods and other great national calamities and to devise and carry on measures for preventing the same."*

As America's premier humanitarian disaster relief organization, the American Red Cross is vitally interested in doing its part to help prevent people from suffering needlessly. Therefore, the Red Cross is working closely with its local, state, and national partners to help people personalize their risk to natural hazards and make preparedness and mitigation a personal priority. Our goal is to help build a "culture of prevention" that helps families and communities become safer and more prepared when disasters strike. The ARC programs are applicable in both pre- and post-disaster situations.

The American Red Cross Mitigation Task Force recommended that the organization pursue five goals:

- Raise the awareness of the need for mitigation - do more to educate and motivate the public about what they can and should do to better protect themselves and their homes from natural hazards.
- Mobilize support for mitigation through partnerships - work more closely with existing partners and new ones (e.g., federal, state and local government, voluntary agencies active in disaster, the insurance industry, etc.) to promote hazard loss reduction initiatives at the national, state, and local levels.
- Expand mitigation activities within the American Red Cross - bolster the ability of chapters to mobilize public and private support for disaster mitigation where it counts - in communities across the United States. Also, the Red Cross must lead by example by taking steps to reduce the vulnerability of its facilities that are in harm's way.
- Advocate government actions that help mitigate disaster damage and loss of life - actively urge the adoption of appropriate building codes, prudent land-use, and other policies that reduce the vulnerability of people and communities to disasters.
- Encourage and support efforts to integrate mitigation into community decision-making - work hand-in-hand with civic, business, and government leaders to integrate mitigation into community planning, development, and other important economic and quality of life discussions.

Current mitigation activities in which the American Red Cross is engaged, in partnership with the Federal Emergency Management Agency (FEMA), the Habitat for Humanity, the insurance industry (i.e., Allstate and State Farm), the Institute for Business and Home safety, the Association of State Flood Plain managers, and many other organizations include the following:

### **Awareness and Education**

Refers to making people aware of the specific actions they or the community can take to prevent or reduce disaster losses. Community disaster education (CDE) materials and activities include mitigation information and provide a solid platform for expanding mitigation education through activities such as providing advice about how to do home makeovers, community mitigation expositions, and media promotions. Thanks to a generous grant from the Allstate Insurance Company Foundation, the American Red Cross has developed an innovative school-based curriculum aptly named *Masters of Disaster™*. This curriculum which is geared to children in grades kindergarten through 8th grades, uses interactive lessons to bring disaster preparedness and mitigation into a growing number of classrooms across the country by aligning these efforts with academic, standards-based learning for which school districts are clamoring. Launched in 2000, *Masters of Disaster™* is teaching tens of thousands of children the origins and impacts of natural hazards while studying standard subjects such as math and science. Children then bring this vital life and property safety information home to their families and neighborhoods. Just days after the terrorist attacks in New York City and Washington, DC, it became apparent that teachers everywhere faced difficult questions in the classroom. Discussions with experts from across the nation addressing the concerns for young people began and the *Facing Fear: Helping Young People Deal with Terrorism and Tragic Events* curriculum was developed. These experts in education, mental health, and emergency preparedness wrote *Facing Fear* to address terrorism and contain general preparedness information that addresses any tragic event, natural disaster, or man-made disaster. It is relevant for anywhere at anytime.

The *Facing Fear* ready-to-go Lessons and Activities are available in K-2, 3-5,6-8, and 9-12 grade levels, containing four lessons in each of the three chapters: Feelings, Facts and Perspectives, and Future. Modeled after the highly successful *Masters of Disaster™* curriculum for natural disasters, lesson plans in *Facing Fear* meet national education standards in health, social studies and language arts.

### **Direct Activities**

Refers primarily to non-structural measures that make homes and their contents more resistant to the hazards that threaten them. For example, Red Cross can organize or work with other community partners to install latches on cabinet doors and bolt bookcases to wall studs in earthquake prone areas to prevent or minimize damage. It should be noted, however, that Red Cross volunteers and employees should perform **only** measures that do **not** require the expertise of a licensed technician, and with the expressed approval of the homeowner.

Chapters have teamed up with other community volunteers to perform non-structural retrofits of the homes and apartments of low-income senior citizens, to elevate rather than simply replace hot water heaters and furnaces in homes that flood repeatedly, and to encourage funding for and participation in flood buyout programs. They also have joined with community partners and government officials to build a permanent home for a family that includes a tornado safe room.

## **Advocacy**

Refers to the active support of actions, regulations, and incentives that reduce the vulnerability of people and their property to disasters. Land use regulations, building codes, and incentives such as fee waivers for disaster prevention actions are examples of ways to reduce disaster losses. The Red Cross serves as a strong and unified voice for mitigation at the state and local levels by supporting programs, ordinances, and legislation such as prudent land-use policies and effective building codes that are necessary to reduce the vulnerability of people and their property. The American Red Cross has been instrumental in successfully advocating for critically important changes to the Stafford Act. In addition, the Red Cross was a pivotal force behind the establishment of the first Congressional Caucus on Natural Hazards. It also is helping to establish a similar caucus in the U.S. House of Representatives. We look forward to these congressional groups doing their part to make meaningful and lasting contributions to the vitally important effort to make disaster preparedness and mitigation a public value and a national priority.

## **Mitigation on a Disaster Relief Operation**

Ideally, mitigation occurs before disaster strikes; however, we also know from experience that people are more likely to take mitigation seriously after a disaster. The immediate period following a disaster presents an opportune time to educate and motivate people about the steps they can and should take to prevent or reduce future losses. Red Cross chapters and disaster relief operations are uniquely positioned to encourage the public to rebuild stronger and safer. Therefore, we are aggressively integrating mitigation into our disaster response and relief efforts to make sure that as we help them cope with and recover from the disaster. Mitigation staff on a disaster relief operation are responsible for:

- Serving as the focal point to initiate and coordinate Red Cross mitigation measures and activities during the relief operation.
- Assisting the disaster relief operation leadership to identify and seize opportunities to help disaster victims reduce or prevent future disaster losses.
- Ensuring the dissemination and appropriate use of Red Cross disaster safety and mitigation materials and messages.
- Leading Red Cross safety and mitigation activities and coordinating them with federal and state mitigation staff and other voluntary organizations to ensure disaster victims are aware of and seriously consider available mitigation programs (e.g., buy-outs, elevations, grants to build tornado safe rooms).

- Coordinating with the Local Disaster Volunteers function to help identify and utilize local and spontaneous volunteers to support disaster safety and mitigation activities.
- Coordinating with the In-Kind Donations unit to identify sources of donated resources (goods, materials, and services) that can be used by disaster victims for mitigation purposes.
- Collecting individual and community disaster preparedness and mitigation success stories and coordinating with the disaster relief operation and government public affairs offices to publicize the fact that disaster preparedness and mitigation saves lives, reduce injuries, and lessen property damage.
- Enhancing the readiness of the affected chapters to coordinate and follow-up on mitigation efforts initiated during response and recovery by Red Cross, FEMA, and state and local government.
- Assisting chapters to access federal, state, and local mitigation grant funds that are needed to support their mitigation efforts, as well as to retrofit or build new chapter facilities to protect these from future disasters.

## National Resource Library of Disaster Mitigation Measures

Development of a national resource library of disaster initiatives undertaken by community-based organizations are underway, collecting the success stories via the Internet at: <http://www.tallytown.com/redcross>.

### Mitigation Analysis

Agency Name (Mission/ Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact	Effect On Loss Reduction (✓)		
			Support	Facilitate	Hinder
American Red Cross	Mitigation Awareness and Education  Direct Activities (to assist individuals/communiti es to implement non- structural mitigation measures)  Mitigation Advocacy  Mitigation on a Disaster Relief Operation	Larry Koslick Florida State Disaster Manager  Phone: 651-514-1486  Web-site: <a href="http://www.redcross.org">www.redcross.org</a>	✓       ✓	✓    ✓	

## **Florida League of Cities**

The Florida League of Cities was created in 1922 by city officials who wished to unite the municipal governments in the state. From a modest beginning of just a few cities and towns, the Florida League of Cities has become one of the largest state municipal leagues in the nation with 404 of Florida's 408 municipalities and six charter counties represented by their voluntary membership in the Florida League of Cities. The League's programs are applicable in both pre- and post-disaster situations.

The aim of the Florida League of Cities is to promote local self-government and serve the needs of the municipal governments in Florida. This includes:

- advocacy at both the state and federal levels,
- increasing public knowledge of municipal services and issues,
- providing municipal officials with training and technical assistance, and
- providing cost-effective programs and products to local governments.

Through its participation in the state hazard mitigation planning process, the Florida League of Cities recognizes a need for informing the elected municipal officials about the importance of community-based hazard mitigation planning and implementation of initiatives to reduce the risk and vulnerability of the people and their properties to the hazards the communities face.

A potential program to which the hazard mitigation education for the elected municipal officials may be integrated is the Institute for Elected Municipal Officials, which offers a comprehensive overview of Florida municipal government presented by a faculty of top professionals in the field.

## **FLASH**

The Federal Alliance for Safe Homes – FLASH, Inc. is a non-profit, 501(c)3, organization committed to promoting life safety and property protection. The organization includes an unprecedented alliance of private, public and non-profit partners dedicated to protecting families and homes from natural and man-made disasters, including flooding, hail, hurricane, lightning, severe storms, tornadoes, wildfires and more. FLASH programs are applicable in both pre- and post-disaster situations.

FLASH began in 1998 as an advertising campaign designed to raise awareness about safety and mitigation options in post-Hurricane Andrew Florida. The campaign borrowed its consumer driven strategy from the highway safety movement to create widespread demand for safer, better-built homes.

Founded as the Florida Alliance For Safe Homes, FLASH grew and expanded quickly becoming the Federal Alliance For Safe Homes during 2002. Today, it targets award-

winning programs to a diverse and growing audience of consumers, code officials, design professionals, elected leaders, homeowners and homebuilders.

The FLASH mission is to help reduce deaths, injuries, suffering, property damage and economic losses caused by natural and man-made disasters.

FLASH uses a social marketing philosophy to deliver disaster safety information. By creating awareness and fostering understanding, FLASH works to bring about acceptance and behavior change in the intended audience. Initiatives combine current, reliable information about the latest tools and techniques to create safer, better-built homes while offering free consumer resource and referral to keep the audience progressing toward the goal.

FLASH is committed to demonstrating leadership through creation of useful and reliable disaster safety education programs and tools. These programs and tools target both lay and technical audiences.

### **Blueprint For Safety™**

This blue-ribbon education program provides the latest in disaster-safe construction techniques for new and existing residential structures. It details code-plus, best practices to harden residences and increase disaster resistance. The program tools include classroom training courses, printed materials, [www.blueprintforsafety.org](http://www.blueprintforsafety.org), contractor's field manual, CD-ROM, interactive online tools and free technical assistance through a toll-free hotline (1-877-221-SAFE).

### **FLASH Cards**

This popular and colorful print campaign offers 14 easy-to-understand cards featuring weather perils, safety tools and special topics like homeland security. The cards contain valuable information in an easy-to-understand format while offering resource lists for more detailed and technical data. Now available in Spanish, the campaign provides consumers with a handy reference tool to de-mystify mitigation techniques, and is easily co-branded for widespread distribution.

### **FLASH Web Site – [www.flash.org](http://www.flash.org)**

The FLASH Web site provides one-stop shopping for those interested in the most accurate and up-to-date disaster safety information. By registering through a secure server, homeowners can keep an on-line record of their home improvement projects while researching safety options.

### **Hurakan® Children's Program**

The Hurakan program features a cartoon character based on the ancient Mayan god of weather. Using Hurakan, children learn fun but life-saving lessons about hurricane

preparedness and safety. Hurakan is featured in the 2002 and 2003 Home Depot Hurricane Guides.

**Multi-media Public Service Campaigns**

FLASH produces, distributes and launches an annual public service campaign to raise awareness and keep disaster safety top-of-mind. Using 30-second television and radio spots in English and Spanish, the campaign promotes FLASH Web sites and free resources. The campaign can be customized and used by partners in any media market.

**One-Stop Hurricane Resource Guide**

This popular tool provides compact, inclusive one-stop shopping for hurricane safety and mitigation information and was originally developed as a media reference guide. The guide is in its second printing and will soon be available as a *One-Stop High Wind* and *One-Stop Disaster Guide*.

**Mitigation Analysis**

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact	Effect On Loss Reduction (✓)		
			Support	Facilitate	Hinder
Federal Alliance for Safe Homes (a non-profit organization committed to promoting life safety and property protection from natural and man-made disasters.)	Blueprint For Safety™	Phone: 1-877-221-SAFE Web-site: <a href="http://www.blueprintforsafety.org">www.blueprintforsafety.org</a>	✓		
	FLASH Cards	Web-site: <a href="http://www.flash.org">www.flash.org</a>		✓	
	One-Stop Hurricane Resource Guide			✓	

**Florida Interfaith Networking in Disaster**

**FIND** is a coalition of faith-based organizations, partnered with allied agencies and each other, which promotes networking to prepare Florida’s communities for the effects of disaster, and in the aftermath facilitates spiritual and long term practical aid.

**FIND’s** Network is comprised of faith-based organizations, state, local and national recovery groups, as well as other state and community-based leaders. Recovery/mitigation focused, FIND works to help Florida prepare for, recover from, and

prevent disaster.

**FIND** keeps the faith community at large informed. In disaster's aftermath, FIND prepares and sends damage/recovery needs assessments to its vast and diverse Network. National Faith Disaster Coordinators have come to rely on FIND's assessment of expected short and long-term recovery concerns and respond quickly when anticipated needs are identified and assistance is requested.

**FIND** is there to help local faith leaders as they identify and address disaster related unmet needs in their community. FIND is there to connect them to other disaster recovery players. Access to resources is provided, interagency cooperation developed, and support for the local effort given. FIND's programs are applicable in both pre- and post-disaster situations.

**FIND** efforts include:

### **Statewide Network building**

FIND brings faith leaders together with other social organization and building industry leaders and government quarterly to communicate, cooperate, and build collaborative relationships.

### **Community Interfaith/Interagency Network, CIIN, development**

FIND nurtures the development of community-based collaborative networks, providing capacity building guidance and support. Reactively, FIND has developed a CIIN in every Florida disaster impacted community since 1993 to address unmet needs and to rebuild the homes and lives of those without insurance or necessary resources. Over 200 homes have been rebuilt to current (stronger) building codes by caring volunteers. Proactively, FIND works to encourage and support CIIN development in non-disaster affected Florida communities. FIND teaches these collaborative groups how to become active participants in their communities' preparedness plans and Local Mitigation Strategy, LMS. Local emergency management is recognizing the potential resources available through working with their local faith-based and other community non-profits. Together they are cooperating to find ways to make mitigation happen.

### **Training**

FIND provides training in all aspects of emotional resiliency building, disaster recovery and mitigation. FIND sponsors Critical Incident Stress Management, CISM, and Compassion Fatigue trainings, and facilitates workshops on a variety of disaster related topics (weapons of mass destruction, Individual and Household Assistance Program,

showcases community rebuild/mitigation projects, CERT, state of the art database programs, technical disaster awareness, Church of the Brethren Child Care program, to name a few). The latest in prevention and intervention strategies are communicated from relevant organizations.

### **Sharing practical knowledge**

FIND facilitates bringing uncommon players to a common table to realize a common mission and identify resources to address unmet needs. FIND's director is a founding member (Chair) of the Florida Home Builders Association FEMA Substantial Improvement/Mitigation Task Force, bringing Home Builders, Architects, Engineers, Building Officials, Flood Plain Managers, County Administrators, Local Emergency Management, Nonprofits, Insurance Industry representatives, FEMA and the State of Florida together to cooperatively address flood rules and mitigation.

### **Operation Cover-up**

Identified as an immediate unmet need by FIND in the aftermath of the Central Florida Tornadoes, resources were needed to protectively cover damaged homes and property. FIND asked Florida Emergency Management to provide the materials. They did. Skilled constructors and roofers donated their time and talent. Over 100 damaged homes were protected from further damage. Promoted/supported by FIND, hundreds of wind-damaged homes have been protected from further damage. FIND now works to help local communities build their human and material resource capacity to meet this anticipated

### **Publishing the *CIIN Tools of the Trade* manual**

Packed full of organizational capacity building tools, this manual (funded by Florida Division of Housing and Community Development) reflects the lessons learned from years of local disaster recover experience. It includes sample Incorporation Papers, By-laws, job descriptions, mission statements, goals, objectives, policies, and best practices. It has been recognized, reproduced, and distributed by FEMA to disaster-affected communities throughout Region IV.

### **FIND is all about Mitigation**

FIND works with allied agencies to promote awareness of mitigation techniques and opportunities. FIND is uniquely able to help communities and their leaders understand the concept of mitigation, identify accomplishable projects, and access the resources to make mitigation happen. In cooperation with Florida Division of Housing and Community Development, FIND published its *Mitigation "Best Practices,"* in which FIND

explains mitigation in terms the layperson can understand, showcases six mitigation projects accomplished by volunteers and nonprofits in communities throughout Florida, explains the LMS and helps community leaders understand how they can, and why they should, become involved. FIND Network participants participate on many LMS boards across the state.

### **Nontraditional Partners to Make Mitigation Happen**

Using the *Mitigation “Best Practices”* publication, FIND conducts workshops across Florida, including Area Coordinator’s groups and the Governor’s Hurricane Conference, to help Florida understand the power of Nontraditional Partnership Building to “Make Mitigation Happen.” Local emergency management is excited about the potential for collaboration with local CIIN participants and the possibility of accessing in-kind resources as mitigation match. It is making the difference for many smaller communities who, within the confines of their government resources, can not produce the match now needed to participate in the mitigation grant sand box.

### **Mitigation Project Implementation**

People skills combined with real estate experience, construction knowledge, and building industry network connections make FIND a qualified sensible choice to implement community mitigation projects. Recently, FIND successfully implemented the acquisition of seven flooded properties in Highlands County – a Nontraditional Partnership to “Make Mitigation Happen.”

### **National cooperation**

FIND is among the oldest and most experienced statewide Interfaith in the United States. FIND works cooperatively to help other states in there statewide Interfaith development. FIND’s *CIIN Tools of The Trade* manual, *Mitigation ‘Best Practices,’* and founding guidelines (including secular agency alliance) are willing shared with emerging statewide Interfaiths. FIND knows the importance of being organized and connected before disaster strikes. Nationally recognized for its network-building skills, FIND understands the power of collaborative relationships. FIND knows it takes everyone working together to “Make Mitigation Happen.”

## Mitigation Analysis

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact	Effect On Loss Reduction (✓)		
			Support	Facilitate	Hinder
Florida Interfaith Networking in Disaster (a coalition of faith- based organizations working with allied agencies to promote awareness of mitigation techniques and opportunities.)		Phone: (352) 796-8387  Web-site: <a href="http://www.floridadisasters.org/">www.floridadisasters.org/</a>	✓		

### Florida Home Builders Association

The Florida Home Builders Association (FHBA) is a trade association representing the residential construction industry in Florida, with 7,000 corporate members. FHBA is actively engaged in governmental affairs, political action and legal defense programs designed to promote and protect homeownership opportunities in Florida. FHBA's programs are applicable in both pre- and post-disaster situations.

Numerous other services provided by FHBA to its members include continuing education, insurance, leadership training, research and networking opportunities. An example of education program that support implementations of structural mitigation is a series of courses on the building/structural component of the Unified Florida Building Code.

FHBA also serves as a technical partner for the Blueprint for Safety Program provided by the Federal Alliance for Safe Homes, providing technical information and guidance for enhancing an educational program designed to provide information about disaster-safe building techniques and features.

## **Disaster Contractors Network**

Jointly supported by the FHBA; the Associated Builders and Contractors of Florida (ABC); Florida Roofing, Sheet Metal and Air Conditioning Contractors Association (FRSA); Association of General Contractors (AGC); the Center for Disaster Risk Policy at Florida State University; Florida Department of Community Affairs; Florida Department of Business and Professional Regulation; and the Federal Emergency Management Agency, Region IV (FEMA), the Disaster Contractors Network (DCN) provides services and training to building professionals including an online training offered through the Center for Disaster Risk Policy at Florida State University.

Year-round mitigation activities and incentives are among the topics covered in DCN's online training.

### **Mitigation Analysis**

<b>Agency Name</b> (Mission/Function)	<b>Programs, Plans, Policies, Regulations, Funding, or Practices</b>	<b>Point of Contact</b>	<b>Effect On Loss Reduction (✓)</b>		
			<b>Support</b>	<b>Facilitate</b>	<b>Hinder</b>
Florida Home Builders Association	Educational courses on the Unified Florida Building Code	<a href="http://www.fhba.com/continuinged/Default.htm">www.fhba.com/continuinged/Default.htm</a>	✓		
	Technical Partner for the Blueprint for Safety Program by the Federal Alliance for Safe Homes (FLASH)	<a href="http://www.blueprintforsafety.org/bluepages/resources.html">www.blueprintforsafety.org/bluepages/resources.html</a>		✓	
	Disaster Contractors Network	<a href="http://www.dcnonline.org">www.dcnonline.org</a>		✓	

**International Hurricane Research Center (IHRC)**  
**Florida International University (FIU)**

**A CHILD OF DISASTER:** the IHRC, a Type 1 Center, was created in 1995 through a public-private partnership between the private sector ***We Will Rebuild Foundation*** and the State of Florida through Florida International university in Miami.

The We Will Rebuild Foundation was a private sector organization created by local leaders of business and industry in Miami-Dade County at the request of the President and the Governor in the aftermath of hurricane Andrew, which devastated the area in 1992. The FIU/IHRC programs are applicable in both pre- and post-disaster situations.

**A MISSION OF RESEARCH:** Upon its creation, the IHRC was given the mission of “conducting hurricane research in Florida”. Initially the effort focused on the human impact of hurricanes through surveys and other research initiatives carried out by social scientists. Over the years the IHRC has recognized its research must be interdisciplinary and collaborative. To that end the structure of the IHRC has evolved to include four distinct research laboratories within its organization. These four labs are:

**Laboratory for Coastal Research:** This lab concentrates on issues of basic science involving beach erosion, sea-level rise, coastal flooding and storm surge. The lab has pioneered the use of airborne laser terrain mapping technology to develop tools for emergency management as it relates to evacuation and planning in coastal areas.

**Laboratory for Social Behavioral Research:** This lab focuses on the human impact of hurricanes and other hazards. The work of this lab ranges from studies of human attitudes with respect to evacuation and mitigation to the role of demographics in risk and vulnerability levels.

**Laboratory for Economic and Insurance Research:** This lab concentrates on the cost of hurricane impacts and issues related to insurance loss risk and liabilities. The lab has been working on the development of a public *insurance loss model* with funded from the Dept. of Insurance.

**Laboratory for Structural Mitigation:** This lab is the only one of its kind in Florida. The lab focuses on design criteria, both architectural and structural, and construction methods and techniques as tools for hurricane loss mitigation in housing in Florida. This lab has lead the IHRC’s participation in the DCA funded *Hurricane Loss Mitigation Program* a.k.a. RCMP since the year 2000. The lab possesses unique equipment to conduct full-scale tests of building components and assemblies under simulated hurricane conditions including the impact of flying debris and wind/rain. In 2003, this lab used critical research findings to submit a proposed modification to the Florida Building Code with respect to the type of nails used to attach roof sheathing to its structure in the High Velocity Hurricane Zone in Florida. The proposed modification will enhance roof performance under hurricane uplift loads by up to 130% without increasing the cost of

construction. This lab works closely with the construction industry to ensure that its research seeks cost-effective and practical applications to improve the quality of housing construction in our state.

**A MISSION OF EDUCATION AND OUTREACH:** The IHRC's philosophy is that research must involve applications that can be converted into practical tools for practitioners, in many disciplines, to pursue damage reduction through the daily practice of their jobs and professions. This objective will be achieved through education and outreach efforts used to convert research findings into knowledge that can then be transferred to those that will use such knowledge as a practical tool for mitigation. The IHRC, mainly through its lab for structural mitigation, supports a graduate level academic education program, a K-12 program, and a continuous outreach effort by involvement of its staff in public speaking activities, participation in conferences and workshops and other activities.

**Developing a Culture of Mitigation through Education:** This program, a.k.a. the K-12 Project, works with teachers and students in K-12 schools to teach the key concepts of *vulnerability*, *hazards*, *damage* and *mitigation*. The project not only promotes take-home activities to involve the parents as well as school-wide activities to provide opportunities for rewarding exceptional work by the students, but also as a venue for involving the larger community.

**Academic Education:** The IHRC supports the teaching of two graduate level academic courses taught at FIU's College of Engineering/Dept. of Construction Management. These courses are *Vulnerability Assessment* (FIU # BCN 5588) and *Hazard Mitigation* (FIU# BCN 5589). Both courses include classroom offerings and a distance learning through the FEEDS program.

**AN INTERNATIONAL MISSION:** the IHRC engages in numerous research, educational and outreach activities involving other countries. The philosophy behind this work is that we can learn a lot by working with institutions in other hurricane vulnerable countries, and then apply such knowledge toward the practice of mitigation here in Florida and other vulnerable states.

## Mitigation Analysis

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact	Effect On Loss Reduction (✓)			Comments
			Support	Facilitate	Hinder	
International Hurricane Research Center at Florida International University. Focuses on damage reduction through programs of basic and applied research complemented by education and outreach initiatives. It is the Type 1 Center dedicated to hurricane research, education and outreach in the state of Florida.	Extensive research capabilities. Major structural mitigation testing capabilities.  Research and education initiatives have been funded by: DCA, FEMA, Florida DOI, NSF, NOAA, ONR/DOD and others.	Ricardo A. Alvarez Deputy Director. (305)348-1865 OR <a href="mailto:alvarez@fiu.edu">alvarez@fiu.edu</a>  web sites at; <a href="http://www.ihrc.fiu.edu">www.ihrc.fiu.edu</a>  <a href="http://mitigation.fiu.edu">http://mitigation.fiu.edu</a>	<b>X</b>	<b>X</b>		Participates and supports the Miami-Dade County LMS. Also the South Florida Hurricane Conference  AND the Governor's Hurricane Conference

## 4.2.5 POLICY AND PROGRAM ANALYSIS

The analysis of the enabling legislation and rules and the policies and the programs related to development in hazard prone areas is a key element in defining the state's mitigation capability. As the surveys of organizations with mitigation related programs and/or policies described in Sections 4.2.1 and 4.2.2, above, continue the results will be posted on the appropriate table and the links to the vulnerability and risk analysis, the goals and objectives will be determined and the results of the analysis from the SHMPAC committee will be posted in the comments section. Where this section reflects an activity, the activity will be more fully described in the Work Plan Section at the end of this document.

### 4.2.5.1 Laws and Rules Enabling Mitigation

Statute or Rule	Agency	Comments
Chapter 161, Florida Statutes (FS)	Department of Environmental Protection Planning (DEP)	
Chapter 163, FS	DCA-DCP	
Rule 9J-5 Florida Administrative Code (FAC)	DCA-DCP	A bill recommending amendments to the current rule has been submitted.
Chapter 186, FS	DCA-DCP	
Chapter 380, FS	DCA-DCP	
Chapter 252, FS	Department of Community Affairs, Division of Emergency Management (DCA-DEM)	
Rule 9G-6 FAC	DCA-DEM	Revisions to the current rule recommended that reflect actual mitigation planning and implementation procedures.
Rule 9G-22 FAC	DCA-DEM	Revisions to the current rule recommended to reflect the Disaster Mitigation Act of 2000; and to incorporate the Pre-Disaster Mitigation Grant Program as a separate rule.

#### 4.2.5.2 State Policies Analysis

Policy	Hazard	Agency	Goals and Objectives	Relation to Local Planning	Comments
Policy 1.1: Ensure that local government comprehensive plans provide for appropriate land uses in vulnerable areas, and manage, control and regulate development of land that is subject to impacts from natural disasters such as coastal and inland flooding, wildfire, tropical storms and hurricanes. (Chapters 163, 187, and 380, Florida Statutes (FS); Rule 9J-5, Florida Administrative Code (FAC))	Flooding Wind Wildfire	Department of Community Affairs, Division of Community Planning (DCA-DCP)	<u>Goal 1</u> , Objective 1.2  <u>Goal 2</u> , Objective 2.3  <u>Goal 2</u> , Objective 2.6	Policy is directed to local comprehensive plan	Research underway to evaluate the effectiveness of local coastal land use and development policies and programs on reducing the potential negative impacts of coastal hazards.
Policy 1.2: Ensure that local government comprehensive plans direct population concentrations away from coastal high hazard areas. (Chapters 163 and 187, FS Rule 9J-5, FAC)	Storm surge Flooding Wind	DCA-DCP	<u>Goal 1</u> , Objective 1.2  <u>Goal 2</u> , Objective 2.3  <u>Goal 2</u> , Objective 2.6	Policy is directed to local comprehensive plan	Research underway to evaluate the effectiveness of local coastal land use and development policies and programs on reducing the potential negative impacts of coastal hazards.
Policy 1.3: Ensure that local governments assess the risk to and vulnerability of persons and property within coastal high hazard area as part of the evaluation and appraisal report, which assessment shall include balancing of property rights with public safety concerns when redevelopment occurs and strategies that address redevelopment feasibility. (Chapters 163, FS; Rule 9J-5, FAC)	Storm surge Flooding Wind	DCA-DCP	<u>Goal 1</u> , Objective 1.2  <u>Goal 2</u> , Objective 2.6		Currently under review by the SHMPAC Policy Analysis Committee

Policy	Hazard	Agency	Goals and Objectives	Relation to Local Planning	Comments
Policy 1.4: Limit land use densities and intensities on coastal barrier islands. (Chapters 163, 187, FS; Rule 9J-5, FAC)	Storm surge Flooding Wind	DCA-DCP	Goal 2, Objective 2.3  Goal 2, Objective 2.6	Policy is directed to local comprehensive plan	Research underway to evaluate the effectiveness of local coastal land use and development policies and programs on reducing the potential negative impacts of coastal hazards.
Policy 1.5: Encourage local governments to adopt guidelines and criteria for post-disaster redevelopment as part of their local comprehensive plan. The post- disaster redevelopment plans should reduce vulnerability and maintain or reduce county hurricane evacuation clearance times and shelter capacity. (Chapters 163, 187, FS; Rule 9J-5, FAC)	Storm surge Flooding Wind	DCA-DCP	Goal 2, Objective 2.6		Currently under review by the SHMPAC Policy Analysis Committee
Policy 1.6: Ensure that local governments regulate the subdivision of land in flood- and storm surge-prone areas and seaward of the Coastal Construction Control Line (CCCL), and where no CCCL, lands in FEMA-delineated V-zone, so that development sites avoid such areas. (Chapters 163, 187, FS; Rule 9J-5, FAC)	Storm surge Flooding Wind	DCA-DCP; Department of Environmental Protection (DEP)	Goal 2, Objective 2.3  Goal 2, Objective 2.6	Policy is directed to local comprehensive plan	Research underway to evaluate the effectiveness of local coastal land use and development policies and programs on reducing the potential negative impacts of coastal hazards.
Policy 1.7: Ensure that local government comprehensive plans avoid land uses with special evacuation needs--such as hospitals, schools, day	Storm surge Flooding Wind	DCA-DCP	Goal 2, Objective 2.3  Goal 2, Objective 2.6	Policy is directed to local comprehensive plan.	Research underway to evaluate the effectiveness of local coastal land use and

Policy	Hazard	Agency	Goals and Objectives	Relation to Local Planning	Comments
care and adult living facilities--in coastal high hazard areas. (Chapters 163, 187, FS; Rule 9J-5, FAC)					development policies and programs on reducing the potential negative impacts of coastal hazards.
Policy 2.1: Transportation improvements that encourage or subsidize new development in coastal high hazard areas and floodways shall be limited. (Chapter 163, FS)	Storm surge Flooding Wind	DCA-DCP; Department of Transportation (DOT)	<u>Goal 2</u> , Objective 2.3  <u>Goal 2</u> , Objective 2.6		Currently under review by the SHMPAC Policy Analysis Committee
Policy 2.2: Require that primary hurricane evacuation routes be constructed above the 100-year flood level and the category 1 storm-surge level. Give priority to the retrofit of existing roads that are not above the 100-year flood level. (Chapter 163, FS; Rule 9J-5, FAC)	Storm surge Flooding	DCA-DCP; Department of Transportation (DOT)	<u>Goal 2</u> , Objective 2.3  <u>Goal 2</u> , Objective 2.6		Currently under review by the SHMPAC Policy Analysis Committee
Policy 3.1: Where hurricane evacuation clearance times exceed 16 hours, local governments should adopt land use, transportation and shelter improvement strategies to reduce clearance times to 16 hours. (currently proposed in amendment to Rule 9J-5, FAC)		DCA-DCP	<u>Goal 2</u> , Objective 2.3  <u>Goal 2</u> , Objective 2.6		Currently under review by the SHMPAC Policy Analysis Committee
Policy 4.1: Ensure that local governments reduce hurricane shelter deficits. (Chapter 163, FS)	Wind	DCA-DCP; Department of Community Affairs, Division of Emergency Management (DCA-DEM)	<u>Goal 2</u> , Objective 2.3  <u>Goal 2</u> , Objective 2.6		Currently under review by the SHMPAC Policy Analysis Committee
Policy 4.2: On a county-by-county basis, establish strategies to reduce	Wind	DCA-DCP; DCA-DEM	<u>Goal 2</u> , Objective 2.3  <u>Goal 2</u> ,		Currently under review by the SHMPAC

Policy	Hazard	Agency	Goals and Objectives	Relation to Local Planning	Comments
shelter deficits, including retrofit of existing public buildings, and alternative shelters in community centers.			Objective 2.6		Policy Analysis Committee
Policy 5.1: Encourage local governments to implement beach erosion control activities to serve as a first line of defense against storm surge and flooding from coastal storms. Provide financial assistance to county and municipal governments for the implementation of beach erosion control activities, such as beach restoration and nourishment, project design and engineering studies, inlet management planning, environmental studies and monitoring, inlet and dune restoration and protection.	Storm surge Flooding	DEP	Goal 2, Objective 2.3  Goal 2, Objective 2.6		Currently under review by the SHMPAC Policy Analysis Committee
Policy 5.2: The State of Florida will regulate development seaward of the Coastal Construction Control Line consistent with Chapter 161, F.S., to protect and stabilize the coastal system from improperly sited or designed structures, state regulatory programs apply/require special siting and design criteria for construction related activities within the coastal building zone seaward of the CCCL.	Storm surge Flooding Wind	DEP	Goal 2, Objective 2.3  Goal 2, Objective 2.6		Currently under review by the SHMPAC Policy Analysis Committee
Policy 5.3: Require setbacks from shorelines to protect	Storm surge Flooding	DEP	Goal 2, Objective 2.3		Currently under review by the

Policy	Hazard	Agency	Goals and Objectives	Relation to Local Planning	Comments
property from coastal flooding.	Wind		Goal 2, Objective 2.6		SHMPAC Policy Analysis Committee
Policy 5.4: Implement the Strategic Beach Management Plan developed by DEP, which documents specific strategies actions at inlets and critically eroded beaches-projects that not only address the state's serious beach erosion, but also provide natural coastal hazard mitigation functions.	Storm surge Flooding Wind	DEP	Goal 1		Currently under review by the SHMPAC Policy Analysis Committee
Policy 6.1: Give coastal areas, including barrier islands, beaches and related lands, priority in local, regional and state land acquisition programs.	Storm surge Flooding Wind	DCA-DCP; DCA-Florida Communities Trust; DEP	Goal 1, Objective 1.2  Goal 2, Objective 2.6		Currently under review by the SHMPAC Policy Analysis Committee
Policy 6.2: Encourage local governments to establish land acquisition strategies in their comprehensive plan. Public acquisition of land and conservation easements avoid future development in coastal areas, wetlands, floodplains and timberlands, which in turn eliminates or reduces the potential impacts of coastal storms, flooding and wildfire.	Storm surge Flooding Wind Wildfire	DCA-DCP	Goal 2, Objective 2.3  Goal 2, Objective 2.6		Currently under review by the SHMPAC Policy Analysis Committee
Policy 6.3: Manage natural resources on public lands to reduce impacts from natural or man-made disasters, such as floods and wildfires.	Flooding Wildfire	DEP; Department of Agriculture, Division of Forestry	Goal 1		Currently under review by the SHMPAC Policy Analysis Committee
Policy 7.1: Increase community participation in the community rating system by ___%, and improve the ratings for current participants so	Flooding	DCA-DEM	Goal 2		Currently under review by the SHMPAC Policy Analysis Committee

Policy	Hazard	Agency	Goals and Objectives	Relation to Local Planning	Comments
that the National Flood Insurance policy holders would benefit from the premium discounts for the improved ratings resulting from the community hazard mitigation activities.					
Policy 7.2: Require that buildings in the coastal high hazard area be built above both the 100-year base flood level and the Category 1 Storm Surge level. (Chapter 163, FS)	Storm surge Flooding	DCA-DCP	<u>Goal 2</u> , Objective 2.3		Currently under review by the SHMPAC Policy Analysis Committee
Policy 7.3: Maintain natural vegetation within the 100-year floodplain and coastal high-hazard areas. Natural vegetation serves as stormwater attenuation and serves flood storage and water quality-related functions for floodplains and coastal high hazard areas.	Flooding Wind	DCA-DCP DEP	<u>Goal 2</u> , Objective 2.3		Currently under review by the SHMPAC Policy Analysis Committee
Policy 7.4: Operate and maintain water control structures to reduce potential impacts from storm events.	Flooding	DEP	<u>Goal 1</u>		Currently under review by the SHMPAC Policy Evaluation Committee.
Policy 7.5: Continue research and technological improvements to detect, measure and map depressional areas to better identify or anticipate sinkhole development.	Sinkhole	DEP	<u>Goal 4</u>		Currently under review by the SHMPAC Policy Evaluation Committee.
Policy 8.1: Provide a comprehensive and coordinated coastal infrastructure strategy to prevent unwise public expenditure and avoid subsidizing	Storm surge Flooding	DCA-DCP	<u>Goal 1</u>		Currently under review by the SHMPAC Policy Evaluation Committee.

Policy	Hazard	Agency	Goals and Objectives	Relation to Local Planning	Comments
growth in hazardous coastal areas that may endanger human life and expose public and private property damage.					
Policy 8.2: Discourage public subsidies for water, sewer, or stormwater facilities that serve development in the 100-year floodplain and coastal high hazard areas.	Storm surge Flooding	DCA-DCP	<u>Goal 1</u>		Currently under review by the SHMPAC Policy Evaluation Committee.
Policy 8.3: Limit state funds that subsidize growth and post-disaster redevelopment in hazardous coastal barrier and coastal high hazard areas. Specific consideration shall be given to the impacts of proposed development of redevelopment with respect to hazard mitigation.	Storm surge Flooding	DCA-DCP	<u>Goal 1</u>		Currently under review by the SHMPAC Policy Evaluation Committee.
Policy 8.4: Promote regional or basin-wide stormwater management facilities to mitigate coastal and inland flooding.	Flooding	DEP	<u>Goal 1</u>		Currently under review by the SHMPAC Policy Evaluation Committee.

### 4.2.5.3 State Programs Analysis

Program	Hazard	Agency	Goals and Objectives	Relation to Local Planning	Comments
Florida Wildland Fire Risk Assessment	Wildfire	Department of Agriculture and Consumer Services, Division of Forestry	<u>Goal 1</u> , Objective 1.7		
Florida Firewise Communities Program	Wildfire	Division of Forestry	<u>Goal 3</u> , Objective 3.3		
Hazardous Fuel Reduction	Wildfire	Division of Forestry	<u>Goal 2</u>		
Fireline Establishment	Wildfire	Division of Forestry	<u>Goal 1</u>		
Best Management Practices	Wildfire	Division of Forestry; Department of Community Affairs, Division of Community Planning (DCA-DCP)	<u>Goal 2</u> , Objective 2.5		
Emergency Management Preparedness and Assistance (EMPA) Competitive Grant Program	Multi-hazard	Department of Community Affairs, Division of Emergency Management (DCA-DEM)	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 3</u>		
Municipal Grant Competitive Grant Program	Multi-hazards	DCA-DEM	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 3</u>		
Local Mitigation Strategy	Multi-hazards	DCA-DEM	<u>Goal 2</u>		
Coastal Management Element of the Local Comprehensive Plan	Storm surge Flooding Wind	DCA-DCP	<u>Goal 1</u> Objective 1.9  <u>Goal 2</u> Objective 2.3	Local land use planning to protect natural resources, as well as potential negative impacts of coastal disasters to people and property by guiding the developments away from coastal high hazard areas.	
Waterfronts Florida	Storm surge Flooding	DCA-DCP	<u>Goal 2</u> Objective 2.6	Participating communities to incorporate hazard mitigation	

Program	Hazard	Agency	Goals and Objectives	Relation to Local Planning	Comments
				planning into the local comprehensive plans.	
Evaluation and Appraisal Report (EAR)	Multi-hazards	DCA-DCP	<u>Goal 2</u> <u>Objective 2.6</u>	The EAR process for updating local comprehensive plans will be integrated with revisions of the local mitigation plans.	
Best Practices for Pre-Disaster Mitigation	Storm surge Flooding Wind	DCA-DCP	<u>Goal 2</u> , <u>Objective 2.5</u>		
Best Practices for Post-Disaster Redevelopment Planning	Storm surge Flooding Wind	DCA-DCP	<u>Goal 2</u> , <u>Objective 2.5</u>		
NASA/Prescott College Project	Multi-hazards	DCA-DCP	<u>Goal 1</u> <u>Objective 1.7</u>		
Community Visioning	Multi-hazards	DCA-DCP	<u>Goal 2</u>		
Florida Dam Safety Program	Flooding	Department of Environmental Protection (DEP)	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 3</u>		
Florida Building Code	Fire Wind Flooding	Department of Community Affairs, Division of Housing and Community Development (DCA-HCD)	<u>Goal 1</u>		
Hurricane Loss Mitigation Program (a.k.a. Residential Construction Mitigation Program)	Wind	DCA-HCD	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 4</u>		
Florida Communities Trust	Storm surge Flooding Wildfire	DCA; DEP	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 5</u>		
Environmental Resource Permit Program	Flooding	DEP	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 5</u>		
Florida Beach and Erosion Control Program	Storm surge Flooding Wind	DEP	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 5</u>		
State of Florida Strategic Beach Management Plan	Flooding	DEP	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 5</u>		

Program	Hazard	Agency	Goals and Objectives	Relation to Local Planning	Comments
Coastal Construction Control Line Program	Storm surge Flooding Wind	DEP	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 5</u>		
Florida Forever Program	Storm surge Flooding Wind Wildfire	DEP	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 5</u>		
Water Control Structures within the Cross State Canal Trail	Flooding	DEP	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 5</u>		
Prescribed Burn within Greenways	Wildfire	DEP	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 5</u>		
Florida Coastal Management Program Grants	Storm surge Flooding Wind	DEP	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 5</u>		
Mapping of Depressions	Sinkhole	Florida Geological Survey (FGS)	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 3</u>		
Sinkhole Database	Sinkhole	FGS	<u>Goal 1</u> <u>Goal 2</u> <u>Goal 3</u>		
Life Safety Code Compliance Projects	Fire	Department of Management Services, Facilities Program	<u>Goal 6</u>		

## 4.3 LOCAL CAPABILITY ASSESSMENT

***44 CFR 201.4(c)(3)(ii) - The State mitigation strategy shall include: a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.***

The Florida Division of Emergency Management has completed a general analysis of existing Local Mitigation Strategies to determine the effectiveness of locally identified policies, programs and capabilities to maintain and support hazard mitigation planning related activities at the local level. This analysis is based upon local evaluations of the effectiveness of the identified programs and their accompanying policies within their communities. The local programs identified and discussed in this section includes:

- Local Building Construction Program with the accompanying policies identified in the local Building codes.
- Local Land Use Planning Program, with the accompanying development regulations identified in the Local Government Comprehensive Plans.
- Local Floodplain Management Program with the accompanying Local Flood Damage Prevention Ordinance.
- Local EM Program with the accompanying Local Comprehensive Emergency Management Plan
- Local Coastal Shoreline Management Program.

The activities discussed in this section by no means are all-inclusive of local programs, policies and capabilities in the state. However, they represent a synopsis of the primary programs and policies that were presented in each of the 67 Local Mitigation Strategies.

Further research on emerging policies, programs, and capabilities that enhance the local hazard mitigation, as well as the evaluation on the effectiveness of existing tools will be conducted on an ongoing basis, whose results will be included in the revised plan that is going to be submitted for a review and approval within five years of the initial plan approval.

**Table 4.3.1: Local Programs and Policies Assessment**

County	Building Codes	Local Government Comprehensive Plans	Local Flood Prevention Ordinances	Local Comprehensive Emergency Management Plan	Coastal Construction Control Line
Alachua	E	E	E2	E	NA
Baker	E	E	E	E	NA
Bay	E1	E	E1	E	E
Bradford	E	E	E	E	E
Brevard	E	E	E	E	E
Broward	E	E	E	E	E
Calhoun	E1	E	E1	E	NA
Charlotte	E	E	E1	E	E
Citrus	E	E	E1	E	E
Clay	E1	E1	E1	E	NA
Collier	E	E	E	E	E
Columbia	E1	E1	E1	E	NA
DeSoto	E	E	E	E	NA
Dixie	E1	E1	E1	E	E
Duval	E	E	E1	E	E1
Escambia	E	E	E	E	E1
Flagler	E	E	E	E	E
Franklin	E	E	E	E	E
Gadsden	E1	E	E	E	NA
Gilchrist	E	E	E	E	NA
Glades	E	E	E	E	NA
Gulf	E	E	E	E	E
Hamilton	E1	E1	E1	E1	NA
Hardee	E	E	E	E	NA
Hendry	E1	E	E1	E	NA
Hernando	E	E	E	E	E
Highlands	E	E	E	E	NA
Hillsborough	E	E	E	E	NA
Holmes	E	E	E	E	NA
Indian River	E	E	E	E	E
Jackson	E	E	E2	E	NA
Jefferson	E1	E1	E1	E	E
Lafayette	E	E	E1	E	NA
Lake	E	E	E	E	NA
Lee	E	E	E	E	E
Leon	E1	E	E1	E	NA
Levy	E	E	E2	E	NA
Liberty	E	E	E	E	NA
Madison	E	E	E	E	NA
Manatee	E	E	E	E	E
Marion	E	E	E	E	NA

County	Building Codes	Local Government Comprehensive Plans	Local Flood Prevention Ordinances	Local Comprehensive Emergency Management Plan	Coastal Construction Control Line
Martin	E	E	E	E	E
Miami-Dade	E	E	E	E	E
Monroe	E	E	E	E	E
Nassau	E	E	E	E	E
Okaloosa	E1	E	E	E	E
Okeechobee	E	E	E1	E	NA
Orange	E	E	E2	E	NA
Osceola	E	E	E	E	NA
Palm Beach	E	E	E	E	E
Pasco	E	E	E	E	E
Pinellas	E	E	E	E	E
Polk	E	E	E2	E	NA
Putnam	E	E	E	E	NA
Saint Johns	E	E	E	E	E
Saint Lucie	E	E	E	E	E
Santa Rosa	E	E	E	E	E
Sarasota	E	E	E	E	E
Seminole	E	E	E1	E	NA
Sumter	E	E	E	E	NA
Suwannee	E	E	E1	E	E
Taylor	E1	E1	E1	E	E
Union	E1	E1	E1	E1	NA
Volusia	E	E	E2	E	E
Wakulla	E	E	E	E	E
Walton	E1	E	E2	E	E1
Washington	E1	E1	E1	E	NA

Table 4.3.1 provides a general analysis of the effectiveness of each of the local programs/policies discussed in this section. In the table, E denotes local analysis provides that measure effectively enhances local mitigation capability. E1 denotes local analysis provides that measure effectively enhances local mitigation capability, but better enforcement is needed. While, E2 denotes local analysis provides that measure effectively enhances local mitigation capability, but not all communities represented under the multi-jurisdictional plan participates in the NFIP.

The following is a general description and capability analysis of the effectiveness of local mitigation programs/policies.

### **Florida Building Code**

On March 1, 2002, a single statewide Florida Building Code (Chapter 553, Florida Statutes) replaced all local codes. The Code is designed to make the local building process more efficient, increase accountability, bring new and safer products to the market, increase consumer confidence, and better protect the residents from natural disasters. The codes meets the fire protection and life safety requirements of the Florida Fire Prevention Code; has minimum requirements to ensure that buildings in hurricane prone areas withstand high winds and in coastal counties, the impact of wind-born debris; and defers flood resistant construction in the areas of special flood hazards to local flood plain management ordinances. New structures that comply with the Code would be fire-resistant; wind damage resistant, if built in the Wind-borne Debris Region; and flood resistant, if built in the floodplain. Revised standards for rehabilitation of new building codes will be implemented in 2004.

The effectiveness of the Code in reducing the potential damages is yet to be proven in the aftermath of the future hazards events. The Department of Community Affairs (DCA) has contracted an engineering consultant to evaluate the effectiveness of wind resistance features in reducing hurricane damage and loss to single family residences and residential buildings with five or more units. Based on the analyses of the damages and losses caused by simulated hurricanes to the buildings each of which has been modeled with a specific set of wind resistive features at numerous locations in Florida, the calculated loss relativities for new constructions build to the Florida Building Code show strong loss reductions over the exiting buildings. These reports (*Development of Loss Relativities for Wind Resistive Features of Residential Structures*, and *Development of Loss Relativities for Wind Resistive Features for Residential Buildings with Five or More Unites*) can be downloaded from the DCA Web-site at: <http://www.dca.state.fl.us/fhcd/programs/rcmp/> . All local governments in the State are required to adopt and implement the Statewide Uniform Building Code. This code also regulates the construction of state-owned facilities, new schools and university/college facilities. Table 4.3.1, indicates that 15 counties report that better enforcement of the building code is needed by communities.

## **Local Comprehensive Planning**

Chapter 163, Florida Statutes, requires local governments to plan for future development and growth, adopt comprehensive plans to guide future growth and development, implement adopted plans by adoption of appropriate land development regulations, develop programs and procedures to carry out and implement provisions of the plan, and periodically evaluate and update the comprehensive plans. The law recognizes the importance of having internal and external consistency in all elements of the comprehensive plans. All local government land use and development decisions must be consistent with the comprehensive plan, therefore regulation of developments in hazard prone areas such as coastal high hazard areas and flood plains specified in local comprehensive plans would guide the developments away from such hazardous areas.

Florida's coastal communities are required to adopt a Coastal Management Element of the Comprehensive Plan that requires protection of human life against the effects of natural disasters, and limitation of public expenditures that subsidize development in high hazard coastal areas (Section 163.3177, Florida Statutes). Additionally, Section 163.3178 of the Florida Statutes requires as a part of the Coastal Management Element of the local comprehensive plans, a component for hazard mitigation including post-disaster redevelopment planning to eliminate inappropriate and unsafe development in coastal areas. While no evaluation have been conducted to assess the effectiveness of post disaster development plans developed by local governments, the Division of Community Planning (DCP) will publish Best Practices guidebooks on pre-disaster hazard mitigation and post-disaster redevelopment.

The Division of Community Planning (DCP) will be completing a review and evaluation of the hazard mitigation effectiveness of the local comprehensive plans. Based on our analysis of Local Mitigation Strategies, all 67 of the Local Mitigation Strategy Working Groups has identified the Local Government Comprehensive Plan as an effective tool in assisting them in carrying out mitigation related activities. [Table 4.3.1](#) shows that seven communities report that better enforcement of local standards is needed.

## **Local Hazard Mitigation Strategy**

In 1997, the Florida Department of Community Affairs (DCA) launched a \$15 million program to promote the development of Local Mitigation Strategies (LMS), to bring cities and counties together in a community-based hazard mitigation planning process.

The body responsible for developing the plan, the LMS Working Group, consists of representatives from a broad range of both the public and private entities such as of building officials, planners, public works staff, emergency management personnel, public housing specialists, transportation authorities, utilities, school boards, water management districts, area businesses, and non-profit organizations.

The LMS has proven to be effective in expediting the post-disaster implementation of local mitigation projects seeking federal mitigation assistance by having the local mitigation projects listed in the LMS and endorsed by the Working Group. It also ensures the funding and implementation of local mitigation projects because some state grant programs (e.g. Florida Small Cities CDBG and Florida Communities Trust) provide points for the projects listed in the LMS, that are seeking funding from these competitive grant programs.

### **Local Comprehensive Emergency Management Plan**

Chapter 252, Florida Statutes, sets forth criteria for compliance review of a local comprehensive emergency management plan (CEMP), which include an annex for mitigation function of the local community. The compliance review of the local CEMP would encourage the local emergency management staff to stay aware of the local hazard mitigation issues through active participation in the LMS process. Each of the 67 Local Mitigation Strategies indicates that the CEMP is an effective tool to assist in implementing hazard mitigation measures at the local level. In many cases, the LMS is used as the documentation needed to address the mitigation annex of the CEMP.

### **Coastal Construction Control Line**

Chapter 161, Florida Statute, designates the Department of Environmental Protection (DEP) to establish coastal construction control line (CCCL), within which special siting and design criteria are applied for obtaining permits for construction and related activities. The CCCL siting and construction standards were shown to be effective in reducing property loss in Hurricane Opal, in which only 2 of the 576 structures permitted by the CCCL program were significantly damaged. In comparison, 768 of 1,610 structures built before the CCCL program were damaged or destroyed by Opal. The control line exists in 31 of the State's 67 counties.

### **Local Floodplain Management Ordinances**

When the community chooses to join the National Flood Insurance Program (NFIP), it must adopt and enforce minimum floodplain management standards for participation. The local floodplain management ordinances incorporates minimum federal requirements within the Special Flood Hazard Area (SFHA) that are designed to prevent new development from increasing the flood threat and to protect new and existing buildings from anticipated flood events, which include requirements for:

- permits for all development in the SFHA,
- review of all development plans and subdivision proposals to determine whether the proposed developments will be reasonably safe from flooding,
- certifications that all new and substantially improved structures in the SFHA are designed and constructed to minimize future flood damage,
- use of all base flood elevation data, and
- maintenance of storm water carrying capacities within all waterways

Based on our reviews of the existing Local Mitigation Strategies, discussions with the State Assistance Office of the NFIP, and a review of the Community Status Report of October 2003, all 67 counties of Florida and over 400 municipalities are currently participating in the NFIP. These communities have adopted and are enforcing the local floodplain management standards described above to meet program requirements to participate in the NFIP. Local regulations must be updated when additional data are provided by FEMA or when Federal or State standards are revised. Additionally, there are six Local Mitigation Strategies that represent 14 sanctioned, non-participating local governments in the state. In Table 4.3.1, those counties are indicated by the E2 designation. Also, 18 counties report that better enforcement of local ordinances is needed.

The CRS is an adjunct program to the NFIP that rewards those communities that participate in flood mitigation related activities that are above and beyond the minimum requirements of the NFIP. The CRS program supports the State's goal to reduce the reduce risks and vulnerability of people and their property to flooding. The CRS and its related activities are an integral part of the state and local mitigation planning process. Several of the eligible activities under the CRS have been identified in the mitigation measures section of many of the Local Mitigation Strategies. The CRS is a very important program, given 210 of the state's 430 NFIP participating local governments presently participates in the CRS and receives over \$61,185,148 in benefits from reduce flood insurance premiums. Over 95 percent of the state's local governments participate in the NFIP with over \$1.7 million policies and this roughly equates to 40 to 45 percent of all NFIP policies nationwide. Moreover, Florida has the fourth highest number repetitive loss properties in the nation.

### **Showcase/Project Impact Community**

In 1998, the State of Florida in partnership with the Federal Emergency Management Agency (FEMA), the Institute for Business and Home Safety (IBHS), the American Red Cross and Fannie Mae, along with a wide range of private sector partners teamed together with the City of Deerfield Beach and Broward County to create the nations first "Showcase Community/Project Impact Community. The initiative was later expanded to include the City of Pensacola/Escambia County, City of Jacksonville/Duval County and Brevard County. In 2000, the Department's Showcase/Project Impact initiative was expanded to include the nation's first Regional Showcase Communities, which encompass those communities that fall under the jurisdiction of the Tampa Bay Regional Planning Council. These communities were chosen because they are located in areas vulnerable to a variety of hazards and have demonstrated a commitment to disaster loss reduction. They served, as laboratories where a variety of initiatives aimed at reducing disaster losses were tested, monitored, modified, and improved. The challenge was to bring all of these initiatives together to reduce redundancy, identify weaknesses and strengths, and ensure the most effective effort.

Additionally, a large part of the initiative success lies in its coordination with all levels of government and in the private sector. Therefore, the Department in coordination with local businesses in the Showcase/Project Impact Communities created the “Operation: Open for Business” initiative. This initiative’s strategy is to retrofit a group of businesses –so that after a storm, consumers and the local economy can remain functional. The Operation: Open for Business” initiative targets businesses that play a critical role in the community, such as supermarkets, gas stations and banks. The program supports businesses to develop contingency plans, educate employees on disaster preparedness and home mitigation, and conduct structural audits to provide business owners with information on needed retrofits. Operation: Open for Business” initiative, also emphasis energy efficiency. Energy efficient retrofits, by their nature, save homeowners or business owners money on a monthly basis. These monthly savings can then be used to offset the cost of mitigation.

In Florida, following communities have embraced the Showcase/Project Impact communities Initiative, bringing together the citizens, businesses, academic institutions, public officials, emergency managers and other public employees in developing and implementing the community-based hazard mitigation projects and initiatives.

- Brevard County
- City of Deerfield Beach/Broward County
- Jacksonville/Duval County
- Miami/Metropolitan Dade County
- City of Pensacola/Escambia County
- Tampa Bay Region (Counties of Hillsborough, manatee, Pasco, and Pinellas & 38 incorporated municipalities)
- Volusia County

The Department continues to work with local governments throughout the state, through the Florida Prepares Initiative, to review and replicate the mitigation successes learned from the Showcase/Project Impact Communities initiative. The Florida Prepares Initiative is modeled after the Showcase/Project Impact concept and seeks to build upon the development of local public/private partnerships as well as the development and integration of community based and faith based organization into the disaster loss reduction process.

### **Examples of Local Plans and Policies with Hazard Mitigation Implications**

Twenty-eight counties include in their LMS documents, summary tables of the local plans and policies and their mitigation implications based on evaluation of existing local plans, policies, and programs. Because local comprehensive plans and county comprehensive emergency management plans are reviewed for consistency with state requirements set forth by the State agencies, only the examples of local policies that are evaluated as effective are provided:

- County Planning Policy that guides types of development/redevelopment in Coastal High Hazard Areas (e.g. Manatee County Planning Policy 4.3.1.3; no redevelopment to date since the adoption of the policy to limit non-industrial redevelopment within the FEMA V-zone of the CSVA; Manatee County Planning Policy 4.3.1.6; no new manufactured homes have been approved since 1989 due to implementation of the policy that prohibits new manufactures homes in CPA).
- County Land Development Codes (LDC) that prohibits new development within flood hazard areas unless flood mitigation measures are implemented (e.g. Hillsborough County Land Development Code Sections 3.06.01 –3.06.03; no units have been constructed within flood hazard areas since 1989 due to the implementation of the LDC).
- City Setback Ordinances that prohibits construction within a specific floodplain and drainage retention area (e.g. City of Tampa Code of Ordinances Section 27-104; effective in allowing no building or structure within the areas designated for the Curiosity Creek Drainage System).
- Town Charter that creates strong disincentive for amending/rezoning the existing residential density limitations within the barrier island community (Long Boat Key Town Charter Article II, Section 22; since the adoption of this Charter provision requiring the referendum approval of the electors to increase the density limitation provided in the 1984 comprehensive plan, no amendment or rezoning have been adopted that increases the density).

### **Examples of Local Programs with Hazard Mitigation Implications**

Some local governments have implemented bond and tax-supported programs to implement local programs with hazard mitigation implications. Identification of local programs that support local hazard mitigation purposes is an ongoing process. Newly established/discovered local hazard mitigation programs will be included in the updated/revised State Hazard Mitigation Plan, as they are identified.

- The Quality Neighborhood Improvement Project (QNIP) in Miami-Dade County is a bond program, which was approved in the Fiscal Years 1998-1999 Budget by the Board of County Commissioners. It is a comprehensive neighborhood restoration program that funds capital improvement projects such as park improvements and sidewalk repairs. The largest proportion of the funding is set aside for countywide drainage improvements, which have eliminated the flooding of the neighborhoods that had been flooded repeatedly in the past before the drainage improvements were made.
- An example of local tax-supported program that supports community hazard mitigation purposes is the Preservation Program in Jacksonville. Using the funding provided by the Better Jacksonville Plan (the City's capital improvement plan supported by a half-penny sales tax and revenue sources), combined with

other sources, the Preservation Program acquires lands for conservation purposes. Since its inception in January 1999, the Project has acquired more than 19,000 acres of lands for conservation. Although the primary purpose of the Project is to acquire environmentally sensitive lands for conservation purposes, it also has hazard mitigation implication. An example of such project is an acquisition and conservation of an area called the Castaway Island, which is located within Category 1 hurricane evacuation zone. The acquisition and conservation of the area eliminated the potential for developments, which would expose people and their property to potential hazards associated with hurricanes and flooding events.

## 4.4 MITIGATION MEASURES

***44 CFR 201.4(c)(3)(iii) - State plans shall include an identification, evaluation, and prioritization of cost-effective, environmentally sound, and technically feasible mitigation actions and activities the State is considering and an explanation of how each activity contributes to the overall mitigation strategy. This section should be linked to local plans, where specific local actions and projects are identified.***

The State of Florida's mitigation measures under consideration are the result of the identification, evaluation and prioritization of proposed actions from Local Mitigation Strategies (LMS). The mitigation measures are consistent with the State Mitigation Strategy's Goals and Objectives, contained in Section 4.1.

### **1. Identification of Mitigation Measures**

As previously described, Rule 9G-22 delegates the state's authority to set priorities and identify projects to the LMS Working Groups. Part of the state's technical assistance efforts have been directed to assisting communities in identifying cost effective mitigation measures that will yield benefits toward reducing their risk to hazards. Additionally, local LMS Working Groups are encouraged to not only pre-identify projects but to gather initial estimates of costs and conduct a simple benefit/cost analysis as a component of the priority setting process. It is also critical to early implementation of the projects in the aftermath of a disaster. The majority of mitigation projects in Florida are locally determined and prioritized based on community local priorities set forth in each of the 67 Local Mitigation Strategies (LMS).

Mitigation measures that have been implemented in Florida can be grouped into six general categories or approaches: preventive measures, property protection, emergency services measures, structural projects, natural resource protection, and public information. A general overview of each of these approaches to mitigating the impact of potential hazards is discussed below:

**PREVENTIVE MEASURES** keep problems from getting started or getting worse. The use of known hazard areas, like floodplains for example, can be limited through planning, land acquisition, or regulation. Building, zoning, planning, and/or code enforcement officials usually administer these activities:

- Planning and zoning
- Open space preservation
- Building codes and enforcement
- Utility retrofits

**PROPERTY PROTECTION** measures are those actions that go directly to permanently getting people, property, and businesses out of unsafe areas where, in terms of wise disaster planning, they shouldn't have been in the first place.

- Property acquisition
- Relocation
- Elevation of structures
- Construction/Retrofit of structures

**EMERGENCY SERVICES MEASURES** are taken during a disaster to minimize its impact. These measures are the responsibility of city or county emergency management staff, operators of major and critical facilities, and other local emergency service organizations. They include:

- Alert warning systems
- Monitoring systems
- Emergency response planning
- Evacuation
- Critical facilities protection
- Preservation of health and safety

**STRUCTURAL PROJECTS** are usually designed by engineers and managed and maintained by public works staffs. They are designed to reduce or redirect the impact of natural disasters (especially floods) away from at-risk population areas. Examples include:

- Reservoirs
- Levees, floodwalls
- Diversions
- Channel modifications
- Storm water management facilities
- Drainage system maintenance

**NATURAL RESOURCE PROTECTION** preserves or restores natural areas or their natural functions. Park & recreation organizations, conservation agencies or wildlife groups usually implement such measures. They include:

- Wetland protection
- Best management practices
- Riverine protection
- Erosion and sediment control

**PUBLIC INFORMATION PROGRAMS** advise property owners, potential property owners, and others of hazards and ways to protect people and property from them. A

public information office usually implements them. Public information activities can include:

- Flood maps and data
- Library resources
- Outreach projects
- Technical assistance
- Real estate disclosure information
- Environmental education programs

The Department's Rule 9G-22 requires the Chairman of the Local Mitigation Strategy Working Group to annually provide an updated list of the county's mitigation initiatives. Table 4.4.1 summarizes the mitigation initiatives listed in each of the respective Local Mitigation Strategies by category or type of initiative, as of April 2004. Several counties did not provide a copy of their local mitigation initiatives list in time for inclusion into the State Plan. However, during the annual update of the state plan the list of proposed local mitigation initiatives will be revised to include all 67 counties.

Over 70% of the proposed projects are emergency services and structural projects. Due to the continued shelter deficit in many counties and vulnerability of critical facilities, retrofitting and providing emergency power comprise the bulk of the proposed emergency services measures. Flooding even from non-declared events also impacts local communities. As a result, projects such as enlarging culverts, replacing pipes, creating detention ponds and increasing ditch capacity are a top priority. St. John's, Lee, Sarasota, Manatee and Collier Counties have experienced beach erosion from past events, therefore, a number of the proposed projects are for erosion protection. Rounding out the lists are preventive measures, property protection and public information initiatives improve post-disaster recovery ability, reduce property damage and increase public awareness respectively.

**Table 4.4.1 Proposed Mitigation Measures by County**

<b>County</b>	<b>Preventive Measures</b> Contributes to State Goal 1,2,4	<b>Property Protection</b> Contributes to State Goal 1,2,4,6	<b>Emergency Services Measures</b> Contributes to State Goal 2	<b>Structural Projects</b> Contributes to State Goal 1,2,4	<b>Natural Resource Protection</b> Contributes to State Goal 2 & 5	<b>Public Information</b> Contributes to State Goal 2 & 3
Alachua	3	5	8	3	1	1
Baker	3	1	2	4		1
Bay						
Bradford	2	1	4	4	1	2
Brevard	50	17	123	69	6	4
Broward						
Calhoun	21	2	28	115	1	1
Charlotte	1	1				1
Citrus	20	6	3	1		2
Clay	1	1	7	2		1
Collier	12	12	28	15	5	3
Columbia		2	8	30		
DeSoto	5	1	3	1		2
Dixie	1	2	17	3		
Duval	3		12	7	1	1
Escambia	4	25	48	29	3	6
Flagler	17	5	10	1		4
Franklin			1	1		6
Gadsden						
Gilchrist	2	1	10	55		
Glades		1				
Gulf	1	11	17	17	5	
Hamilton			18	8		
Hardee		2	6	1		1
Hendry						
Hernando		4	14	3		
Highlands	1		4	1		2
Hillsborough	28	10	90	119	11	7
Holmes	2	1	7	23	1	
Indian River	6	5	10	5	4	1
Jackson	4	1	11	40	1	
Jefferson	1		5			2
Lafayette	2		2	3		
Lake	3	1	3	4		
Lee						
Leon						
Levy	7	3	7	10		
Liberty		2	1			
Madison	3		4			2
Manatee	23	12	84	17	3	6

<b>County</b>	<b>Preventive Measures</b> Contributes to State Goal 1,2,4	<b>Property Protection</b> Contributes to State Goal 1,2,4,6	<b>Emergency Services Measures</b> Contributes to State Goal 2	<b>Structural Projects</b> Contributes to State Goal 1,2,4	<b>Natural Resource Protection</b> Contributes to State Goal 2 & 5	<b>Public Information</b> Contributes to State Goal 2 & 3
Marion	2		12			2
Martin	4	1	9	19		1
Miami-Dade						
Monroe						
Nassau	7	5	10	10	5	
Okaloosa	24	17	22	20	5	2
Okeechobee						
Orange	16	10	51	45		3
Osceola	1	1	1	1		1
Palm Beach	9	23	47	47	5	8
Pasco	10	10	19	73		
Pinellas	14	11	36	13	6	4
Polk	7	17	74	4	2	
Putnam	3	1	12	3	1	1
Santa Rosa	6	7	24	33	1	
Sarasota	62	17	109	69	3	1
Seminole	3	14	2	60	2	
St. Johns	14	2	10	7	5	3
St. Lucie	9	3	22	56	7	
Sumter	3	1	6	12		
Suwannee	10	2	5	2	1	
Taylor	4		5			2
Union	4		8	4		
Volusia	4	3	21	22		3
Wakulla						
Walton	4	1	26	1		2
Washington	6	5	6	22		
<b>Total</b>	<b>450</b>	<b>86</b>	<b>1122</b>	<b>1114</b>	<b>86</b>	<b>89</b>

\*Number of projects may include one or more project sites.

Table 4.4.2 summarizes the number of projects funded in each county by category or approach. Starting with Hurricane Opal, the State transferred its authority to set priorities to the local entity. Depending on the funding sources and local vulnerabilities, the scope of work for mitigation projects is largely based on the damages caused by the disaster's hazard. Hurricane Andrew (FEMA 955 DR FL) caused vast wind damage and, as a result, more 70% of the HMGP projects were wind retrofits. Tropical Storm Allison (FEMA 1381 DR FL) caused widespread flooding and the majority of the projects submitted for funding are storm water management projects. Two of the best ways to mitigate wildfires are by informing the public and improving emergency services. As a result projects submitted under FEMA 1223 DR FL (1998 Wildfires) were of these types. Likewise, Flood Mitigation Assistance grants are primarily used to fund property

protection measures for properties listed on the FEMA Repetitive Loss List. Supplemental funds received through Unmet Needs have been applied to projects that eliminate the threat to public health and welfare.

**Table 4.4.2: Mitigation Measures Implemented Per County**

County	Preventive Measures	Property Protection	Emergency Services Measures	Structural Projects	Natural Resource Protection	Public Information
Alachua		1				
Baker		2		1		
Bay		19	3	15		
Bradford			1	1		
Brevard	1	5	1	8	1	
Broward	1	24	4	2		
Calhoun		1		4		
Charlotte		1		1		
Citrus		12				
Clay			1			
Collier		4	3	1		
Columbia		1	1			
DeSoto			1			
Dixie	1		2	1		
Duval		13	1			
Escambia	3	18	3	1	2	
Flagler			1			
Franklin		7		1		
Gadsden		4	2			
Gilchrist	1	4	2		1	
Glades		1				
Gulf		3	2			
Hamilton			1	2		
Hardee			1			
Hendry			1			
Hernando		4				
Highlands				1		
Hillsborough		10	1	2		
Holmes		5	4			
Indian River			1			
Jackson		2	3	1		
Jefferson	1					
Lafayette			1			
Lake				2		
Lee		8		2		
Leon	1	5	4			
Levy		2				
Liberty		2	1			

County	Preventive Measures	Property Protection	Emergency Services Measures	Structural Projects	Natural Resource Protection	Public Information
Madison						
Manatee	1	9	6			
Marion			1	1		
Martin		8				
Miami-Dade	4	66	33	11	2	1
Monroe	10	55	3	15	1	
Nassau						
Okaloosa	4	3		8		
Okeechobee			3			
Orange			1	2		
Osceola			1	3		
Palm Beach		9	6	12		
Pasco		24	1	8		
Pinellas		67	5	1		
Polk		2				
Putnam			1			
Santa Rosa		5	2	2		
Sarasota		11	4			
Seminole		2	1			
St. Johns			1			
St. Lucie		3				
Sumter		1	1			
Suwannee		1				
Taylor					1	
Union			1			
Volusia		3	1	3	1	
Wakulla	2	1	1			
Walton		4				
Washington		4	2	2		

\*Number of projects may include one or more project sites.

## **2. Prioritization of Mitigation Measures**

Starting with Hurricane Opal, the State transferred its authority to set priorities to the local entity. As provided in the Department's Rule 9G-22 and the State's HMGP Administrative Plan, the state has delegated its responsibility for determining mitigation funding priorities to the local communities through the LMS process. All Florida counties have completed LMS's. Within each county's LMS, they have identified hazards, made vulnerability assessments, risk analyses, and provided dollar estimates of potential property losses throughout their individual county. Building directly upon these assessments, each county has identified a prioritized list of hazard mitigation initiatives, with an accompanying action plan for their implementation. The LMS has thus become the foundation of the statewide mitigation funding strategy. As such, the Chair of the local LMS Working Group will submit projects in prioritized order to the state for funding consideration under the HMGP and Pre-Disaster Mitigation Program.

The task of developing a mitigation initiative prioritization process and schedule has been assigned to an ad hoc Mitigation Prioritization Committee. Annually, the SHMPAC Chair will solicit mitigation related measures from the team members and other interested parties for inclusion into the State Plan. All mitigation recommendations received by the chair will be provided to a Mitigation Prioritization Committee for review and prioritization. The Mitigation Prioritization Committee will in turn provide formal recommendations to the SHMPAC in the form of a prioritized list of measures for inclusion in State Plan. The measures that may be accomplished during the upcoming year are absorbed into the Work Plan as a current year task.

In 2003, the State of Florida submitted the Pre-Disaster Mitigation Competitive Program sub-applications in the State's application based on the LMS and the Benefit-Cost Ratio (BCR) contained in the sub-applications. In future PDMC application periods, prioritization will be based on the LMS with any additional final prioritization factors, such as BCR, to be determined in the future by the State of Florida.

The State Mitigation Strategy has identify the design prioritization process for state and local projects for mitigation related funded programs as an objective (Objective 1.5) under Goal 1 – Enhance and maintain state capability to implement a comprehensive statewide hazard loss reduction strategy. The objective will be lead by the SHMPAT with support by the Mitigation Prioritization Committee.

The initial list of mitigation measures is not presented in a priority order. Along with the mitigation measures, the state hazard mitigation goals that would be addressed through the measures are identified in Table 4.4.2. The following mitigation actions have been recommended by the SHMPAC for funding consideration:

**Table 4.4.3: State Mitigation Measures**

<b>Mitigation Initiatives</b>	<b>Contribution Toward Plan Goals</b>					
	<b>Goal 1:</b> State Loss Reduction Capability	<b>Goal 2:</b> Local Hazard Mitigation Capability	<b>Goal 3:</b> Public and Private Sector Awareness	<b>Goal 4:</b> Vulnerability Research & Development	<b>Goal 5:</b> Cultural, Economic & Natural Resources	<b>Goal 6:</b> State owned facilities & infrastructure vulnerability
Non-traditional Partners in Mitigation		X	X	X		
Blueprint for Safety	X		X	X		X
Kids Mitigation Marketing Campaign			X			
Developing a culture of Mitigation through K-12 Education			X			
Mitigating Human Hazards		X	X	X	X	X
Hazard Mitigation Certificate Program		X	X	X	X	X
Disaster Planning for Florida Historic Resources					X	
Statewide Dam Inventory	X					
Wind Retrofit of Florida Supreme Court Building				X	X	X
Local Mitigation Strategy How-to-Guides		X	X			
TOAS enhancements	X	X	X	X		
Enhancements of Warning Systems						
Local Elected Officials Mitigation Training	X	X	X			
Demonstration Project for Construction of Safe Rooms			X	X		
Demonstration for Retrofitting of Community Center at Mobile Home Park			X	X		
Development of Florida Mitigation Alliance	X	X	X			
Best Management Guidebooks for All Hazards	X	X	X	X		
Interactive Recovery and Mitigation Education DVD		X	X	X		
Interactive Mitigation Program for Small Business			X			
Disaster Risk Management in Florida (University of Florida)	X		X		X	X
Together We Prepare (American Red Cross)		X	X			

### **3. Evaluation of Mitigation Measures**

All mitigation measures submitted to the state for funding consideration must meet the following eligibility criteria:

- Be consistent with the State Mitigation Plan
- Solve/address a problem
- Be located in a vulnerable area identified in the community's LMS
- Be technical feasible including cost effective and environmental conformance (Upon request, the State will provide technical assistance in completing the technical feasible analysis to the local LMS Working Group/applicant.)
- Identify a non-federal match

The state will then complete a technical feasibility analysis on each eligible mitigation measure. The following process is utilized by state staff to determine the technical feasibility of all proposed project applications submitted regardless of the type of measure or funding source. All proposed projects will be subject to a three part screening process; Engineering Technical Feasibility, Cost Benefit Analysis, and Environmental Review. Each evaluation is performed simultaneously and complements each other.

- **Engineering Review:** This review establishes whether the project is feasible from an engineering standpoint and whether it will reduce damages as claimed. Additionally, this review involves whether the application contains sufficient information and data for input into the benefit-cost model. The reviewer may suggest changes to make the project more efficient in reducing damage and loss.
- **Benefit Cost Analysis:** This review is to determine which benefit-cost analysis tool to use. The State of Florida uses the traditional FEMA approved Benefit-Cost computer generated modules. If the project application data are limited or incomplete, then a benefit-cost analysis that uses limited data should be employed. If, however, the data in the project application is more or less complete, then a more detail method of analysis can be used. A detail discussion of the benefit-cost analysis is provided in this section of the plan.
- **Environmental Review:** This review alerts reviewers to any potential environmental and or historical concerns raised by the project. Additionally, this review provides the federal funding agency the necessary information needed for compliance with the National Environmental Policy Act. A detail discussion of the environmental review process is provided in this section of the plan.

#### **Benefit-Cost Analysis:**

The benefit-cost analysis is used to determine the cost-effectiveness of all projects. At its most important basic level, benefit-cost analysis determines whether the cost of investing in a mitigation project today (the “cost”) will result in sufficiently reduced damages in the future (the “benefits”) to justify spending money on the project. If the benefit is greater than the cost, then the project is cost-effective; if the benefit is less than the cost, then the project is not cost-effective. For example, a project cost of \$10,000 and the value of damages prevented after the mitigation measure is \$15,000. In this case, the dollar-value of benefits exceeds the cost of funding the project, the project is deemed cost effective. By dividing the benefits by the costs, this relationship is depicted numerically, resulting in a benefit-cost ratio. The benefit cost ratio is simply a way of stating whether benefits exceed projects costs, and by how much. Conversely, if the cost of the project exceeds the benefits, the project would not be deemed cost-effective.

It is important to understand that, basically, benefit-cost analysis is the same for each type of hazard mitigation project. The only differences are the types of data that are used in the calculations, depending on whether the project is for floods or tornado.

### ***Levels of Review***

Three methods are used to determine a project’s benefit-cost ratio: limited data analysis, full data analysis and best estimate. The limited data and full data methods are used to make final determinations of cost-effectiveness even when there is limited data. In some cases, quick screening analysis with these approaches yields inconclusive results and additional data and screening may be required.

- **Limited Data Analysis**

Limited data analysis is a powerful tool that can often demonstrate that projects are cost-effective in many cases regardless of whether the available data is complete or not. The limited data analysis was developed for those cases when a project’s cost-effectiveness can be determined by using only limited key pieces of data.

The Limited Data analysis may be used when there is at least one accurate, documented relationship established between the return frequency of a given event and the damage resulting from it. For example, if it is known that a 30-year flood caused \$500,000 in damage, the frequency-damage relationship is established and the limited data analysis may be used. Using more than one point at which this relationship is known greatly increases the accuracy of the analysis, so users are encouraged to get more than this basic information when using this method (see FEMA technical manuals and guidance) In all cases, the source of the information used to establish the frequency-damage relationship must be credible, and damage information must be documented. The limited data analysis considers only some of a project’s benefits (those that are most important or those for which data exist) and ignores other benefits that may be difficult to estimate or for which data may not be

available. In other words, this analysis purposely uses only a few pieces of information to determine the project's cost-effectiveness and undercounts, or ignores, other benefits that will be gained by funding the project. If this data indicates that project is cost-effective, then no further analysis is needed. No additional data has to be collected.

- **Full Data Analysis**

If a limited data analysis shows that a project is not cost-effective, then the next step is a full data analysis. Sometimes a full data analysis is used if, at first glance, the project appears not to be cost-effective. Like limited data analysis, full data analysis, however, also uses professional judgment to estimate about input data that give the highest reasonable benefits that can be expected from a mitigation project.

The full data analysis may be used when accurate information regarding hazard [probability and magnitude], vulnerability [the susceptibility of a structure to damage at various hazard intensities [flood depth, wind velocity, ground shaking, etc.], characteristics of a structure and its contents [floor area, elevation, structure type, presence of a basement, etc.] and costs of displacement and relocation in a particular community [renting an apartment, moving contents to storage, etc.] are known. When such information is available, the full data analysis yields the most accurate result of the three modules. For this reason, this module should generally be used when relatively costly projects are being evaluated. In this case, even when accurate data are not available, users should consider making an effort to obtain it, since results are more accurate and defensible. Because it relies on the highest, reasonable estimate of benefits (prevention of damage by the project), an upper-bound analysis can only determine that the project benefit cost ratio is not cost-effective (less than 1.0). The project can only be rejected as not cost-effective with this analysis. In other words, because the highest reasonable estimate of damages is used in the calculation, if the benefit cost ratio is still less than 1.0, you can only conclude that the project is not cost-effective.

The benefit-cost analysis will yield one of three outcomes: (1) the project is cost-effective ( $BCR > 1.0$ ); (2) the project is not cost-effective ( $BCR < 1.0$ ), or (3) additional data is required.

### ***Benefit-Cost Analysis Exemptions***

The following categories of mitigation measures are exempt from the FEMA policy on Benefit-cost analysis:

- **5% Initiative projects:** States, which receive a Presidential declaration, are eligible to use up to 5% of available HMGP funding at their discretion.
- **Tornado Initiative:** States, which receive a Presidential declaration, are eligible to use up to an additional 5% of available HMGP funding at their discretion.

- Substantial Damage Waivers for acquisition of substantially damaged structures in 100-year floodplain.
- Mitigation planning related grants.

## **Environmental Review**

All projects that will receive federal funding must comply with all applicable federal and state laws as well as Executive orders as required by the National Environmental Policy Act and the National Historic Preservation Act (NHPA). Each project proposed for funding and its alternative is reviewed to determine if there will be any adverse environmental, historical or cultural impacts. The level of environmental review is based upon the type of project (scope of work). Once the environmental review is completed, the recommended NEPA document and compliance documentation is submitted to FEMA.

### ***Categorical Exclusions from Federal Environmental Review***

Projects that have no or little impact on the environment may be categorically excluded from preparation of an environmental assessment or environmental impact statement. Certain categorically excluded projects are required to be reviewed by the Florida State Clearinghouse for consistency with state environmental laws.

A partial list of categorically excluded projects is included below:

- Preparation, revision, and adoption of regulations, directions, manuals, and other guidance documents related to actions that qualifies for categorical exclusions;
- Studies that involve no commitment of resources other than manpower and associated funding;
- Both training and operational exercises utilizing existing facilities in accordance with established procedures and land use designations;
- Acquisition of property or the removal or relocation of structures under any applicable authority when the acquisition is from a willing seller, the buyer coordinates on planning with affected authorities, and the acquired property will be dedicated in perpetuity to uses that are compatible open space, recreational, or wetland practices;
- Acquisition or lease of existing facilities where planned uses conform to past use or local land use requirements;

- Acquisition, installation, or operation of utility and communication facilities that use existing distribution systems, or currently used infrastructure rights-of-way;
- Planting of indigenous vegetation;
- Demolition of structures and other improvements or disposal of uncontaminated structures and other improvements to permit off-site locations, or both;
- Repair, reconstruction, restoration, elevation, retro-fitting, upgrading to current codes and standards, replacement of any facility in a matter that substantially conforms to the pre-existing design, function, and location; and
- Movement of existing facilities and the construction of small scale hazard mitigation measures in existing developed areas with substantially completed infrastructure, when the immediate project area has already been disturbed, and when those actions do not alter basic function, do not exceed capacity of other systems components, or modify intended land use; provided the operation of the completed project will not, of itself, have an adverse impact on the quality of the environment.

The Environmental Unit must sign off on all projects before they can be input into NEMIS or provided to FEMA for final approval.

### **Measuring Losses Avoided**

The escalating cost of disasters continues to be a concern of local communities, the state and the federal government. Local communities, the state and federal government continue to take unprecedented effort to reduce the state's risk to hazards, however, much of this effort is going unnoticed. As public financial resources continue to decrease and demand for public services continue to increase, competition for these resources is overwhelming.

Both Congress and the State Legislature are putting a greater emphasis on the quantification of losses avoided from the adoption and implementation of mitigation measures funded using public dollars. Increasingly, we must answer questions and be able to document the extent to which implementation of mitigation actually reduce disaster related losses. Information on losses avoided as a result of the implementation of mitigation related measures has become a critical component of the state's overall comprehensive mitigation planning strategy.

As a result, the state is developing a mitigation measure analysis tool that will document the losses avoided by implementing each mitigation projects. This tool will provide data that can be used as a comparison for the cost-effectiveness relative to future disasters.

Currently after a major disaster event, state staff will manually collect data necessary for the analysis of losses avoided. This data is included in the Post Disaster Mitigation

Assessment Report. The state has been working with a consultant to develop an electronic system, similar to that being used in other states and FEMA to document losses avoided. The intent is to identify projects in the State Plan and follow them to completion.

Initially, only HMGP and FMA project grants can be fully tracked and evaluated upon completion. These projects serve as the state's database for mitigation projects and are currently entered into the FERS database used by the state to track financial information. New data fields are being added to include a more complete project description, the latitude and longitude of the project site, and the damage estimation tables from the projects benefit cost analysis.

A GIS capability is also being added so that in the aftermath of an event, an evaluator can enter the latitude and longitude of the impacted area and the program will extract from the database all the relevant completed projects in the impacted area. The program will map the location and provide a written description of the project including address, contact person and the damage estimation tables. This will allow an inspector to compare actual damage against the table predictions to determine effectiveness and calculate losses avoided.

The results of the inspection and the losses-avoided calculation will be entered into the database and a report will be produced documenting project effectiveness and losses avoided. Copies will be provided to the project sponsor, the Local Mitigation Strategy Working Group and FEMA Region IV. The reports will be available for a longer term analysis of the general effectiveness of certain measures and in particular those which are specified in the state building code. The losses-avoided data will be used to support budget requests to the legislature for state mitigation matching funds. The enhanced database will be operational by December 2004. Until then the data necessary for the analysis will be compiled manually.

### **State of Florida Mitigation Measures**

The SHMPAC is tasked with identifying multi-objective mitigation measures for state owned facilities and related projects that have a statewide impact on hazard risk reduction. The state's Mitigation Strategy prioritizes communities and local jurisdictions based upon demonstrated commitment toward mitigation. The state's Local Mitigation Strategy Initiative was developed on the premise that communities which adopt and implement pre-disaster mitigation strategies should be given priority over those communities that do not, when various mitigation funding opportunities are made available. Additionally, the state does not rank or prioritize planning and project applications from local communities. The Department's Rule 9G-22 requires Local Mitigation Strategy Working Group to prioritize and rank locally submitted projects. The local prioritization process will vary from community to community, however, at a minimum the process must include criteria that includes cost effectiveness, technical feasibility and environmental soundness for each project. For a detailed review of the

process used by a particular local Mitigation Strategy Working Group to prioritize projects or applications, please review that local community Mitigation Strategy. The SHMPAC Chair solicits mitigation related measures from the team members and other interested parties for inclusion into the State Plan. The mitigation measures listed in Table 4.4.2 have been derived from the step-wise approach used in the planning process.

The measure, once proposed by a SHMPAC member organization, was then reviewed by the overall SHMPAC Working Group. This review was intended to identify any unintentional or unwarranted interdepartmental or inter-jurisdictional impacts, conflicts or duplications, or to eliminate any measures, which were not mitigation in intent. If there were no objections, the initiative was considered acceptable for incorporation into the strategy. If concerns are raised for any of the abovementioned reasons, the participant proposing the initiative was requested to respond with additional information or to appropriately modify the proposal.

Once an initiative is accepted for incorporation into the strategy, any additional information to characterize the initiative and justify its implementation was gathered. Of course, it is recognized that each participating organization maintains a separate legal and/or administrative responsibility apart from the other participants for implementation of the applicable mitigation measures

Implementation of the mitigation measures listed in this section is contingent upon the sponsor receiving financial support to do so, or, as appropriate, the agreement and endorsement of the applicable governing body to implement the listed measures. Listing of an initiative in this section serves only as a proposal for further consideration and action on the part of State to minimize the impact of future disasters.

## 4.5 FUNDING SOURCES

***44 CFR 201.4(c)(3)(iv) – The State mitigation strategy shall include identification of current and potential sources of Federal, State, local, or private funding to implement mitigation activities.***

The State of Florida has limited financial resources dedicated toward funding of mitigation related projects. The majority of the state funds that indirectly support mitigation related activities are provided for land acquisition, water quality and quantity related issues and meeting the non-Federal match requirements for various federally funded mitigation assistance programs.

The State of Florida leverages the funds available from federal and state source to provide financial assistance to local communities, state agencies and private non-profit agencies to implement the hazard mitigation projects that have been identified, prioritized and documented by the Local Mitigation Strategy (LMS) Working Group, and the SHMPAC in their respective mitigation plans.

### **Resource Identification Strategy – A Mitigation Funding Identification Tool**

The Department of Community Affairs in partnership with the Florida Public Affairs Center at Florida State University, assists communities and other potential applicants in finding funds needed for disaster mitigation and recovery related activities. These organizations developed the web based Resource Identification Strategy (RIS) - a comprehensive, continually updated database that contains information on historical and potential funding sources for disaster preparedness, response, mitigation, recovery, and long-term redevelopment related projects. These projects were funded by federal, state and other organizations for every major disaster in the United States since 1987.

The goal of the database is provide communities with important information on potential revenue before a event occurs, when developing and updating Local Mitigation Strategies, and after disasters, when looking at ways to build stronger, disaster-resistant and sustainable communities in Florida

Program descriptions, eligibility criteria, and application procedures are provided. Assistance levels are provided and the process used to apply for assistance, along with the names and position of key contact people for various funding sources, are included in the database. The database is designed to be representative –that is, it provides traditional and non-traditional sources and project examples rather than a comprehensive list of projects. Program and project data is continually added and updated.

## **State Funding Sources**

The following is an overview of available state funding sources that have been used as non-federal share for federal grant programs as well as to fund non-federally funded local projects. This list is not all-inclusive and will be updated annually as additional state funding sources are identified.

### ***Emergency Management Preparedness and Assistance (EMPA) Competitive Grant Program***

Lead Agency:

The Grants Section of the Finance and Administration Section of the Florida Division of Emergency Management administers EMPA.

Contact Information:

Emergency Management Preparedness and Assistance Competitive Grant Program  
Bureau of Compliance Planning and Support, Finance and Administration, Grants  
Section

Division of Emergency Management  
Florida Department of Community Affairs

2555 Shumard Oak Boulevard

Tallahassee, Florida 32399-2500

Telephone: (850) 413-9942; Web page: <http://www.dca.state.fl.us/cps/grants.htm>

Annual Funding:

The amount and availability of funds in the Trust Fund for allocation each year is subject to an annual appropriation by the Legislature.

Funding Source:

The Emergency Management Preparedness and Assistance Trust Fund, generates the revenue from a \$2.00 surcharge annually on homeowner's policies and a \$4.00 surcharge annually on commercial policies sold within the State of Florida.

Program Description:

In 1993, the Florida Legislature created the Emergency Management Preparedness and Assistance Trust Fund (Section 252.371, Florida Statute) to strengthen and enhance existing state and local emergency management programs through providing county base grants, as well as two types of competitive grants described below.

Emergency Management Competitive Grant Program - provides competitive grants to state, regional, local governments, and private non-profit organizations to implement

projects that will further state and local emergency management objectives. Only three applications may be submitted per applicant, except for the county and state agencies. Total FY 2001-2002 funding provided: \$3.4 million; Total FY 2002-2003 funding provided: \$3.4 million.

Municipal Grant Competitive Grant Program - provides competitive grants to municipalities that are legally constituted, have an emergency management program authorized, established, and maintained, and have signed the Statewide Mutual Aid Agreement. Also, they must have supplied all required information and documentation such that the agreement is ready to be signed by the Division as of the date of the application deadline. Each Municipal Emergency Management Program may apply for one competitive grant not to exceed \$50,000. Total FY 2001-2002 funding provided: \$1.2 million; Total FY 2002-2003 funding provided: \$1.2 million.

#### Mitigation Implications:

Because the formal categories of projects to be funded include the projects that will further state and local management objectives (9G-19.009, Florida Administrative Code), which include mitigation, the funding may be used for community mitigation purposes. For example, amongst 27 projects funded under the Competitive Grant Program during FY 2002-2003, 4 projects were related with mitigation planning and/or outreach. These projects need to state their priorities in the list of mitigation projects in the Local Mitigation Strategy.

#### ***Hurricane Loss Mitigation Program (HLMP) a.k.a. Residential Construction Mitigation Program (RCMP)***

#### Lead Agency:

Division of Housing and Community Development, Florida Department of Community Affairs administers the RCMP.

#### Contact Information:

Residential Mitigation Construction Program  
Division of Housing and Community Development  
Florida Department of Community Affairs  
2555 Shumard Oak Boulevard  
Tallahassee, Florida 32399-2500  
Telephone: (850) 488-7956  
Web page: <http://www.floridacommunitydevelopment.org/programs/rcmp/>

#### Annual Funding:

The Residential Construction Mitigation Program (RCMP) receives \$10 million annually from the Florida Hurricane Catastrophe Trust Fund (Ch. 215.559, Florida Statutes). Of annual appropriation of \$10 million, \$3 million is directed to retrofitting existing public facilities to enable them to be used as public shelters, and \$7million is allocated as follows:

40 percent, or \$2.8 million is used to mitigate future losses for mobile homes;

10 percent, or \$700,000, is directed to the Type I Center of the State University System dedicated to hurricane research - Florida International University;

50 percent, or \$3.5 million is directed to programs developed by the Department with advice from the Advisory Council to help prevent or reduce losses or to reduce the cost of rebuilding after a disaster.

#### Funding Source:

The Florida Hurricane Catastrophe Fund, a re-insurance fund established to limit insurance exposure after a storm.

#### Program Description:

In 1999, the Florida Legislature passed the Bill Williams Residential Safety and Preparedness Act, creating the Hurricane Loss Mitigation Program, (section 215.559, Florida Statutes), with an annual appropriation of \$10 million. These funds derive from the Florida Hurricane Catastrophe Fund, (section 215.444, F.S.) and are provided to the Florida Department of Community Affairs for administration. Section 215.559, F.S., establishes minimum funding levels for specific interests and creates an advisory council to make recommendations to the Department on developing programs.

During the Fiscal Year 2002-2003, a total of \$300,000 has been allocated to the development of a Wind Mitigation Database, which allows Florida homeowners and builders to search the Internet-based database for wind insurance discounts that are available for building features that reduce damage and loss in windstorms. Pursuant to the Section 627.0629, all insurance companies are required to make a rate filing which include the credits, discounts, or other rate differentials for construction techniques that reduce damage and loss in windstorms.

## ***Florida Hurricane Catastrophe Fund (FHCF)***

### Lead Agency:

The State Board of Administration administers the FHCF.

### Contact Information:

Florida Hurricane Catastrophe Fund  
Florida State Board of Administration  
Hermitage Center, Suite 100  
1801 Hermitage Boulevard  
Tallahassee, FL 32308

Telephone: (850) 413-1349; Web page: <http://www.fsba.state.fl.us/fhcf/>

### Annual Funding:

The unrestricted fund balance as of December 31, 2001, was approximately \$3.8 million.

### Funding Source:

The State Board of Administration invests reimbursement premiums, collected from the participating insurers selling residential property insurance in Florida, in short-term securities.

### Program Description:

The FHCF is a reinsurance program. Insurers that write residential property insurance on structures and their contents- 259 with more than \$900 billion in exposure as of 12/31/2001 - are required to participate and pay a premium based on their maximum hurricane exposure. Companies can select three coverage option levels - 45, 75, or 90 percent of covered losses above their retention. The unrestricted fund balance as of December 31, 2001, was approximately \$3.8 million.

The FHCF covers residential structures located in the State of Florida, including appurtenant structures and their contents. This includes commercial-residential, mobile home, tenants, condominium owners, and stand-alone inland marine policies. All other commercial property was exempted from the fund during the 1995 legislative session. Premiums paid by participating insurers into the fund may be included in policyholder rates the same as the expense of reinsurance. Companies must demonstrate to the Department of Insurance that there is no overlap between the FHCF premium included in their rate filing and their Acat load, covering either private reinsurance or catastrophe reserves being set aside on a taxable basis.

Mitigation Implication:

The FHCF would reduce the long-term economic impacts of hurricanes by maintaining the state's property insurance capacity through providing reimbursement to participating insurers for a portion of catastrophic hurricane losses.

Furthermore, the FHCF supports implementation of hurricane mitigation projects through providing annual funding to the Florida Department of Community Affairs' Residential Construction Mitigation Program, as well as other local governments and state agencies' programs to reduce potential losses from hurricanes.

***Florida Communities Trust Fund (FCT)***

Lead Agency:

The FCT is created within the Florida Department of Community Affairs, with the governing body consisting of the Secretary of Community Affairs and the Secretary of the Environmental Protection.

Contact Information:

Florida Communities Trust  
Department of Community Affairs  
2555 Shumard Oak Boulevard  
Tallahassee, FL 32399-2100  
Telephone: 850-922-2207; Web page: <http://www.dca.state.fl.us/ffct/>

Annual Funding:

Approximately \$66 million is made available to eligible applicants each year, and applicants are eligible for up to \$6.6 million or 10 percent of this amount.

Funding Source:

Florida Forever bonds (the Trust receives 22% of the proceeds from the sale of Florida Forever bonds for an annual appropriation of \$66 million).

Program Description:

The FCT was created to assist local governments in bringing their local comprehensive plans into compliance and implementing the goals, objectives and policies of the conservation, recreation and open space, and coastal management elements of local comprehensive plans, or in otherwise conserving natural resources and resolving land use conflicts.

The FCT will annually make grants available to local governments and non-profit environmental organizations through a competitive application cycle to help purchase parks, greenways and open spaces land identified in local comprehensive plans. Under this program, all local governments will be required to provide a minimum 25 percent match, except small local governments (counties with a population less than 75,000 and cities with a population less than 10,000) who would qualify for a 100 percent grant.

Mitigation Implications:

When Florida's natural lands within the salt water and fresh water systems are acquired for preservation purposes using the FCT, the preserved water systems would provide mitigation functions against the potential impacts of the coastal and fresh water flooding.

***Florida Coastal Management Program (FCMP) Grants***

Lead Agency:

Florida's Department of Environmental Protection (DEP) administers the FCMP Grants.

Contact Information:

Florida Coastal Management Program Grants  
Florida Department of Environmental Protection  
3900 Commonwealth Blvd. MS 47  
Tallahassee, Florida 32399-3000  
Phone: (850) 245-2161 or (850) 245-2163;  
Web-page: <http://www.dep.state.fl.us/secretary/legislative/coastal/grants/index.htm>

Annual Funding:

While four types of assistance can be provided to implement local coastal management projects (technical assistance, site designation, training, and financial assistance) under the Florida Coastal Management Program, the financial assistance award is limited to no more than \$50,000 for land acquisition, small construction, or capital improvement projects; and no more than \$25,000 for all other projects. A recipient will be required to provide 100 percent (one to one) matching funds, which may be cash or in-kind. The total grant amount provided for the Fiscal Year 2001-2002 was \$1,488,955.

Funding Source:

The U.S. Department of Commerce, National Oceanic and Atmospheric Administration

Program Description:

The Coastal Management Program Grants are provided to the communities to implement the projects in four specific categories.

Remarkable Coastal Places  
Community Stewardship  
Access to Coastal Resources  
Working Waterfronts

Mitigation Implications:

When coastal dune re-vegetation projects are funded under the Community Stewardship category, the restored dune systems would mitigate the potential impacts of winds and storm surges associated with tropical storms and hurricanes. The projects applied under the Working Waterfronts category are required enhance the traditional waterfront economy while addressing the issues of public access, resource protection, and hazard mitigation.

**Local Funding Sources**

The following table provides a synopsis of data obtained from reviewing each of the existing Local Mitigation Strategies (67) to identify local funding sources that have been used in the past to fund local mitigation related projects. This list contains funding sources that have been used as match for federal grant programs as well as to fund non-federally funded local projects.

**Table 4.5.1: Local Sources**

Funding Source	Description
Half-Cent Sales Tax	This is a local option tax designed to raise revenues to plan, finance, construct, renovate and improve infrastructure such as roads, drainage, and parks.
Ad Valorem Tax	The ad valorem tax is levied based on the value of real and tangible personal property as of January 1 of each year and is intended to increase total revenue of local governments.
Stormwater Tax Assessment	The fee is based on the total amount of a property's impervious surface and has been used to prepare a stormwater program and fund a wide range of drainage improvements.
Housing and Rehabilitation Fund	Assistance in this category stems from Community Development Block Program funds and is used for rehabilitation for owner occupied homes.
In-Kind Services	Services or equipment for projects provided by local individuals or groups in the community.
Impact Fees/ Development Exaction	Impact fees on new development such as 1) Water and Sewer Connection Fee; 2) Fire Impact Fee; 3) Law Enforcement Impact Fee; 4) Transportation Impact Fee; and 5) School Impact Fee are used for the purchase and construction of capital assets. (School impact fees may be remitted periodically to the County School Board).
Tourist Tax Local Option	A local tax is levied on most rents, leases or lets, and living accommodations in hotels, motels, apartments, houses, and mobile homes (contracted for periods of less than six months or less) in promotion of tourism and tourist-type activities.
Revenue Bonds	This is revenue derived from the issuance of long-term debt, such as bonds or commercial paper. Proceeds are deposited into capital projects funds and/or debt service funds.
Permit Fees	This is revenue derived from the issuance of local licenses and permits. Exceptions include occupational licenses and building permits.
State Revenue Sharing	Two tax sources are earmarked for sharing with counties: 2.9 % of net cigarette tax collections; 41.3% of net intangible tax collections. Intangible tax collections provide 95% of total revenue shared with counties in this category.

## **Private Funding Sources**

The following table provides an overview of private funding sources that have been used to fund mitigation related projects. This list is a synopsis of data obtained from reviewing each of the existing Local Mitigation Strategies (67) to identify private funding sources that have been used in the past to fund local mitigation related projects. This list is not all-inclusive and will be updated annual as new private funding sources are identified.

**Table 4.5.2: Private Sources**

Funding Source	Description
Wallace Global Fund	The Wallace Global Fund supports measures, which promise to advance globally sustainable development in some fundamental way. The fund seeks to maximize its impact by investing its resources in projects that meet the following criteria: Tackle root problems that impede progress toward a sustainable future; propose compelling strategies for promoting environmentally an/or socially sustainable development, such as leveraging additional financial resources, policy change, implementing innovative programs; offer potential for significant impact at the global level; and require private money, at least initially.
John D. and Catherine T. MacArthur Foundation	Initiates programs and support their purposes including community-based activities.
The Community Foundation of Palm Beach and Martin Counties	To provide innovative responses to recognized community needs which do not unnecessarily duplicate other efforts; strive to equip people to help themselves; significantly strengthen the capacity of existing institutions to reach a broader segment of the community; emphasize shared values and collective interests and actions among divergences groups that have little or no history of working together; programs that are neighborhood driven.
Anheuser-Busch Companies Inc.	Supports charitable organizations active in the fields of education, health care, programs for minorities and youth, cultural enrichment, and environmental protection.

## **Federal Funding Sources**

The following is an overview of the principle federal funding sources that the state uses to achieve it mitigation goals. Federal Funding Sources Appendix provides an extensive list of federal funding sources for mitigation projects and initiatives. This list is a reprint of document, Federal Mitigation Programs, Activities and Initiatives and is available at FEMA website at [www.fema.gov/fema/fema.doc](http://www.fema.gov/fema/fema.doc). Additionally, the State of Florida’s Resource Identification Strategy, which is discussed at the beginning of Section 4.5, provides a detailed list of federal funding sources.

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

Lead Agency:

Department of Homeland Security, Federal Emergency Management Agency

Contact Information:

Department of Homeland Security, Federal Emergency Management Agency  
Region IV Atlanta, Georgia

Annual Funding:

The HMGP funds are post-disaster funds which are provided as a result of a major disaster declaration.

#### Program Description

The Hazard Mitigation Grant Program is authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (PL 93-288 as amended). It is a partnership that is designed to assist states, local governments, private non-profit organizations and Indian Tribes in implementing long-term hazard mitigation measures following a major disaster declaration. The objectives of the Hazard Mitigation Grant Program are: 1) To prevent future losses of lives and damage to property due to disasters; 2) To implement state or local hazard mitigation plans; 3) To enable mitigation measures to be implemented during immediate recovery from a disaster; and 4) To provide funding for previously identified mitigation measures that benefit the disaster area. Eligible applicants are state and local governments, native American tribes and certain non-profit agencies. The eligible activities include: acquisition of damaged structures, elevation and retrofit of existing structures, relocation or demolition of existing structures and minor structural flood control projects. The above activities although eligible must meet the minimum criteria detailed in this Section under Eligibility Criteria for Mitigation Measures, in order to be considered for funding.

Although the Hazard Mitigation Grant Program is federally funded, the program is administered through a partnership arrangement with the Florida Department of Community Affairs, Division of Emergency Management. In this capacity, the key responsibilities of the state are to (1) Solicit and review Hazard Mitigation Grant Program proposals from applicants; (2) Prepare and submit the proposals to the Federal Emergency Management Agency in accordance with procedures set forth in the State Hazard Mitigation Grant Program Administrative Plan; and (3) Manage the Hazard Mitigation Grant Program and the funds available under the program. The state's Hazard Mitigation Grant Program Administrative Plan governs how projects are selected for funding.

## Mitigation Implications:

Between August 1992 and September 2001, Florida Division of Emergency Management (DEM) received over \$220 million in federal funding under the HMGP over 23 declared disasters.

Examples of the recent projects funded with the HMGP funding include the following:

1344 (Tropical Storm Helene) Of 13 projects funded, more than 50% related to reducing impacts of high wind events (e.g. wind retrofitting and hurricane shutters), and the rest mitigating against flooding (elevation and flood proofing of structures).

1345 (South Florida Floods) Of 28 projects funded, more than 90% was flood mitigation projects (e.g. area drainage improvement and structural flood proofing), and the rest related to reducing impacts of high wind events.

1359 (Severe Freeze) 100% of 18 projects submitted to FEMA were wind mitigation projects.

1381 (Tropical Storm Allison) 80% of 20 project submitted to FEMA was flood mitigation projects, and the rest was wind mitigation.

1393 (Tropical Storm Gabrielle) Of 33 projects submitted to FEMA, nearly 80% was wind mitigation projects (hurricane shutters), and the remaining was flood mitigation (drainage improvements).

The State only allows funding with HMGP the local projects that are identified in existing Local Hazard Mitigation Strategies. The State also utilizes the HMGP 7% planning allocation to support local mitigation planning. The implementation of various types of mitigation projects using the funding provided by the HMGP supports the State to achieve its mitigation goal to: “enhance and maintain state capability to implement a comprehensive state wide hazard loss reduction strategy”, and “support the development and enhancement of local capability to practice hazard mitigation”.

### ***Flood Mitigation Assistance Program (FMA)***

Lead Agency:

Department of Homeland Security, Federal Emergency Management Agency

Contact Information:

Department of Homeland Security, Federal Emergency Management Agency  
Region IV Atlanta, Georgia

## Annual Funding:

The FMA funds are pre-disaster funds that are provided on an annual basis.

## Program Description

The Flood Mitigation Assistance (FMA) Program is authorized by Sections 1366 and 1367 (42 U.S.C.) of the National Flood Insurance Reform Act of 1994. It is a partnership designed to assist states, local and Indian Tribal governments in reducing or eliminating long-term risks of flood damage to repetitively flooded structures insured under the National Flood Insurance Program (NFIP). The goals of the Flood Mitigation Assistance Program are to (1) Fund cost-effective and technically feasible measures that reduce or eliminate the long-term risk of flood damage to buildings and manufactured homes insured under the NFIP;

(2) Encourage long-term, comprehensive mitigation planning that addresses repetitive flood losses; (3) Reduce the number of repetitively or substantially damaged structures and the associated claims on the National Flood Insurance Fund; and (4) Complement other federal and state mitigation programs with similar long-term mitigation goals.

There are three types of grants available under the FMA: (1) Planning, (2) Projects; and (3) Technical Assistance. Eligible applicants are state and local governments, Native American tribes and certain non-profit agencies. The eligible activities include: acquisition of damaged structures, elevation and retrofit of existing structures, relocation or demolition of existing structures and minor structural flood control projects. The above activities although eligible must meet the minimum criteria detailed in this Section under Eligibility Criteria for Mitigation Measures, in order to be considered for funding.

Although the Flood Mitigation Assistance Program is federally funded, the program is administered through a partnership arrangement with the Florida Department of Community Affairs, Division of Emergency Management. In this capacity, the key responsibilities of the state are to (1) Solicit and review Hazard Mitigation Grant Program proposals from applicants; (2) Prepare and submit the proposals to the Federal Emergency Management Agency in accordance with procedures set forth in the State Flood Mitigation Assistance Program Administrative Plan; and (3) Manage the Flood Mitigation Assistance Program and the funds available under the program. The state's Flood Mitigation Assistance Grant Program Administrative Plan governs how projects are selected for funding.

## Mitigation Implications:

The State Assistance Office for the National Flood Insurance and Flood Mitigation Assistance Programs, the agency responsible for managing the FMA, has managed seven funding cycles since 1997, funding acquisition, elevation, and flood retrofitting of 158 repetitively flooded structures. The State also utilizes the FMA planning allocation

o support local mitigation planning. The implementation of various types of mitigation projects using the funding provided by the FMA supports the State to achieve its mitigation goal to: “enhance and maintain state capability to implement a comprehensive state wide hazard loss reduction strategy”, and “support the development and enhancement of local capability to practice hazard mitigation”.

### ***Pre-Disaster Mitigation Program (PDM)***

Lead Agency:

Department of Homeland Security, Federal Emergency Management Agency

Contact Information:

Department of Homeland Security, Federal Emergency Management Agency  
Region IV Atlanta, Georgia

Annual Funding:

The PDM funds are pre-disaster funds that are provided on an annual basis.

Program Description

The PDM program was authorized by Section §203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended by Section §102 of the Disaster Mitigation Act of 2000, to assist communities to implement hazard mitigation programs designed to reduce overall risk to the population and structures before the next disaster occurs. Eligible applicants are State agencies; Federally recognized Indian Tribal governments, and local governments. Private non-profit organizations are not eligible, to apply; however, they may request a local government to submit an application for proposed activities on their behalf. The eligible activities include: acquisition of damaged structures, elevation and retrofit of existing structures, relocation or demolition of existing structures and minor structural flood control projects. The above activities although eligible must meet the minimum criteria detailed in this Section under Eligibility Criteria for Mitigation Measures, in order to be considered for funding. The above activities although eligible must meet the minimum criteria detailed in this Section under Eligibility Criteria for Mitigation Measures, in order to be considered for funding.

Although the PDM program is federally funded, the program is administered through a partnership arrangement with the Florida Department of Community Affairs, Division of Emergency Management. In this capacity, the key responsibilities of the state are to (1) Solicit and review Hazard Mitigation Grant Program proposals from applicants; (2) Prepare and submit the proposals to the Federal Emergency Management Agency in accordance with procedures set forth in the National PDM funding guidance; and (3) Manage the PDM program and the funds available under the program.

### Mitigation Implications:

The State of Florida received over \$670,000 under the Pre-Disaster Mitigation Grant Program for the Fiscal-Year 2002.

In order to enhance the local hazard mitigation capability through the support of Florida's Local Hazard Mitigation Strategy (LMS), the DEM has provided eight pilot communities funding to update the communities' existing LMS documents to comply with the federal requirements for local hazard mitigation planning set forth by the Disaster Mitigation Act of 2000. In addition to the LMS updates, the funds will provide the pilot communities technical assistance for implementing the local hazard mitigation projects, as well as funding for information dissemination on the cost effective mitigation technologies, and community outreach to encourage mitigation efforts among homeowners and small business. These efforts are compatible with the State mitigation goal to enhance and support local hazard mitigation capabilities. Additionally, the state used PDM funds to conduct a statewide vulnerability and risk assessment, which provides basis for the State Hazard Mitigation Plan. An up-to-date and comprehensive vulnerability and risk assessment is essential for the State to achieve its mitigation goal to reduce risks and vulnerability of the people and their properties in Florida. The projects funded with the PDM funding support the State in achieving its state goals to "enhance and maintain state capability to implement a comprehensive statewide hazards loss reduction strategy, and support the development and enhancement of local capability to practice hazard mitigation."

### ***Emergency Management Performance Grant ((EMPG)***

#### Lead Agency:

Department of Homeland Security, Federal Emergency Management Agency

#### Contact Information:

Department of Homeland Security, Federal Emergency Management Agency  
Region IV Atlanta, Georgia

#### Annual Funding:

The EMPG funds are provided on an annual basis.

#### Program Description

FEMA is responsible for leading and supporting the Nation in a comprehensive, risk-based, all hazards emergency management program. The primary means of ensuring the development and maintenance of such a program is FEMA funding to states through the Emergency Management Performance Grant (EMPG). The purpose of the

EMPG is to support comprehensive emergency management at the State and local levels and to encourage the improvement of mitigation, preparedness, response and recovery capabilities for all hazards. Funds provided under the EMPG may be used to support activities that contribute to terrorism consequences management preparedness.

#### Mitigation Implications:

Between the Fiscal Years 2000 and 2002, The State of Florida received over \$14.6 million in EMPG and the terrorism funding combined. The State received \$6,870,000 for the EMPG alone, for the FY 2003.

The State leverages the EMPG in funding programs across the division in all four phases of the emergency management: preparedness, response, recovery and mitigation. Examples of the effective use of the EMPG funding for the mitigation purposes include hiring of a consultant to conduct the statewide risk and vulnerability assessment, which supports the State Hazard Mitigation Goal to “enhance and maintain state capability to implement a comprehensive statewide hazard loss reduction strategy”. A partial funding of the Florida Prepares initiative, which succeeds the community-based mitigation measures under the Project Impact, supports the State’s Mitigation Goal to “increase public and private sectors awareness and support for disaster loss education practices as a means of developing a culture of hazard mitigation in Florida.

#### **Meeting Non-federal Match**

Florida will provide up to 12.5% of the required 25% non-federal match for all FEMA mitigation related grant projects. However, these funds are contingent upon annual appropriations by the State Legislature and are subject to Florida Statute Chapter 216. Table 4.4.1 provides a detail list of federally declared disasters in Florida, for which HMGP funds were made available as well as the non-federal match required. Prior to FEMA DR-1359, the state has assisted local applicants in meeting the non-federal match share by providing 12.5% of the required 25% match. However, post-2000 all sub-grantees and potential sub-grantees have been required to provide the entire 25% non-federal match share. This was necessitated by the down turn in the state’s economy. The state continues to work with potential applicants exploring new and innovated avenues to address non-federal share match. The State, in coordination and partnership with FEMA, has implemented the “Global Match” concept for meeting the non-federal share match requirement. Global match permits a potential applicant to meet the non-federal share match by receiving credit for state and/or local government funds that were committed to similar type project(s). These similar non-federally funded

projects must meet all of the eligibility requirements as specified by the federal funding source for which it is matching. The state was awarded a 2003 Davis Productivity Award from the Florida Tax Watch, a non-governmental fiscal watch group, as recognition of implementing an innovated program that saved the state and local governments in excess of \$31 million in appropriations. This was only made possible because of the state's demonstrated commitment to providing a comprehensive statewide approach by annually allocating state and local dollars to mitigation related projects designed to reduce future losses from hazards.

**Table 4.5.3: Federal Funding Source for Hazard Mitigation**

Disaster Number	Disaster Name	Date of Declaration	Federal Share	Non-Federal Share (State)	Non-Federal Share (Local)
952	S. W. FI Floods	August 12, 1992	50%	0%	50%
955	Andrew	August 24, 1992	50%	0%	50%
966	Tornados	October 8, 1992	50%	0%	50%
982	Winter Storm	March 13, 1993	50%	0%	50%
1035	T. S. Alberto	July 10, 1994	75%	25%	0%
1043	T. S. Gordon	October 27, 1994	75%	0%	25%
1062	Erin	August 10, 1995	75%	25%	0%
1069	Opal	October 4, 1995	75%	25%	0%
1074	S. E. FI Floods	October 27, 1995	75%	25%	0%
1141	T. S. Josephine	October 15, 1996	75%	25%	0%
1195	El Nino	January 6, 1998	75%	12.5%	12.5%
1204	Groundhog Day	February 12, 1998	75%	12.5%	12.5%
1223	Wildfires	June 18, 1998	75%	25%	0%
1241	Earl	September 4, 1998	75%	12.5%	12.5%
1249	Georges	September 28, 1998	75%	12.5%	12.5%
1259	Mitch	November 6, 1998	75%	12.5%	12.5%
1300*	Floyd	September 22, 1999	75%	0%	25%
1306*	Irene	October 20, 1999	75%	0%	25%
1344	Helene	October 3, 2000	75%	12.5%	12.5%
1345*	S. F. Floods	October 5, 2000	75%	0%	25%
1359	Freezes	February 6, 2001	75%	0%	25%
1381	Allison	June 17, 2001	75%	0%	25%
1393	Gabrielle	September 28, 2001	75%	0%	25%
1460	Miami Tornadoes	April 25, 2003	75%	0%	25%
1481	CW & SW Storm	July 29, 2003	75%	0%	25%

\*Global Match Disasters

## **Mitigation Success**

The following is a list of mitigation measures that have been funded throughout State using a variety of mitigation related funding sources. These projects are examples of the state's commitment to being creative in assisting local governments in reducing their risk to identified vulnerabilities. A more detailed list of traditional mitigation projects funded in the state since 1992 is provided in Project Appendix.

- Using FMA and HMGP program funds, the State has assisted local governments in retrofitting repetitive loss structures using the non-traditional elevation methods such as (1) modified elevation or demo-rebuild, and (2) adding a second story addition above the required base flood elevation, abandoning and flood retrofitting the first floor to meet local flood ordinance requirements.
- Using HMGP program 5% funds, the state partnered with the National Weather Service and Local Emergency Management Offices to upgrade the fragmented statewide warning systems to assure that approximately 97% of the state's population is covered by the NOAA Weather Radio System.
- Using HMGP and state EMPA funds, existing schools throughout the state were retrofitted to the American Red Cross standards for use as public shelters. These retrofits also reduced the state's overall shelter deficit.
- Using FMA program funds, the City of Indian Shores acquired a structure that was under HUD foreclosure action. The structure was abandoned, blighted and become an eyesore to the community. The structure was acquired at a substantial savings well below market appraisal for properties in this coastal/oceanfront community. Structure was demolished and site is presently used as parking.
- Using HMGP program 5% funds, the state partnered with the Federal Alliance for Safe Homes (FLASH) to develop a comprehensive educational and outreach program for the construction industry on building disaster-resistant structures. The Blueprint for Safety Program outlines techniques for protecting both new construction and existing homes against flooding, wildfire, hurricanes and tornadoes. Additionally, the program encourages the construction industry to consider code plus types of activities when constructing new structures, especially wind and water reinforcement activities.
- Using FMA program funds, Manatee County acquired a COMMERCIAL repetitive loss property, the Electrodex Incorporated, which manufactures electric light bulbs. The total project cost for this acquisition was \$1.4 million and the property has received in excess of \$1.46 million in flood insurance claims since 1997.

- Using funding from the state of Florida Community Trust Program, the state has acquired hundreds of millions of acres of land, now designated for public parks, open space and greenways. During fiscal year 2002-03, the FCT program funded 37 projects that acquired lands, which will prevent future development in Coastal High Hazard Areas and 100-Year floodplains. One such example is the Wall Springs Coastal addition in Pinellas County, which consisted of 87 areas of undeveloped privately owned land in the 100-Year floodplain. This area is surrounded by several properties that are presently on the FEMA repetitive loss list for Pinellas County. By acquiring these properties, the state is substantially reducing risk in these areas.
- Using RCMP funds, the state has funded a project to collect current rate filing data related to credits, discounts, or other rate differentials for fixtures and construction techniques, which meet the minimum requirements of the Florida Building Code. The data is entered into an existing expandable data base to index the range in dollars and/or percent of premium savings, of the listed credits, discounts, or other rate differentials offered for all insurance companies, then grouped in fixtures and construction techniques categories. This database will allow Florida homeowners and builders to search the Internet-based database for wind insurance discounts that are available for building features that reduce damage and loss in windstorms. Pursuant to the Section 627.0629, all insurance companies are required to make a rate filing which include the credits, discounts, or other rate differentials for construction techniques that reduce damage and loss in windstorms.
- The Florida Uniform Building Code which replaces more than 400 local codes and is designed to make the local building process more efficient, increase accountability, bring new and safer products to the market, increase consumer safety and better protect the residents of the state from identified hazards. The code meets the fire protection and life safety requirements of the Florida Fire Prevention Code; has minimum requirements to ensure that buildings in hurricane prone areas will withstand high winds and in coastal counties, the impact of wind-born debris; and defers flood resistant construction in the areas of special flood hazards to local floodplain management ordinances. New structures that comply with the Code will be fire-resistant; wind damage resistant, if built in the Wind-borne Debris Region; and flood resistant, if built in the floodplain
- Using Supplemental Unmet Needs funds, the state has partnered with Monroe County and the Habitat for Humanity to construct affordable housing to replace structures destroyed by Hurricane Georges. Through the use of Unmet Needs Supplemental funding, monies have been made available to assist with strengthening these new structures to withstand the impact of winds greater than 150 miles per hour.

- Using HMGP program and supplemental appropriations from the state Legislature, DEM partnered with the Governor's Office, Miami-Dade County LMS Working Group and the South Florida Water Management District to provide flood relief to thousands of residents to expedite improvement of the local storm water systems.
- As a result of lesson learned from Project Impact Initiative, the state recognized that protecting the continuity of community businesses and industries after a disaster event is one of the most important aspects of hazard mitigation. Without a resilient economic base, affected communities cannot quickly recover and may experience permanent economic injury. Under the umbrella of Florida Prepares Initiative, the state using HMGP program 5% funds, partnered with the Tampa Bay Regional Planning Council to develop a motivational and informative interactive CD/DVD outreach tool that presents a unified approach to all aspects of business continuity. The project has resulted in the development of an educational business CD, a manual for completing a Business Continuity Plan with an emphasis on pre-disaster mitigation, and a new web page designed to complement the concepts presented in the manual.
- The State of Florida used global match as part of the funding strategy for FEMA disasters 1300, Hurricane Floyd; 1306, Hurricane Irene; and 1345, South Florida Flooding event. Global match concept provides that the State may credit eligible costs incurred after the date of a disaster declaration for non-federally funded HMGP type projects toward the non-federal match for HMGP assistance for a disaster. However, any non-federally funded project included in the global match is considered an HMGP project, and must be reviewed and approved in accordance with the same eligibility criteria as federally funded HMGP projects. For these events alone, State and local governments realized a collective savings of \$173,022, \$7.6 million, and \$24 million respectively in matching funds. The limitation of this process is having similar projects funded by state or local government general revenue funds in a timeframe consistent with the disaster declaration generating funds. This works extremely well in large communities, but could be very difficult in smaller, rural communities.
- Using RCMP funds, the state has partnered with the University of Florida to retrofit and outfit 30 Atlantic and Gulf coast homes with wind and wind load measuring devices. The data collected from the various homes is critical to post-disaster evaluation of building performance, construction methods and materials, building code provisions and retrofit measures employed in efforts to strengthen homes, and to reduce losses due to hurricanes. Funds are also used for field deployment during actual events; inspection and maintenance and upgrade to existing equipment including inspection of wiring on existing homes; continuation of development of analysis software; and a Florida Coastal Monitoring Program website for data dissemination and public awareness.

# **5.0**

## **LOCAL MITIGATION PLANNING COORDINATION**

## 5.1 LOCAL FUNDING AND TECHNICAL ASSISTANCE

***44 CFR 201.4(c)(4)(i) - The section should include a description of the State process to support, through funding and technical assistance, the development of local mitigation plans.***

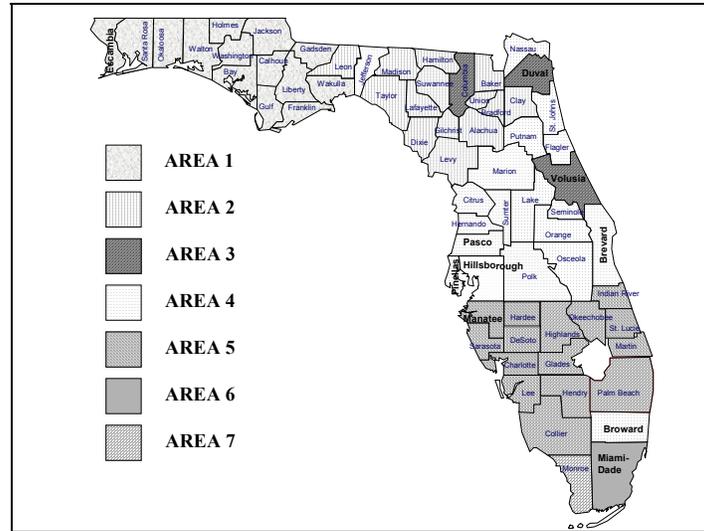
After Hurricane Opal in 1996, which caused massive coastal erosion, and the El Niño flooding events in 1997-98, the Department of Community Affairs realized that hazard mitigation measures could be more effectively moved into the implementation stage if local governments using a broad spectrum of community representation were empowered to set their own mitigation priorities and projects. In 1997, the Florida Department of Community Affairs launched a \$14,229,361 project to promote Local Mitigation Strategies (LMS). FEMA provided \$5,285,704 in Hazard Mitigation Grant Program (HMGP) funds allocated under seven previous disaster declarations. The State of Florida contributed the other \$8,943,656. The project provided funding for each county and its incorporated municipalities to work together to prepare a multi-jurisdictional unified LMS that serves as a bridge between the local government comprehensive and emergency management plans, land development regulations, building codes, other ordinances and local capital improvement programs. The focus of the LMS is broad-based, pre-disaster mitigation planning, providing an effective analytical method of integrating hazard mitigation concepts into policy and routine decision-making.

The mitigation strategies rely on working groups that bring together a broad range of government officials (building codes, planning and zoning, public works, emergency management, engineering, housing, transportation authorities) and officials from such entities as utilities, school boards, water management districts, area businesses, insurance providers, land developers, and non-profit organizations. To assist these working groups, the Department provides technical assistance in the form of training, workshops and materials.

By December of 2001, all Florida counties had completed LMS's. The hazard identification and vulnerability assessments and risk analyses provide dollar estimates of potential property losses throughout the state. Building directly upon these assessments, each county has identified a prioritized list of hazard mitigation measures, with an accompanying action plan for their implementation. The LMS's have thus become the foundation of the statewide pre-disaster mitigation planning activities.

## **LMS Liaisons**

In order to ensure effective understanding of local conditions and characteristics important to successful implementation of mitigation and redevelopment measures by communities, individual LMS liaisons from the Division have been assigned to serve as principal contacts for local government representatives, municipalities, and members of the private sector regarding hazard mitigation planning and programming. The areas of the state that have been assigned contacts are illustrated below.



The responsibilities of each LMS liaison are to support mitigation strategy maintenance and improvement by local governments, to understand conditions relevant to mitigation and redevelopment planning for these communities, to represent the interests of the communities to the Division in program development and implementation, and to provide technical assistance to the LMS Working Groups on updating and implementing the LMS.

## **Local Hazard Mitigation Coordinators**

The Division encourages and expects county government to designate an individual to serve as a Hazard Mitigation Coordinator. The Division anticipates that this individual will serve as the coordinator and contact point for local and Divisional communications regarding the following:

- The planning process for maintaining the local hazard mitigation strategy,
- Community compliance with the National Flood Insurance Program, the Community Rating System, and the local Flood Mitigation Assistance Plan,
- The relevant elements of the jurisdiction's required comprehensive plan, its amendments, and the Evaluation and Appraisal Report required under F.S. Chapter 163,

- The relevant elements of the county's comprehensive emergency management plan required under F.S. Chapter 252,
- Local government actions and responsibilities for processing of applications for mitigation measures under funding programs represented by the Department, such as those available under the Pre-Disaster and Hazard Mitigation Grant Program of the Division of Emergency Management and the Community Development Block Grant program of the Division of Housing and Community Development,
- Departmental programs for technical assistance and training,
- Input from the jurisdiction to the Department's development and maintenance of the Florida Hazard Mitigation Strategy, and
- Other relevant activities and programs as they arise.

### **LMS Working Groups**

Each county electing to participate in the HMGP must have a formal LMS Working Group and a current LMS. Not later than the last working weekday of January of each year the Chairperson of the Board of County Commissioners shall submit to the Department a list of the members of the Working Group and its designated chairperson and Vice-Chairperson. The Working Group is required to have representation from various agencies of county and municipal government, interested private organizations, civic organizations, trade and commercial support groups, property owners associations, Native American Tribes or authorized tribal organizations, water management districts, regional planning councils, independent special districts and non-profit organizations.

Counties must demonstrate that they have issued a written invitation to each municipality, private organization, civic organization, Native American Tribe or authorized tribal organization, water management district, independent special district and non-profit organization, as applicable, to participate in the LMS working groups. This documentation shall accompany the membership list submitted to the Department. The Working Groups are responsible for designating a Chairperson and Vice-Chairperson, revising the LMS as necessary, coordinating all mitigation activities within the County, setting the an order of priority for local mitigation projects, and submitting annual LMS updates to the Department.

The Division's staff has been actively providing technical assistance to local governments on revising existing LMS documents to meet the requirement of the Disaster Mitigation Act of 2000 (DMA2K). As of July 2003, staff have met with assigned LMS chairpersons, attended LMS working group meetings, and made formal presentations on the minimum planning requirements for local mitigation plans as detailed in the DMA2K.

In addition, the Division staff has held five regional workshops during August and September 2002 to review the criteria and the FEMA provided supplementary materials. These were well attended but suffered from a lack of examples drawn from actual reviews. In January 2003, the Division staff completed a joint training session with its

FEMA counter parts and jointly reviewed ten LMSs that had been locally revised to meet the new criteria. From this review, staff drew examples for each of the criteria with a critique of what was right, what was missing and exactly what is necessary to meet the criteria. These examples, became the basis for four additional regional training workshops held during the second week of March 2003.

The Division has also purchased a copy of the 2003 version Mitigation 20/20™ for each county working group and sponsored five regional training sessions on its use given by the developer. These were very well attended and there appears to be considerable interest in using the program at least for part of the analysis.

The Division was awarded \$3 Million in HMGP 7 percent planning funds by FEMA to provide a range of local assistance that includes:

- Planning Grants - The application contains \$1.7 million for local planning assistance to make the necessary revisions to meet the DMA2K requirements. A portion of the funds will be used for small grants to some of the smaller counties who normally use consultants to develop their local plans and need such assistance to bring their LMS into compliance. The balance of the funds will be available on a competitive basis for larger studies to improve the quality of compliant LMSs and meet the criteria described in the Funding Sources section of this plan.
- Hazards Analysis Data - In the application, the Division has set aside funds to purchase a second round of The Arbiter of Storms (TAOS) for each county Working Group. TAOS identifies areas within each county with high potential for damage from high winds, storm surge and inland flooding along with estimates of damage. Each county working group will receive a CD with maps of the hazard areas that they can printout and use in revising their vulnerability and risk analysis as well as the data layers that working groups with access to GIS capability can use to carry out more refined studies.
- Identifying Future Risk - Under a previous grant, the Division is providing partial funding for a GIS based land-use predictive model developed by Prescott College, Prescott Arizona in cooperation with NASA. The model takes land-use decisions and projects the outcome in terms of development over a twenty-year period and presents the results in a GIS format. With our assistance, the model will also project any increases in risk from natural disasters associated with a particular land-use decision. The current application contains funds to expand the number of test counties and becomes a tool to consider future risk as required in DMA2K.
- Comprehensive Plan/LMS Nexus - Finally, the application provides over \$500K for one or more consultants that will, on a county-by-county basis beginning with the coastal counties, review all local comprehensive plans to determine where additional mitigation is necessary or desirable. Once this is complete, the

consultant will review the LMS to determine its capability to provide the needed mitigation data to the associated comprehensive plans. Finally, the consultant will conduct a mediated session between the planners and the LMS Working Group to discuss ways to better integrate the LMS and the local planning process.

Additionally, the Division has developed and provides a number of planning related tools to assist local governments in developing comprehensive mitigation programs. This local mitigation toolkit includes:

### **Resource Identification Strategy**

The Department of Community Affairs in partnership with the Florida Public Affairs Center at Florida State University, assists communities and other potential applicants in finding funds needed for disaster mitigation and recovery related activities. These organizations developed the web based Resource Identification Strategy (RIS) - a comprehensive, continually updated database that contains information on historical and potential funding sources for disaster preparedness, response, mitigation, recovery, and long-term redevelopment related projects.

### **Handbook for Hazard Mitigation Projects**

This handbook addresses mitigation projects that protect existing public buildings and critical facilities, including flood proofing and wind retrofits of existing public utility infrastructure. Projects may also be to mitigate future damage at facilities owned by eligible private non-profit organizations, and Indian Tribes or authorized tribal organizations. The handbook is organized to follow the typical process, from planning a project, considering the factors that affect both design and implementation, preparing the application, implementing the project, through to a section on closing the books.

### **Handbook for Floodplain Acquisition and Elevation Projects**

Most of this handbook is written to address floodplain acquisition, although a section on elevation is included. In addition, the primary focus is on residential properties. Like the *Handbook for Hazard Mitigation Projects* above, it is organized to follow the typical process from planning to closeout.

### **The Local Mitigation Strategy: A Guidebook for Florida Cities and Counties**

This guidebook was prepared to help communities and counties develop hazard mitigation strategies in order to:

1. Identify problems and possible mitigation solutions in advance of a disaster to be in a better position to obtain post-disaster funding.

2. Recover faster, reduce vulnerability and identify opportunities for post-disaster mitigation.

3. Meet comprehensive planning and other planning requirements and achieve community goals.

The guidebook helps a community prepare a local mitigation strategy by providing an outline and information about technical assistance. It is recommended that local governments use this guidebook as an index to record where criteria items are addressed in existing plans, ordinances or policies.

### **Floodplain Management Home Study Course for Florida Officials**

The course is designed to meet two goals. The first is to share and discuss the importance of floodplain management to a number of mitigation planning and project measures. The second is to assist local officials in properly administering and enforcing construction and development activities in Special Flood Hazard Areas. The course materials clarify the minimum federal regulations contained in *Title 44 Code of Federal Regulations* and *The Model Flood Damage Prevention Ordinance*.

### **Florida Firewise Communities Program**

This program is an interagency planning and mitigation program led by the Division of Forestry to address the growing problem of wildfire in the wildland/urban interface. The objectives of the Florida Firewise Communities Program are to educate citizens and community leaders on the threat of interface fire and the need for Florida citizens at all levels to accept a certain level of responsibility as partners with the fire service community in mitigation and fire prevention. Firewise Communities workshops are held in local counties and municipalities so participants can see how to apply wildfire mitigation practices to their own communities. A Florida Firewise Communities Steering Committee coordinates statewide implementation of the program.

### **STORM**

STORM (Simulation Training on Recovery and Mitigation) is a gaming simulation of the post-storm recovery process. It is a training device for state and local officials who may have to deal with hurricane recovery but who lack prior experience. The game does this by confronting players with the major decisions that local governments must make during hurricane recovery and by demonstrating to players the value of pre- and post-storm recovery planning for the issues created by coastal storms.

## 5.2 LOCAL PLAN INTEGRATION

***44 CFR 201.4(c)(4)(ii) - The section should include a description of the State process and timeframe by which the local plans will be reviewed, coordinated, and linked to the State Mitigation Plan.***

This section describes the Division's process and timeline for reviewing and linking Local Mitigation Strategies to the State Mitigation Plan. Effective December 2001, all 67 counties have a completed multi-jurisdictional Local Mitigation Strategies (LMS). Initially, the Mitigation Section reviewed each of the 67 LMS to determine if the goals and objectives and risks assessment of the local plans are consistent with those of the state plan. As of April 30, 2004, 30 LMS counties have submitted draft copies of their goals and objectives and risk assessment. State Mitigation staff reviewed the newly submitted documentation to assure that revision to the Local Mitigation Strategies are consistent with the State Mitigation Plan. It is anticipated that by January 2005, 25 additional communities will submit their revised LMS to the State for review. As these plans are reviewed and submitted to FEMA for final approval, state Mitigation staff will integrate the appropriate local plan data into the State Mitigation Plan. On annual basis, the SHMPAC will revise the State Mitigation Plan to incorporated new and better data on local risk assessment as needed. The state will continue to work with the remaining 12 communities who have projected that their plans will be revised to meet DMA2K by November 2005.

### **Local Plan Review and Approval Process**

The Mitigation staff in partnership with FEMA reviews the final LMS and subsequent revisions thereto as they are submitted. The reviews will document the degree to which the local plan is consistent with the State Mitigation Plan and compliance with the minimum local mitigation planning requirements of the Disaster Mitigation Act of 2000. The following is an overview of the LMS review and approval process:

1. The LMS working group will submit the final draft of local plan or proposed revisions to local plan to the State Mitigation Staff for review for compliance with the minimum local mitigation planning requirements of the Disaster Mitigation Act of 2000.
2. If plan is deemed compliant by state Mitigation staff, it will be forwarded to FEMA for final review and approval. If not compliant, the plan will be returned to the community with a list of deficiencies. The local LMS Working Group will make changes as needed and resubmit local plans to state for additional review and final approval.
3. Upon FEMA's final review and approval, the Division will formally notify the respective county of plan approval.

Once compliant with Disaster Mitigation Act of 2000, the Division will monitor local plan implementation in four ways:

1. First, monitoring and technical assistance will be provided on local plan implementation through monthly contacts made by the assigned state mitigation staff liaison;
2. Second, through the annual reporting requirements set out in the Departmental Rule 9G-22 of the Florida Administrative Code;
3. Third, through the periodic FEMA/state review required every five years in Disaster Mitigation Act of 2000; and
4. Fourth, after any major Presidential declared disaster event, the state Mitigation staff will contact the Chairman of the impacted counties LMS Working Group and request that the group be convened to review the impacts of the event in the community. This group will team with the SHMPAC and function as the Interagency Hazard Mitigation Team.

Currently, the Local Comprehensive Emergency Management Plan (CEMP) is reviewed by the state every four years. Once an LMS is found compliant, we will suggest to the working group moving that LMS to a four-year schedule that alternates every two years with the CEMP review. Thus, two years after a CEMP review, the county will have an LMS review. Any changes affecting the state plan not previously picked up through informal contact of the annual update will be incorporated at that time.

## 5.3 PRIORITIZING LOCAL ASSISTANCE

***44 CFR 201.4 (c)(4)(iii) - The section shall include criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs which should include consideration for communities with the highest risks, repetitive loss properties, and most intense development pressures. For non-planning grants, a principal criterion for prioritizing grants shall be the extent to which benefits are maximized according to a cost benefit review of proposed projects and their associated costs.***

This Section provides a brief description of the criteria by which the state will prioritize communities and local jurisdictions for available mitigation planning and project funding under available programs. The state's Mitigation Strategy prioritizes communities and local jurisdictions based upon demonstrated commitment toward mitigation. The state's Local Mitigation Strategy Initiative was developed on the premise that communities which adopt and implement pre-disaster mitigation strategies should be given priority over those communities that do not, when various mitigation funding opportunities are made available. Additionally, the state does not rank or prioritize planning and project applications from local communities. The Department's Rule 9G-22 requires Local Mitigation Strategy Working Group to prioritize and rank locally submitted projects. The local prioritization process will vary from community to community, however, at a minimum the process must include criteria that includes cost effectiveness, technical feasibility and environmental soundness for each project. For a detailed review of the process used by a particular Local Mitigation Strategy Working Group to prioritize projects or applications, please review that local community Mitigation Strategy.

Several state administered grant programs have recognized the importance of pre-disaster mitigation planning and have began providing additional points if the project is listed in the respective Local Mitigation Strategy. Examples of such programs are the Small Cities Community Development Block Grant Program and the Florida Community Trust Program, which are administered by the Department of Community Affairs. The Coastal Zone Management Program, which is administered by the Florida Department of Environmental Protection, also awards additional points to project applications that are listed in the respective Local Mitigation Strategies.

The SHMPAC will continue to explore opportunities to encourage other state agencies and mitigation related funding sources to consider adopting policies requiring all mitigation related projects submitted for funding to be included in the respective Local Mitigation Strategy or the State Mitigation Plan Initiative list.

## **Non –Federally Funded Planning and Project Grants**

The strategy outlines the criteria by which the Department will prioritize communities that receive planning and project grants under state and other non- federally funding sources. A community must be a participant in the Nation Flood Insurance Program. Funding will vary by agency and the eligibility requirements will vary by funding source, the state plan recommends that all available non-Federal funds be distributed to those communities that have clearly demonstrated both the ability and the desire to complete the plan and to follow through with the measures developed in the plan.

1. Communities that have demonstrated a high level of local commitment to hazard mitigation planning:
  - a) The Department has approved the LMS and it exceeds minimum planning criteria;
  - b) Identified and prioritized key local measures that will enhance the LMS;
  - c) LMS Working Group meets at least once a quarter; and
  - d) The community's ability to provide the non-federal match.
2. Communities that have demonstrated some level of local commitment to hazard mitigation planning:
  - a) The Department has approved the LMS and it meets minimum planning criteria;
  - b) LMS Working Group meets at least annually; and
  - c) The community's ability to provide the non-federal match.
3. Communities that have not demonstrated any level of local commitment to hazard mitigation planning:
  - a) The Department has not approved the LMS; and
  - b) LMS Working Groups do not meet

## **Federally Funded Planning Related Grants**

The strategy outlines the criteria by which the Department will prioritize communities that receive planning and project grants under federal funding sources. Listed below are the criteria by which the Department will prioritize communities that receive funding under federal grant program that includes the Flood Mitigation Assistance (FMA), Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) programs. Since funding for mitigation planning activities is limited, available funds must be

distributed to those communities that have clearly demonstrated both the ability and the desire to complete the local plan and to follow through with the measures developed in the plan.

All requests for flood loss reduction planning related activities shall be referred to the National Flood Insurance and Flood Mitigation Assistance Programs Section for FMA Planning Grant funding consideration. If funds are not available or the proposed planning project is not eligible for funding under FMA, the planning project will be provided to the Mitigation Planning Section for further consideration.

### **Flood Mitigation Planning Grants**

To be eligible for FMA Planning Grant funds, a community must be a compliant participant, which is not on probation or suspended, in the National Flood Insurance Program (NFIP). The Department awards FMA Planning Grants at its professional discretion to eligible communities that best meet the objectives of benefiting the National Flood Insurance Program fund. Additionally, the following criteria will be considered in determining which communities receive FMA Planning Grants:

1. NFIP local governments that have repetitive loss structures but have never submitted or infrequently submitted applications to the FMA for repetitive loss projects;
2. NFIP local governments who participate in the Community Rating System program with ten or more repetitive loss properties listed on FEMA's Repetitive Loss List;
3. NFIP local governments that have a high total number of repetitive or targeted repetitive loss structures on FEMA's repetitive loss list; and
4. NFIP local governments that have experienced a significant flood event but for which they did not receive a Presidential Disaster Declaration; and
5. NFIP local governments that have targeted repetitive loss structures.

### **Hazard Mitigation Grant Program 7% and Pre-Disaster Mitigation Planning Grants**

To be eligible for HMGP 7% and PDM Planning Grant funds, a community must be an active participant in the NFIP. Additionally, the following criteria will be used to prioritize communities for HMGP 7% and PDM Planning Grant assistance:

1. Communities that have demonstrated a high level of local commitment to hazard mitigation planning:
  - a) The Department has approved the LMSs and it exceeds minimum planning criteria;

- b) Identified and prioritized key local planning measures that will enhance the LMS;
  - c) LMS Working Group meets at least once a year; and
  - d) The community's ability to provide the non-federal match.
2. Communities that have demonstrated some level of local commitment to hazard mitigation planning:
- a) The Department has approved the LMSs and it meets minimum planning criteria;
  - b) LMS Working Group meets at least once a year; and
  - c) The community's ability to provide the non-federal match.
3. Communities that have not demonstrated any level of commitment to hazard mitigation planning:
- a) The Department has not approved the LMSs; and
  - b) LMS Working Group does not meet.

### **Federally Funded Project Related Grants**

The Disaster Mitigation Act of 2000 provides that as a condition for receipt of future federal mitigation assistance funds, a local government must have a FEMA approved local mitigation plan. Additionally, for all FMA, HMGP and PDM funded projects, the state will recommend to FEMA for funding locally prioritized projects that are technically feasible, cost effective and environmentally sound. Section 4.4 provides an overview of the state's process for determining the technical feasibility, cost-effectiveness and environmental soundness for each project. All projects recommended for funding will be reviewed to determine the extent to which the project benefits are maximized in relationship to the project cost. However, the state will not use this as criteria for ranking local submitted projects, as the Department Rule 9G-22 requires local mitigation strategy working groups to prioritize and rank locally submitted projects. For a full discussion of methodology used by the state to determine project cost effectiveness for FEMA funded projects, please refer to Section 4.4-Evaluation of Mitigation Measures for Technical Feasibility. The State will make every effort to fund all cost effective, eligible and technically feasible projects that are submitted for mitigation funding by eligible applicants. In those instances where cost effective, eligible and technically feasible projects are submitted under a specific grant programs and found to meet all applicable program eligibility requirements, however, because of funding restraints or lack of available funds, the project is not funded, the project will be recommended to the next

available funding source for which it qualify. For example an acquisition of repetitive loss structure project is submitted under HMGP and meets all program eligibility requirements and is not funded due to limited amount of available HMGP funds. This project will be provided to the FMA staff for consideration under next funding cycle.

The strategy listed below is the criteria by which the Department will prioritize communities that receive project related grants under the FMA, HMGP and PDM programs.

### **Hazard Mitigation Grant Program Project Grants**

Funding allocations and project funding is provided below and will be in accordance with the Departments' HMGP Administrative Rule, Chapter 9G-22 (Section 9G-22.006) Florida Administrative Code and HMGP Administrative Plan.

1. The available HMGP funds shall be allocated to counties included in the relevant presidential disaster declaration, in proportion to each county's share of federal disaster funding from the Public Assistance, Individual Assistance and Small Business Administration programs as of 90-days after the disaster declaration as reported by the FEMA.
2. Eligibly submitted projects for each county included in the relevant presidential disaster declaration will be funded in order of priority as outlined in the LMS until the allocated funds are exhausted or all eligible projects are funded, whichever occurs first.
3. Any allocation remaining after all eligible projects in any declared county are funded shall be reallocated to those counties included in the relevant presidential disaster declaration whose allocation was not sufficient to fund all submitted eligible projects in proportion to each county's share of unfunded projects.
4. If funds remain after all eligible projects under subsection (1) above have been funded, then they shall be applied to fund eligible projects submitted from counties not included in the relevant presidential disaster declaration on a first-come-first-served basis until all available funds are obligated.

### **Flood Mitigation Assistance Project Grants**

To be eligible for FMA Project Grant funds, a community must be a compliant participant, which is not on probation or suspended, in the National Flood Insurance Program (NFIP). Additionally, funding allocations and project funding is provided below and will be in accordance with the Departments' FMA Administrative Plan and Memorandum of Understanding for Managing State.

1. Funds will be made available to those communities that have structures that appear on the FEMA Targeted Repetitive Loss Properties list. From that list, an estimated 1000 properties are located in Florida. Appropriate funding consideration will be given to the targeted repetitive loss properties and those properties that will result in the greatest savings to the National Flood Insurance Fund.
2. Any residual funds will be made available to all other communities participating in the NFIP
3. Eligible submitted projects for each community will be funded in order of priority as outlined in the submittal letter from the LMS until the allocated funds are exhausted, or all eligible projects are funded, whichever occurs first.
4. Further, the FMA project approvals will be done in accordance with the Memorandum of Understanding. FMA funding for Repetitive Loss Projects will be awarded as following:
  - a. Structures that are substantially damaged;
  - b. Structures with four or more losses that exceed the value of the structure;
  - c. Structures with two or more losses in a ten-year period, where the cumulative payments exceed the fair market value of the structure; and
  - d. Structures with two or more losses in a ten-year period, where the cumulative payments do not exceed the fair market value of the structure.

Irrespective of the above priorities, the Department may use its discretion and consider “hardship projects” for approval.

### **Pre-Disaster Mitigation Project Grants**

Since funding for PDM-C related projects are competitive nationwide, the available funds will be distributed to those communities that have clearly demonstrated both the ability and the desire to complete project applications that score in the upper percentile in the National Evaluation process. The state will accept PDM-C applications from only NFIP participating communities that have an FEMA approved LMS. Additionally, the state will not give priority to one PDM-C eligible community over another. All project applications submitted under PDM-C will be reviewed and ranked based upon the following criteria:

1. Projects submitted must be included in the community's list of prioritized initiatives;
2. Eligibility of the Applicants and sub-applicants:
3. Eligibility of proposed activities and cost;
4. Eligibility and availability of non-federal cost share;
5. Consistency of mitigation projects with the State and FEMA-approved LMS as well as the State Mitigation Plan;
6. Feasibility of mitigation projects;
7. Benefit cost ratio of at least 1.0 for mitigation projects, including substantially damaged structures. Applicants are required to complete their own Benefit Cost Analysis. Mitigation projects with a benefit cost ratio less than 1.0 will not be considered;
8. Technical accuracy, complete supporting documentation, and source credibility of the BCA;
9. Complete responses to the Environmental/Historic Preservation Established Questions and supporting documentation for mitigation projects and inclusion of appropriate treatment measures in project cost; and
10. Complete responses to Supplemental Questions for National Ranking and Evaluation.

# **6.0**

# **PLAN MAINTENANCE PROCEDURES**

# 6.1 MONITORING, EVALUATING AND UPDATING THE PLAN

***44 CFR 201.4(c)(5)(I) - The Standard State plan should detail the State's established method and schedule for monitoring, evaluating, and updating the plan.***

44 CFR Part 102 requires that the state review and revise as necessary its mitigation planning document to reflect changes in development, progress in state wide mitigation efforts, and changes in priorities, and resubmit it for approval by the FEMA Regional Director every three years. The regulations require a plan maintenance process that outlines the state method and schedule for monitoring, evaluating and updating the plan. The State of Florida intends to review and revise its State Mitigation Strategy on an annual basis.

## **Plan Maintenance Process**

The State Hazard Mitigation Officer in coordination with the SHMPAC is responsible for monitoring, evaluating and updating the State Mitigation Plan. The Mitigation staff is the unit directly responsible for facilitating this task.

### Monitoring and Evaluating

As part of the annual update, the Mitigation staff will monitor and review the progress on implementing the actions and projects identified in state plan every six months. Semi-annually each SHMPAC member will submit a progress report on tasks assigned. The Mitigation Staff will review and evaluate the reports to determine if assigned tasks are on target and recommend actions needed to assure completion of related activities. The Mitigation Staff will prepare a progress reports and provide it to the SHMPAC at the next scheduled meeting.

### Plan Updates

The plan will be reviewed and updated in three ways, annually, the three-year cycle and after major Presidential declarations.

**Annual review:** Annually, the plan will be reviewed to gauge the progress as well as assess any changing conditions in the state that may affect mitigation activities and project implementation in Florida. Additionally, any new or better data obtained from reviews and updates of Local Mitigation Strategies. Any progress made on the goals and objectives, changes in the risk assessment and implementation of mitigation initiatives listed in the plan. Moreover, the plan will only be revised annually if

necessary to reflect significant changes that took place during the proceeding year. As part of the annual update, the state Mitigation staff will monitor and review the progress on implementing the actions and projects identified in state plan every six months. Semi-annually each SHMPAC member will submit a progress report on tasks assigned. The update process will be similar to the planning process used to develop the original plan and will incorporate opportunities for public involvement. Staff will use the form in Figure 6.1.1 to carry out the review of the Strategy and recommend changes by September 30 of each year.

### Figure 6.1.1 State Mitigation Plan Recommended Revisions

Annual Review of the Florida State Mitigation Strategy for (year)	
1. Have there been any major changes in development trends in the state that require modification of the Strategy? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Explain:	
Recommended Changes:	
2. Has there been progress toward attainment of the goals of Section 4.1 of the Strategy? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Explain:	
Recommended Changes:	
3. Have there been any changes in priority for state wide mitigation efforts as a result of a shift in development trends, economics, policy, or state level organization? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Explain:	
Recommended Changes:	
Analysis by: _____	Date _____

The annual plan review and revision process is as follows:

- After the desired revisions have been identified, staff will draft revisions by November 30.
- The revisions will be presented to the State Hazard Mitigation Plan Advisory Council (SHMPAC) at a January meeting to ensure that all state level partners are in agreement regarding the update.
- Subsequent changes recommended by SHMPAC will be incorporated into the Strategy by March 31.
- The revised State Mitigation Strategy will be endorsed by the Governor and forwarded for approval to the FEMA Region IV Director during October.

**Three-year review:** Every three years, the State Hazard Mitigation Officer in coordination with the SHMPAC will review and revise the State Mitigation Plan prior to submittal to FEMA for final approval. This process will be similar to the planning process utilized by the SHMPAC in the initial development of the State Mitigation Plan. A detailed discussion of the planning process is provided in Section 2.1 of the plan. The plan review process will start at least 12 months before FEMA approval is required. To the extent possible, data from Local Mitigation Strategies that have completed their three-year review and revision cycle will be incorporated into the state plan. As part of the three-year review, the SHMPAC will:

- Review and update the goals and objectives to determine and highlight progress toward accomplishing them. Evaluation of goals and objectives to assure they still address current conditions.
- Review risk assessment to assure it is reflective of the state's overall risk. Determine if the nature and magnitude of risk has changed. Florida Department of Financial Management will review and update data on state owned facilities and their respective vulnerabilities.
- Review the state capabilities to determine the effectiveness of existing programs, policies, regulations, and funding sources toward addressing the state's mitigation needs. This review will also provide an evaluation of whether the current resources are adequate for implementing the plan;
- Documenting any implementation problems such as technical, political, legal, or coordination issues with other agencies;
- Discuss whether the outcomes have occurred as expected; and
- Document agency and other partner participation.

**Post-Disaster review:** After each major Presidentially declared disaster event, the State Hazard Mitigation Officer will convene the SHMPAC to review the impacts of the event against the state's overall mitigation strategy. The SHMPAC will be provided information gathered as part of the state's post-disaster mitigation assessment and its accompanying report. The report provides an overview of the event and its impact on population and structures. The SHMPAC will use this data to update the state plan as needed and make recommendations to the Governor's Authorized Representative on mitigation opportunities to reduce the impact of future disasters on the state's population and structures. Within six months of the disaster event, the SHMPAC will submit revisions, if necessary, to the Governor for endorsement and forwarded for approval to FEMA.

## 6.2 MONITORING PROGRESS OF MITIGATION ACTIVITIES AND ASSESSMENT OF MITIGATION ACTIONS

***44 CFR 201.4(C)(5)(II) and (iii) - The Standard State plan maintenance process should include a system for monitoring implementation of mitigation measures and project closeouts, and a system for reviewing progress on achieving goals as well as activities and projects in the Mitigation Strategy.***

The State Mitigation Plan maintenance process, in addition to outlining the plan update process, also details the system by which the state will monitor implementation of mitigation measures, project closeouts and reviews progress on achieving the goals and other target activities in the plan. The State Hazard Mitigation Officer (SHMO) in coordination with the SHMPAC is responsible for developing an annual work plan that becomes the primary document to govern this task. The annual work plan includes a series of task to be accomplished over a 12-month period. Every six months SHMPAC committee chair members will submit progress reports on tasks assigned and activities accomplished. The Mitigation staff will use these reports to monitor, review and evaluate the status of assigned tasks and recommend actions needed to assure their completion. The Mitigation staff will prepare a progress report and provide it to the SHMPAC at the next scheduled meeting.

Annually, the State Hazard Mitigation Officer in coordination with the SHMPAC will:

- Using the implementation schedule developed for the mitigation projects, meet on a quarterly basis to track the progress of the mitigation plan. Quarterly status reports detailing efforts to date and any challenges that have been experienced in implementing the project shall be submitted to the SHMO by each of the committee chairs for each of the activities identified in the work plan. The SHMO will be responsible for tracking the progress of implementing the tasks and ensuring that the plan timelines are adhered to.
- On an annual basis the State Hazard Mitigation Officer, in coordination with the SHMPAC, will develop a year-end report. The report should detail mitigation activities undertaken over the course of the year as well as any mitigation projects that have been completed. The report should also highlight mitigation success stories. The report should address the following:
  - Evaluation of goals and objectives to assure they still address current conditions;
  - Determine if the nature and magnitude of risk has changed;
  - Evaluate whether the current resources are adequate for implementing the plan;

- Document any implementation problems such as technical, political, legal, or coordination issues with other agencies;
- Discuss whether the outcomes have occurred as expected; and
- Document agency and other partner participation.

Copies of the annual report will be made available to each of the participating agencies and organizations, Governor's office, local governments, public and FEMA Region IV.

In those instances where mitigation projects listed in the state plan are funded through the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Grant Program and Flood Mitigation Assistance Program, the recipient of the grant will be required to submit the grant-specific quarterly reports to the state Mitigation staff. Additionally, all eligible applicants who receive mitigation grant funds are required to submit a closeout report at the completion of the project. Information from the quarterly reports will be used to assist in tracking the progress of all grant-funded projects. A detailed discussion of the state's procedures for monitoring and closeout of mitigation projects funded by the programs listed above can be found in the State of Florida Hazard Mitigation Grant Program Administrative Plan.

### **Work Plan for 2004-5**

The annual work plan is the controlling document for efforts to implement the State of Florida Enhanced Hazard Mitigation Plan. Tasks 1-18 are derived from those objectives or parts of objectives from Section 4.1 that SHMPAT and the SHMPAT Support Team feel can be practically completed during the current year. Tasks 19-22 have to do with the plan update and maintenance schedule from Section 6.1. The remaining tasks represent mitigation measures from Section 4.4 to be accomplished this year. The projected time lines for this year's activities are represented on Chart 6.2.1.

**Task #1:** Incorporate State policies into the State Hazard Mitigation Plan and coordinate with Local Mitigation Strategy Programs.

**Task #2:** Establish and support an on-going liaison between Federal, State, Regional and Local Governments as well as the private sector and general public through the State Hazard Mitigation Plan Advisory Team.

**Task #3:** Integrate the pre- and post disaster mitigation functions with the response and recovery functions of the state's existing Emergency Support Functions (ESFs).

**Task #4:** Design a process for prioritizing state and local projects for mitigation related funding programs.

**Task #5:** Establish a mediation process to resolve conflicts between state agencies' existing plans, programs and mitigation related policies and integrate them into the State Hazard Mitigation Plan.

**Task #6:** Establish criteria for risk and vulnerability assessment of state-owned critical facilities and infrastructure.

**Task #7:** Update the inventory of state-owned facilities.

**Task #8:** Inventory critical facilities and infrastructure that are leased.

**Task #9:** Annually review and update the existing Mitigation Resource Identification Strategy Database.

**Task #10:** Identify effective local regulatory approaches to hazard mitigation.

**Task #11:** Identify pre-and post disaster mitigation related funding opportunities to local communities throughout the state.

**Task #12:** Review and recommend at least annual updates of the local risk and vulnerability assessments.

**Task #13:** Create an Education and Outreach Committee of the State Hazard Mitigation Plan Advisory Team to organize and develop a comprehensive statewide mitigation education and outreach strategy.

**Task #14:** Develop a business continuity awareness program designed to educate the business community on the benefits of mitigation in reducing their vulnerabilities and risk to natural and man made hazards.

**Task #15:** Establish a SHMPAT Research Subcommittee to establish state research needs; adopt research strategies; and formulate a review process for resource allocation.

**Task #16:** Obtain archive space and dissemination services from Florida's public universities.

**Task #17:** Establish hazard mitigation priorities for retrofitting of existing state critical facilities and infrastructure based upon risk and vulnerability assessment.

**Task #18:** Ensure that state facilities and infrastructure are located, designed and constructed to complement/support local priorities as defined in the Local Mitigation Strategies.

**Task #19:** Staff analysis of plan progress and recommendations for changes.

**Task #20:** Draft plan changes.

**Task #21:** Recommend changes to SHMPAT.

**Task #22:** Incorporate changes into the plan.

**Task #23:** Best Mitigation Practices Guidebooks for local governments.

**Task #24:** Waterfronts Florida.

**Task #25:** Comprehensive Plan legislation.

**Task #26:** Interactive Mitigation and Recovery Educational DVD.

**Task #27:** Study - Best Practices for Residential and Business Development in Wildland-Urban Interface Areas.

**Table 6.2.1: 2004-5 Work Plan**

Task Name	04												2005			
	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	
<b>Workplan: March 1, 2004 - March 31, 2005</b>	[Redacted]															
Task 1	[Bar]															
Task 2	[Bar]															
Task 3	[Bar]															
Task 4	[Bar]															
Task 5	[Bar]															
Task 6	[Bar]															
Task 7	[Bar]															
Task 8	[Bar]															
Task 9	[Bar]															
Task 10	[Bar]															
Task 11	[Bar]															
Task 12	[Bar]															
Task 13	[Bar]															
Task 14	[Bar]															
Task 15	[Bar]															
Task 16	[Bar]															
Task 17	[Bar]															
Task 18	[Bar]															
Task 19	[Bar]															
Task 20	[Bar]															
Task Name	04												2005			
Task 21	[Bar]															
Task 22	[Bar]															
Task 23	[Bar]															
Task 24	[Bar]															
Task 25	[Bar]															
Task 26	[Bar]															
Task 27	[Bar]															