The
Local Mitigation Strategy

✷✷✷✷✷

Hazard Mitigation
for
Miami-Dade County
and its
Municipalities, Departments and Private Sector Partners

LMS
Miami-Dade

June 30, 2012

Part IV - The Appendices

Appendix A

Miami Dade County
Board of County Commissioners

Resolution No. R-452-10

Resolution Adopting the Local Mitigation Strategy

On June 6, 2000, the Miami-Dade County Board of County Commissioners formally adopted the Local Mitigation Strategy as official county policy. The Board of County Commissioners renewed their commitment to the LMS on April 20, 2010, after FEMA's approval of the 2010 LMS update.

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 14(A)(5)
4-20-10

RESOLUTION NO. R-452-10

RESOLUTION ADOPTING THE LOCAL MITIGATION STRATEGY IDENTIFYING AND PRIORITIZING HAZARDS MITIGATION GRANT PROGRAM PROJECTS TO BECOME A PART OF THE STATEWIDE HAZARD MITIGATION STRATEGY

WHEREAS, the Board adopted Resolution No. R-382-98 on March 31, 1998 which approved the initial execution of a Hazards Mitigation Strategy agreement with the Florida Department of Community Affairs (FDCA); and

WHEREAS, the State requires all Local Mitigation Strategy (LMS) programs be approved every five years by the governing board of the agency submitting the plan and Miami-Dade County's first LMS plan was approved in the middle of the 1995-2000 five year cycle; and

WHEREAS, on June 6, 2000 Resolution No. R-572-00 was adopted by the Board and then again on June 7, 2005 via Resolution No. R-710-05 and the year 2010 marks the completion of the last 5 year cycle; and

WHEREAS, the Federal Emergency Management Agency funded a national initiative to help communities develop local mitigation strategies that identify projects to mitigate the effects of natural disasters and to identify sources of funds to address those problems; and

WHEREAS, the State of Florida Department of Community Affairs and/or Florida Division of Emergency Management enters into agreements with Miami-Dade County to provide the funding for the County and municipalities to jointly develop a Local Mitigation Strategy to become a component of the Statewide Mitigation Strategy; and

WHEREAS, the County entered into agreements with local municipalities to establish a unified process for developing the Local Mitigation Strategy and convey funds for participation in the plan development; and

WHEREAS, the Local Mitigation Strategy meets the State agreement requirements and was accomplished with the participation of local governments, the School Board of Miami-Dade

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County, and a broad range of private not-for-profit agencies, businesses and universities coordinated by the Department of Emergency Management; and

WHEREAS, this Board desires to accomplish the purposes outlined in the accompanying memorandum, a copy of which is incorporated herein by reference,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA, that this Board adopts the Local Mitigation Strategy in substantially the form attached hereto and made a part hereof, an original of which is on file with the Clerk of the Board.

The foregoing resolution was offered by Commissioner **Joe A. Martinez** who moved its adoption. The motion was seconded by Commissioner **Rebeca Sosa** and upon being put to a vote, the vote was as follows:

Dennis C. Moss, Chairman	aye		
Jose "Pepe" Diaz, Vice-Chairman	aye		
Bruno A. Barreiro	aye	Audrey M. Edmonson	aye
Carlos A. Gimenez	aye	Sally A. Heyman	absent
Barbara J. Jordan	aye	Joe A. Martinez	aye
Dorrin D. Rolle	aye	Natacha Seijas	aye
Katy Sorenson	aye	Rebeca Sosa	aye
Sen. Javier D. Souto	aye		

The Chairperson thereupon declared the resolution duly passed and adopted this 20th day of April, 2010. This resolution shall become effective ten (10) days after the date of its adoption unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

MIAMI-DADE COUNTY, FLORIDA
BY ITS BOARD OF
COUNTY COMMISSIONERS

HARVEY RUVIN, CLERK

By: **DIANE COLLINS**
Deputy Clerk

Approved by County Attorney as
to form and legal sufficiency.

Eric A. Rodriguez

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Appendix B
State Letter Approving the Local Mitigation Strategy

STATE OF FLORIDA
DIVISION OF EMERGENCY MANAGEMENT

CHARLIE CRIST
Governor

DAVID HALSTEAD
Director

May 14, 2010

Mr. Raymond Misomali
Miami-Dade County Local Mitigation Strategy Working Group Chair
9300 Northwest 41st Street
Miami, Florida 33178-2414

Dear Mr. Misomali:

Congratulations! The enclosed letter constitutes the Federal Emergency Management Agency's (FEMA) formal approval of the Miami-Dade County Local Mitigation Strategy Plan (LMS) for all of the participating jurisdictions.

The plan has been approved for a period of five years and will expire again on May 5, 2015.

The mitigation planning unit would like to thank you for all of your hard work. It has been a pleasure working with you and we look forward to serving you in the future. If you have any questions regarding this matter, please contact Laura Herbert at 850-922-5580 or laura.herbert@em.myflorida.com.

Respectfully,

Miles E. Anderson, State Hazard Mitigation Officer
Bureau of Recovery and Mitigation
Mitigation Section

MEA/lh

Enclosed: FEMA letters of notification dated May 5, 2010

FLORIDA RECOVERY OFFICE
36 Skyline Drive
Lake Mary, FL 32746-6201

DIVISION HEADQUARTERS
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100
Tel: 850-413-9969 • Fax: 850-488-1016
www.FloridaDisaster.org

STATE LOGISTICS RESPONSE CENTER
2702 Directors Row
Orlando, FL 32809-5631

FEMA Letter Approving the Local Mitigation Strategy

U.S. Department of Homeland Security
FEMA Region IV
3003 Chamblee Tucker Road
Atlanta, GA 30341

FEMA

May 5, 2010

Mr. David Halstead, Director
Division of Emergency Management
2555 Shumard Oak Boulevard
Tallahassee, Florida 32399-2100

Attention: Mr. Miles Anderson

Reference: Miami-Dade County Multi-jurisdictional Local Mitigation Strategy

Dear Mr. Halstead:

We are pleased to inform you that the Miami-Dade County Multi-jurisdictional Local Mitigation Strategy is in compliance with the federal hazard mitigation planning standards resulting from the Disaster Mitigation Act of 2000, as contained in 44 CFR 201.6. The plan is approved for a period of five (5) years, to May 5, 2015.

This plan approval extends to the following participating jurisdictions that provided a copy of their resolution adopting the plan:

Miami-Dade County (unincorporated)	City of Miami Beach
City of Aventura	City of Miami Gardens
Town of Bal Harbor Islands	Town of Miami Lakes
Village of Biscayne Park	Miami Shores Village
City of Coral Gables	City of Miami Springs
Town of Cutler Bay	City of North Bay Village
City of Dural	City of North Miami
Village of El Portal	City of North Miami Beach
City of Florida City	City of Opa-locka
Town of Golden Beach	Village of Palmetto Bay
City of Hialeah	Village of Pinecrest
City of Hialeah Gardens	City of South Miami
City of Homestead	City of Sunny Isles Beach
Indian Creek Village	Town of Surfside
Village of Key Biscayne	City of Sweetwater
Town of Medley	Village of Virginia Gardens
City of Miami	City of West Miami

The approved participating jurisdictions are hereby eligible applicants through the State for the following mitigation grant programs administered by the Federal Emergency Management Agency (FEMA):

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Severe Repetitive Loss (SRL)
- Flood Mitigation Assistance (FMA)

We commend the participants in the Miami-Dade County plan for the development of a solid, workable plan that will guide hazard mitigation activities over the coming years. Please note that all requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is submitted.

For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the aforementioned programs. In addition, please be aware that if any of the approved jurisdictions participating in this plan are placed on probation or are suspended from the National Flood Insurance Program, they may be ineligible for certain types of federal funding.

We strongly encourage each Community to perform an annual review and assessment of the effectiveness of their hazard mitigation plan; however, a formal plan update is required at least every five (5) years. We also encourage each Community to conduct a plan update process within one (1) year of being included within a Presidential Disaster Declaration or of the adoption of major modifications to their local Comprehensive Land Use Plan or other plans that affect hazard mitigation or land use and development. When the plan is amended or revised, it must be resubmitted through the State as a "plan update" and is subject to a formal review and approval process by our office. If the plan is not updated prior to the required five (5) year update, please ensure that the draft update is submitted at least six (6) months prior to expiration of this plan.

The State and the participants in the Miami-Dade County plan should be commended for their close coordination and communications with our office in the review and subsequent approval of the plan. If you or Miami-Dade County have any questions or need any additional information please do not hesitate to contact Gabriela Vigo, of the Hazard Mitigation Assistance Branch, at (229) 225-4546, or Linda L. Byers of my staff at (770)-220-5498.

Sincerely,

Robert E. Lowe, Chief
Risk Analysis Branch
Mitigation Division

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Appendix C

Table 1
Risk Assessment and Hazard Profile

Hazard Vulnerabilities by Municipality for Miami-Dade County

Jurisdiction	Wind	Flood	Excess Temperatures	Agriculture	Drought	Wildfires
Aventura	Yes	Yes	Yes	Yes	Yes	No
Bal Harbour	Yes	Yes	Yes	Yes	Yes	No
Bay Harbor Islands	Yes	No	Yes	Yes	Yes	No
Biscayne Park	Yes	Yes	Yes	Yes	Yes	No
Coral Gables	Yes	Yes	Yes	Yes	Yes	No
Cutler Bay	Yes	Yes	Yes	Yes	Yes	No
Doral	Yes	Yes	Yes	Yes	Yes	Yes
El Portal	Yes	Yes	Yes	Yes	Yes	No
Florida City	Yes	Yes	Yes	Yes	Yes	Yes
Golden Beach	Yes	Yes	Yes	Yes	Yes	No
Hialeah	Yes	Yes	Yes	Yes	Yes	Yes
Hialeah Gardens	Yes	Yes	Yes	Yes	Yes	No
Homestead	Yes	Yes	Yes	Yes	Yes	Yes
Indian Creek Village	Yes	No	Yes	Yes	Yes	No
Islandia	Yes	Yes	Yes	Yes	Yes	No
Key Biscayne	Yes	Yes	Yes	Yes	Yes	No
Medley	Yes	Yes	Yes	Yes	Yes	Yes
Miami	Yes	Yes	Yes	Yes	Yes	No
Miami Beach	Yes	Yes	Yes	Yes	Yes	No
Miami Gardens	Yes	Yes	Yes	Yes	Yes	No
Miami Lakes	Yes	No	Yes	Yes	Yes	No
Miami Shores	Yes	Yes	Yes	Yes	Yes	No
Miami Springs	Yes	Yes	Yes	Yes	Yes	No
North Bay Village	Yes	No	Yes	Yes	Yes	No
North Miami	Yes	Yes	Yes	Yes	Yes	No
North Miami Beach	Yes	Yes	Yes	Yes	Yes	No
Opa-locka	Yes	Yes	Yes	Yes	Yes	No
Palmetto Bay	Yes	Yes	Yes	Yes	Yes	No
Pinecrest	Yes	Yes	Yes	Yes	Yes	No
South Miami	Yes	Yes	Yes	Yes	Yes	No
Sunny Isles Beach	Yes	Yes	Yes	Yes	Yes	No
Surfside	Yes	Yes	Yes	Yes	Yes	No

Sweetwater	Yes	Yes	Yes	Yes	Yes	No
Virginia Gardens	Yes	Yes	Yes	Yes	Yes	No
West Miami	Yes	Yes	Yes	Yes	Yes	No
Unincorporated Area	Yes	Yes	Yes	Yes	Yes	Yes

Notes:
All jurisdictions within the County are susceptible to agricultural hazards since their impact is not limited to crops but also, landscape plants. The most impact, however, is felt in the City of Homestead, the base of agriculture within the county.

Previous Natural Hazard Occurrences

Wind, Fire, Flooding, and Excessive Temperatures

Date	Hazard Category	Type	Magnitude	Property Damage	Crop Damage
9/20/1953	Wind	Tornado	F0	0K	0
11/8/1953	Wind	Tornado	F	0K	0
4/3/1954	Wind	Tornado	F0	0K	0
6/23/1954	Wind	Tornado	F0	0K	0
10/18/1955	Wind	Thunderstorm Winds	0 kts.	0	0
4/10/1956	Wind	Thunderstorm Winds	0 kts.	0	0
4/10/1956	Wind	Thunderstorm Winds	72 kts.	0	0
10/15/1956	Wind	Tornado	F0	3K	0
3/15/1957	Wind	Thunderstorm Winds	0 kts.	0	0
8/3/1957	Wind	Thunderstorm Winds	63 kts.	0	0
8/4/1957	Wind	Thunderstorm Winds	0 kts.	0	0
10/8/1957	Wind	Tornado	F0	3K	0
8/27/1958	Wind	Thunderstorm Winds	0 kts.	0	0
6/17/1959	Wind	Thunderstorm Winds	0 kts.	0	0
6/17/1959	Wind	Tornado	F3	2.5M	0
6/29/1959	Wind	Tornado	F0	0K	0
9/26/1960	Wind	Thunderstorm Winds	0 kts.	0	0
6/5/1962	Wind	Thunderstorm Winds	50 kts.	0	0
9/5/1962	Wind	Tornado	F0	0K	0
11/9/1962	Wind	Tornado	F1	3K	0
6/3/1963	Wind	Tornado	F	0K	0
6/5/1963	Wind	Tornado	F	0K	0
4/30/1964	Wind	Thunderstorm Winds	60 kts.	0	0
5/3/1964	Wind	Thunderstorm Winds	75 kts.	0	0
7/31/1964	Wind	Tornado	F	0K	0
8/13/1964	Wind	Tornado	F	0K	0

Date	Hazard Category	Type	Magnitude	Property Damage	Crop Damage
10/14/1964	Wind	Tornado	F1	3K	0
3/4/1965	Wind	Thunderstorm Winds	0 kts.	0	0
7/17/1965	Wind	Thunderstorm Winds	60 kts.	0	0
3/29/1966	Wind	Thunderstorm Winds	52 kts.	0	0
4/9/1966	Wind	Thunderstorm Winds	55 kts.	0	0
5/25/1966	Wind	Thunderstorm Winds	50 kts.	0	0
6/1/1966	Wind	Thunderstorm Winds	0 kts.	0	0
6/8/1966	Wind	Tornado	F0	0K	0
6/8/1966	Wind	Tornado	F1	0K	0
6/9/1967	Wind	Tornado	F	0K	0
2/19/1968	Wind	Tornado	F1	25K	0
2/19/1968	Wind	Tornado	F2	2.5M	0
6/7/1968	Wind	Tornado	F1	250K	0
6/25/1968	Wind	Tornado	F1	0K	0
8/30/1968	Wind	Tornado	F0	0K	0
9/12/1968	Wind	Tornado	F0	0K	0
10/4/1968	Wind	Tornado	F0	0K	0
10/16/1968	Wind	Thunderstorm Winds	50 kts.	0	0
1/4/1969	Wind	Thunderstorm Winds	0 kts.	0	0
2/12/1969	Wind	Tornado	F0	25K	0
6/10/1969	Wind	Tornado	F	0K	0
8/10/1969	Wind	Tornado	F	0K	0
10/17/1969	Wind	Thunderstorm Winds	60 kts.	0	0
3/5/1970	Wind	Tornado	F1	3K	0
6/12/1971	Wind	Thunderstorm Winds	51 kts.	0	0
6/22/1971	Wind	Tornado	F2	25K	0
8/9/1971	Wind	Thunderstorm Winds	0 kts.	0	0
11/15/1972	Wind	Tornado	F0	0K	0
6/23/1973	Wind	Tornado	F0	0K	0
12/20/1973	Wind	Tornado	F1	250K	0
12/20/1973	Wind	Tornado	F2	2.5M	0
5/7/1974	Wind	Thunderstorm Winds	50 kts.	0	0
9/13/1974	Wind	Thunderstorm Winds	56 kts.	0	0
6/29/1975	Wind	Thunderstorm Winds	0 kts.	0	0
7/4/1975	Wind	Thunderstorm Winds	0 kts.	0	0
7/4/1975	Wind	Tornado	F1	25K	0
8/26/1975	Wind	Tornado	F0	25K	0
8/19/1976	Wind	Thunderstorm Winds	54 kts.	0	0
5/4/1977	Wind	Thunderstorm Winds	0 kts.	0	0

Date	Hazard Category	Type	Magnitude	Property Damage	Crop Damage
5/8/1977	Wind	Thunderstorm Winds	0 kts.	0	0
6/8/1977	Wind	Thunderstorm Winds	52 kts.	0	0
6/18/1977	Wind	Tornado	F0	0K	0
1/19/1978	Wind	Thunderstorm Winds	62 kts.	0	0
3/3/1978	Wind	Thunderstorm Winds	66 kts.	0	0
4/23/1978	Wind	Thunderstorm Winds	0 kts.	0	0
5/5/1978	Wind	Thunderstorm Winds	0 kts.	0	0
5/18/1978	Wind	Tornado	F0	0K	0
8/24/1978	Wind	Thunderstorm Winds	0 kts.	0	0
2/25/1979	Wind	Thunderstorm Winds	0 kts.	0	0
4/29/1979	Wind	Thunderstorm Winds	0 kts.	0	0
4/29/1979	Wind	Thunderstorm Winds	0 kts.	0	0
5/24/1980	Wind	Thunderstorm Winds	56 kts.	0	0
5/25/1980	Wind	Thunderstorm Winds	54 kts.	0	0
5/25/1980	Wind	Thunderstorm Winds	65 kts.	0	0
5/25/1980	Wind	Tornado	F1	25K	0
6/11/1980	Wind	Tornado	F0	25K	0
7/15/1980	Wind	Tornado	F1	25K	0
8/21/1980	Wind	Tornado	F1	25K	0
9/9/1980	Wind	Thunderstorm Winds	0 kts.	0	0
11/15/1980	Wind	Tornado	F0	3K	0
5/7/1981	Wind	Tornado	F1	25K	0
7/9/1981	Wind	Tornado	F0	3K	0
8/10/1981	Wind	Thunderstorm Winds	0 kts.	0	0
8/16/1981	Wind	Tornado	F0	0K	0
9/26/1981	Wind	Tornado	F0	0K	0
1/14/1982	Wind	Thunderstorm Winds	51 kts.	0	0
3/6/1982	Wind	Tornado	F1	2.5M	0
4/28/1982	Wind	Thunderstorm Winds	70 kts.	0	0
5/27/1982	Wind	Tornado	F1	2.5M	0
6/17/1982	Wind	Thunderstorm Winds	0 kts.	0	0
8/6/1982	Wind	Thunderstorm Winds	54 kts.	0	0
8/12/1982	Wind	Tornado	F0	0K	0
9/23/1982	Wind	Tornado	F0	3K	0
2/2/1983	Wind	Thunderstorm Winds	0 kts.	0	0
2/10/1983	Wind	Thunderstorm Winds	66 kts.	0	0
2/10/1983	Wind	Tornado	F0	0K	0
2/16/1983	Wind	Thunderstorm Winds	51 kts.	0	0
2/16/1983	Wind	Thunderstorm Winds	0 kts.	0	0

Date	Hazard Category	Type	Magnitude	Property Damage	Crop Damage
3/17/1983	Wind	Tornado	F2	2.5M	0
3/24/1983	Wind	Thunderstorm Winds	58 kts.	0	0
3/24/1983	Wind	Thunderstorm Winds	0 kts.	0	0
5/31/1983	Wind	Tornado	F0	3K	0
6/8/1983	Wind	Thunderstorm Winds	0 kts.	0	0
7/18/1983	Wind	Thunderstorm Winds	0 kts.	0	0
8/5/1983	Wind	Tornado	F0	0K	0
8/28/1983	Wind	Thunderstorm Winds	56 kts.	0	0
8/28/1983	Wind	Thunderstorm Winds	59 kts.	0	0
12/16/1983	Wind	Thunderstorm Winds	0 kts.	0	0
4/13/1984	Wind	Tornado	F0	25K	0
5/16/1984	Wind	Tornado	F0	0K	0
5/16/1984	Wind	Tornado	F0	0K	0
7/25/1984	Wind	Thunderstorm Winds	0 kts.	0	0
6/30/1985	Wind	Thunderstorm Winds	0 kts.	0	0
7/10/1985	Wind	Thunderstorm Winds	0 kts.	0	0
8/5/1985	Wind	Tornado	F0	3K	0
2/7/1986	Wind	Tornado	F0	0K	0
3/15/1986	Wind	Thunderstorm Winds	0 kts.	0	0
3/26/1986	Wind	Thunderstorm Winds	50 kts.	0	0
5/21/1986	Wind	Thunderstorm Winds	0 kts.	0	0
8/11/1986	Wind	Thunderstorm Winds	0 kts.	0	0
9/4/1986	Wind	Thunderstorm Winds	0 kts.	0	0
1/4/1987	Wind	Thunderstorm Winds	52 kts.	0	0
1/4/1987	Wind	Thunderstorm Winds	55 kts.	0	0
1/22/1987	Wind	Thunderstorm Winds	70 kts.	0	0
3/31/1987	Wind	Thunderstorm Winds	60 kts.	0	0
4/15/1987	Wind	Thunderstorm Winds	60 kts.	0	0
6/27/1987	Wind	Tornado	F0	0K	0
9/30/1987	Wind	Thunderstorm Winds	50 kts.	0	0
12/8/1987	Wind	Thunderstorm Winds	55 kts.	0	0
4/5/1989	Wind	Tornado	F0	0K	0
4/30/1989	Wind	Thunderstorm Winds	60 kts.	0	0
5/15/1989	Wind	Thunderstorm Winds	55 kts.	0	0
6/30/1989	Wind	Thunderstorm Winds	50 kts.	0	0
8/14/1989	Wind	Thunderstorm Winds	50 kts.	0	0
8/16/1989	Wind	Thunderstorm Winds	55 kts.	0	0
8/17/1989	Wind	Tornado	F0	3K	0
4/3/1990	Wind	Thunderstorm Winds	0 kts.	0	0

Date	Hazard Category	Type	Magnitude	Property Damage	Crop Damage
4/8/1990	Wind	Thunderstorm Winds	52 kts.	0	0
5/10/1990	Wind	Tornado	F0	0K	0
6/4/1990	Wind	Thunderstorm Winds	0 kts.	0	0
6/19/1990	Wind	Tornado	F0	0K	0
6/24/1990	Wind	Tornado	F0	0K	0
6/27/1990	Wind	Thunderstorm Winds	70 kts.	0	0
8/10/1990	Wind	Thunderstorm Winds	0 kts.	0	0
8/11/1990	Wind	Thunderstorm Winds	0 kts.	0	0
8/18/1990	Wind	Thunderstorm Winds	0 kts.	0	0
10/9/1990	Wind	Thunderstorm Winds	0 kts.	0	0
10/23/1990	Wind	Thunderstorm Winds	0 kts.	0	0
1/15/1991	Wind	Tornado	F0	3K	0
1/15/1991	Wind	Tornado	F1	250K	0
4/25/1991	Wind	Thunderstorm Winds	0 kts.	0	0
6/26/1991	Wind	Thunderstorm Winds	58 kts.	0	0
7/12/1991	Wind	Tornado	F0	250K	0
7/13/1991	Wind	Thunderstorm Winds	0 kts.	0	0
7/21/1991	Wind	Tornado	F0	0K	0
7/26/1991	Wind	Thunderstorm Winds	0 kts.	0	0
8/4/1991	Wind	Tornado	F0	25K	0
7/4/1992	Wind	Thunderstorm Winds	0 kts.	0	0
7/4/1992	Wind	Thunderstorm Winds	0 kts.	0	0
11/9/1992	Wind	Tornado	F0	0K	0
3/13/1993	Wind	Thunderstorm Winds	72 kts.	0	0
3/13/1993	Wind	Thunderstorm Winds	0 kts.	5K	0
3/13/1993	Wind	Thunderstorm Winds	0 kts.	500K	0
4/5/1993	Wind	Thunderstorm Winds	0 kts.	5K	0
4/5/1993	Wind	Tornado	F0	5.0M	0
8/23/1993	Wind	Thunderstorm Winds	0 kts.	50K	0
10/16/1993	Wind	Tornado	F0	1K	0
6/9/1994	Wind	Tornado	F0	0	0
6/10/1994	Wind	Thunderstorm Winds	0 kts.	0	0
6/10/1994	Wind	Thunderstorm Winds	0 kts.	1K	0
6/22/1994	Wind	Thunderstorm Winds	0 kts.	1K	0
6/22/1994	Wind	Thunderstorm Winds	65 kts.	1K	0
9/10/1994	Wind	Thunderstorm Winds	50 kts.	0	0
10/31/1994	Flooding	Flood	N/A	50K	0
11/13/1994	Wind	Tropical Storm Gordon	N/A	500K	500K
12/23/1994	Wind	Thunderstorm Winds	0 kts.	0	0

Date	Hazard Category	Type	Magnitude	Property Damage	Crop Damage
1/14/1995	Wind	Thunderstorm Winds	53 kts.	0	0
1/14/1995	Wind	Thunderstorm Winds	0 kts.	75K	0
2/13/1995	Wind	Thunderstorm Winds	86 kts.	5.0M	0
4/8/1995	Wind	Tornado	F0	1K	0
6/13/1995	Wind	Thunderstorm Winds	55 kts.	0	0
6/22/1995	Flooding	Flood	N/A	1.5M	0
6/22/1995	Wind	Thunderstorm Winds	0 kts.	0	0
6/30/1995	Wind	Tornado	F0	0	0
7/2/1995	Wind	Thunderstorm Winds	53 kts.	0	0
7/11/1995	Wind	Thunderstorm Winds	45 kts.	0	20K
7/12/1995	Wind	Tornado	F0	10K	0
8/2/1995	Wind	Hurricane	N/A	0	0
8/23/1995	Wind	Tropical Storm Jerry	N/A	600K	1.0M
9/28/1995	Flooding	Flood	N/A	10K	0
12/21/1995	Excessive Temperatures	Extreme Cold	N/A	0	0
1/3/1996	Wind	Tornado	F1	1.2M	0
1/7/1996	Wind	Thunderstorm Winds	50 kts.	10K	0
2/5/1996	Excessive Temperatures	Extreme Cold	N/A	0	74.9M
3/4/1996	Fire	Wild/forest Fire	N/A	0	0
3/23/1996	Fire	Wild/forest Fire	N/A	0	0
6/17/1996	Wind	Tornado	F0	0	0
6/19/1996	Wind	Thunderstorm Winds	53 kts.	0	0
7/10/1996	Wind	Hurricane	N/A	0	0
8/8/1996	Wind	Tornado	F0	0	0
9/2/1996	Wind	Thunderstorm Winds	50 kts.	0	0
9/2/1996	Wind	Thunderstorm Winds	50 kts.	25K	0
9/12/1996	Wind	Thunderstorm Winds	65 kts.	0	0
9/12/1996	Wind	Thunderstorm Winds	65 kts.	0	0
9/20/1996	Wind	Thunderstorm Winds	50 kts.	0	0
9/21/1996	Wind	Thunderstorm Winds	54 kts.	10K	0
11/14/1996	Wind	High Wind	37 kts.	0	0
11/15/1996	Wind	High Wind	49 kts.	0	0
1/19/1997	Excessive Temperatures	Extreme Cold	N/A	0	200.0M
4/26/1997	Water	Flood	N/A	0	0
4/26/1997	Wind	Thunderstorm Winds	63 kts.	50K	50K
5/4/1997	Wind	Tornado	F0	0	0
5/12/1997	Wind	Tornado	F1	525K	0

Date	Hazard Category	Type	Magnitude	Property Damage	Crop Damage
5/28/1997	Wind	Thunderstorm Winds	52 kts.	0	0
5/28/1997	Wind	Thunderstorm Winds	48 kts.	0	0
5/28/1997	Wind	Tornado	F0	0	0
6/3/1997	Wind	Thunderstorm Winds	55 kts.	2K	0
6/9/1997	Flooding	Flood	N/A	0	0
6/14/1997	Flooding	Flood	N/A	0	0
6/20/1997	Wind	Thunderstorm Winds	61 kts.	0	0
7/2/1997	Wind	Tornado	F0	2K	0
7/10/1997	Wind	Tornado	F0	0	0
7/19/1997	Wind	Thunderstorm Winds	56 kts.	0	0
7/19/1997	Wind	Thunderstorm Winds	55 kts.	0	0
7/19/1997	Wind	Thunderstorm Winds	55 kts.	0	0
8/8/1997	Wind	Thunderstorm Winds	55 kts.	0	0
8/21/1997	Flooding	Urban Flood	N/A	0	0
12/27/1997	Wind	Thunderstorm Winds	61 kts.	0	0
1/8/1998	Wind	Thunderstorm Winds	78 kts.	0	0
1/8/1998	Wind	Tornado	F0	30K	0
2/2/1998	Wind	Thunderstorm Winds	57 kts.	0	0
2/2/1998	Wind	Thunderstorm Winds	61 kts.	0	0
2/2/1998	Wind	Tornado	F2	175.0M	0
2/2/1998	Wind	High Wind	40 kts.	0	0
2/15/1998	Wind	High Wind	40 kts.	0	0
3/9/1998	Wind	Thunderstorm Winds	53 kts.	0	0
3/9/1998	Wind	Tornado	F1	1.0M	0
4/17/1998	Fire	Wild/forest Fire	N/A	0	0
5/4/1998	Wind	Thunderstorm Winds	60 kts.	0	0
5/4/1998	Wind	Thunderstorm Winds	55 kts.	0	0
5/4/1998	Wind	Thunderstorm Winds	0 kts.	0	0
5/4/1998	Wind	Thunderstorm Winds	0 kts.	0	0
5/4/1998	Wind	Tornado	F0	0	0
5/4/1998	Wind	Tornado	F0	0	0
5/6/1998	Wind	Thunderstorm Winds	0 kts.	0	0
6/29/1998	Wind	Thunderstorm Winds	55 kts.	0	0
7/3/1998	Wind	Thunderstorm Winds	52 kts.	0	0
7/22/1998	Wind	Thunderstorm Winds	64 kts.	0	0
8/3/1998	Wind	Tornado	F0	0	0
8/3/1998	Wind	Tornado	F0	0	0
8/14/1998	Wind	Thunderstorm Winds	60 kts.	0	0
8/14/1998	Wind	Thunderstorm Winds	60 kts.	50K	0

Date	Hazard Category	Type	Magnitude	Property Damage	Crop Damage
9/5/1998	Wind	Tornado	F0	0	0
9/16/1998	Water	Flood	N/A	0	0
9/24/1998	Wind	Tornado	F0	50K	0
9/24/1998	Wind	Tornado	F0	30K	0
9/24/1998	Wind	Tropical Storm	N/A	0	0
9/25/1998	Wind	Hurricane	N/A	255.0M	15.0M
9/25/1998	Wind	Tropical Storm	N/A	0	0
10/9/1998	Wind	Tornado	F0	0	0
11/4/1998	Wind	Tropical Storm	N/A	30.0M	20.0M
1/3/1999	Wind	Thunderstorm Winds	60 kts.	0	0
3/3/1999	Wind	Tornado	F0	10K	0
3/3/1999	Wind	Thunderstorm Winds	40 kts.	10K	0
3/30/1999	Fire	Wild/forest Fire	N/A	50K	0
4/3/1999	Fire	Wild/forest Fire	N/A	0	0
4/9/1999	Fire	Wild/forest Fire	N/A	0	0
4/28/1999	Wind	Thunderstorm Winds	75 kts.	1K	0
5/11/1999	Wind	Thunderstorm Winds	50 kts.	0	0
5/23/1999	Fire	Wild/forest Fire	N/A	0	0
5/29/1999	Wind	Thunderstorm Winds	50 kts.	0	0
6/8/1999	Flood	Flood	N/A	50K	0
6/23/1999	Wind	Thunderstorm Winds	50 kts.	0	0
8/2/1999	Wind	Thunderstorm Winds	50 kts.	0	0
8/2/1999	Wind	Thunderstorm Winds	0 kts.	0	0
8/3/1999	Wind	Tornado	F0	0	0
9/13/1999	Wind	Hurricane	N/A	100K	0
9/20/1999	Wind	Tornado	F0	0	0
9/20/1999	Wind	Tropical Storm	N/A	325K	0
10/14/1999	Wind	Hurricane	N/A	262.0M	338.0M
10/15/1999	Flooding	Flood	N/A	100.0M	200.0M
2/22/2000	Wind	Tornado	F0	0	0
4/5/2000	Fire	Wild/forest Fire	N/A	100K	0
4/14/2000	Flooding	Flood	N/A	10K	0
4/16/2000	Wind	Tornado	F0	0	0
5/15/2000	Wind	Thunderstorm Winds	70 kts.	0	0
5/30/2000	Wind	Tornado	F0	0	0
5/31/2000	Flooding	Flood	N/A	5K	0
6/7/2000	Wind	Thunderstorm Winds	55 kts.	50K	0
6/7/2000	Wind	Thunderstorm Winds	60 kts.	10K	0
6/22/2000	Wind	Tornado	F0	0	0

Date	Hazard Category	Type	Magnitude	Property Damage	Crop Damage
7/10/2000	Wind	Tornado	F0	0	0
10/3/2000	Flooding	Flood	N/A	450.0M	500.0M
10/3/2000	Wind	Thunderstorm Winds	50 kts.	0	0
10/3/2000	Wind	Thunderstorm Winds	55 kts.	0	0
10/3/2000	Wind	Tornado	F0	0	0
10/3/2000	Wind	Tornado	F0	0	0
10/3/2000	Wind	Tornado	F0	0	0
10/3/2000	Wind	Tornado	F1	20K	0
10/5/2000	Flooding	Flood	N/A	0	0
10/6/2000	Flooding	Flood	N/A	0	0
12/10/2000	Flooding	Flood	N/A	100K	13.0M
12/23/2000	Wind	High Wind	35 kts.	0	0
12/31/2000	Excessive Temperatures	Extreme Cold	N/A	0	2.0M
1/1/2001	Excessive Temperatures	Extreme Cold	N/A	0	6.0M
1/5/2001	Excessive Temperatures	Extreme Cold	N/A	0	78.0M
1/23/2001	Excessive Temperatures	Extreme Cold	N/A	0	0
6/11/2001	Wind	Thunderstorm Winds	50 kts.	5K	0
6/16/2001	Wind	Thunderstorm Winds	52 kts.	0	0
6/26/2001	Wind	Thunderstorm Winds	0 kts.	0	0
8/15/2001	Excessive Temperatures	Excessive Heat	N/A	0	0
8/21/2001	Wind	Tornado	F0	0	0
9/9/2001	Flooding	Heavy Rain	N/A	0	0
10/21/2001	Flooding	Heavy Rain	N/A	0	0
11/5/2001	Wind	Tornado	F0	6K	0
11/5/2001	Wind	Hurricane	N/A	50K	0
1/2/2002	Wind	Tornado	F1	50K	0
1/4/2002	Excessive Temperatures	Extreme Cold	N/A	0	0
5/30/2002	Wind	Tornado	F0	0	0
6/15/2002	Wind	Thunderstorm Winds	65 kts.	10K	0
7/16/2002	Excessive Temperatures	Excessive Heat	N/A	0	0
8/2/2002	Wind	Thunderstorm Winds	70 kts.	5K	0
8/26/2002	Wind	Thunderstorm Winds	60 kts.	0	0
12/9/2002	Flooding	Flood	N/A	50K	0
12/9/2002	Wind	Thunderstorm Winds	50 kts.	0	0

Date	Hazard Category	Type	Magnitude	Property Damage	Crop Damage
12/9/2002	Wind	Thunderstorm Winds	50 kts.	0	0
1/19/2003	Excessive Temperatures	Extreme Cold	N/A	0	2.0M
1/24/2003	Excessive Temperatures	Extreme Cold	N/A	0	0
2/17/2003	Excessive Temperatures	Excessive Heat	N/A	0	0
3/1/2003	Excessive Temperatures	Excessive Heat	N/A	0	0
3/17/2003	Wind	Thunderstorm Winds	55 kts.	0	0
3/17/2003	Wind	Thunderstorm Winds	70 kts.	0	0
3/27/2003	Wind	Tornado	F0	0	0
3/27/2003	Wind	Tornado	F1	75K	0
3/27/2003	Wind	Tornado	F2	8.0M	0
4/26/2003	Wind	Thunderstorm Winds	50 kts.	0	0
4/29/2003	Wind	Thunderstorm Winds	60 kts.	10K	0
4/29/2003	Wind	Thunderstorm Winds	70 kts.	25K	0
5/2/2003	Wind	Thunderstorm Winds	55 kts.	5K	0
5/2/2003	Wind	Thunderstorm Winds	60 kts.	0	0
5/2/2003	Wind	Thunderstorm Winds	64 kts.	0	0
5/28/2003	Wind	Thunderstorm Winds	55 kts.	0	0
6/8/2003	Wind	Thunderstorm Winds	50 kts.	0	0
7/12/2003	Wind	Tornado	F0	10K	0
8/11/2003	Wind	Thunderstorm Winds	50 kts.	0	0
8/11/2003	Wind	Thunderstorm Winds	55 kts.	20K	0
8/12/2003	Wind	Tornado	F0	5K	0
9/5/2003	Wind	Tornado	F0	0	0
9/24/2003	Wind	Thunderstorm Winds	50 kts.	0	0
10/29/2003	Wind	Tornado	F0	20K	0
11/6/2003	Flooding	Heavy Rain	N/A	0	200K
11/8/2003	Flooding	Heavy Rain	N/A	0	0
6/6/2004	Wind	Thunderstorm Winds	50 kts.	1K	0
6/6/2004	Wind	Thunderstorm Winds	50 kts.	10K	0
6/19/2004	Wind	Thunderstorm Winds	50 kts.	0	0
7/7/2004	Fire	Wildfire	N/A	0	0
7/19/2004	Wind	Thunderstorm Winds	57 kts.	0	0
8/1/2004	Flooding	Heavy Rain	N/A	10K	0
8/1/2004	Wind	Thunderstorm Winds	60 kts.	0	0
8/2/2004	Water	Heavy Rain	N/A	40K	0
8/2/2004	Wind	Thunderstorm Winds	60 kts.	0	0
8/12/2004	Wind	Thunderstorm Winds	70 kts.	5K	0

Date	Hazard Category	Type	Magnitude	Property Damage	Crop Damage
8/13/2004	Wind	Thunderstorm Winds	52 kts.	0	0
9/4/2004	Wind	Hurricane	N/A	621.0M	90.0M
9/25/2004	Wind	Hurricane	N/A	323.0M	30.0M
9/28/2004	Flooding	Flood	N/A	50K	0
4/22/2005	Fire	Wildfire	N/A	0	0
5/3/2005	Wind	Thunderstorm Winds	50 kts.	10K	0
5/3/2005	Wind	Thunderstorm Winds	55 kts.	0	0
5/26/2005	Wind	Thunderstorm Winds	50 kts.	0	0
5/26/2005	Wind	Thunderstorm Winds	60 kts.	10K	0
6/2/2005	Wind	Thunderstorm Winds	53 kts.	0	0
6/11/2005	Flooding	Heavy Rain	N/A	0	0
6/11/2005	Wind	Thunderstorm Winds	50 kts.	0	0
6/16/2005	Flooding	Heavy Rain	N/A	30K	0
6/17/2005	Wind	Thunderstorm Winds	55 kts.	5K	0
7/8/2005	Wind	Hurricane	N/A	0	0
7/25/2005	Wind	Thunderstorm Winds	55 kts.	10K	0
7/28/2005	Wind	Thunderstorm Winds	50 kts.	0	0
8/25/2005	Wind	Hurricane	N/A	100.0M	423.0M
9/10/2005	Wind	Tornado	F0	0	0
9/10/2005	Wind	Tornado	F0	0	0
9/11/2005	Flooding	Heavy Rain	N/A	0	0
9/20/2005	Wind	Tropical Storm	N/A	0	0
10/24/2005	Wind	Storm Surge	N/A	0	0
10/24/2005	Wind	Hurricane	77 kts.	0	0
10/24/2005	Wind	Hurricane	N/A	10.0B	0
4/27/2006	Wind	Thunderstorm Winds	62 kts.	0	0
5/15/2006	Flooding	Heavy Rain	N/A	0	0
5/15/2006	Wind	Thunderstorm Winds	60 kts.	0	0
5/15/2006	Wind	Thunderstorm Winds	60 kts.	0	0
5/15/2006	Wind	Thunderstorm Winds	61 kts.	0	0
5/15/2006	Wind	Thunderstorm Winds	80 kts.	50K	0
5/15/2006	Wind	Thunderstorm Winds	60 kts.	0	0
5/15/2006	Wind	Thunderstorm Winds	60 kts.	0	0
5/16/2006	Flooding	Heavy Rain	N/A	0	0
5/26/2006	Flooding	Heavy Rain	N/A	0	0
6/27/2006	Wind	Thunderstorm Winds	60 kts.	0	0
7/6/2006	Wind	Thunderstorm Winds	60 kts.	0	0
8/29/2006	Wind	Tropical Storm	N/A	0	0
9/2/2006	Flooding	Heavy Rain	N/A	100K	0

Date	Hazard Category	Type	Magnitude	Property Damage	Crop Damage
9/16/2006	Wind	Thunderstorm Winds	52 kts.	0	0
11/14/2006	Wind	Tornado	F0	0K	0K
11/16/2006	Flooding	Heavy Rain	N/A	20K	0K
2/19/2007	Excessive Temperatures	Extreme Cold	N/A	0K	0K
4/10/2007	Wind	Thunderstorm Winds	52 kts.	0K	0K
4/12/2007	Wind	Thunderstorm Winds	52 kts.	1K	0K
5/6/2007	Wind	Thunderstorm Winds	61 kts.	0K	0K
5/6/2007	Wind	Thunderstorm Winds	56 kts.	1K	0K
5/6/2007	Wind	Thunderstorm Winds	56 kts.	0K	0K
5/6/2007	Wind	Thunderstorm Winds	62 kts.	0K	0K
5/20/2007	Flooding	Flood	N/A	5K	0K
5/20/2007	Flooding	Flood	N/A	0K	0K
5/20/2007	Flooding	Flood	N/A	0K	0K
6/1/2007	Wind	Tornado	F1	20K	0K
6/12/2007	Wind	Thunderstorm Winds	52 kts.	0K	0K
6/12/2007	Wind	Thunderstorm Winds	55 kts.	0K	0K
6/14/2007	Wind	Thunderstorm Winds	57 kts.	0K	0K
6/15/2007	Wind	Tornado	F0	0K	0K
6/18/2007	Wind	Tornado	F0	0K	0K
6/24/2007	Wind	Thunderstorm Winds	52 kts.	0K	0K
7/5/2007	Flooding	Flood	N/A	0K	0K
7/7/2007	Wind	Thunderstorm Winds	52 kts.	0K	0K
7/21/2007	Wind	Thunderstorm Winds	52 kts.	0K	0K
7/21/2007	Wind	Tornado	F0	0K	0K
8/6/2007	Wind	Thunderstorm Winds	52 kts.	0K	0K
10/1/2007	Wind	Thunderstorm Winds	59 kts.	0K	0K
10/30/2007	Wind	Storm Surge	N/A	0K	0K
10/30/2007	Wind	Tropical Depression	N/A	0K	0K
10/30/2007	Wind	Tropical Storm	N/A	0K	0K
11/1/2007	Wind	Storm Surge	N/A	4.0M	0K
11/1/2007	Wind	Tropical Depression	N/A	0K	0K
2/13/2008	Wind	Thunderstorm Winds	52 kts.	1K	0K
4/6/2008	Wind	Thunderstorm Winds	50 kts.	0K	0K
4/6/2008	Wind	Thunderstorm Winds	56 kts.	0K	0K
4/6/2008	Wind	Thunderstorm Winds	50 kts.	0K	0K
4/6/2008	Wind	Thunderstorm Winds	50 kts.	0K	0K
4/6/2008	Wind	Thunderstorm Winds	50 kts.	0K	0K
5/7/2008	Fire	Wildfire	N/A	30K	0K
5/14/2008	Fire	Wildfire	N/A	0K	0K

Date	Hazard Category	Type	Magnitude	Property Damage	Crop Damage
5/24/2008	Wind	Thunderstorm Winds	50 kts.	0K	0K
5/24/2008	Wind	Thunderstorm Winds	50 kts.	0K	0K
6/1/2008	Fire	Wildfire	N/A	0K	0K
6/13/2008	Wind	Tornado	F0	0K	0K
7/2/2008	Wind	Thunderstorm Winds	50 kts.	2K	0K
7/14/2008	Wind	Thunderstorm Winds	60 kts.	5K	0K
8/14/2008	Wind	Tornado	F1	150K	0K
8/18/2008	Wind	Tropical Storm	N/A	15K	0K
8/31/2008	Wind	Tornado	F0	0K	0K
9/8/2008	Wind	Tropical Storm	N/A	0K	0K
10/4/2008	Flooding	Flood	N/A	1K	0K
10/9/2008	Flooding	Flood	N/A	10K	0K
1/22/2009	Excessive Temperatures	Extreme Cold	N/A	0K	0K
1/22/2009	Excessive Temperatures	Extreme Cold	N/A	0K	0K
2/5/2009	Excessive Temperatures	Extreme Cold	N/A	0K	0K
5/1/2009	Fire	Wildfire	N/A	0K	0K
5/25/2009	Wind	Thunderstorm Winds	50 kts.	80K	0K
5/27/2009	Wind	Thunderstorm Winds	52 kts.	0K	0K
5/27/2009	Wind	Thunderstorm Winds	52 kts.	0K	0K
5/27/2009	Wind	Thunderstorm Winds	52 kts.	0K	0K
5/28/2009	Wind	Thunderstorm Winds	50 kts.	0K	0K
6/1/2009	Wind	Thunderstorm Winds	53 kts.	0K	0K
6/1/2009	Wind	Thunderstorm Winds	56 kts.	0K	0K
6/5/2009	Flooding	Flood	N/A	50K	0K
6/7/2009	Wind	Thunderstorm Winds	51 kts.	0K	0K
6/7/2009	Wind	Thunderstorm Winds	60 kts.	0K	0K
6/19/2009	Wind	Thunderstorm Winds	52 kts.	0K	0K
6/21/2009	Excessive Temperatures	Excessive Heat	N/A	0K	0K
6/23/2009	Wind	Thunderstorm Winds	52 kts.	0K	0K
6/23/2009	Wind	Thunderstorm Winds	58 kts.	0K	0K
6/23/2009	Wind	Thunderstorm Winds	50 kts.	0K	0K
6/23/2009	Wind	Thunderstorm Winds	61 kts.	0K	0K
6/23/2009	Wind	Thunderstorm Winds	52 kts.	0K	0K
7/24/2009	Wind	Thunderstorm Winds	51 kts.	0K	0K
7/25/2009	Wind	Thunderstorm Winds	50 kts.	0K	0K
			Total	12.363B	1.994B

Source: National Climatic Data Center, Date Accessed December 31, 2009

Table 2b

Drought Occurrence

Year	Palmer Drought Severity Index (PDSI)
1953	0.870833
1954	1.425833
1955	-1.58167
1956	-3.2925
1957	0.965
1958	2.424167
1959	3.174167
1960	3.384167
1961	-1.42833
1962	-3.03917
1963	-1.36167
1964	0.561667
1965	-0.10167
1966	2.1125
1967	0.19
1968	1.965
1969	2.86
1970	-0.12083
1971	-2.9875
1972	0.51
1973	-0.11667
1974	-1.15417
1975	-2.5275
1976	-0.46
1977	0.435833
1978	0.085
1979	0.175
1980	0.396667
1981	-0.35417
1982	0.24
1983	3.060833
1984	0.6775
1985	-0.55333
1986	-0.05167
1987	-0.09

1988	-0.15833
1989	-4.2525
1990	-4.23
1991	0.805833
1992	0.001667
1993	2.3625
1994	1.438333
1995	3.716667
1996	0.7175
1997	0.481667
1998	0.268333
1999	0.418333
2000	-0.31833
2001	0.5825
2002	-0.10833
2003	0.241667
2004	-0.43583
2005	0.288333
2006	-0.56417
2007	-0.41583
2008	0.028333
2009	-1.53

Source: National Climatic Data Center, Accessed on January 11, 2010

Table 3

Summary of Occurrence by Hazard Group: 1953-2009

Hazard Group	Occurrence	Probability (Events Per year)	Vulnerabilities
Wind	409	7	Wind can impact all vulnerable categories
Flooding	39	0.7	All people and infrastructure, including buildings, and critical facilities in impacted areas
Drought	13	0.23	Agriculture
Excessive Temperatures	19	0.34	Agriculture, elderly and indigent population
Fire	14	0.25	People, agriculture, wildlife, and structures within fire zone
Agricultural Hazards*	Monthly	Monthly	Crops and landscape plants

Source: National Climatic Data Center

***Agricultural Hazards**

Current data identifying previous occurrences of agricultural hazards is not complete. The Department of Emergency Management is currently working with the Miami-Dade County Extension to secure data for agricultural hazard occurrence. The current data available from the Miami-Dade County Agriculture Extension indicates that this hazard occurs monthly; however efforts are being undertaken to identify specific information on type of agriculture hazard that occurs.

Table 4
Scientific Measures to Identify Extent

Saffir-Simpson Scale

Category	Wind Speed	Impact
Tropical Storm	39-73	N/A
1	74-95 mph (64-82 kt)	No real damage to buildings. Damage to unanchored mobile homes. Some damage to poorly constructed signs. Also, some coastal flooding and minor pier damage.
2	96-110 mph (83-95 kt)	Some damage to building roofs, doors and windows. Considerable damage to mobile homes. Flooding damages piers and small craft in unprotected moorings may break their moorings. Some trees blown down.
3	111-130 mph (96-113 kt)	Some structural damage to small residences and utility buildings. Large trees blown down. Mobile homes and poorly built signs destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain may be flooded well inland.
4	131-155 mph (114-135 kt)	More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Terrain may be flooded well inland.
5	156 mph and up (135+ kt)	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Flooding causes major damage to lower floors of all structures near the shoreline. Massive evacuation of residential areas may be required.

Source: National Hurricane Center, http://www.nhc.noaa.gov/HAW2/english/basics/saffir_simpson.shtml (accessed on October 9, 2009)

Fujita Scale

A scale of tornado intensity in which wind speeds are inferred from an analysis of wind damage:

Rating	Wind, Damage
F0 (weak)	40-72 mph, light damage
F1 (weak)	73-112 mph, moderate damage
F2 (strong)	113-157 mph, considerable damage
F3 (strong)	158-206 mph, severe damage
F4 (violent)	207-260 mph, devestating damage
F5 (violent)	260-318 mph (rare), incredible damage

Source: National Hurricane Center, http://www.weather.gov/glossary/index.php?letter=f (accessed January 8, 2009)

Palmer Drought Severity Index

Normal	0 to -0.5
Incipient Drought	-0.5 to -1.0
Mild Drought	-1.0 to -2.0
Moderate Drought	-2.0 to -3.0
Severe Drought	-3.0 to -4.0
Extreme Drought	> -4.0

Excessive Temperatures

Category	Heat Index	Possible heat disorders for people in high risk groups
Extreme Danger	130°F or higher (54°C or higher)	Heat stroke or sunstroke likely.
Danger	105 - 129°F (41 - 54°C)	Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity.
Extreme Caution	90 - 105°F (32 - 41°C)	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Caution	80 - 90°F (27 - 32°C)	Fatigue possible with prolonged exposure and/or physical activity.

The National Weather Service Weather Forecast Office for Miami issues a wind chill advisory when the temperature is 35 degrees Fahrenheit with associated winds of 5 miles per hour lasting 3 hours. A wind chill warning is issued for wind chills 25 or lower for a minimum of 3 hours. The County activates its cold weather shelter plan when temperatures reach 50 degrees Fahrenheit.

Summary of Extent for Each Hazard

Hazard Group	Extent
Wind	F2 Tornado (winds between 113-157 mph) or a Category 5 storm on the Saffir-Simpson scale; both events could cause considerable damage in the county
Flooding	Flood levels equaling and/or exceeding the 100-year flood event
Drought	PDSI >4
Excessive Temperatures	"Danger" category as identified in the "Excessive Temperatures" table
Fire	Fire potentially consuming over 700 sq miles of land
Agricultural Hazards*	Hundreds of millions of dollars in losses

Data Sources for Vulnerability and Risk

The information and assessments contained in Tables 1 and 2 above are based on data and information from the following sources:

- Hurricane, tornado and thunderstorm estimates are from the National Weather Service Miami Forecast Office, Florida State University Meteorology Department and the publications: *Florida Hurricanes and Tropical Storms* (Williams & Duedall) and *Hurricane Watch* (Sheets & Williams).

- Storm surge estimates are based on historical records and the SLOSH II computer modeling from FEMA, the U.S. Army Corps of Engineers and the National Hurricane Center.

- Flood data is from the South Florida Water Management District (SFWMD) and the National Weather Service Miami Forecast Office.

- Hazardous materials (HazMat) data is based on filings required under Section 302 of the Federal Emergency Planning and Community Right-to-Know Act and maintained by Miami-Dade Office of Emergency Management and Miami-Dade Fire Rescue.

- Nuclear Power Plant estimates are based on the location within FPL's Turkey Point 10-Mile Emergency Planning Zone (EPZ) (See App. E).

- Wildfire vulnerabilities are based on data provided by the Florida Division of Forestry and the Miami-Dade County Department of Environmental Resources Management (DERM) (See App. E).

- Agricultural loss data is from USDA Farm Service Agency, the University of Florida's Institute of Food and Agricultural Sciences (IFAS) and the Miami-Dade Cooperative Extension Service.

- Drought, extreme heat and freezing data is based upon records from SFWMD, Miami-Dade DERM, Miami-Dade Office of Emergency Management, University of Florida IFAS and the National Weather Service.

- Mass migration information is from the U.S. Department of Homeland Security, Florida Department of Law Enforcement and the Miami-Dade Office of Emergency Management.

- Tsunami information is from the National Weather Service Miami Forecast Office.

Appendix D

Table 1

South Florida Hurricanes & Storms

Date	Name	Category	Wind	Surge	Deaths	Damage $
6/17/1906	Hurricane #2	1	80	Unk	0	Unk
10/18/1906	Hurricane #8	3	120	Unk	164	160,000
10/11/1909	Hurricane #9	2	100	Unk	0	Unk
10/21/1924	Hurricane #7	TS	70	Unk	0	Unk
9/18/1926	Hurricane #6	4	138	13.2’	243	1.4 Billion
10/21/1926	Hurricane #10	2	110	Unk	0	Unk
9/17/1928	Hurricane #4	4	132	10-15’	2,500*	26,000,000
9/28/1929	Hurricane #2	2	100	Unk	0	Unk
9/3/1935	Hurricane #2	5	160	20+	408	6,000,000
11/4/1935	Hurricane #6	1	75	6’	19	5,500,000
10/6/1941	Hurricane #5	3	120	8’	5	700,000
9//16/1945	Hurricane #9	4	138	13.7’	4	540,000,000
9/22/1948	Hurricane #7	2	98	8’	0	Unk
10/6/1948	Hurricane #8	2	105	6.2’	0	5,500,000
8/27/1949	Hurricane #2	4	130	Unk	2	52,000,000
10/18/1950	King	2	105	14’	3	28,000,000
9/10/1960	Donna	4	136	13’	50	1.8 Billion
8/27/1964	Cleo	2	105	6’	3	28,000,000
9/8/1965	Betsy	3	125	9’	75	6.4 Billion
10/4/1966	Inez	1	85	15.5’	48	5,000,000
9/3/1979	David	2	98	3-5’	5	10,000,000
8/24/1992	Andrew	5†	155	16.9’	48	30 Billion
11/16/1994	Gordon	TS	52	3-5’	0	90,000,000
9/25/98	Georges	2	98	5-6’	0	12,500,000
11/5/98	Mitch	TS	65	3-4’	0	100,000
10/15/1999	Irene	1	75	3-5’	4	800,000,000
10/3/2000	To become Leslie	TD	35	2-4’	0	500,000,000
9/3/2004	Frances	1	75	2-4’	0	33,000,000
9/25/2004	Jeanne	TS	50	2-4’	0	10,400,000
8/25/2005	Katrina	1	80	2-4’	0	800,000,000
9/18/2005	Rita	TS	50	2-3’	0	12,000,000
10/24/05	Wilma	2	110	5-6’	0	1.5 billion

Note: The date listed is the date of landfall in South Florida and the category of storm shown is the highest category that existed when the storm passed over or near Miami-Dade County.

† Hurricane Andrew was reclassified from a Cat 4 storm to Cat 5 in 2002 by the National Hurricane Center.

Sources: National Weather Service, Miami Forecast Office
NOAA National Hurricane Center/Tropical Prediction Center
Florida State University Meteorology Department
Florida Hurricanes and Tropical Storms (Williams & Duedall)

Table 2
South Florida Heavy Rainfall and Major Flooding

Date	Type Storm	Location	Rainfall inches	Damage
Jun 12, 1901	T.S. #4	Miami	5-10" (13")	Unknown
Oct 17, 1904	Hurricane #3	South Dade	10-15"	Severe Agriculture
Oct 18, 1906	Hurricane #8	Miami	8-12"	Heavy
Oct 17, 1910	Hurricane #4	South Florida	10-15"	Unknown
Oct 20, 1924	Hurricane #7	Dade County	5-12"	Extensive
Nov 30, 1925	T. S. #2	Central Florida	15" (16")	Severe
Sep 27, 1929	Hurricane #2	Dade County	8-12"	Unknown
Jun 15, 1931	Unknown	La Belle	12"	Heavy
Jul 30, 1933	Hurricane #5	West Palm	15"	Unknown
Sep 3, 1935	Hurricane #2	Homestead	7-18"	Unknown
Nov 4, 1935	Hurricane #6	Miami	3-12"	Over $5 Mil
Jun 15, 1936	T. S. #1	Miami	10-15"	Heavy-1st floor evacs
Oct 18, 1944	Hurricane #11	West Palm	10-15"	Severe Ag losses
Sep 16, 1945	Hurricane #9	Dade County	8-12"	Severe Ag losses
Oct 12, 1947	Hurricane #8	Dade County	10-15"	Massive flooding
Sep 21, 1948	Hurricane #7	Dade County	8-12" (25")	Severe crop damage
Oct 6, 1948	Hurricane #8	South Dade	5-10" (12")	Over $5 Mil
Jun 17, 1959	T.D. #3	South Florida	7-12"	Roads/structures
Oct 14-15, 65	Unknown	South Florida	10-20"	Moderate to severe
Sep 1, 1977	Tropical storm	S.W Coast	12-18"	Widespread-roads & Structures
Aug 17, 1981	T.S. Dennis	South Dade	10-12"	Severe Ag losses
Jul 23, 1985	T. S. Bob	Naples	13-20"	Unknown
Nov 16, 1994	T. S. Gordon	South Dade	6-16"	Ag, Streets, Structures
Oct 15, 1999	Hurricane Irene	Miami-Dade	10-15" (17.5")	Major flooding
Oct 3, 2000	Tropical Dep.	Miami-Dade	10-20"	Major flooding
Aug 25, 2005	Hurricane Katrina	Miami-Dade	8-12"	Major flooding, Severe Ag losses

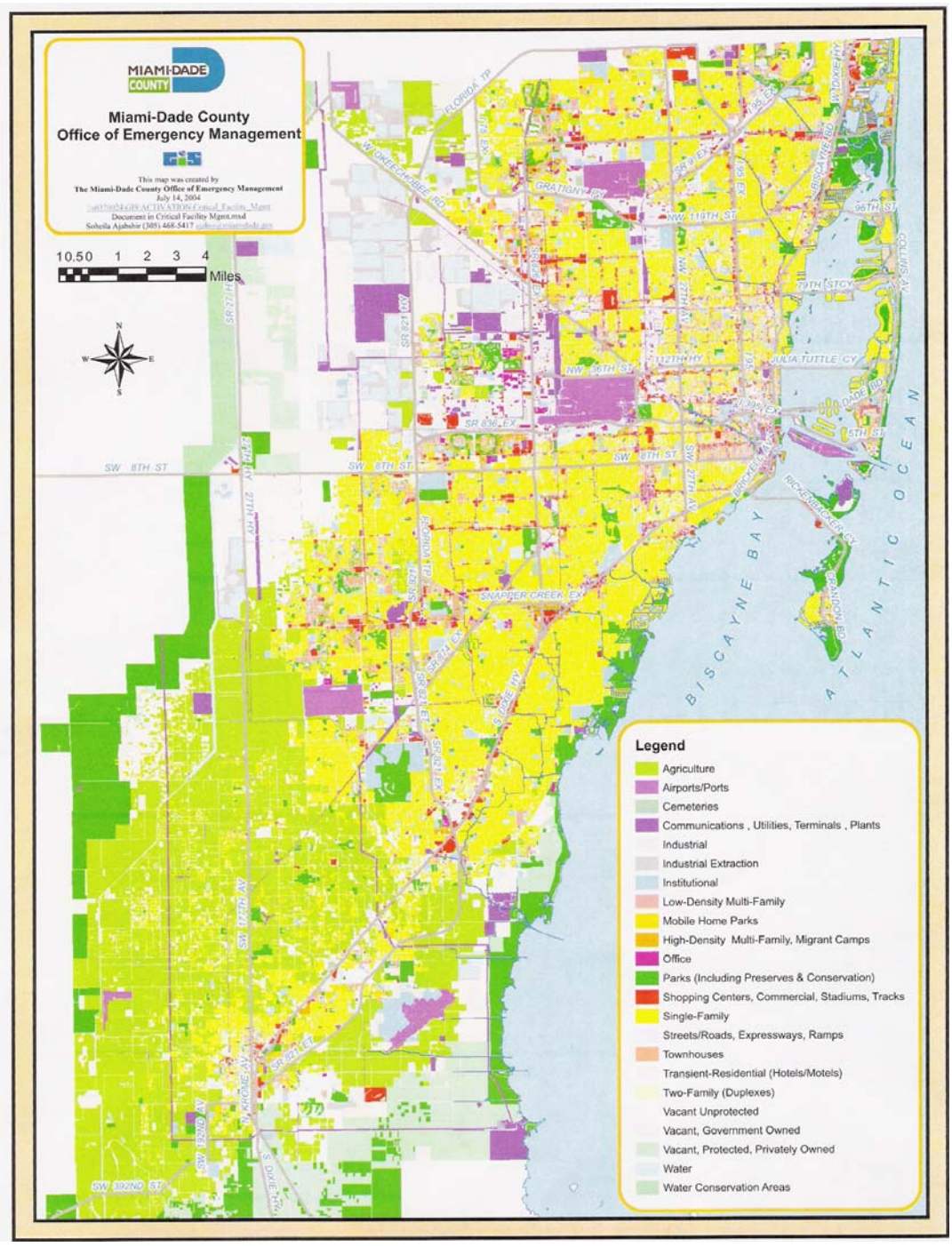
Total events: 26 Return period: 4.0 years

Source: National Weather Service, Miami Forecast Office
South Florida Water Management District
Florida State University Meteorology Department

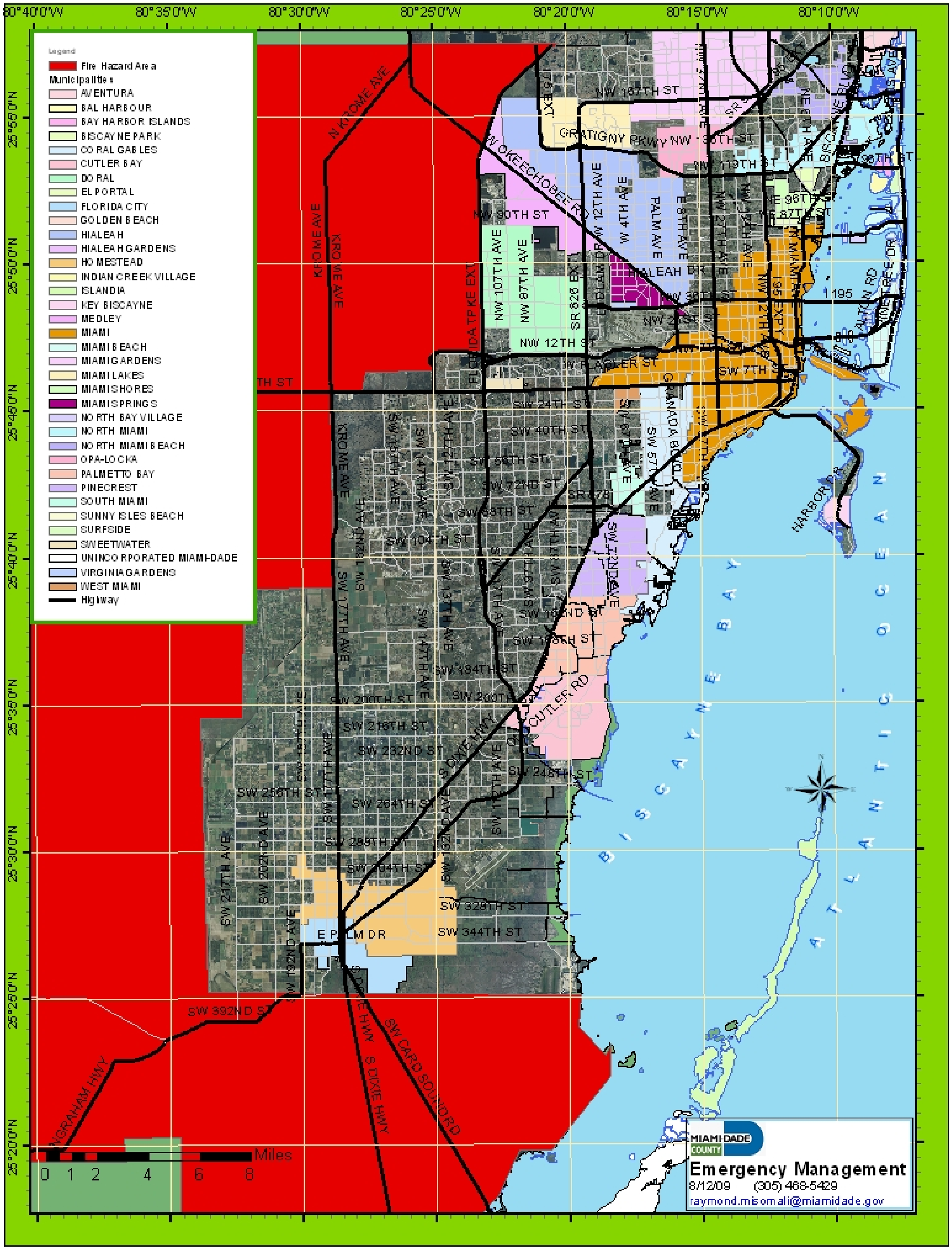
Appendix E

Maps

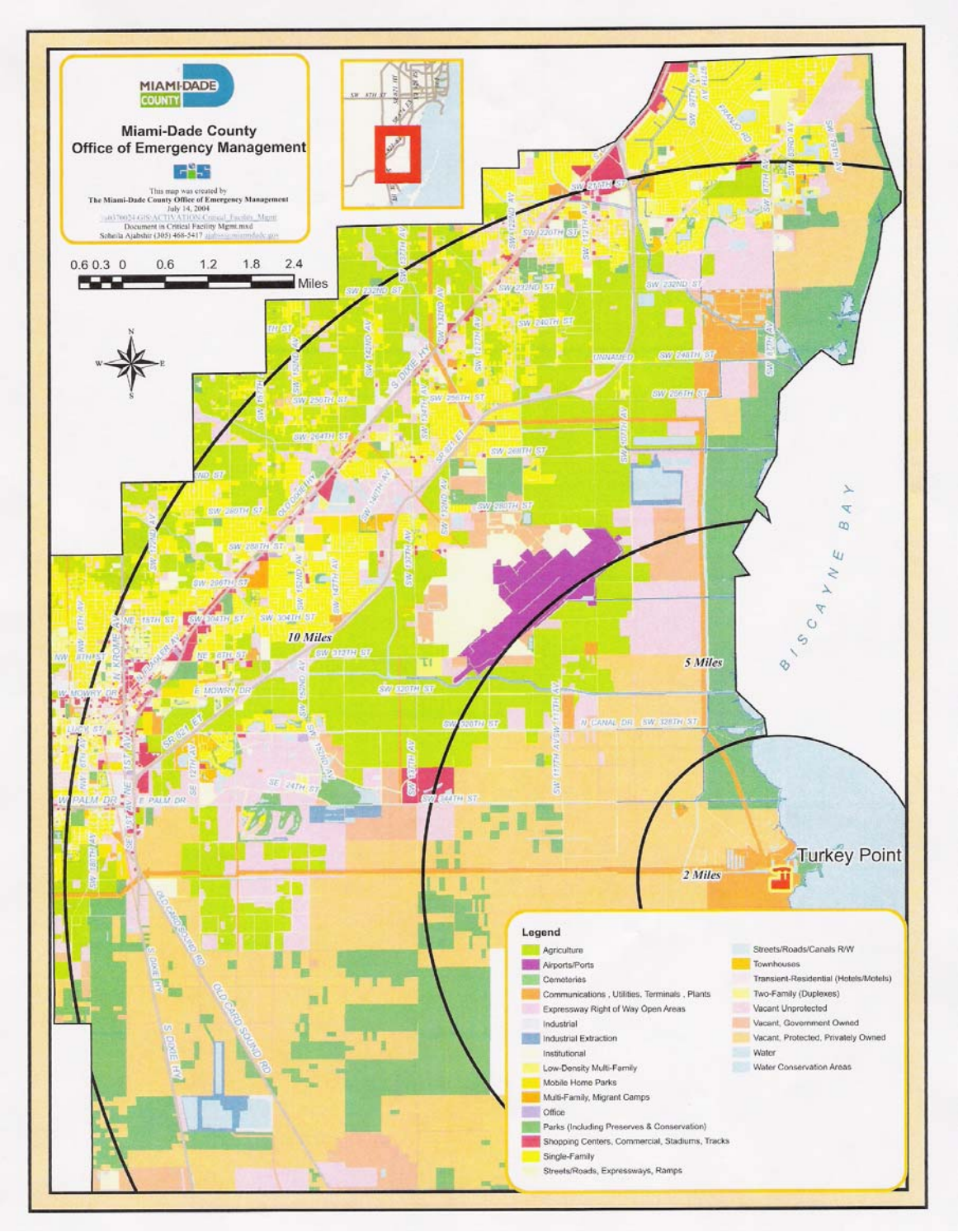
Miami-Dade Comprehensive Land Use



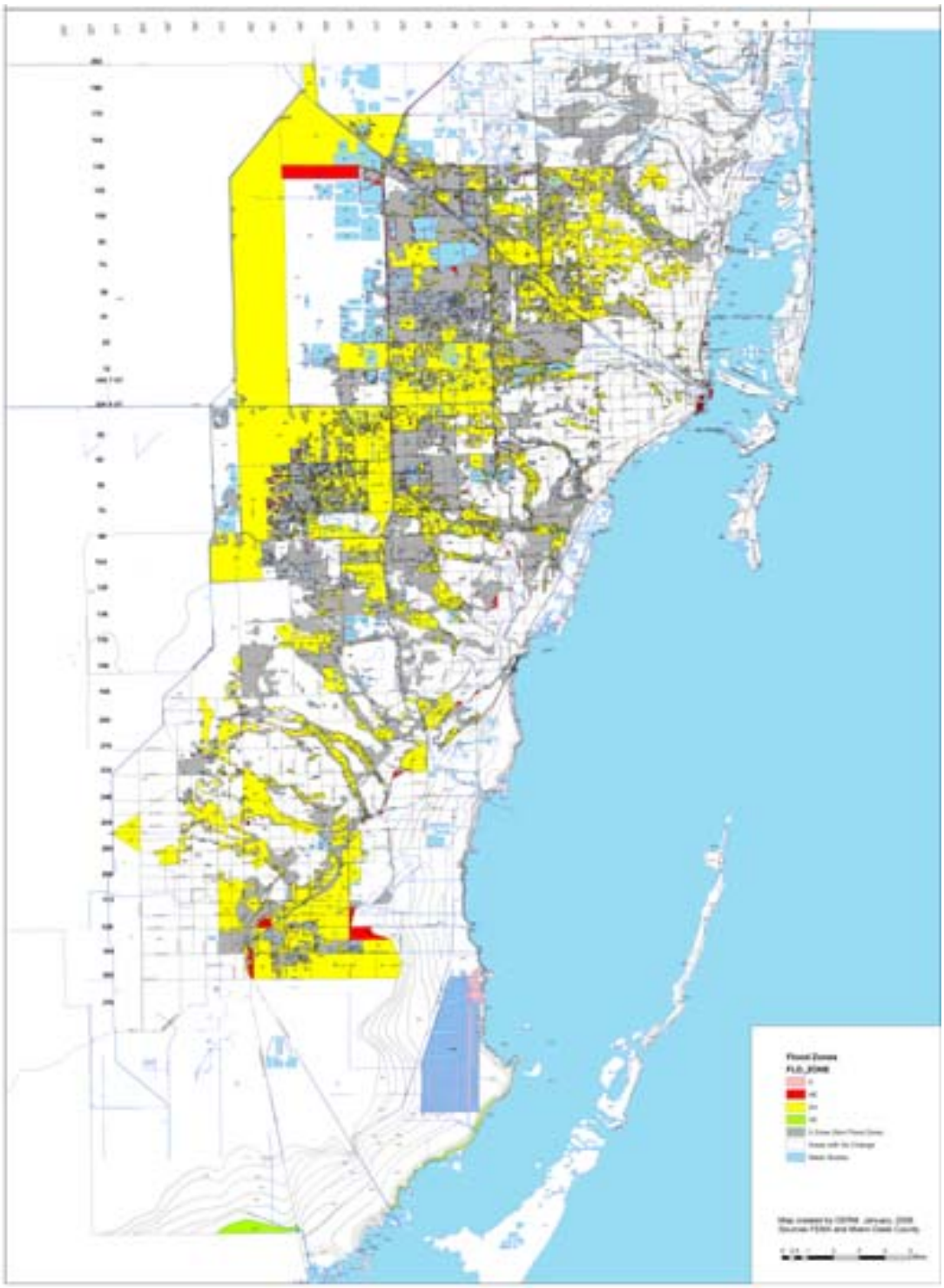
Fire-Hazard Area in Miami-Dade County



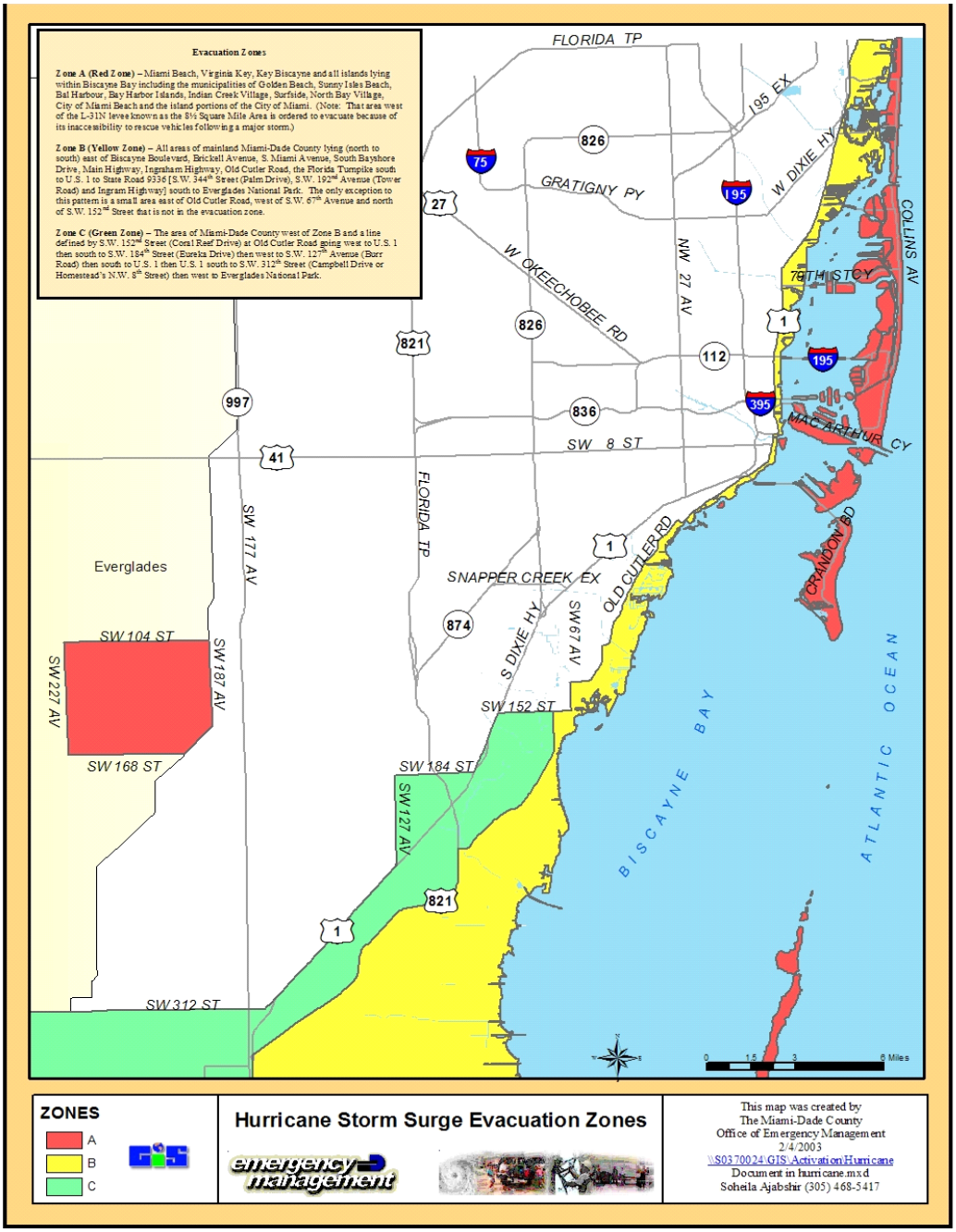
Land Use Within Turkey Point Nuclear Power Plant 10-Mile EPZ



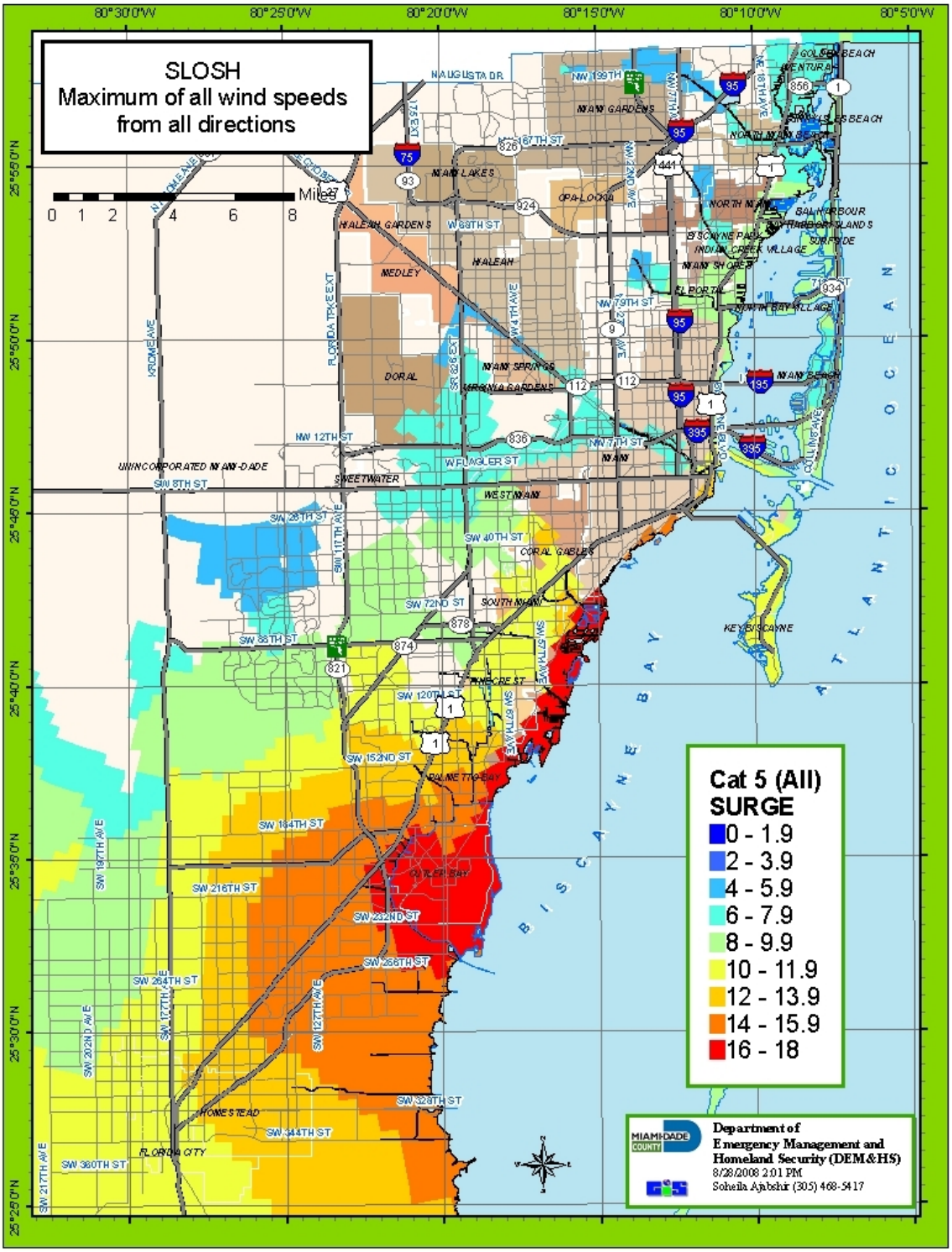
Map of Miami-Dade Flood Zones



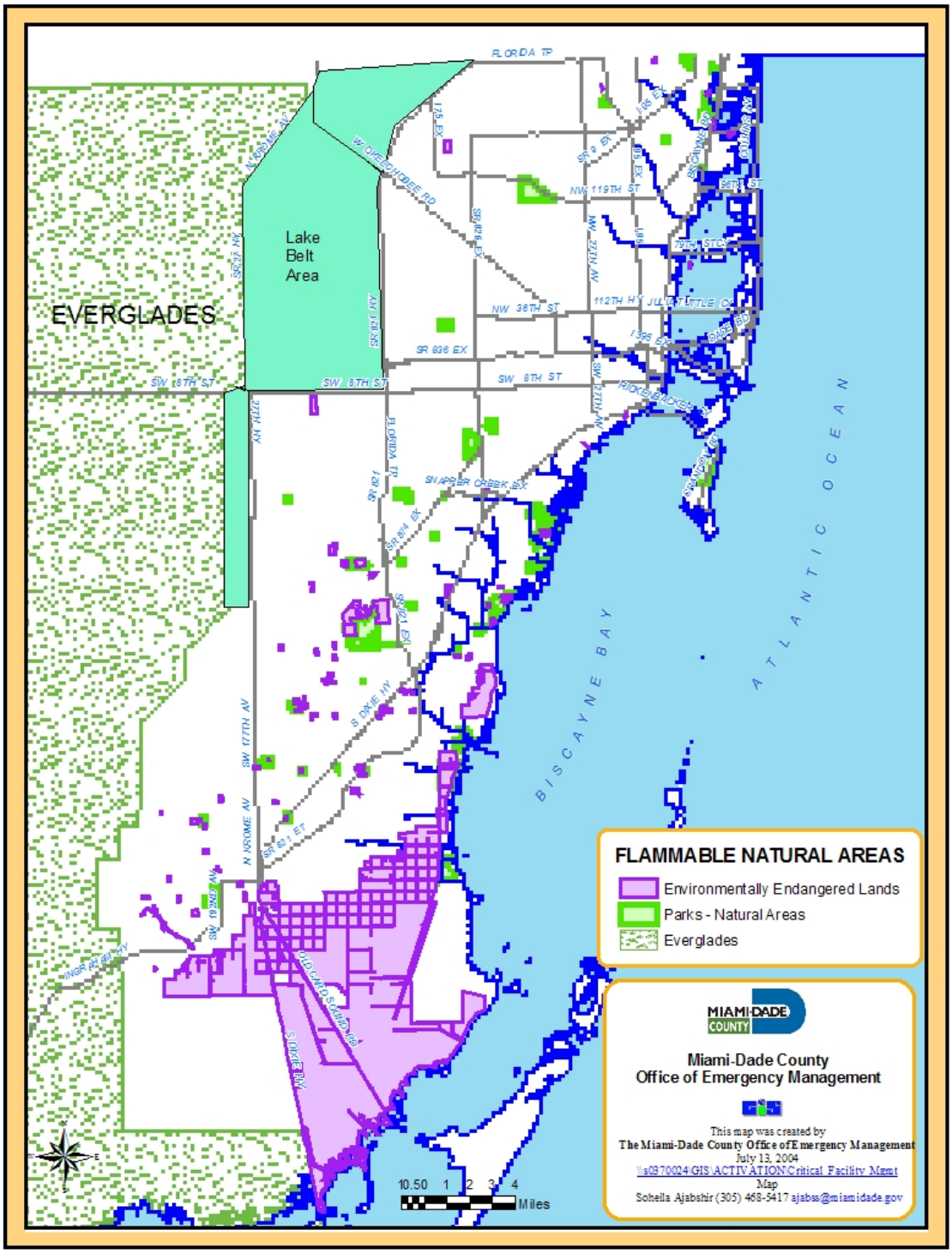
Map of Miami-Dade Evacuation Zones



Map of Miami-Dade Storm Surge Impact



Map of Miami-Dade Flammable Natural Areas



Appendix F

National Flood Insurance Program

Community Rating System Sites (CRS) Area Projects

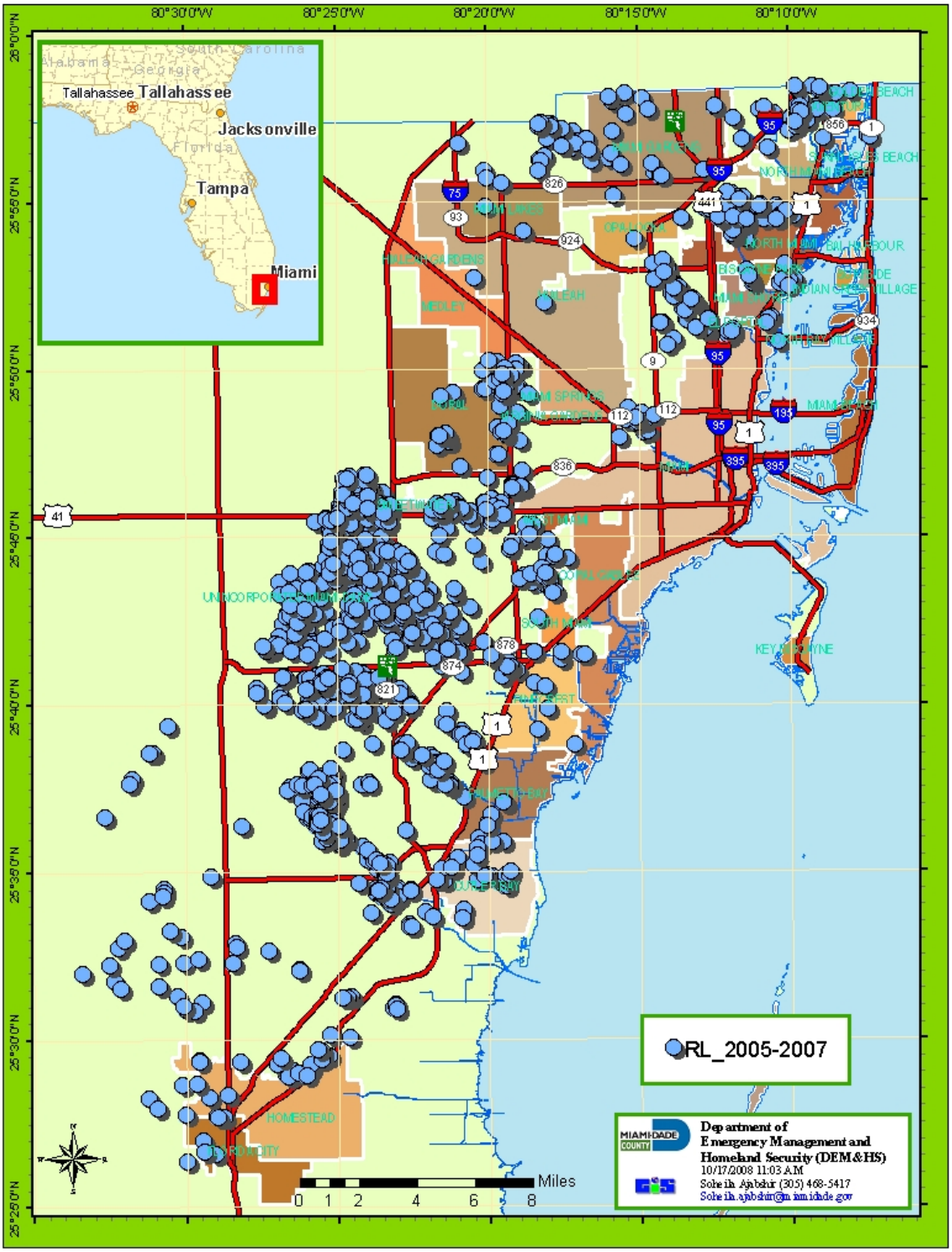
Most of the repetitive losses sites are identified, funded and mitigated through several Miami-Dade County programs, such as the Stormwater Management Master Plan, Flood Inspections, Quality Neighborhoods Improvement Program, Public Works Capital Budget, General Obligation Bond, Stormwater Utility and Secondary Canal Dredging Programs. The objective of this program is the mitigation of localized flooding problems not identified or addressed any other programs, including flooding of residential units above their finished floor elevations, through the construction of minor drainage improvements at various locations throughout Miami-Dade County. These sites (residential/commercial or industrial facilities) are reported by the Federal Emergency Management Agency (FEMA) on a yearly basis as having experienced flooding above their finished floor elevations, two (2) times or more with a damage claim of $1,000.00 or more each time.

RECOMMENDED REPETITIVE LOSS AREA PROJECTS
DECEMBER 2008

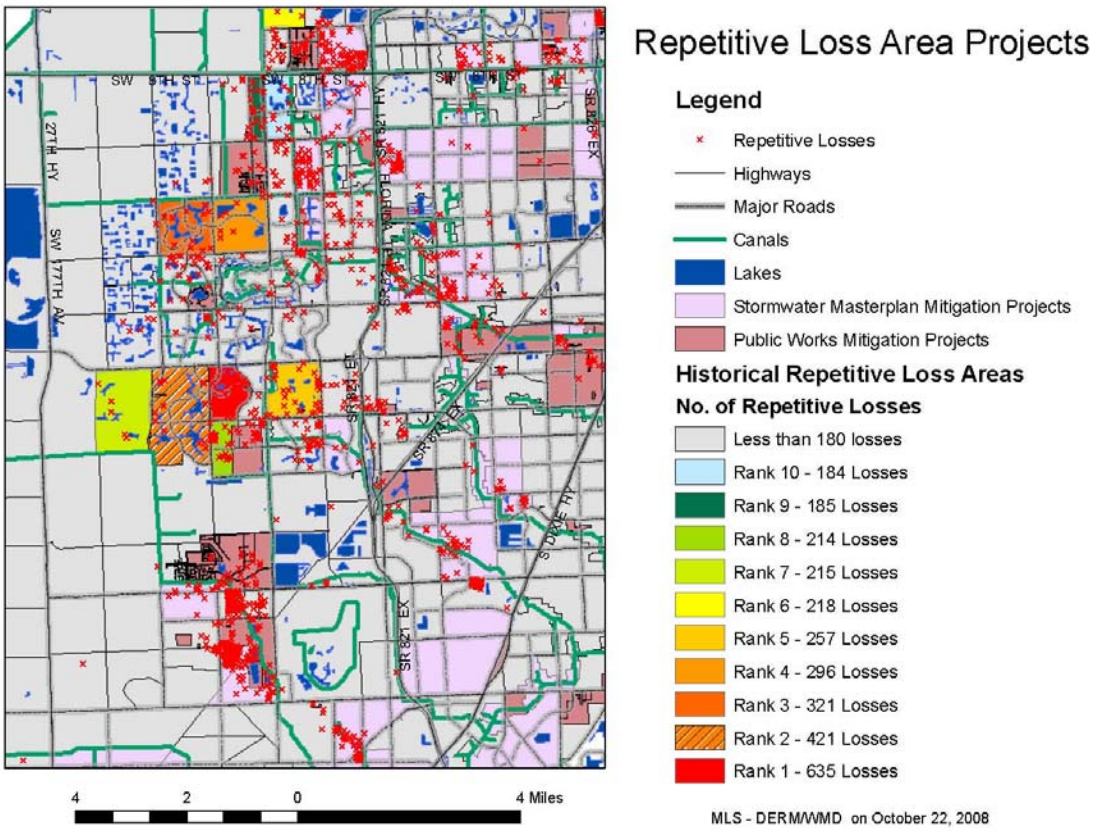
SUB-BASIN	AREA, ACRES	COMMISION DISTRICT	BASIN	NUMBER OF REPETITIVE LOSSES IN THE AREA(*)	RANK	PROJECT LIMITS	ESTIMATED COST
CC100-W-1	412	11	C-100	635	1	SW 88TH ST & SW 149TH AVE & SW 104TH TER & SW 142 AVE	$ 2,680,750
C1-N-4	1160	11	C-1	421	2	SW 88TH ST & SW 167TH CT & SW 117TH ST & SW 147 CT	$ 7,537,854
BD-S-3	633	11	C-2	321	3	SW 56TH ST & SW 157TH CT & SW 42ND ST & SW 147 AVE	$ 4,114,506
BD-S-4	624	11	C-2	296	4	SW 56TH ST & SW 137TH AVE & SW 42ND ST & SW 147 AVE	$ 4,058,897
C100-E-1	575	10	C-100	257	5	SW 88TH TER & SW 137TH AVE & SW 104TH ST & SW 127 AVE	$ 3,739,428
CC4-N-6	337	12	C-4	218	6	NW 12TH ST & NW 137 AVE & NW 6TH ST & NW 128 PL	$ 2,193,123
C1-N-3	949	11	C-1	215	7	SW 88 ST & SW 167TH AVE & SW 157 AVE & C1-W CANAL	$ 6,170,547
CC100-W-2	327	11	C-100	214	8	SW 104TH TER & SW 147 AVE & SW 120 ST & SW 142 CT	$ 2,127,166
139AVE-E-1	179	11	C-2	185	9	SW 8TH ST & SW 139TH AVE & SW 26TH TER & SW 137TH AVE	$ 1,162,909
MC-W-1	366	11	C-2	184	10	SW 8TH ST & SW 137TH AVE & SW 26TH TER & SW 131ST CT	$ 2,380,690
						TOTAL COST	**$ 36,165,870**

(*) NUMBER OF LOSSES EXCLUDES NO-NAME STORM AND IRENE

Map of Miami-Dade NFIP Repetitive Loss Properties
2005-2007



Map of Repetitive Loss Area Projects



A progress report on these activities may be found at the Local Mitigation Strategy website: **http://www.miamidade.gov/oem/library/LMS/LMS_Progress_Report-Activity_510.pdf**

Repetitive Loss by Land Use as of November 2009

Jurisdiction	2-4 Family	Assmd-condo	Non Res-ident	Other Resident	Single Family	Total
Aventura	1	0	1	2	2	6
Bal Harbour		1				1
Bay Harbor Islands	0	0	0	0	1	1
Biscayne Park	0	0	0	0	3	3
Coral Gables	0	1	2	0	17	20
Cutler Bay	0		0		25	25
Doral	0	5	24	17	9	55
El Portal	0	0	1	0	4	5
Florida City	0	0	0	0	43	43
Golden Beach	0	0	0	0	0	0
Hialeah	14	4	19	4	163	204
Hialeah Gar-dens	1	0	15	0	23	39
Homestead	0	1	7	5	23	36
Indian Creek Village		0	0	0	0	0
Islandia	0	0	0	0		0
Key Biscayne	0	1	3	4	23	31
Medley	0	2	11	0		13
Miami	26	8	17	21	139	211
Miami Beach	1	1	15	30	46	93
Miami Gardens	0	0	2	0	30	32
Miami Lakes	0	0	0	0		0
Miami Shores	0	0	0	0	8	8

Jurisdiction	2-4 Family	Assmd-condo	Non Resident	Other Resident	Single Family	Total
Miami Springs	3	2	3	0	60	68
North Bay Village	0	0	0	0	7	7
North Miami	2	1	3	1	34	41
North Miami Beach	1	0	1	0	9	11
Opa-locka	0	3	2	2	10	17
Palmetto Bay		0	1	0	9	10
Pinecrest	0	0	2	0	9	11
South Miami	0	0	1	0	6	7
Sunny Isles Beach	0	0	1	1	1	3
Surfside	0	0	1	0	2	3
Sweetwater	17	0	0	0	66	83
Virginia Gardens	0	0	0	1	7	8
West Miami	0	0	0	0	18	18
Unincorporated Area	47	21	108	53	830	1059
					Total	2172

NFIP and CRS Participation

Community Rating System Members:

Unincorporated Miami-Dade County – 5
City of Aventura – 7
Village of Bal Harbour – 8
Town of Bay Harbor Islands – 7
City of Coral Gables – 8
City of Doral – 8
Town of Golden Beach – 10
City of Hialeah – 7
City of Homestead – 8
City of Miami – 8
City of Miami Beach – 7
City of Miami Gardens – 7
Town of Miami Lakes – 6
Miami Shores Village – 8
City of North Miami – 5
City of North Miami Beach – 8
City of South Miami – 8
City of Sunny Isles Beach – 8

Village of Key Biscayne – 7 Town of Surfside – 10

Note: All municipalities within Miami-Dade County participate in the National Flood Insurance Program (NFIP). However, the other sixteen municipalities within Miami-Dade County participate in the NFIP but not in the Community Rating System (CRS) and therefore are not entitled to the available discounts. Those municipalities are: Village of Biscayne Park, Town of Cutler Bay, Village of El Portal, City of Florida City, City of Hialeah Gardens, Indian Creek Village, City of Islandia, Town of Medley, City of Miami Springs, City of North Bay Village, City of Opa-locka, Village of Palmetto Bay, Village of Pinecrest, City of Sweetwater, Village of Virginia Gardens and City of West Miami. Cutler Bay, Palmetto Bay and Pinecrest all have CRS applications pending.

To maintain compliance with the NFIP, the municipalities of the Miami-Dade County will do the following:

1 Accept, review and maintain elevation records for all new construction and substantial improvements in Special Flood Hazard Areas.

2 Require permits and review all new construction, including substantial improvements, for compliance with the minimum standards under the NFIP and local floodplain management code.

3 Require that all development proposals greater than 50 lots or 5 acres, whichever is less, include in such proposals base flood elevation data.

4 Provide that all new construction and substantial improvements in V and VE zones are elevated on pilings and columns so that the bottom of the lowest horizontal structural member of the lowest floor is elevated to at or above the Base Flood Elevation.

5 Require that all manufactured homes placed in Special Flood Hazard Areas be installed using methods and practices that minimize flood damage, including proper elevation and anchoring to resist flotation, collapse or lateral movement.

Appendix G

LMS Prioritization Matrix

Suitability Parameter:

Parameter		Weighting Factor	Scoring Criteria	Score	Points
Suitability		**30%**			
1	Appropriateness of the Measure	40%	**5 – High:** Reduces vulnerability and is consistent with Local Mitigation Strategy goals and plans for future growth **3 – Medium:** Needed, but does not tie to identified vulnerability **1 – Low:** Inconsistent with LMS goals or plans	5	200
2	Community Acceptance	15%	**5 – High:** accepted by most communities **3 – Medium:** accepted by most; may create burdens **1 – Low:** Not likely to be accepted by any community ("Not in my backyard")	5	75
3	Environmental Impact	15%	**5 – Positive effect** on the environment **3 – No effect** on the environment **1 – Adverse effect** on the environment	5	75
4	Consistent with Existing Legislation and/or Policies	15%	**5 – High:** Consistent with existing laws and regulations **3 – Medium:** New legislation or policy changes needed, but no conflicts identified **1 – Low:** Conflicts with existing Laws and regulations	5	75
5	Consistent with Existing Plans and Priorities	15%	**5 – High –** Consistent with existing plans **3 Medium** – Somewhat consistent **1 – Low** – Conflicts with existing plans and policies	5	75
Parameter Subtotal		100%	**Sum of parameter scores; max =**	500	500
Suitability Subtotal		**(sum of parameter scores) / (maximum possible score)**			**100%**

Risk Reduction Parameter

Risk Reduction		**45%**			
1	Scope of Benefits	15%	**5 – High:** Benefits all municipalities and the unincorporated area directly or indirectly **3 – Medium:** Benefits more than half but not all of the municipalities and/or the unincorporated area **1 – Low:** Benefits less than half of the municipalities and/or the unincorporated area	5	75
2	Potential to Save Human Lives	35%	**5 – High:** More than 1,000 lives **3 – Medium:** Up to 1,000 lives **1 – Low:** No lifesaving potential	5	175
3	Importance of Benefits	15%	**5 – High:** Needed for essential services **3 – Medium:** Needed for other services **1 – Low:** No significant implications	5	75
4	Level of Inconvenience or "Nuisance Factor"	10%	**5 – None:** Causes few problems **3 – Moderate:** Most problems avoided **1 – Significant:** Causes much inconvenience (e.g., traffic jams, loss of power, delays)	5	50
5	Economic Effect or Loss	10%	**5 – Minimal** economic loss (little effect during project) **3 – Moderate** economic loss (minimum disruption) **1 – Significant** economic loss (businesses closed, jobs affected, etc.)	5	50
6	Number of People to Benefit	15%	**5 – High:** more than 100,000 people **3 – Medium:** 10,000 to 100,000 people **1 – Low:** fewer than 10,000 people	5	75
	Parameter Subtotal	100%	**sum of parameter scores; max =**	500	500
Risk Reduction Subtotal		**(sum of parameter scores) / (maximum possible score)**			**100%**

Cost Parameter

Cost		**25%**			
1	Estimated Costs*	20%			100
	i. Initial Cost	*75%*	**5 – Low:** $0 to $100,000 **3 – Moderate:** $100,000 to $1 million **1 – High:** More than $1 million	*5*	*375*
	ii. Maintenance/Operating Costs	*25%*	**5 – Low** costs **3 – Moderate** costs **1 – High** costs	*5*	*125*
2	Benefit to Cost Ratio	40%	**5 – High:** Ratio is greater than 4 to 1 **3 – Medium:** Ratio is between 1 to 1 and 4 to 1 **1 – Low:** Ratio is less than 1 to 1	5	200
3	Financing availability	10%	**5 – Good:** Readily available with grants or other funding **3 – Moderate:** Limited matching funds available **1 – Poor:** No funding sources or matching funds are identified	5	50
4	Affordability	10%	**5 – Good:** Project is easily affordable **3 – Moderate:** Project is somewhat affordable **1 – Poor:** Project is very costly for the jurisdiction	5	50
5	Repetitive Damages Corrected	20%	**5 - High:** Alleviates repetitive loss. Property must have been damaged in the past by a disaster event. **3 - Medium:** Repetitive loss may have occurred but was not documented. **1 - Low:** No effect on repetitive loss.	5	100
	Parameter Subtotal	100%	**sum of parameter scores: max =**	500	500
Cost Subtotal		**(sum of parameter scores) / (maximum possible score)**			**100%**

Prioritization Algorithm Totals

Parameter	Weighting Factor		Percent	Points
SUITABILITY SUBTOTAL	30%		100%	30
RISK REDUCTION SUBTOTAL	45%		100%	45
COST SUBTOTAL	25%		100%	25
TOTAL	**100%**			**100**

For a working Microsoft Excel worksheet of the LMS Prioritization Matrix send an e-mail request to: **mdlms@miamidade.gov**.

Components Used to Prioritize Potential Mitigation Measures

PARAMETER	DEFINITION
Suitability	
Appropriateness of the measure	The extent to which a measure reduces identified vulnerabilities and conforms to stated Local Mitigation Strategy goals, objectives and plans.
Community Acceptance	The likelihood of the measure being accepted or perceived as positive by all, most, or only some of a community. The "not in my back yard" theory is a negative.
Environmental Impact	An indicator of whether the measure will have a positive, negative, or neutral effect on the environment.
Legislation	An indication of whether the measure can be implemented within existing laws and regulations, or if it will require action at the legislative or senior management level policy changes.
Consistent with Existing Municipal Plans and Priorities	A measure of conformance with existing planning documents and stated goals and objectives of a municipality.
Risk Reduction Potential	
Scope of Benefits	The extent to which a measure benefits multiple municipalities, more than half of a community, or less than half of the community.
Potential to Save Lives	How many lives, if any, will the measure save or protect.
Importance of Benefits	The effect of a measure on essential services, such as life safety, human health, and basic necessities of life.
Level of Inconvenience or "Nuisance Factor."	The extent to which a measure can avoid problems in the community, or cause such as traffic congestion, delays, loss of power, etc.
Economic Effects and Property Damage Avoided	A measure of economic effects avoided, including both property damage and economic losses suffered by businesses and residents such as business closings and jobs affected.
Number of People to Benefit	A measure of the number of people expected to benefit from a measure. More than 100,000; more than 10,000; less than 10,000?
Cost	
Initial Costs of the Project	Actual anticipated total (federal plus local share) dollar costs of a proposed mitigation measure.
Ability to Maintain and Operate	Measures the ability of a municipality to maintain and operate the equipment or facility after it is acquired.
Benefit to Cost Ratio	A measure of total anticipated benefits divided by total costs, discounted appropriately and evaluated using FEMA's benefit/cost methodology.
Financing	The extent to which resources are available to finance the cost of the measure, including sources of potential grants and matching funds.
Affordability	An assessment of the measure's cost in relation to available resources.
Repetitive Damages	The potential for a measure to reduce the frequency of repetitive damages at a facility. Past damages must have occurred and have been documented.

Appendix H

LMS Working Group Members

Chairman/Coordinator: Ray Misomali Vice Chairman/Coordinator: Mike Gambino

The Municipalities

Judy Appelgren
Assistant to the City Manager
City of Aventura

J.C. Jimenez
Assistant Town Manager
Town of Bay Harbor Islands

Frank Spence
Village Manager
Village of Biscayne Park

Dallas Brown
Facilities Superintendent
City of Coral Gables

Ralph Casals
Public Works Director
*City of Cutler Bay

Eric Carpenter
Public Works Director
City of Doral

Jason Walker
Village Manager
Village of El Portal

Rick Stauts
Executive Director, CRA
City of Florida City

Jim Skinner
Chief of Police
Town of Golden Beach

Joe Caragol
Emergency Management Director
City of Hialeah

Manny Carrera
Emergency Management Coordinator
City of Hialeah Gardens

Ed Bowe
Police Captain, Community Services Bureau
City of Homestead

Sam Kissinger
Village Manager
Indian Creek Village

John Gilbert
Fire Chief
Village of Key Biscayne

Tom Hughes
Chief of Police
Town of Medley

Bashir Wayne
Recovery & Mitigation Specialist
City of Miami

Judy Hoanshelt
Grants Manager
City of Miami Beach

Mike Gambino
Floodplain Manager
City of Miami Gardens

Osdel Larrea
Public Works Director
Town of Miami Lakes

Scott Davis
Public Works Director
Miami Shores Village

Jim Borgmann
City Manager
City of Miami Springs

Bob Pushkin
Assistant City Manager
City of North Bay Village

Lumane Claude
Chief of Staff
City of North Miami

Dale Greer
Safety Officer
City of North Miami Beach

Starex Smith
Assistant to the City Manager
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Note: The municipalities of Bal Harbour and Islandia no longer participate in the Miami-Dade Local Mitigation Strategy. *City of Cutler Bay Incorporated in 2005 and subsequently joined the LMS.

Miami-Dade County

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Fabio Dias
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IBM

Appendix I

LMS Committees

Local Mitigation Strategy Steering Committee:

Luis Avila, American Red Cross of Greater Miami and the Keys
Lewis Beilman, South Florida Water Management District
Ed Bowe, City of Homestead
Dallas Brown, City of Coral Gables
Ken Capezzuto, University of Miami
Kevin Carrier, Miami-Dade Building Code Compliance Office
Mike Gambino, City of Miami Gardens
Stacy Kilroy, Mount Sinai Medical Center
Richard Ogburn, South Florida Regional Planning Council
Hugh Gladwin, Florida International University
Michael Nardone, URS Corporation
Bryan Norcross, America's Emergency Network
Ray Misomali, Miami-Dade Office of Emergency Management
Jeff Robinson, Hurricane Protection Industries, Inc.
Bashir Wayne, City of Miami

LMS Standing Committees

Agriculture Committee
Business Continuity Committee
College & University Committee
Flood Mitigation Committee
- Watershed Mitigation Subcommittee
- Community Rating System Subcommittee
- FIRM Restudy Subcommittee

Hospitals Committee
Publications Committee
Terrorism Mitigation Committee
Ways and Means Committee

LMS Ad Hoc Committees:

Evacuation Restudy Committee
- Drawbridges Subcommittee
- High-rises Subcommittee
- Hurricane Sheltering Subcommittee
- Rainfall Inundation Subcommittee
- Storm Surge Subcommittee
- Traffic and Transportation Subcommittee

Appendix J

List of LMS Changes

Section	Page	Change Made	Purpose
Introduc-tion	2	Define use of divisional groups;	To clarify the purpose and use of the divisional groups
	3-4	Added a revision procedure	To explain the revision process
	5	Added how to use document section	To better define the scope of this document and how it relates to other planning mechanisms
Part I	19-29	Added extent, location, and vul-nerability of impact as necessary	To better define those hazards relative to extent, location, and vulnerability
	3,4, 35, 36	Define revision process	To clarify the revision process and how information for incor-poration into the LMS document is received
Part II	38-243	Added "Project Administration and Implementation"	To define the operational com-ponents of each project and de-fine implementation procedures
Part III		N/A	N/A
Appendices	261-295	Updated hazard analysis data and supporting documentation	To correlate text with appen-dices
	287 (E)	Updated flood zone map	To provide current information
	289 (E)	Added Storm Surge Map	To provide required information
	294-295 (F)	Added Repetitive Loss Chart Added NFIP compliance re-quirements	To provide current information and add required information
	285 (E)	Added Fire-Hazard Area Map	To support text
	295 (H)	Updated municipal NFIP and CRS participation	To provide current information
Part V	331 (J)	Removed Appendix J from main document	Maintain historical account of LMS program in separate doc-ument
Part VI	332	Added completed projects sec-tion	Maintain account of completed LMS projects

Section	Page	Change Made	Purpose
	447-448 (K)	List of Changes	Documenting changes to plan

All changes listed above except those that appear in "The Projects" subsection were made in response to the five-year review process. The changes in "The Projects" subsection have not been captured in the chart above due to unforeseen management changes within the LMS program. However as identified in this document, each participant of the LMS Working Group is asked to submit their updated project list twice a year for inclusion in the June 30th and December 31st publications of the LMS document. Consequently, each member is responsible for monitoring their project lists for appropriate changes and updating.

The Local Mitigation Strategy

Miami-Dade County, Florida

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