

OSCEOLA COUNTY

The 2004 hurricane season underscores the importance of better integrating hazard mitigation activities and local comprehensive planning. This past fall, Floridians experienced significant damage from Hurricanes Charley, Frances, Jeanne, and Ivan. In 1992, Hurricane Andrew devastated South Florida. In 1998 and 1999, most counties in Florida experienced wildfires, and in some cases, the fires created devastating results – the loss of homes. The cost of recovery for these various disasters ranges from hundreds of thousands to billions of dollars, significantly taxing local, State, and Federal financial sources. Losses covered through Federal funding as a result of the 2004 hurricanes alone could reach as high as \$7 billion. It is imperative to try to reduce the costs of natural disasters. One way is to better integrate hazard mitigation considerations into local comprehensive planning.

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1. County Overview

Geography and the Environment

Osceola County is located in central Florida. It covers a total of 1,322 square miles with an average population density of 130.5 people per square mile (U.S. Census, 2000).

There are two incorporated municipalities within the County: Kissimmee and St. Cloud.

Population and Demographics

Official 2004 population estimates for all jurisdictions within Osceola County, as well as, the percent change from the 2000 U.S. Census are presented in **Table 1.1**. The most current estimated countywide population of Osceola is 225,816 people (University of Florida, Bureau of Economic and Business Research, 2004). A majority of these residents live in the unincorporated County, which has been growing rapidly, at a rate of 39.2% in just 4 years. Between 1990 and 2000, Osceola County as a whole had a growth rate of 60.1%, which is more than twice that of the statewide growth rate of 23.5% in those 10 years.

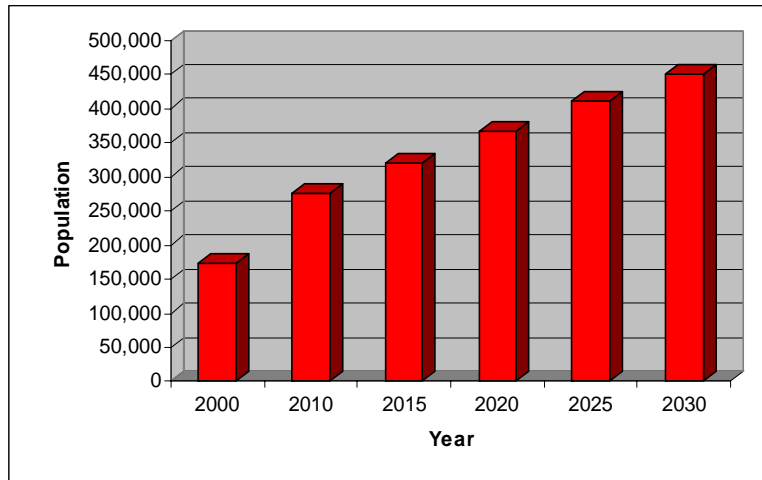
Table 1.1 Population by Jurisdiction

Jurisdiction	Population, Census 2000	Population Estimate, 2004	% Change, 2000-2004
Unincorporated	104,605	145,568	39.2%
Kissimmee	47,814	55,856	16.8%
St. Cloud	20,074	24,392	21.5%
Countywide Total	172,493	225,816	30.9%

Source: University of Florida, Bureau of Economic and Business Research, 2004.

According to the University of Florida, Bureau of Economic and Business Research (2004), Osceola County's population is projected to continue to grow rapidly, reaching 450,200 people by the year 2030. **Figure 1.1** illustrates medium population projections for Osceola County based on 2004 calculations.

Figure 1.1 Medium Population Projections for Osceola County, 2010-2030



Source: University of Florida, Bureau of Economic and Business Research, 2004.

Of particular concern within Osceola County's population, are those persons with special needs and/or limited resources such as the elderly, disabled, low-income, or language-isolated residents. According to the 2000 U.S. Census, 11.4% of Osceola County residents are listed as 65 years old or over, 20.3% are listed as having a disability, 11.5% are listed as below poverty, and 33.3% live in a home with a primary language other than English.

2. Hazard Vulnerability

Hazards Identification

The highest risk hazards for Osceola County as identified in the County's Local Mitigation Strategy (LMS) are high winds, lightning, flood, and major wildland fires. Sinkholes were not discussed.

The County is frequently hit by tornadoes. In 1998, an F4 tornado killed 25 people and destroyed \$100 million in property. Osceola County also experiences high winds and flooding from tropical storms and hurricanes. Lightning is also a frequent event in Osceola and has started many wildfires in central Florida.

Hazards Analysis

The following analysis looks at three major hazard types: flooding, sinkholes, and wildfire. Most of the information in this section was obtained through the online Mapping for Emergency Management, Parallel Hazard Information System (MEMPHIS) provided by the Florida Department of Community Affairs (FDCA), Division of Emergency Management.

Existing Population at Risk

Table 2.1 presents the countywide population at risk from hazards, as well as a breakdown of the sensitive needs populations at risk. The first column in the table summarizes the residents of Osceola County that live within Federal Emergency Management Agency Flood Insurance Rate Map zones, which signify special flood hazard areas. According to these maps, 22.4% of the population, or 38,695 people, are within the 100-year flood zone. A majority of the special-needs populations at risk of flooding are disabled. In Osceola County, sinkholes are a risk, and 28.2% of the population is within a medium to high-risk sinkhole zone. Wildfire is a hazard of major concern to the County, and more people are at risk to wildfire than compared to the other hazard estimates. Column 3 of the tables shows the amount of people that fall in medium- to high-risk wildfire zones, which is based on many factors, including vegetation and ease of access to the homes. Countywide, there are 109,679 people, or 63.6% of the total population, at medium- to high-risk from wildfire. A total of 34.9% of those at risk are disabled, making a quick evacuation difficult.

Table 2.1 Countywide and Special Needs Populations at Risk from Hazards

Population	Flood	Sinkhole (med-high risk)	Wildfire (med-high risk)
Minority	5,507	5,403	23,142
Over 65	5,615	6,248	11,915
Disabled	13,349	15,454	38,236
Poverty	3,815	3,886	11,257
Language-Isolated	770	1,009	1,573
Single Parent	1,818	2,428	6,848
Countywide Total	38,695	48,682	109,679

Source: Florida Department of Community Affairs, 2005a.

Evacuation and Shelters

As discussed in the previous sections, population growth in Osceola County has been rapid, and this trend is projected to continue. As the population increases in the future, the demand for shelter space during a hurricane or wildfire event is only going to increase. Also, evacuees from neighboring counties could also be looking for shelter in Osceola. Currently, there is space for 10,824 people in the County’s shelters, this leaves enough space for 939 more people in the case of a Category 5 hurricane. However, the projected demand for 2009 means that the County will not be able supply enough space, leaving approximately 1,345 people without shelter (FDCA, 2004).

Existing Built Environment

While the concern for human life is always highest in preparing for a natural disaster, there also are large economic impacts to local communities, regions, and even the State when property damages are incurred. To be truly sustainable in the face of natural hazards, we must work to protect the residents and also to limit, as much as possible, property losses that slow down a community’s ability to bounce back from a disaster. **Table 2.2** presents estimates of the number of buildings in Osceola County by structure type that are at risk from each of the three hazards being analyzed. As seen in the estimated population at risk statistics in **Table 2.1**, wildfire puts the largest amount of structures at risk as well. Regardless of hazard, the structure type most at risk is single-family homes.

Flooding is the second largest risk to property in the County, with 31,390 structures within a flood zone. According to the latest National Flood Insurance Program Repetitive Loss Properties list, there are three homes in unincorporated Osceola County that have had flood damage multiple times and received insurance payments (FDCA, 2005b).

Table 2.2 also shows 20,258 structures within medium- to high-risk sinkhole areas, with 72.4% of those being single-family homes.

Table 2.2 Countywide Number of Structures at Risk from Hazards

Structure Type	Flood	Sinkhole (med-high risk)	Wildfire (med-high risk)
Single-Family Homes	14,081	14,675	24,382
Mobile Homes	6,433	1,326	3,859
Multi-Family Homes	3,727	1,553	3,704
Commercial	1,930	1,171	1,570
Agriculture	3,469	487	2,268
Gov./Institutional	1,750	1,046	2,049
Total	31,390	20,258	37,832

Source: Florida Department of Community Affairs, 2005a.

Analysis of Current and Future Vulnerability

The previous hazards analysis section discussed population and existing structures at risk from flooding, sinkholes, and wildfire, according to MEMPHIS estimates. This section is used to demonstrate the County’s vulnerabilities to these hazards spatially and in relation to existing and future land uses. The FDCA has provided maps of existing land use within hazard areas based on the 2004 County Property Appraiser geographic information system (GIS) shapefiles. Maps of future land uses in hazard areas were developed using the Osceola County future land use map dated November 2004.

In **Attachment A**, two maps present the existing and future land uses within a 100-year flood zone. There are large swaths of flood-prone areas scattered across the County; however, there are large clusters of them to the west and to the south of St. Cloud. The total amount of land in these special flood hazard areas is 386,370 acres for the unincorporated County. Only 6.8% of these acres are currently undeveloped. As shown in **Table 2.3**, 89.1% of the flood-prone areas are located in agriculture or parks and recreation use areas. According to **Table 2.4**, most of the undeveloped lands are designated for future agricultural use areas. Based on population projections and development trends in Osceola County, it would be inaccurate to assume that these hazard areas, which are currently undeveloped, are going to remain that way. Farmland is rapidly being converted to residential uses through land use changes throughout the State.

In **Attachment B**, maps present the land uses associated with high-risk wildfire zones. These wildfire risk areas are scattered across the County, with most of the larger contiguous areas being near the Turnpike, Kissimmee, or St. Cloud. A total of 43.5% of the land within these wildfire zones is currently in agricultural use according to the data in **Table 2.3**. Another 16.5% has single-family homes on it, and 19.3% is vacant. Of the 6,429 undeveloped acres, 34.1% is shown to be designated for agricultural uses in the future, 26.7% is designated as suburban, and 17.8% is for future low-density residential use (**Table 2.4**). Continuing to put homes in these wildfire-vulnerable areas will increase the amount of property and people at risk and will do nothing to decrease the risk factor since low-density neighborhoods often keep most of the trees and vegetation in the yards that allow a wildfire to spread.

Maps showing the sinkhole hazard zones and associated existing and future land uses can be found in **Attachment C**. The sinkhole hazard zones are all found in the northern part of the County, near Kissimmee and St. Cloud. **Table 2.3** shows that 48.6% of this area is in agricultural use, 25% is undeveloped, and 10.9% is single-family residential. **Table 2.4** shows that 28.9% of these areas are designated for future agricultural use, 16.1% is designated for commercial use, and 11.7% is designated for low-density residential. Ideally, this hazard zone should be restricted from development or at least regulated so that geological testing must be done before structures can be built.

Table 2.3 Total Unincorporated Acres in Hazard Areas by Existing Land Use Category

Existing Land Use Category		Flood	Wildfire Susceptible Areas	Sinkholes
Agriculture	Acres	254,512.5	14,454.1	46,669.1
	%	65.9	43.5	48.6
Attractions, Stadiums, Lodging	Acres	262.4	71.6	1,375.3
	%	0.1	0.2	1.4
Places of Worship	Acres	168.5	113.3	295.2
	%	0.0	0.3	0.3
Commercial	Acres	141.1	95.6	702.7
	%	0.0	0.3	0.7
Government, Institutional, Hospitals, Education	Acres	5,914.3	564.2	4,296.8
	%	1.5	1.7	4.5
Industrial	Acres	477.3	118.2	460.4
	%	0.1	0.4	0.5
Parks, Conservation Areas, Golf Courses	Acres	89,794.6	2,742.9	3,526.8
	%	23.2	8.3	3.7
Residential Group Quarters, Nursing Homes	Acres	149.8	26.3	47.9
	%	0.0	0.1	0.1
Residential Multi-Family	Acres	156.3	76.2	937.2
	%	0.0	0.2	1.0
Residential Mobile Home, or Commercial Parking Lot	Acres	2,288.6	2,949.6	2,409.4
	%	0.6	8.9	2.5
Residential Single-Family	Acres	5,071.9	5,498.4	10,425.8
	%	1.3	16.5	10.9
Submerged Land (Water Bodies)	Acres	72.9	2.5	84.5
	%	0.0	0.0	0.1
Transportation, Communication, Rights-of-Way	Acres	86.1	51.1	370.7
	%	0.0	0.2	0.4
Utility Plants and Lines, Solid Waste Disposal	Acres	837.1	61.3	442.1
	%	0.2	0.2	0.5
Vacant	Acres	26,436.6	6,429.1	23,965.6
	%	6.8	19.3	25.0
Total	Acres	386,370.0	33,254.3	96,009.3
	%	100.0	100.0	100.0

Data from: Florida Department of Community Affairs, 2005.

Table 2.4 Total and Undeveloped Acres in Hazard Areas by Future Land Use Category for the Unincorporated County

Future Land Use Category		Flood		Wildfire Susceptible Areas		Sinkhole	
		Total	Undev.	Total	Undev.	Total	Undev.
Agricultural	Acres	310,341	17,419	17,303	2,190	45,149	6,918
	%	80.3%	65.9%	52.0%	34.1%	47.0%	28.9%
Commercial	Acres	2,270	873	1,600	763	8,960	3,854
	%	0.6%	3.3%	4.8%	11.9%	9.3%	16.1%
Conservation	Acres	52,644	3,015	1,224	88	3,407	1,773
	%	13.6%	11.4%	3.7%	1.4%	3.5%	7.4%
Destination New Town	Acres	4	0	212	136	3,540	1,731
	%	0.0%	0.0%	0.6%	2.1%	3.7%	7.2%
Dual Use/HDR and Commercial	Acres	47	5	27	13	0	0
	%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%
Dual Use/Institutional and Commercial	Acres	8	0	0	0	0	0
	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
HDR	Acres	104	64	91	44	167	75
	%	0.0%	0.2%	0.3%	0.7%	0.2%	0.3%
Incorporated	Acres	0	0	0	0	5,609	1,249
	%	0.0%	0.0%	0.0%	0.0%	5.8%	5.2%
Industrial	Acres	666	114	321	105	80	30
	%	0.2%	0.4%	1.0%	1.6%	0.1%	0.1%
Institutional	Acres	805	113	210	18	1,047	25
	%	0.2%	0.4%	0.6%	0.3%	1.1%	0.1%
Lake	Acres	394	6	3	0	167	16
	%	0.1%	0.0%	0.0%	0.0%	0.2%	0.1%
Low Density Residential	Acres	8,438	1,737	3,971	1,143	14,319	2,802
	%	2.2%	6.6%	11.9%	17.8%	14.9%	11.7%
Low Density Residential with MHO	Acres	0	0	2	0	5	0
	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Medium Density Residential	Acres	1,195	185	319	92	976	288
	%	0.3%	0.7%	1.0%	1.4%	1.0%	1.2%
Reedy Creek Improvement District	Acres	93	52	14	0	5,216	3,737
	%	0.0%	0.2%	0.0%	0.0%	5.4%	15.6%
Right-of-Way	Acres	0	0	1	0	0	0
	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural Enclave	Acres	303	87	741	118	926	155
	%	0.1%	0.3%	2.2%	1.8%	1.0%	0.6%
Suburban	Acres	9,059	2,766	7,215	1,717	6,440	1,311
	%	2.3%	10.5%	21.7%	26.7%	6.7%	5.5%
Total	Acres	386,370	26,437	33,254	6,429	96,009	23,966
	%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Data from: Florida Department of Community Affairs, 2005.

HDR = High Density Residential.
MHO = Manufactured Housing Overlay.

Table 2.5 presents the existing land uses for the acres in Osceola County that are incorporated within one of the two municipalities. For flood hazard areas, 30.7% is current vacant. A total of 41.3% of the wildfire risk areas that are within Kissimmee or St. Cloud are used for government or institutional uses, and 21.1% is still undeveloped. The largest amount of acres at risk in the cities is subject to sinkholes, and 32.4% of the sinkhole zones within the incorporated areas have single-family homes on them.

Table 2.5 Total Incorporated Acres in Hazard Areas by Existing Land Use Category

Existing Land Use Category		Flood	Wildfire Susceptible Areas	Sinkholes
Agriculture	Acres	429.1	76.9	601.7
	%	15.4	5.5	11.5
Attractions, Stadiums, Lodging	Acres	6.5	0.9	4.0
	%	0.2	0.1	0.1
Places of Worship	Acres	28.5	12.5	99.7
	%	1.0	0.9	1.9
Commercial	Acres	107.0	32.1	198.0
	%	3.8	2.3	3.8
Government, Institutional, Hospitals, Education	Acres	385.7	573.6	418.0
	%	13.8	41.3	8.0
Industrial	Acres	19.6	10.3	47.5
	%	0.7	0.7	0.9
Parks, Conservation Areas, Golf Courses	Acres	245.9	74.7	511.4
	%	8.8	5.4	9.8
Residential Group Quarters, Nursing Homes	Acres	16.5	1.3	40.4
	%	0.6	0.1	0.8
Residential Multi-Family	Acres	149.1	32.6	172.6
	%	5.4	2.3	3.3
Residential Mobile Home, or Commercial Parking Lot	Acres	22.3	23.6	234.3
	%	0.8	1.7	4.5
Residential Single-Family	Acres	427.1	247.9	1,694.1
	%	15.3	17.8	32.4
Transportation, Communication, Rights-of-Way	Acres	0.2	2.2	5.6
	%	0.0	0.2	0.1
Utility Plants and Lines, Solid Waste Disposal	Acres	94.5	8.7	120.2
	%	3.4	0.6	2.3
Vacant	Acres	854.9	293.4	1,075.4
	%	30.7	21.1	20.6
Total	Acres	2,787.1	1,390.7	5,222.6
	%	100.0	100.0	100.0

Data from: Florida Department of Community Affairs, 2005.

3. Existing Mitigation Measures

Local Mitigation Strategy

Osceola County's LMS (approved 2/1/05) includes the following goals and objectives:

1. To establish local government capabilities for developing, implementing and maintaining effective mitigation programs by:

- Making data and information needed for defining hazards, risk areas and vulnerabilities readily available
- Helping emergency services organizations develop preplanning capability to promptly initiate emergency response operations
- Supporting effective use of data and information related to hazard mitigation planning and program development
- Measuring and documenting the effectiveness of hazard mitigation initiatives implemented in the community
- Deriving and utilizing mitigation "lessons learned" from each significant disaster event occurring in or near the community
- Making community mitigation planning and programming assistance available to the community

2. To build a disaster resistant community by the year 2020 with all sectors of the community working together by:

- Advocating for resources to establish and implement a business continuity and recovery program in the community for key community organizations
- Establishing interagency agreements for local agencies and organizations, where possible, for the development and implementation of mitigation-related projects and programs
- Having governing bodies endorse and implement the local hazard mitigation plan and support community mitigation programming
- Establishing outreach programs, where possible, to gain participation in mitigation programs from key business, industry, institutions and community groups
- Periodically updating the community regarding local efforts in mitigation planning and programming

3. To maximize capabilities for initiating and sustaining emergency response operations during and after a disaster by:

- Establishing policies concerning the relocation, retrofitting or modification of evacuation routes
- Determining evacuation shelter priorities for the funding of shelter retrofit or relocation needed to ensure their operability during and after disaster events
- Retrofitting or relocating local emergency services facilities to withstand the structural impacts of disasters, as funding becomes available
- Providing response capabilities necessary to protect visitors, special needs individuals, and the homeless from a disaster's health and safety impacts as resources permit
- Retrofitting or relocating shelters or structures for vehicles and equipment needed for emergency services operations to withstand the impacts of disasters as funds become available
- Retrofitting or relocating utility and communications systems supporting emergency services operations to withstand the impacts of disasters as funds become available
- Prioritizing routes to and from key critical facilities and evacuation routes for accessibility

4. To minimize disruption to the continuity of local government operations by:

- Retrofitting or relocating buildings and other facilities used for the routine operations of government, where possible, to withstand the impacts of disasters
- Preparing community redevelopment plans to guide decision-making and resource allocation by local government in the aftermath of a disaster
- Working to protect important local government records and documents from the impacts of disasters
- Updating plans and identifying resources to facilitate reestablishing local government operations after a disaster
- Obtaining redundant equipment, facilities, and/or supplies, as needed funding becomes available, to facilitate reestablishing local government operations after a disaster

5. To minimize threats of disasters to the health, safety and welfare of the community's residents and visitors by:

- Establishing systems for notifying the public at risk and providing emergency instruction during disasters
- Supporting effective structural measures to protect residential areas from the physical impacts of disasters
- Seeking to reduce the vulnerability of facilities in the community posing an extra health or safety risk when damaged or disrupted by the impact of a disaster
- Encouraging the retrofit or relocation of public and private medical and health care facilities in the community to withstand the impact of disasters
- Removing or relocating residential structures from defined hazard areas where feasible
Encouraging the retrofit of residential structures by their owners to withstand the physical impacts of disasters
- Reducing the vulnerability of structures, facilities and systems serving visitors to the community in order to meet their immediate health and safety needs
- Providing resources, equipment and supplies to meet community health and safety needs after a disaster

6. To support effective hazard mitigation programming through establishment and implementation of applicable local government policies and regulations by:

- Identifying local government facilities that could be enhanced by mitigation techniques to minimize physical or operational vulnerability to disasters
- Reviewing and where appropriate, revising land use policies, plans and regulations in order to discourage or prohibit inappropriate location of structures or infrastructure components in areas of higher risk
- Ensuring that hazard mitigation needs and programs are given appropriate emphasis in resource allocation and decision-making
- Establishing and enforcing building and land development codes that are effective in addressing the hazards threatening the community
- Avoiding high hazard natural areas for new or continuing development
- Participating in the National Flood Insurance Program (NFIP) and the associated Community Rating System (CRS)
- Locating new local government facilities outside of identified high hazard areas and/or designing them in a manner that minimizes their vulnerability to the impacts of such hazards
- Encouraging the use of appropriate hazard mitigation techniques in the reconstruction and rehabilitation of structures and utilities in the community
- Promoting private property maintenance that is consistent with minimizing vulnerabilities to disaster

7. To minimize the vulnerability of homes, institutions and places of employment to the effects of disaster by:

- Identifying funding and providing economic incentive programs for the general public, businesses and industry to implement structural and non-structural mitigation measures
- Supporting key employers in the community in the implementation of important mitigation measures for their facilities and systems
- Assisting with the removal, relocation or retrofitting of vulnerable structures and utilities in hazard areas including schools, libraries, museums, and other institutions important to the daily lives of the community

8. To minimize the threat to the economic vitality of the community from a disaster by:

- Strengthening where feasible components of the infrastructure needed by the community's businesses and industries from the impact of disaster
- Developing emergency response and disaster recovery plans that consider the needs of key employers in the community
- Encouraging community businesses and industries to make their facilities and operations more disaster resistant
- Helping to establish programs, facilities and resources to support the resumption of business activities by local businesses and industry impacted by disasters
- Educating the public regarding the condition and functioning of the community in the aftermath of a disaster

9. To minimize disruption to the community's infrastructure from a disaster by:

- Encouraging hazard mitigation programming by private sector organizations owning or operating key community utilities including major energy sources, and telecommunications
- Supporting routine maintenance of the community's infrastructure to minimize the potential for system failure
- Strengthening transportation and utility services in the community to reduce failures

10. To promote community awareness and education by:

- Encouraging interested individuals to participate in hazard mitigation planning and training activities.
- Providing public education, especially to those living or working in defined hazard areas, about their vulnerability to disasters and effective mitigation techniques
- Offering training to managers of public facilities about hazard mitigation techniques and the components of the community's mitigation plan
- Providing technical training in mitigation planning and programming to appropriate local government employees
- Encouraging information sharing about appropriate hazard mitigation techniques among owners and operators of businesses and industries in the community

Comprehensive Emergency Management Plan

The Osceola County Comprehensive Emergency Management Plan (CEMP) was not available for review at the time this profile was drafted. The final version of this document will contain a review of the Mitigation Annex of the CEMP.

Post-Disaster Redevelopment Plan

A Post-Disaster Redevelopment Plan (PDRP) for Osceola County was not available for review at the time this profile was drafted. If Osceola County has a current PDRP, this will be obtained and reviewed for the final version of this document.

National Flood Insurance Program/Community Rating System

No information could be found regarding participation in the National Flood Insurance Program's Community Rating System by Osceola County or any of its municipalities.

4. Comprehensive Plan Review

Osceola County's Comprehensive Plan (adopted in 2004) was reviewed in order to see what the County has already done to integrate their LMS policies, and hazard mitigation in general, into their planning process. A list of the goals, objectives, and policies currently in the plan that contribute to hazard mitigation is found in **Attachment D**. The following is a summary of how well the plan addressed the three hazards of this analysis.

Osceola's Comprehensive Plan has several policies referring to general hazard mitigation. The Plan refers to the County's LMS and CEMP, saying that the LMS should be updated on an annual basis and that the LMS should be considered when reviewing land use changes. Another policy requires the County to analyze the distribution of future land uses in order to reduce disaster impacts (Policy 1.13.1), which corresponds with objectives under LMS Goals 5 and 6. There also is a policy to promote public awareness of natural disasters (Policy 2.1.4), which corresponds to Goal 10 in the LMS.

There are many policies throughout the elements that refer to evacuation and shelter needs corresponding to the objectives under LMS Goal 3. The evacuation policies require intergovernmental coordination in developing evacuation plans and in maintaining evacuation routes. Policies dealing with sheltering include providing an adequate amount, which Osceola has done for the time being, securing grants to harden schools, and coordinating with the School Board on retrofitting schools in areas with a shelter deficit.

Flooding was addressed in the Comprehensive Plan in several policies, as well. There were a few vague policies referring to conserving and limiting development in natural areas such as wetlands, floodplains, and water management areas. A new future land use designation also limits development in those areas to wetland preservation, water management, and passive recreation. Another more defined policy related to flooding prohibits the location of public schools in a velocity flood zone. There also is a goal to provide a stormwater management system and a policy to prioritize stormwater projects based on frequency and degree of flooding.

Wildfire was addressed in the Comprehensive Plan only through response and water supply issues. A policy refers to the requirement for residential development that water pressure is adequate for fire fighting. A couple of other policies refer to intergovernmental coordination in mapping firefighting water lines and hydrants.

No policies were found during this review that directly related to sinkhole hazards. There were however, two policies that referred to protecting the aquifer, which could decrease the probability of sinkholes since they sometimes can occur from water level changes in the aquifer in karst areas that are already susceptible to sinkhole activity.

5. Recommendations

For the LMS to be effective in the decision-making process of growth management, its objectives and policies must be integrated into the Comprehensive Plan. The Plan is the legal basis for all local land use decisions made. If hazard mitigation is to be accomplished beyond the occasional drainage project, these hazards must be addressed in comprehensive planning, where development can be limited or regulated in high-risk hazard areas, just as sensitive environments are routinely protected through growth management policies. Mitigation of hazards is considerably easier and less expensive if done when raw land is being converted into development. Retrofitting structure and public facilities after they have been built is significantly more expensive. However, if older neighborhoods or communities are scheduled to be revitalized or redeveloped, hazard mitigation should be an aspect considered and integrated into the project prior to development approval.

Osceola County has begun this process of integrating hazard mitigation throughout its Plan's Elements. The prior section summarized how the major hazards for the County have been addressed for the most part. There is, however, still a disconnect between the LMS objectives and initiatives and the policies in the Comprehensive Plan. By tightening the connection between these documents, the County will find it easier to implement hazard mitigation, and there will be higher awareness of these issues within more departments of the County government.

NOTE: The recommendations set out in this section are only suggestions. Through the workshop process and contact with the local governments, the goal of this project is to end up with specific recommendations tailored and acceptable to each county. While the Profile addresses flooding, wildfire, and sinkholes, during the update of the local Comprehensive Plan the County should consider other hazards if appropriate, such as tornadoes and soil subsidence.

Comprehensive Plan

The LMS has several objectives that relate to identifying hazard areas and reviewing the effectiveness of mitigation measures. This should definitely be a first step in planning for hazards, and yet there were no Comprehensive Plan policies found that highlight the need to identify these hazard zones. It is recommended that the County work to include data and analysis in their Plan that identify geographic areas, such as the analysis included in this profile. This sort of information can lead to planning policies such as overlay zones that increase building code requirements or require impact fees for only those areas that are at risk from the hazard. By having a few policies that define the high-risk hazard zones and require that they be updated and maintained on a regular basis, it will make all mitigation policies more easily implemented and their effectiveness will be easier to measure.

Another issue that was absent from the Comprehensive Plan but that is an objective of the LMS is mitigation of public facilities to withstand disasters. The LMS has several objectives that suggest that public facilities, and even private facilities vital to the community such as hospitals, should be relocated out of hazard areas or retrofitted to minimize damage. It is highly recommended that a similar policy be added to the Comprehensive Plan as well as language that restricts public investment in high-risk hazard areas. For instance, a policy could easily be added that restricts infrastructure or public buildings from being built in the floodplain. This would deter private development in flood zones as well, if they could not get infrastructure extended to the property.

The LMS also has an objective encouraging the preparation of a post-disaster redevelopment plan (PDRP) and an objective for participating in the NFIP Community Rating System (CRS). The State encourages all counties to develop a PDRP. This can be a stand-alone document or it can be incorporated into the Comprehensive Plan. This would be a valuable tool for the County to have. The Comprehensive Plan also should refer to the County's intent to continue to

participate in the CRS program. This is an important piece of any flood mitigation strategy, and including it as a policy may help in ensuring funding for the program in the future.

Osceola's LMS also refers to supporting the business community and especially key employers in becoming more disaster resistant in several objectives. This could be reflected in the Comprehensive Plan as well. The County could encourage business continuity planning and could provide information to interested businesses. They also could assist businesses through information or incentives in implementing mitigation measures to their facilities.

There are also several issues concerning hazard mitigation that are not found in either the LMS or the Comprehensive Plan that should be in these documents. According to the data found in **Table 2.1** of this document, wildfire puts 63.6% of the population at risk and yet is addressed in the Plan only through the need to provide water for firefighting. While it is important to ensure adequate water supplies for response, wildfires are best mitigated by preventing their ability to spread to populated areas. This can be done in a number of ways, the best of which is through land use regulations that limit residential development in the wildland interface or intermix zone. Development could be limited near large natural areas that are at high risk for wildfire or by ensuring adequate buffer areas between natural areas and development so that prescribed burns may be used as a routine maintenance measure in the natural area. Requiring firewise site design, building materials, and landscaping in developments within risk zones also will help to protect property. Requirements for multiple entrances or exits to a subdivision in a risk area could help save lives in the event a wildfire threatens the neighborhood by allowing a quicker evacuation.

Almost a third of the County is at risk from sinkholes, and there is no mention of this hazard in the LMS or Comprehensive Plan. A policy could be added prohibiting development in a risk zone without first investigating the stability of the soils. Policies directed at preservation of the aquifer could also mention the importance this plays in decreasing the probability of human-induced sinkholes.

Overall, some of the policies that are included in the Comprehensive Plan related to hazard mitigation could be strengthened so that they are more directly associated with defined hazards and easier to implement. There are many other policies that are considered best management practices for hazard mitigation that could be considered by the County as they update their Comprehensive Plan. The final draft of this profile will include more of these options.

Local Mitigation Strategy

The LMS could also be enhanced to include some of the items that the Comprehensive Plan already has or that are recommended for inclusion. For instance, the identification of hazard zones with existing and future land uses overlain could be included in both plans. Also, the objectives in the LMS are broad and could include more detailed policies related to specific hazard types. Using the existing objectives, more specific policies perhaps could be included under each objective referring to how they could be implemented in relation to a certain hazard. Overall, the LMS could be enhanced and further connected with the County Comprehensive Plan.

6. Sources

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Attachment A

**Maps of the Existing and Future Land Uses
within the 100-year Floodplain**

Attachment B

**Maps of the Existing and Future Land Uses
within the High-Risk Wildfire Zone**

Attachment C

**Maps of the Existing and Future Land Uses
within the High-Risk Sinkhole Zones**

Attachment D

Osceola County Comprehensive Plan Excerpts Related to Hazard Mitigation

Future Land Use Element

Policy 1.3.42: Pursuant to a natural resource inventory by December 2004, Osceola County shall adopt as part of the Land Development Code land use restrictions and incentives as measures to protect potable water well fields, environmentally sensitive lands, areas characterized by a fire ecology, aquifer recharge areas, and all other identified natural resources, resource areas, and raw materials determined to be critical to the overall health, safety, and welfare of the residents of the County from incompatible land uses and activities.

Policy 1.3.43: Osceola County shall require that all developments with a significant impact upon natural resources, including but not limited to developments involving mining, natural resource extraction, wetlands removal, or environmentally sensitive habitat destruction, prepare an environmental impact statement and mitigation plan. This environmental impact statement shall detail the long-term potential land use impacts upon the natural resource base of the County and demonstrate how those land use impacts will be alleviated. This policy shall not authorize the County to regulate impacts of the consumptive use of water as provided in Chapter 373, F.S. However, such applicant will still be required to address those other impacts of the proposed activity that involve construction, installation, erection, acquisition, operation, maintenance, improvement, extension, connection, enlargement, or reconstruction of any project infrastructure.

Policy 1.4.2: Osceola County adopts a **Conservation/Open Space** Future Land Use category for properties within the Poinciana Township PD. Uses in this category will be limited to upland and wetland preservation, water management areas (primarily non-structural) and passive recreation. In those areas where the boundaries are based upon wetlands, jurisdictional determinations by the appropriate State or Federal agency will supersede the general delineations of the Future Land Use Map series. This land use category is compatible with land uses already existing in the Planned Development and provides consistency with BLIVR 783-002.

Policy 1.7.4: Osceola County shall require the following location criteria for public schools:

3. The proposed location shall not be located within a velocity flood zone/flood way.

Objective 1.13: Hazard Mitigation.

Osceola County shall annually review any interagency hazard mitigation reports that have been issued at the Federal or State level due to a Presidential Disaster Declaration.

Policy 1.13.1: Based on the review of the interagency hazard mitigation reports, Osceola County shall analyze the distribution of Future Land Use in conjunction with the recommendations of Federal or State agencies in order to reduce the potential for future flooding, reduction of property losses and the promotion of public welfare.

Policy 1.13.2: The County shall consider the Local Mitigation Strategy (LMS) when reviewing requests for land use changes to ensure that the requested land use designation do not conflict with the LMS.

Parks and Recreational Facilities Element

Policy 1.1.14: Community and regional parks shall develop at a minimum Pervious Surface Ratio of 0.50.

Policy 1.1.21: The County shall encourage developments to incorporate parks or recreational facilities adjacent to wetlands and water management areas.

Public Educational Facilities Element**Objective 2.3: Provision of Emergency Shelters.**

The County shall assure the adequate provision of emergency shelters.

Policy 2.3.1: The Osceola County Office of Emergency Management and the School Board of Osceola County Facility Construction Office shall establish a schedule and attempt to secure grant funding as available for selected and/or appropriate educational facilities for activities such as but not limited to shuttering for the protection of openings, emergency power transfer switches, emergency power generators, retrofitting of structures, including walls and roofs to meet hurricane force winds.

Policy 2.3.2: When grant funding is available and awarded, the Osceola County Office of Emergency Management shall coordinate with the appropriate School Board staff to ensure the retrofit of one or more public educational facilities each year to meet host/impact requirements. Priority shall be given to those areas of Osceola County that have been identified by the Office of Emergency Management as having a shelter deficit.

Public Safety Element

Policy 1.1.2: For all new residential development, and any new phases of existing residential development, the County will require certification from the water supplier as to their capacity to deliver the required water flows for firefighting, as determined by the Insurance Services Office (ISO) flow chart.

Objective 1.2: Coordinated Mapping Project.

The County should enter into an interlocal agreement with the Tohopekaliga Water Authority and the City of St. Cloud, and all other applicable agencies, to develop and maintain database of the existing and planned potable water, sanitary sewer, reuse water, firefighting water lines, and fire hydrants.

Policy 1.2.1: All involved agencies should form a project team to create and manage the water line database.

Policy 1.2.6: The County will coordinate with the adjacent utility provider to develop and maintain a fire hydrant mapping program for use by fire and rescue services.

GOAL 2: DISASTER PREPAREDNESS, MITIGATION, AND RECOVERY.

The Osceola County Office of Emergency Management shall provide coordination of the preparedness, response, recovery, and mitigation responses to natural and man-made disasters that may affect the residents and visitors of Osceola County.

Objective 2.1: Emergency Management.

The County shall continue to coordinate with surrounding local governments and appropriate state agencies to develop local and regional evacuation management plans.

Policy 2.1.1: The County shall coordinate with the Florida Department of Transportation to identify key evacuation routes that are vulnerable to flooding erosion and critical points of congestion during an evacuation.

Policy 2.1.2: The County shall coordinate with the appropriate agencies to develop recommended roadway improvements for those areas along the proposed evacuation routes identified to have deficiencies. Priority shall be given to those evacuation routes servicing the highest number of people.

Policy 2.1.3: The County shall use the Osceola County Comprehensive Emergency Management Plan (CEMP) to guide its disaster preparedness and recovery operations. The County shall use this document to guide coordination efforts, including working with the cities of the County, the Osceola County School District, the applicable State agencies.

Policy 2.1.4: The County shall improve its disaster preparedness functions by increasing public awareness of natural disasters.

Objective 2.2: Local Mitigation Strategy (LMS).

The County shall meet on a regular basis with local entities to introduce new projects into the LMS, prioritize hazard mitigation projects, and update the LMS.

Policy 2.2.2: The County shall coordinate with the Florida Department of Community Affairs Division of Emergency Management and the Federal Emergency Management Agency to pursue funding opportunities and to manage disaster recovery operations.

Policy 2.2.4: To ensure that the County maintains its eligibility for hazard mitigation and disaster preparedness grants, the County shall review and update the LMS on an annual basis.

Policy 2.2.5: The County shall prioritize the funding and planning of Local Mitigation Strategy projects within the 100-year floodplain.

Stormwater Management Element**GOAL 1: PROVISION OF A COMPREHENSIVE STORMWATER MANAGEMENT SYSTEM.**

Osceola County shall endeavor to provide, as resources and opportunities are available, a comprehensive stormwater management system that protects persons and property from flooding, prevents negative impacts to the natural groundwater aquifer, and safeguards surface waters against the degradation of water quality, thereby promoting the health, safety, and welfare of Osceola County residents.

Objective 1.1: Flood Control.

The County shall evaluate floodplain permitting to protect the function of floodplains.

Policy 1.1.1: The County shall evaluate development within the 100-year floodplain so as not to adversely affect the capacity of the floodplain to store water. Mitigation through compensating storage may be permissible.

Policy 1.1.3: Stormwater management improvement projects shall be prioritized within the urbanizing area based upon the frequency of flooding, severity of flooding, water quality problems, existing land uses, Future Land Use Map categories, and basin studies.