



Integrating Hazard Mitigation into Comprehensive Planning

Dixie County Profile

Florida Department of Community Affairs

Executive Summary

The experiences of the 2004 hurricane season epitomize the importance of better integrating hazard mitigation activities into local comprehensive planning. Last fall, residents all over the state experienced significant damages from Hurricanes Charley, Frances, Jeanne, and Ivan as a result of winds, tornadoes, surge, and/or flooding. But this was not the only time we have experienced natural disasters, nor will it be the last. In 1992, Hurricane Andrew devastated South Florida. In 1998 and 1999, most counties in Florida experienced wildfires. In some cases, despite firefighters' best efforts, fires advanced through neighborhoods and homes were lost. Every year in Central Florida, new sinkholes emerge, swallowing homes and damaging infrastructure. 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. Worst of all, however, are the many lives that, directly or indirectly, are lost due to natural disasters. It is imperative that we reduce the human and financial costs of natural disasters. Through better integration of natural hazard considerations into local comprehensive planning, we can build safer communities.

This Dixie County Profile has been prepared as part of a statewide effort by the Florida Department of Community Affairs to guide local governments in integrating hazard mitigation principles into local Comprehensive Plans. Information provided in this profile will enable planners to (1) convey Dixie County's existing and potential risk to identified hazards; (2) assess how well local hazard mitigation principles have been incorporated into the County's Comprehensive Plan; (3) provide recommendations on how hazard mitigation can be better integrated into the Comprehensive Plan; and (4) determine if any enhancements could be made to the Local Mitigation Strategy (LMS) to better support comprehensive planning. Best available statewide level data are provided to convey exposure and risk as well as illustrate the vulnerability assessment component of the integration process.

In this profile, guidance is provided on how hazard mitigation can be a part of comprehensive planning through an examination of population growth, the hazards that put the County at risk, the special needs population and structures that could be affected by these hazards, and the distribution of existing and future land uses in different hazard areas. We hope that this analysis will serve as an example of the issues each jurisdiction should consider as they update their plans to include hazard mitigation. The profile also contains a review of the LMS and the Comprehensive Plan. Based on the analysis and review, we were able to develop specific options for the County on how to incorporate more hazard mitigation into the Comprehensive Plan and how to enhance the LMS so that it is also a better tool for local planners.

During our review, we found that Dixie County had many strengths regarding hazard mitigation in both its LMS and Comprehensive Plan, and these are outlined in the profile. There are always ways to further strengthen such plans, however, and the following is a summary of some of the options that would enable the County to do so.

Like many counties in Florida, Dixie County has a deficit of hurricane shelter capacity. The LMS and Comprehensive Plan can address this issue through the creation of a Level of Service standard for shelter capacity, a study of alternatives to address shelter issues and locations, and promotion of safe rooms in new construction outside the flood zone. Also, the LMS states there may be potential problems with certain segments of evacuation routes that could hinder a safe evacuation. Evacuation route conditions can be addressed by prioritizing needed improvements in the Capital Improvement Schedule in addition to listing it in the LMS projects.

The County can further reduce potential damage from natural disasters by promoting cluster development and requiring higher building elevations in coastal and flood prone areas. Sinkhole risk can be addressed by limiting development in high-risk karst areas or by requiring testing to

determine if land is stable before a building permit is issued. Policies can be added that require capital improvements to be prioritized based on whether they will reduce vulnerability to a hazard.

Wildfire risk is not directly mentioned in the Comprehensive Plan. Increases in low density development in or near high-risk wildfire zones may create an increase in risk to persons and property. The CEMP explains that the Department of Forestry has successfully carried out prescribed burns in the County, but no formal arrangement exists between the two. The County can reduce it's vulnerability to wildfire by adopting firewise building codes and landscaping requirements for high-risk areas. It also can work with large land managers of timber and other forested uses to use prescribed burns or other methods to keep these properties from increasing the risk for wildfire in the County.

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1. County Overview

Geography and Jurisdictions

Dixie County is located between the Suwannee River and the Steinhatchee River, along the Gulf of Mexico. It covers a total of 704 square miles with an average population density of 19.6 people per square mile (U.S. Census, 2000). There are two incorporated municipalities within the County, and these are listed in **Table 1.1**.



Population and Demographics

Official 2004 population estimates for all jurisdictions within Dixie County as well as the percent change in population from the 2000 U.S. Census are presented in **Table 1.1**. The most current estimated countywide population of Dixie County is 14,928 people (University of Florida, Bureau of Economic and Business Research, 2004). The most populated city in Dixie County is Cross City, but 86.3% of the countywide population lives in the unincorporated portion of the County. Between 1990 and 2000, Dixie County as a whole had a growth rate of 30.6%, which was greater than the statewide growth rate of 23.5% in those 10 years.

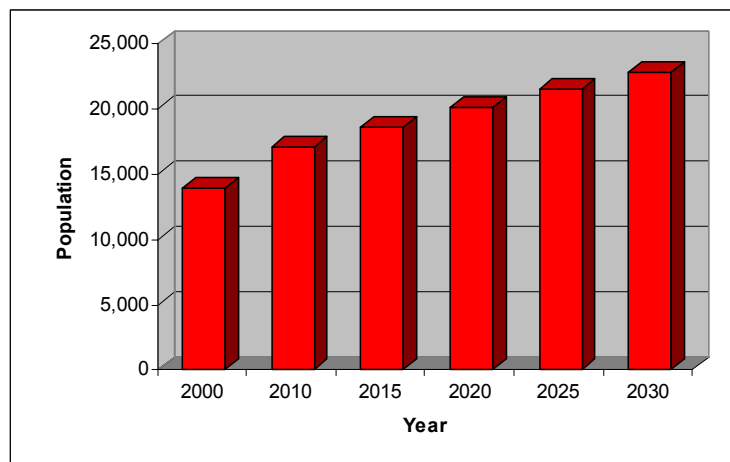
Table 1.1 Population Estimates by Jurisdiction

Jurisdiction	Population, Census 2000	Population Estimate, 2004	% Change, 2000-2004	% of Total Population (2004)
Unincorporated	11,846	12,882	8.7%	86.3%
Cross City	1,775	1,801	1.5%	12.1%
Horseshoe Beach	206	245	18.9%	1.6%
Countywide Total	13,827	14,928	8.0%	100.0%

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

According to the University of Florida, Bureau of Economic and Business Research (2004), Dixie County’s population is projected to grow steadily for the next 25 years, reaching 22,700 people by the year 2030. **Figure 1.1** illustrates medium population projections for Dixie County based on 2004 calculations.

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



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

Of particular concern within Dixie 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, 17.1% of Dixie County residents are listed as 65 years old or over, 28.1% are listed as having a disability, 19.1% are listed as below poverty, and 4.4% live in a home with a primary language other than English.

2. Hazard Vulnerability

Hazards Identification

The following natural hazards were analyzed in Dixie County's Local Mitigation Strategy (LMS): drought, extreme summer heat, earthquakes, flooding, hurricanes / tropical storms, landslides / erosion, winter storms, tornadoes, tsunamis, and wildfires. The LMS did not prioritize these hazards, however, it did suggest that wildfires, tornados, and hurricanes/ tropical storms pose the most significant threat to the county. The remainder of the hazards identified in the LMS posed little to moderate threat in the county based on historical records.. (Dixie County, 2004)

The Suwannee River Basin floods regularly. The LMS notes severe flooding occurred in 1948, 1959, and 1973. There were 12 federally declared disasters in Dixie County between 1993 and 2001. Of those events, there were 5 fire disasters in the County between 1998 and 2001. Hurricanes Erin, Opal, and Georges have all passed over the County.

Hazards Analysis

The following analysis looks at four major hazard types: hurricanes and tropical storms (specifically surge), flooding, sinkholes, and wildfire. All of the information in this section, except the evacuation and shelter estimates, was obtained through the online Mapping for Emergency Management, Parallel Hazard Information System (MEMPHIS). MEMPHIS was designed to provide a variety of hazard related data in support of the Florida Local Mitigation Strategy DMA2K revision project. It was created by Kinetic Analysis Corporation (KAC) under contract with the Florida Department of Community Affairs (FDCA). Estimated exposure values were determined using the Category 3 Maxima Scenario for storm surge, the Federal Emergency Management Agency's (FEMA's) designated 100-year flood zones (A, AE, V, VE, AO, 100 IC, IN, AH), levels of concern 5 through 9 for wildfire, and high through adjacent risk zones for sinkholes. Storm surge exposure data are a subset of flood exposure, therefore the storm surge results are also included in the flood results. For more details on a particular hazard or an explanation of the MEMPHIS methodology, consult the MEMPHIS Web site (<http://lmsmaps.methaz.org/lmsmaps/index.html>) or your countywide LMS.

Existing Population at Risk

Table 2.1 presents the estimated countywide population at risk from hazards, as well as a breakdown of the sensitive needs populations at risk. Unfortunately, digital flood zone data was not available at the time of this analysis. Wildfire is a hazard of concern to the County, with 39.2% of the population living in medium- to high-risk wildfire zones, most of which are disabled making a quick evacuation difficult. Approximately 1,357 people countywide, or 9.8% of the population, would be at risk from surge due to a Category 3 hurricane. Local emergency management officials likely would recommend that all of these residents at risk from surge evacuate or go to a County shelter. Approximately 11.5% of residents are at risk from sinkholes based on the presence of karst formations.

Table 2.1 Estimated Number of Persons at Risk from Selected Hazards

Population	Flood	Sinkhole (high-adjacent risk)	Wildfire (medium-high risk)	Surge
Minority	NA	601	625	21
Over 65	NA	244	921	345
Disabled	NA	762	3,149	667
Poverty	NA	450	1,269	200
Language Isolated	NA	0	0	0
Single Parent	NA	168	372	32
Countywide Total	NA	1,588	5,419	1,357

NA = Data not available

Source: Florida Department of Community Affairs, 2005a.

Evacuation and Shelters

As discussed in the previous sections, population growth in Dixie County has been steady, and this trend is projected to continue. As the population increases in the future, the demand for shelter space and the length of time it takes to evacuate the County is only going to increase. Currently, evacuation clearance times for Dixie County are estimated to be 6 hours for every hurricane category, as shown in **Table 2.2**, well below the often recommended evacuation times of 12 hours. These data were derived from 11 regional Hurricane Evacuation Studies that have been produced by FEMA, the U.S. Army Corps of Engineers, and Florida Regional Planning Councils. The study dates range from 1995 to 2004 and are updated on a rotating basis. Storm events requiring evacuation typically impact larger areas, often forcing multiple counties to issue evacuation orders and placing a greater number of evacuees on the major roadways, such as Route 27, further hindering evacuation progress. Thus, it is important to not only consider evacuation times for Dixie County, but also for other counties in the region as shown in **Table 2.2**.

Table 2.2 County Evacuation Clearance Times in Hours
(High Tourist Occupancy, Medium Response)

County	Hurricane Category				
	1	2	3	4	5
Dixie	6	6	6	6	6
Franklin	5.5	8	8	8	8
Gulf	7	9.75	9.75	10.75	10.75
Jefferson	3.5	3.5	5.25	5.25	5.25
Leon	15.75	23	23	24.5	24.5
Taylor	12	12	12	24	24
Wakulla	13.25	21.25	21.25	22	22

Note: Best available data as of 7/05

Source: State of Florida, 2005

(some counties may be in the process of determining new clearance times)

Coupled with evacuation is the need to provide shelters. If adequate space can be provided in safe shelters for Dixie County residents, then this could be a partial solution to the ever-increasing clearance times for evacuation. Currently, the State Shelter Plan reports that there is space for 1,592 people in the County’s shelters, and there are 2,679 more people that will need sheltering in the case of a Category 5 hurricane. It is projected that by 2009 the deficit will increase to 3,000 people in need of space (FDCA, 2004). The County LMS includes information from a study completed by the Army Corps of Engineers that indicates there is significant capacity to shelter approximately 4,053 people in the 3 County schools. In either case, the County can also promote a decrease in the future demand for public shelters by encouraging new homes to be built with safe rooms if they are outside of flood and surge zones. Residents who are further inland in the County and not in a flood zone could shelter in place if they had a safe

room that could withstand hurricane-force winds. Safe rooms could at least be a last option for residents who cannot evacuate in time, especially in the case of a tornado.

Existing Built Environment

While the concern for human life is always of utmost importance 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 recover from a disaster. **Table 2.3** presents estimates of the number of buildings in Dixie County by structure type that are at risk from each of the four hazards being analyzed.

Flooding presents a moderate risk to property in the County, with 307 structures within a flood zone. Most of the structures are single-family homes or agricultural buildings. According to the latest National Flood Insurance Program Repetitive Loss Properties list, there are 71 homes in unincorporated Dixie County that have had flood damage multiple times and received insurance payments but have not remedied the recurring problem (FDCA, 2005). There are 2,742 structures at risk from surge, as shown in **Table 2.3**, making it a larger concern for property than inland flooding.

Table 2.3 also shows 62 structures within high to adjacent risk sinkhole areas. However, the most significant risk to structures in the county is posed by wildfire. Nearly 83.8% of the County is forested, totaling 383,155 acres. **Table 2.3** estimates there are 7,219 structures at risk from wildfires. A majority of the structures exposed to a wildfire hazard are single-family homes..

Table 2.3 Estimated Number of Structures at Risk from Selected Hazards

Structure Type	Flood	Sinkhole (high-adjacent risk)	Wildfire (medium- high risk)	Surge
Single-Family Homes	125	12	3,688	626
Mobile Homes	38	36	1,002	996
Multi-Family Homes	15	2	276	209
Commercial	11	0	258	78
Agriculture	116	0	1,541	751
Gov./Institutional	2	12	454	82
Total	307	62	7,219	2,742

Source: Florida Department of Community Affairs, 2005a.

In addition to understanding exposure, risk assessment results must also be considered for prioritizing and implementing hazard mitigation measures. The risk assessment takes into account not only the people and property in a hazard area, but also the probability of occurrence that is necessary to understand the impacts to people and property. Although people and property are exposed to hazards, losses can be greatly reduced through building practices, land use, and structural hazard mitigation measures. The next section of this report examines the existing and future land use acreage in hazard areas. This information can be useful in considering where to implement risk reducing comprehensive planning measures.

Analysis of Current and Future Vulnerability

The previous hazards analysis section discussed population and existing structures at risk from flooding, sinkholes, wildfire, and surge according to MEMPHIS estimates. This section demonstrates the County’s vulnerabilities to these hazards spatially and in relation to existing and future land uses. The following maps of existing land use within hazard areas are based on the 2004 geographic information system (GIS) shapefiles from the County Property Appraiser’s

Office. Maps of future land uses in hazard areas were developed using the Dixie County future land use map obtained February 2001 and created by the North Central Florida Regional Planning Council.

In **Attachment A**, four maps show the existing and future land uses within the coastal hazard zone (Category 1 storm surge zone) and the hurricane vulnerability zone (Category 1 evacuation zone). The affected area for the coastal hazard and hurricane vulnerability zones falls along the Gulf coastline and low lying areas along the Steinhatchee and Suwannee Rivers. **Table 2.4** presents the number of acres of land in both of these zones. A majority of the land in these two categories is either used for agriculture or parks and conservation. Agricultural use makes up 40.3% of the acreage in the coastal hazard zone and 63.8% of the hurricane vulnerability zone, while parks and conservation areas comprise 55.0% and 30.8% respectively. This is very positive for the County since a large portion of these hazard areas are being conserved or have not yet been developed, thereby giving the County opportunities to limit and regulate development. **Table 2.5** presents future land use estimates and a breakdown of how currently undeveloped land has been designated for future use. Approximately 82,231 acres within the coastal hazard zone are designated environmentally sensitive areas with very low, low and moderate density. These uses are found primarily north of the conservation land located directly on the Gulf coast. Environmentally sensitive areas- with low and moderate densities are located along County Road 349 near Steinhatchee, along County Road 361, and along the main access road to Horseshoe Beach. Much of this land is currently in agricultural use with low density development along those routes. Conservation use is currently assigned to 42,516.1 acres, or 33.5% of land, in the coastal hazard zone. This is consistent with existing land uses and limits development inside the coastal hazard zone. It is also positive that much of the existing land which is currently in agricultural use is designated as environmentally sensitive land on the future land use map.

The hurricane vulnerability zone is located primarily below Route 27 and runs the width of the County. More than half of this zone, 51.7%, is designated as environmentally sensitive areas. Low density environmentally sensitive area designated land follows the coastal routes northward. It is likely development will occur along these roads, potentially increasing evacuation times. Much of the existing vacant land is designated to future land use categories that allow for low residential development. Development of vacant parcels along Route 27 near Cross City and Fanning Springs can be considered infill development, since there are a significant number of existing parcels with residential uses in these areas.

In **Attachment B**, two maps present the existing and future land uses within a 100-year flood zone. Alternating rows of floodprone and dry land run throughout the southern portion of the County. Much of the land in the 100-year flood zone is currently used for agriculture- 63.5% of the flood-prone acres. Another 31.9% of the flood-prone acres in the unincorporated County are currently in a conservation land use.

The low density environmentally sensitive area use is designated along County Roads 361 and 349 as well as the main access road to Horseshoe Beach, most of which is currently in agricultural use. There is no high density development designated in the 100-year flood plain. In fact, 99.1% of acreage in the 100-year flood zone is dedicated to agriculture, conservation, or environmentally sensitive areas in future land use categories (**Table 2.5**).

In **Attachment C**, maps present the land uses associated with high-risk wildfire zones. A large wildfire susceptible area is found in the western portion of the county south of Route 27. As shown in **Table 2.4**, approximately 82.9% of the acres in potential wildfire zones is currently used for agriculture. The future land use map shows much of this land remaining either in Agricultural use or changing to an environmentally sensitive areas category. **Tables 2.4** and **2.5** show that there are fewer acres in wildfire zones reserved for primary residential land uses on the future land use map than are in current residential use. A reduction of residential uses in wildfire zones is positive since it is possible less people and property will be at risk. Also 65.1% of the undeveloped lands at risk from wildfire are designated for future moderate density uses (1 du per

5 acres) in agriculture or environmentally sensitive areas (**Table 2.5**). While lower density development will not add as much property and people within the wildfire risk areas, this type of development is actually a greater risk for wildfire than high density development. Large-lot residential development is the most at risk since these homes typically are surrounded by wooded lots and often do not have enough defensible space to stop a wildfire from spreading throughout the neighborhood.

Attachment D includes maps of potential sinkhole areas in the County. Much of the hazard area is found along the Steinhatchee River, Suwannee River, and encompassing Cross City. Of the 6,549 acres in potential sinkhole areas, 4364.5 acres, or 66.6% of the land is currently used for agriculture or conservation. Residential land use within the potential sinkhole areas currently accounts for 857.3 acres but may increase in the future since 69.1% of the currently vacant acres are designated for moderate density Agricultural and Environmentally Sensitive Areas land uses which include 1 du per 5 acres.

Table 2.4 Total Unincorporated Acres in Hazard Areas by Existing Land Use Category

Existing Land Use Category		Coastal Hazard Zone	Hurricane Vulnerability Zone	Flood Zones	Wildfire Susceptible Areas	Potential Sinkhole Areas
Agriculture	Acres	51,184.3	183,650.4	181,373.8	41,459.2	3,347.3
	%	40.3	63.8	63.5	82.9	51.1
Attractions, Stadiums, Lodging	Acres	32.8	123.3	101.7	38.3	2.5
	%	0.0	0.0	0.0	0.1	0.0
Places of Worship	Acres	11.6	105.0	45.5	60.6	16.1
	%	0.0	0.0	0.0	0.1	0.2
Commercial	Acres	14.7	156.1	32.8	58.4	68.0
	%	0.0	0.1	0.0	0.1	1.0
Government, Institutional, Hospitals, Education	Acres	1,659.0	2,267.0	2,372.2	362.0	180.6
	%	1.3	0.8	0.8	0.7	2.8
Industrial	Acres	5.3	105.0	19.6	14.7	45.9
	%	0.0	0.0	0.0	0.0	0.7
Parks, Conservation Areas, Golf Courses	Acres	69,751.0	88,646.3	91,039.0	3,330.4	1,017.2
	%	55.0	30.8	31.9	6.7	15.5
Residential Group Quarters, Nursing Homes	Acres	0.2	1.1	0.2	0.2	0.0
	%	0.0	0.0	0.0	0.0	0.0
Residential Multi-Family	Acres	0.0	5.4	1.8	8.2	1.3
	%	0.0	0.0	0.0	0.0	0.0
Residential Mobile Home, or Commercial Parking Lot	Acres	535.3	2,569.9	1,912.7	1,276.5	438.9
	%	0.4	0.9	0.7	2.6	6.7
Residential Single-Family	Acres	763.3	2,510.2	1,647.2	1,001.6	417.1
	%	0.6	0.9	0.6	2.0	6.4
Transportation, Communication, Rights-Of-Way	Acres	218.2	495.4	356.5	193.1	24.5
	%	0.2	0.2	0.1	0.4	0.4
Utility Plants and Lines, Solid Waste Disposal	Acres	26.3	53.3	35.2	7.6	7.8
	%	0.0	0.0	0.0	0.0	0.1
Vacant	Acres	2,701.2	7,385.7	6,628.6	2,202.3	981.8
	%	2.1	2.6	2.3	4.4	15.0
Total Acres	Acres	126,903.2	288,074.1	285,566.8	50,013.1	6,549.0
	%	100.0	100.0	100.0	100.0	100.0

Table 2.5 Total and Undeveloped Acres in Hazard Areas by Future Land Use Category for the Unincorporated County

Future Land Use Category		Coastal Hazard Zone		Hurricane Vulnerability Zone		Flood Zones		Wildfire Susceptible Areas		Potential Sinkhole Areas	
		Total	Undev.	Total	Undev.	Total	Undev.	Total	Undev.	Total	Undev.
Ag. - Low Density (< 1 d.u. per 10 acre)	Acres	223.8	58.0	224.7	58.0	226.3	56.0	80.7	17.8	0.0	0.0
	%	0.2	2.1	0.1	0.8	0.1	0.8	0.2	0.8	0.0	0.0
Ag. - Medium Density (< 1 d.u. per 2 acres)	Acres	0.0	0.0	3,664.3	115.0	3,129.7	64.9	1,744.0	107.2	0.0	0.0
	%	0.0	0.0	1.3	1.6	1.1	1.0	3.5	4.9	0.0	0.0
Ag. - Moderate Density (< 1 d.u. per 5 acres)	Acres	0.0	0.0	13,549.0	1,177.1	9,737.6	713.4	8,062.5	769.6	1,806.8	286.9
	%	0.0	0.0	4.7	15.9	3.4	10.8	16.1	34.9	27.6	29.2
Ag. - Very Low Density (< 1 d.u. per 40 acre)	Acres	0.0	0.0	42,421.1	34.6	78,190.9	52.2	14,331.7	8.5	0.0	0.0
	%	0.0	0.0	14.7	0.5	27.4	0.8	28.7	0.4	0.0	0.0
Commercial	Acres	79.6	31.2	622.6	222.5	93.4	35.2	193.5	67.5	63.1	28.3
	%	0.1	1.2	0.2	3.0	0.0	0.5	0.4	3.1	1.0	2.9
Conservation	Acres	42,516.1	193.3	42,600.1	193.3	45,094.5	242.5	977.3	27.4	624.9	6.0
	%	33.5	7.2	14.8	2.6	15.8	3.7	2.0	1.2	9.5	0.6
Environmentally Sen. Areas - Low Density	Acres	7,308.3	332.8	17,233.4	396.1	7,962.8	362.7	3,614.6	137.5	0.0	0.0
	%	5.8	12.3	6.0	5.4	2.8	5.5	7.2	6.2	0.0	0.0
Environmentally Sen. Areas - Low Density	Acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	109.0	28.3
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	2.9
Environmentally Sen. Areas - Moderate Density	Acres	3,957.0	1,019.0	12,378.9	3,570.2	13,341.5	3,851.6	2,795.3	664.8	0.0	0.0
	%	3.1	37.7	4.3	48.3	4.7	58.1	5.6	30.2	0.0	0.0
Environmentally Sen. Areas - Moderate Density	Acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,382.5	391.7
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.4	39.9
Environmentally Sen. Areas - Very Low Density	Acres	70,965.5	579.2	148,942.2	592.3	125,092.7	618.2	15,513.3	17.4	0.0	0.0
	%	55.9	21.4	51.7	8.0	43.8	9.3	31.0	0.8	0.0	0.0
Environmentally Sen. Areas - Very Low Density	Acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	750.2	1.3
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5	0.1
Industrial	Acres	0.0	0.0	113.9	28.3	64.7	19.4	124.8	7.8	2.2	2.2
	%	0.0	0.0	0.0	0.4	0.0	0.3	0.2	0.4	0.0	0.2
None	Acres	207.8	75.3	695.8	217.4	389.2	132.2	320.8	68.0	439.6	153.4
	%	0.2	2.8	0.2	2.9	0.1	2.0	0.6	3.1	6.7	15.6
Public	Acres	354.2	1.8	445.9	29.9	417.3	25.9	358.5	54.6	16.1	15.4
	%	0.3	0.1	0.2	0.4	0.1	0.4	0.7	2.5	0.2	1.6
Recreation	Acres	15.4	0.0	35.0	11.4	15.4	0.0	8.5	3.8	0.0	0.0
	%	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0
Res. - Low Density (< 2 d.u. per acre)	Acres	0.0	0.0	2,496.1	204.0	154.9	12.5	423.1	69.3	140.0	24.1
	%	0.0	0.0	0.9	2.8	0.1	0.2	0.8	3.1	2.1	2.5
Res. - Moderate Density (< 4 d.u. per acre)	Acres	1,275.6	410.6	2,650.9	535.7	1,655.9	442.1	1,464.7	181.0	214.7	44.1
	%	1.0	15.2	0.9	7.3	0.6	6.7	2.9	8.2	3.3	4.5
Total	Acres	126,903.3	2,701.2	288,073.9	7,385.7	285,566.9	6,628.6	50,013.2	2,202.3	6,549.0	981.8
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 2.6 presents the total numbers of acres in a hazard zone in Dixie County’s incorporated areas and how many of those acres are currently undeveloped. Horseshoe Beach is the only municipality that is subject to surge or within the Category 1 evacuation zone. Approximately 52.1% of these acres at risk are not yet developed however, allowing the City the chance to limit development in the hurricane vulnerability and coastal hazard zones. The city lies directly on the coast making evacuation routes vital. Horseshoe Beach is not subject to wildfire or sinkhole risk, but does have 123 acres within the 100-year floodplain. Again half of those acres are currently vacant giving the City an opportunity to reduce its vulnerability.

As an inland community, Cross City is not susceptible to storm surge but is susceptible to flooding. There are 91 acres within the City that are within the 100-year floodplain but about half of these are still undeveloped. The City is much more vulnerable to wildfire and sinkhole hazards, though. There is opportunity to reduce the risk associated with these hazards, especially by controlling development on the vacant land in each area. Of the at-risk acres in the city, 23% of the potential wildfire acres are vacant and 36% of sinkhole susceptible areas are vacant. According to the County LMS, Cross City contains 127 acres of forestlands within its city limits and is surrounded by forested land, making it vulnerable to wildfires.

Table 2.6 Total and Vacant Incorporated Acres in Hazard Areas

Jurisdiction		Coastal Hazard Zone		Hurricane Vulnerability Zone		Flood Zones		Wildfire Susceptible Areas		Sinkhole Susceptible Areas	
		Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant
Cross City	Acres	0.0	0.0	0.0	0.0	91.0	43.5	257.5	58.4	397.5	141.3
	%	0.0	0.0	0.0	0.0	42.5	47.8	100.0	22.7	100.0	35.5
Horseshoe Beach	Acres	115.5	60.2	115.5	60.2	123.3	63.1	0.0	0.0	0.0	0.0
	%	100.0	52.1	100.0	52.1	57.6	51.2	0.0	0.0	0.0	0.0
Total Acres	Acres	115.5	60.2	115.5	60.2	214.2	106.6	257.5	58.4	397.5	141.3
	%	100.0	52.1	100.0	52.1	100.0	49.8	100.0	22.7	100.0	35.5

3. Existing Mitigation Measures

Local Mitigation Strategy

The LMS is an ideal repository for all hazard mitigation analyses, policies, programs, and projects for the County and its municipalities due to its multi-jurisdictional and intergovernmental nature. The LMS identifies hazard mitigation needs in a community and structural or non-structural initiatives that can be employed to reduce community vulnerability. Communities can further reduce their vulnerability to natural hazards by integrating the LMS analyses and mitigation objectives into their Comprehensive Plans.

An LMS prepared pursuant to the State’s 1998 guidelines has three substantive components (FDCA, 2005b):

Hazard Identification and Vulnerability Assessment (HIVA). This section identifies a community’s vulnerability to natural hazards. Under Florida rules, the HIVA is required to include, at a minimum, an evaluation of the vulnerability of structures, infrastructure, special risk populations, environmental resources, and the economy to any hazard the community is susceptible to. According to FEMA, LMS that are revised pursuant to the Disaster Mitigation Act of 2000 (DMA 2000) criteria must include maps and descriptions of the areas that would be affected by each hazard, information on previous events, and estimates of future probabilities. Vulnerability should be assessed for the types and

numbers of exposed buildings, infrastructure, and critical facilities with estimates of potential monetary losses. Plan updates will be required to assess the vulnerability of future growth and development.

Guiding Principles. This section lists and assesses the community's existing hazard mitigation policies and programs and their impacts on community vulnerability. The Guiding Principles typically contain a list of existing policies from the community's Comprehensive Plan and local ordinances that govern or are related to hazard mitigation. Coastal counties frequently include policies from their Post-Disaster Redevelopment Plans (PDRPs).

Mitigation Initiatives. This component identifies and prioritizes structural and non-structural initiatives that can reduce hazards vulnerability. Proposals for amendments to Comprehensive Plans, land development regulations, and building codes are often included. Structural projects typically address public facilities and infrastructure, and buy-outs of private structures that are repetitively damaged by flood. Many of these qualify as capital improvement projects based on the magnitude of their costs and may also be included in the capital improvements elements of the Counties' and Cities' Comprehensive Plans. The LMS Goals and Objectives will guide the priority of the mitigation initiatives.

The Dixie County LMS (adopted in 2004) was used as a source of information in developing this profile and was also reviewed for any enhancements that could be made to allow better integration with other plans, particularly the local Comprehensive Plans.

Hazard Identification and Vulnerability Assessment

This section of the LMS identifies eleven natural hazards and gives a detailed description of each. It does not rank or prioritize the hazards but mentions tropical storms, hurricanes, tornados and wildfires are the major concerns for the County. It identifies the typical risks associated with each natural hazard, provides a list of critical facilities, evacuation routes, evacuation shelters, and repetitive damaged structures. There is discussion that wildfire may cause risk to the economy of the county due to the location of structures such as hotels, fisheries, and homes near forested areas. Also, this section of the LMS does mention the County Comprehensive Plan and suggests that future land development decisions use the Dixie Local Mitigation Strategy as guidance for the appropriate distribution, location and extent of land uses within the unincorporated county.

Guiding Principles

There was not a guiding principles section in the Dixie County LMS. Policies from other plans were not listed in this report. It would be useful if a list of the hazard-related policies from each jurisdiction's Comprehensive Plan were included in the LMS for reference. This would allow all jurisdictions and County departments access to this information that can be used to judge whether more integration is needed.

LMS Goals and Objectives

The LMS Goals and Objectives can be found in **Attachment E**. The goals and objectives are also summarized in **Section 5** as part of the recommendations analysis. The following is a summary of how well the LMS has addressed mitigation issues that coincide with planning concerns.

The Dixie County LMS goals and objectives aim to establish an ongoing Local Mitigation Strategy Program using information provided in the hazard identification and vulnerability assessment. Also, the goals and objective promote cooperation with FEMA, Emergency Management officials, local government entities, and the Suwannee River Water Management District. The goals and objectives also call for the creation and collection of useful data including an emergency management GIS system, updated critical / vital facility inventories, a Stormwater Management

Plan, a stormwater management study, a river basin study, and updated flood insurance rate maps. The goals and objectives also promote involvement of the FEMA Flood Insurance Program and Community Rating system, indirectly addressing flooding in the County.

Specific objectives that directly promote hazard mitigation are limited in number. Objective 1.1 promotes training classes for county personnel, responders and elected officials to improve emergency management preparedness. Objective 3.3 also suggests solving evacuation route problems within the County and municipalities but does not suggest the Capital Improvements Element in the Comprehensive Plan as a mechanism for achieving this objective. Objective 6.1 calls to rehabilitate substandard housing. Objectives 7.1 and 7.2 call for improvements of an early warning systems in coastal communities.

The LMS goals and objectives do not address all of the hazards that the County is vulnerable to. The LMS does suggest the goals, objectives, and policies in the comprehensive plan should consult the LMS in future land use guidance. (Dixie County. 2004)

Comprehensive Emergency Management Plan

The Mitigation Annex of the 2002 Dixie County CEMP was reviewed for consistency with the other plans and evaluated in its effectiveness as a tool for planners. It is a strong plan and offers significant information including an assessment of the County's vulnerability to natural and man-made disasters, geographic information, analysis of vulnerability by demographic criteria, and a critical facilities inventory. The plan focuses on emergency management operations during an emergency more so than pre-disaster hazard mitigation although it does illustrate such responsibilities to the Dixie County Emergency Services Division of Emergency Management. The plan also covers the chain of responsibility for pre-disaster and post-disaster mitigation operations including a list of primary and secondary agencies. The plan also lays out a clear guideline for emergency operations for different disaster levels, financial management during a disaster, and training programs to prepare for disasters. The CEMP refers to the LMS for guidance in pre-disaster mitigation agency functions and responsibilities.. (Dixie County. 2002)

Post-Disaster Redevelopment Plan

A PDRP for Dixie County was not available for review at the time this profile was drafted. If Dixie 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

Dixie County, Cross Creek, and Horseshoe Beach all participate in the National Flood Insurance Program. The County does not participate in the Community Rating System.

4. Comprehensive Plan Review

Dixie County's Comprehensive Plan (adopted in 1990) 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 F**. These policies are also presented in **Section 5**. The following is a summary of how well the plan addressed the four hazards of this analysis.

Coastal Hazards

Dixie County's Comprehensive Plan has many policies considered to be best management practices for mitigating hurricane and coastal surge impacts. There are several policies that deal with evacuation needs including setting informal level of service standards for peak evacuation. Other policies act to protect the natural environment within the Coastal High Hazard Area (CHHA). The County must relocate or replace infrastructure in the CHHA, and all public expenditures in the CHHA are to be limited. There many policies that discourage population and property development inside the CHHA by limiting development vulnerable to storm surge and high winds.

Flooding Hazards

Flooding was addressed in the Comprehensive Plan in multiple policies. There were many policies for protecting natural resources including floodplains and wetlands. The County participates in National Flood Insurance Program and regulates development and installation of utilities in flood zones according to the program's requirements. There are many policies that require the Land Development Regulations to regulate development in areas subject to flooding through density and intensity limitations, buffer zones, mitigation requirements for drainage, and enforce structure setbacks.

Wildfire Hazards

There were no policies in the Comprehensive Plan that directly related to wildfire hazards. An objective to conserve fresh water supplies indirectly relates to having sufficient water to put out a wildfire. There is a policy that promotes coordination with the Department of Forestry in managing forest areas.

Sinkhole Hazards

Several policies were indirectly applicable to sinkhole mitigation. There is a policy that requires the Land Development Regulations to restrict development on unsuitable areas including those with adverse earth formations. It does not directly list karst areas in the description. There are policies aimed at conserving land for groundwater recharge. This policy contributes to mitigating sinkholes by decreasing the probability of human-induced sinkholes, which can occur from changes in the water level of the aquifer in karst areas that are already susceptible to sinkhole activity.

Other Hazard Mitigation Policies

Post disaster redevelopment was addressed in several of the Comprehensive Plan policies. Other policies require the County to cooperate with other governmental agencies such as the Florida Department of Natural Resources, Big Bend Aquatic Preserve Management Office, and FEMA. There are also several policies that require coordination and consistency with other plans including evacuation plans, the County's Peacetime Emergency Plan (now called the CEMP) and it's hazard mitigation annex, and interagency hazard mitigation reports.

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 needs to be an aspect considered and integrated into the project prior to the time of development approval.

Dixie 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 for the most part well-addressed. There is, however, still some disconnection 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. **Table 5.1** will be included in the final draft of this document and will present options for further integration as well as the basis for these recommendations.

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 result in specific recommendations tailored and acceptable to each county. While the profile addresses hurricanes, flooding, wildfire, and sinkholes, the County should consider other hazards, if appropriate, such as tornadoes and soil subsidence, during the update of the local Comprehensive Plan.

General Recommendations

- Promote cooperation with the North Central Florida Regional Planning Council to share information and administer programs that address planning issues and hazard mitigation in the County.
- Support the Dixie County Building Department and Zoning Department in identifying hazard mitigation projects.
- Consult CEMP and LMS to prioritize hazard mitigation projects in the Capital Improvements Element.
- Create policies that prioritize hazard mitigation projects and the protection of natural resources in the Capital Improvement Element.
- Create Comprehensive Plan policies that promote the education of hazard mitigation, hurricane preparedness, the location of evacuation routes and shelters, and wildfire hazards to the public, the business community, and to public officials.

Wildfire Hazards

- Encourage timber land managers to use prescribed fire, clear brush, and/or provide a defensible buffer around their property for wildfire management.
- Promote neighborhoods to become Firewise USA Communities.
- Provide Firewise educational materials to public.
- Identify safe zones in case of wildfire (areas with enough defensible space).
- Require management plans for conservation easements that address reduction of wildfire fuels.

- Require removal of exotic vegetation and proper management in high fire risk areas as condition of development approval.
- Adopt landscape standards for storm-resistant and/or firewise vegetation for public facilities and infrastructure.
- Promote firewise vegetation and defensible space in high fire risk areas.
- Limit residential development in defined high fire risk areas through overlay districts.
- Adopt firewise building code requirements for defined high fire risk areas.
- Use NFPA 1144 (Standard for Protection of Life and Property from Wildfire) for building design standards, access standards for subdivisions, water supply and pressure standards, and underground utilities.
- Require firewise neighborhood design as condition of approval for subdivision or PUD in risk areas.

Coastal Hazards

- Prioritize evacuation route improvements in capital improvements schedule.
- Create a policy that requires continual improvement of evacuation times and conditions.
- Provide info on building safe rooms.
- Create Emergency Shelter Capacity Level of Service.
- Prohibit or restrict new and expansion of existing special needs facilities in the CHHA.
- Increase elevation requirements for surge zones to be defined higher than the base flood elevation.

Flooding Hazard

- Acquire land in floodplains and CHHA for open space and recreation purposes.
- Establish PDR or TDR program for preserving natural protective features in hazard areas.
- Require conservation easements for wetlands, floodplains, beaches, and dunes as condition of subdivision or PUD.
- Limit impacts of development on major drainage features.
- Create buffer zones around all floodplains and wetlands.

Sinkhole Hazard

- Restrict development through overlay districts or preservation zones in karst-sensitive areas.
- In potential sinkhole areas, require geotechnical testing before approving building permits.

Other

- Promote cluster development to avoid natural features.
- Enforce the Florida Building Code and establish higher standards for structures in high risk hazard areas.
- Utilize or encourage open space as a means to reduce intensities/densities in hazard areas.
- Use TDR with reduction of densities within hazard areas.
- Prepare redevelopment plans for areas with repetitive hazard damages.
- Pre-identify allowable locations for post-disaster debris sites (i.e. public parks).

- Access the vulnerability and risk of historical structures to various hazards.
- Locate post disaster debris sites to avoid environmentally sensitive areas and historical sites.

6. Sources

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Attachment A

**Maps of the Existing and Future Land Uses within the
Coastal Hazard Zone and the Hurricane Vulnerability Zone**

Attachment B

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

Attachment C

**Maps of the Existing and Future Land Uses
within Wildfire Susceptible Areas**

Attachment D

**Maps of the Existing and Future Land Uses
within Potential Sinkhole Hazard Areas**

Attachment E

Dixie County Local Mitigation Strategy Goals and Objectives

Goal 1: Establish an ongoing Local Mitigation Strategy Program, which is in the interest of the public health safety and welfare.

Objective 1.1: The Local Mitigation Strategy Program shall identify available mechanisms to promote training classes for County personnel, responders and elected officials to improve emergency management preparedness and response through education and training.

Objective 1.2: As part of the Local Mitigation Strategy Working Group Fiscal Year 1998-99 tasks, prepare county wide geographical information system mapping so that Emergency Management officials can integrate hazard mitigation efforts with all local government entities.

Objective 1.3: As part of the Local Mitigation Strategy Working Group Fiscal Year 1998-99 tasks, prepare county wide critical/vital facility inventories, as well as a procedure to update periodically.

Goal 2: Complete Storm water Management Plan for the riverain drainage basins currently being prepared by the Suwannee River Water Management District.

Objective 2.1: The Local Mitigation Strategy Working Group shall identify available funding sources for the expansion of the current storm water management study to lead to the creation of a comprehensive storm water management plan for all lands within the drainage basins of the county and municipalities. The City of Cross City has a special need to coordinate such a storm water plan with the County and the region, as a regional study and plan for storm water management should be prepared to address the City's storm water management.

Objective 2.2: The Local Mitigation Strategy Working Group shall work closely with the Suwannee River Water Management District to identify needs identified by the riverain basin study, currently being prepared.

Objective 2.3: Link the storm water management study being prepared for the County to the recent contamination of water wells to determine if improvements may be constructed to prevent storm water infiltration into surficial aquifers (the majority of land area within the County is within a groundwater discharge area).

Goal 3: In order to improve the floodplain management capabilities of the county and municipalities, the Local Mitigation Strategy committee will assist local governments with eligibility requirements for the Community Rating System.

Objective 3.1: The Local Mitigation Strategy committee shall contact the regional representatives of the Insurance Services Offices to assist the county and municipalities with the Community Rating System Application.

Objective 3.2: FEMA, Flood insurance Rate Maps should be amended to include new data provided by stormwater management studies conducted through the Local Mitigation Strategy Program.

Objective 3.3: Solve evacuation route problems within the County and municipalities, specifically regarding CR351, which is the only evacuation route for the Town of Horseshoe Beach.

Goal 4: Use the hazard identification and vulnerability assessment to identify uses, which may have an adverse impact on the county's natural resources.

Objective 4.1: Identify projects for the protection of natural resources, which are potentially impacted by uses identified in the County's hazard identification portion of the Local Mitigation Strategy Program.

Objective 4.2: Identify canals, which have been dug on property without governmental review and approval.

Goal 5: Establish business protection mechanisms as part of the overall Local Mitigation Strategy.

Objective 5.1: Endeavor to collect hazard mitigation plans prepared by the major employers within the County in an effort to determine existing plans and procedures before establishing new strategies.

Goal 6: Identify substandard housing within the municipalities and the coastal communities, which have been repeatedly damaged by natural disasters.

Objective 6.1: Where feasible (economically and logistically), the substandard housing identified in Goal 6 should be either rehabilitated to standard conditions or purchased for removal. The Local Mitigation Strategy committee should coordinate with existing grant programs to achieve funding for accomplishing this objective.

Goal 7: Establish an early warning system for the coastal communities.

Objective 7.1: Identify funding sources for the improvement of NOAA radio warning systems within the coastal communities.

Objective 7.2: Locate and install civil defense type warning devices within the coastal communities to enhance early warning systems.

Attachment F

Dixie County Comprehensive Plan Excerpts Related to Hazard Mitigation

Future Land Use Element

- Policy I.1.5 The County's land development regulations shall contain standards for the coordination and siting of proposed urban development near agricultural or forested areas, or environmentally sensitive areas (including but not limited to wetlands and floodplain areas) to avoid adverse impact upon existing land uses.
- Policy I.1.6 The County's land development regulations shall govern future urban development within designated urban development areas in conformance with the land topography and soil conditions, and within an area which is or will be served by public facilities and services.
- OBJECTIVE I.2 The County shall adopt land development regulations by 1990 which regulate the location of land development consistent with topography and soil conditions.
- Policy I.2.1 The County's land development regulations shall restrict development within unsuitable areas due to flooding, improper drainage, steep slopes, rock formations and adverse earth formations, unless acceptable methods are formulated by the developer and approved by the County to solve the problems created by the unsuitable land conditions.
- Policy I.4.1 The County's land development regulations shall contain specific and detailed provisions to manage future growth and development to implement the Comprehensive Plan which shall contain at a minimum the following provisions to:
- (c) Protect environmentally sensitive lands identified within the Conservation Element;
 - (d) Regulate areas subject to seasonal and periodic flooding and provide for drainage and stormwater management;

Policy I.5.5 The areas within the 100-year floodplain, as designated by the Federal Emergency Management Agency, Flood Insurance Rate Map, as amended, which are located in the regionally significant areas identified within the Appendix of this Comprehensive Plan shall maintain an average lot size of 10 acres with no lot being less than 5 acres in size or having a length or width ratio of greater than 3 to 1. In addition, non-residential uses such as industrial activities and non-marine oriented commercial uses shall be prohibited from locating within these areas, although resource-based activities, such as campgrounds of less than 200 campsites, may be allowed as special exceptions.

Policy I.6.4 The County's land development regulations shall include provisions for adequate drainage, stormwater management, open space and convenient on site traffic flow and needed vehicle parking for all development.

Policy I.6.6 The County shall participate in the National Flood Insurance Program and regulate development and the installation of utilities in flood hazard areas in conformance with the program's requirements.

Policy I.8.4 The County's land development regulations shall provide for the rebuilding of residences or rebuilding of non-conforming uses or structures which are destroyed or damaged by an act of God. All rebuildings shall be consistent with other plan policies and applicable land development regulations.

OBJECTIVE I.9 The County shall include historic resource preservation provisions within the land development regulations by 1990.

Policy I.9.1 The County shall maintain a listing of all known prehistoric and historic sites within the County. This list shall be updated as new information regarding the prehistoric or historic significance of a site is identified and provided to the County by the state historical officer.

Policy I.9.2 The County's land development regulations shall include historic resource regulations for the maintenance and adaptive reuse of historic structures and sites.

OBJECTIVE I.10 The County shall adopt regulations to protect natural resources and environmentally sensitive lands (including but not limited to wetlands and floodplains) by 1990.

Policy I.10.2 The County's land development regulations shall include provisions which will mitigate the adverse effects of land uses on environmentally sensitive areas. In addition, the land development regulations shall prohibit the location of any structure, other than permitted docks, piers, walkways, or essential services (upon approval of the Florida Department of Environmental Regulation and the Water Management District) within a wetland.

Policy I.10.3 As part of the County's development review process the impacts on agricultural and forested areas shall be assessed and identified prior to development approval.

Policy I.10.4 As part of the County's development review process environmentally sensitive land shall be identified for protection. These environmentally sensitive lands shall include, but not be limited to, wetlands, floodprone areas, areas designated as prime groundwater aquifer recharge areas and critical habitat areas for designated rare, threatened, endangered, or species of special concern.

OBJECTIVE I.13 The County shall adopt land development regulations by 1990 which regulate the location of land development consistent with topography and soil conditions

Policy I.13.1 The County's land development regulations shall restrict development within unsuitable areas due to flooding, improper drainage, steep slopes, rock formations and adverse earth formations, unless acceptable methods are formulated by the developer and approved by the County to solve the problems created by the unsuitable land conditions.

- Policy I.15.1 The County's land development regulations shall contain specific and detailed provisions to manage future growth and development to implement the Comprehensive Plan which shall contain at a minimum the following provisions to:
- (a) Regulate the subdivision of land;
 - (b) Regulate the use of land and water consistent with this Element and ensure the compatibility of adjacent land uses and provide for open space;
 - (c) Protect environmentally sensitive lands identified within the Conservation Element;
 - (d) Regulate areas subject to seasonal and periodic flooding and provide for drainage and stormwater management;
 - (e) Protect potable water wellfields and aquifer recharge areas;
 - (f) Regulate signage;
 - (g) Ensure safe and convenient onsite traffic flow and vehicle parking needs; and
 - (h) Provide that development orders and permits shall not be issued which result in a reduction of the level of service standards adopted in this Comprehensive Plan.

SANITARY SEWER, SOLID WASTE, DRAINAGE, POTABLE WATER
AND NATURAL GROUNDWATER AQUIFER RECHARGE ELEMENT

Policy IV.2.9 The County's land development regulations shall include provisions which prohibit the construction of structures or landscape alterations which would interrupt natural drainage flows, including sheet flow and flow to isolated wetland systems.

Policy IV.5.1 The County's land development regulations shall provide for the limitation of development adjacent to natural drainage features to protect the functions of the feature.

- OBJECTIVE IV.6 The County, by 1990, shall assist the Water Management District, with the implementation of its water conservation rule, when water shortages are declared by the District. Whereby, during such shortages, water conservation measures shall be implemented for the use and reuse of water of the lowest acceptable quality for the purposes intended.
- Policy IV.6.1 The County shall continue to enforce water use restrictions during a Water Management District declared water shortage.

CONSERVATION ELEMENT

GOAL V - CONSERVE, THROUGH APPROPRIATE USE AND PROTECTION, THE RESOURCES OF THE COUNTY TO MAINTAIN THE INTEGRITY OF NATURAL FUNCTIONS.

- Policy V.2.3 The County shall identify and make recommendations, where appropriate, for the purchase of environmentally sensitive lands under the Conservation and Recreation Lands Program.
- Policy V.2.4 The County's land development regulations shall require a 35-foot natural buffer around all wetlands and prohibit the location of residential, commercial and industrial land uses within the buffer areas, but allow agriculture, silviculture and resource-based recreational activities within buffer areas subject to best management practices.
- Policy V.2.5 The County shall, through the development review process, require that post-development runoff rates and pollutant loads do not exceed pre-development conditions.
- Policy V.2.6 The County's land development regulations shall require all new development to maintain the natural functions of environmentally sensitive areas, including but not limited to wetlands and 100-year floodplains so that the long term environmental integrity and economic and recreational value of these areas is maintained.

- Policy V.2.7 The County's land development regulations shall provide for the regulation of development within 100-year floodplains in order to maintain the flood-carrying and flood storage capacities of the floodplains and reduce the risk of property damage and loss of life.
- Policy V.2.8 The County's land development regulations shall provide for the conservation of wetlands through prohibiting any development or dredging and filling, which would significantly alter their natural functions and by only allowing non-intensive agricultural, aquaculture and silviculture consistent with best management practices manuals developed by the Florida Division of Forestry and the Florida Department of Agriculture.
- Policy V.2.9 The County shall support the Water Management District in their conducting of water conservation programs.
- Policy V.2.10 The County shall coordinate with the plans of the Water Management District for the emergency conservation of water sources.
- Policy V.2.14 The County's land development regulations shall require a 75-foot regulated natural buffer adjacent to all perennial rivers, streams and creeks identified as regionally significant areas within the Appendix of this Comprehensive Plan and prohibit the location of residential, commercial and industrial land uses within the buffer areas, but allow agriculture, silviculture and resource-based recreational activities within buffer areas subject to best management practices.
- Policy V.2.15 The County's land development regulations shall require a 35-foot regulated natural buffer adjacent to all other perennial rivers, streams and creeks and prohibit the location of residential, commercial and industrial land uses within the buffer areas, but allow agriculture, silviculture and resource-based recreational activities within buffer areas subject to best management practices.

OBJECTIVE V.3 The County will continue to maintain requirements within the land development regulations to require special mining permits and that such permits be coordinated with the Florida Department of Natural Resources; require that all subdivision plats be approved in a manner which will protect and conserve the natural functions of soils; and establishing a coordination process by which adjacent local governments, other governmental entities and research and interest groups have input into the identification and preservation of unique vegetative communities.

Policy V.3.2 The County shall review topographic, hydrologic and vegetative cover factors during the development review process in order to protect and conserve the natural functions of soils.

Policy V.3.3 The County shall require, during the development review process that multiple use of forest resources, where appropriate, be required to provide for timber production, recreation, wildlife habitat, watershed protection, erosion control and maintenance of water quality.

Policy V.4.5 The County shall address during the development review process the mitigation of development activities within environmentally sensitive areas, which include but are not limited to those areas identified as regionally significant areas, within the Appendix of this Comprehensive Plan to ensure that the possible impacts created by the proposed development activity will not significantly alter the natural functions of the these significant natural resources. All new development will maintain the natural functions of environmentally sensitive areas, including but not limited to wetlands and 100-year floodplains so that the long term environmental integrity and economic impact and recreation value of these areas is maintained.

Capital Improvements Element

OBJECTIVE VIII.5 The County, by 1990, shall limit expenditures for infrastructure which subsidize growth within the coastal management area as identified within this Comprehensive Plan to those public facility needs identified within the Coastal Management Element.

Policy VIII.5.2 The County shall replace or renew community facility plants damaged due to storm surge or flood only where such facility can meet minimum requirements for flood proofing.

Coastal Management Element

GOAL IX - PROTECT, CONSERVE OR ENHANCE COASTAL RESOURCES, REDUCE VULNERABILITY OF COASTAL DEVELOPMENT AND PUBLIC FACILITIES TO NATURAL HAZARDS AND ENSURE PUBLIC ACCESS TO THE SHORELINE.

OBJECTIVE IX.1 The County shall request assistance from the Florida Department of Natural Resources, Lower Suwannee National Wildlife Refuge Management Office,

and the Big Bend Aquatic Preserve Management Office to assist the County with the identification and protection of the coastal wetlands and seagrasses to ensure that there will be no net loss of the existing coastal natural resources of the County.

Policy IX.1.4 No development including residential development, shall be permitted within a coastal wetland area unless project alternatives that would avoid wetland impacts are unavailable and mitigation is provided by the applicant to offset adverse impacts. For purposes of this policy, sufficient mitigation is as required by Florida Administrative Code Rules 17-312.300 through 17-312.390. It is intended that all standards in these citation are to apply to all new development and redevelopment.

Policy IX.3.2 The County's land development regulations shall incorporate standards for the permitting of marinas which address at a minimum; land use compatibility, availability of upland support services, existing protective status or ownership, hurricane contingency planning, protection of water quality, water depth, environmental disruptions and mitigation actions, availability for public use, and economic need and feasibility.

OBJECTIVE IX.5 The County through the Procedure for Monitoring and Evaluation of the Capital Improvements Element, shall limit expenditures that subsidize development within coastal high-hazard areas, to the restoration or enhancement of natural resources.

- Policy IX.5.1 The County's coastal high hazard area shall be that area which is designated by and is coincident with the Federal Emergency Management Area Velocity Zone line.

- Policy IX.5.2 The County's land development regulations shall limit development which is vulnerable to natural hazards such as storm surge and high winds within coastal high hazard areas.

- Policy IX.5.3 The County, as part of the development review process, shall require the location of public facilities away from coastal high-hazard areas, where such public facilities have the potential for being damaged during a storm.

- OBJECTIVE IX.6 The County shall maintain the residential land use densities provided within this element of the Comprehensive Plan to assist in the limitation of undue population concentration in known or predicted coastal high-hazard areas.

- Policy IX.6.2 The County shall participate in the National Flood Insurance Program and regulate development and installation of utilities in flood hazard areas in conformance with the program's requirements for minimizing damage caused by flooding and storm surge.

- Policy IX.6.3 The County shall comply with appropriate provisions of the hazard mitigation annex of the County's peacetime emergency plan and applicable existing interagency hazard mitigation reports.

- Policy IX.6.4 The County's land development regulations shall limit residential development and resident populations within coastal high hazard areas to locations and numbers which can be safely evacuated during hurricane hazard periods.

- Policy IX.6.5 The land development regulations shall limit dwelling unit density to four units per acre in designated urban development areas within the Coastal Management Areas.

- OBJECTIVE IX.7 The County shall maintain hurricane evacuation times of 15 hours for a category 1 storm and 22 hours for a category 5 storm for the residents of the Coastal Management Area, by 1990.

- Policy IX.7.1 The County shall coordinate the procedures for notifying the public of potential dangers and appropriate preparatory measures for natural disasters, including the location of evacuation routes, with the applicable regional and local evacuation plans.
- OBJECTIVE IX.8 The County, by 1990, shall plan for post-disaster redevelopment which reduces or eliminates the exposure of human life and public and private property to natural hazards.
- Policy IX.8.1 The County's Peacetime Emergency Plan shall address immediate repair and cleanup actions needed to protect the public health and safety, including repairs to potable water, wastewater and electrical power facilities; removal of debris, stabilization or removal of structures about to collapse; and minimal repairs to make dwellings habitable before commencing with or permitting long-term repair and redevelopment activities.
- Policy IX.8.2 The County shall remove, relocate or structurally modify damaged public facilities, as appropriate, in light of factors such as cost to construct, cost to maintain, recurring damage, impacts on land use, impacts on the environment and public safety.
- Policy IX.8.3 The County's land development regulations shall require the removal, relocation or structural modification of unsafe structures, as appropriate, if rebuilt, require structures which have suffered damage to an extent of more than 70 percent of their replacement value at the time of such damage to be rebuilt in conformance with current building requirements.
- Policy IX.8.4 The County's land development regulations shall limit redevelopment in areas of repeated damage by requiring structures which suffer repeated damage to rebuild landward of their current location or to modify the structure to delete the areas most prone to damage.
- OBJECTIVE IX.10 The County's land development regulations shall include provisions for the protection, preservation or sensitive reuse of historic resources within the Coastal Management Area, by 1990.

Policy IX.10.1 The County shall maintain an inventory of historic sites to facilitate the application of standards specified within the land development regulations for maintenance of their character in the development and sensitive reuse of these historic structures.

Policy IX.11.1 The County's capital improvements budgeting process shall only schedule public facilities improvements which when constructed will be capable of serving development or redevelopment at the densities permitted by this element of the Comprehensive Plan, consistent with coastal resource protection and safe evacuation.