



Integrating Hazard Mitigation into Comprehensive Planning

Gulf 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 Gulf 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 Gulf 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 Gulf 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.

The Comprehensive Plan shows that the County is committed to providing adequate evacuation routes but additional policies can help improve evacuation times and meet Local Mitigation Strategy Goal 6. There are no policies in the LMS or the Comprehensive Plan that directly address evacuation shelters. Also, the County can promote educational programs on hazard mitigation, hurricane preparedness, better building practices, wildfire risk, and safe rooms to the public and business community. Finally, since the LMS is a strong document and a useful mitigation tool, the Comprehensive Plan should include a policy supporting the use and maintenance of the LMS.

Table of Contents

Executive Summary i

1. County Overview 1

2. Hazard Vulnerability 2

3. Existing Mitigation Measures 8

4. Comprehensive Plan Review 10

5. Recommendations 11

6. Sources 12

Attachments.....

 Attachment A: Maps of the Existing and Future Land Uses within the Coastal Hazard
 Zone and the Hurricane Vulnerability Zone A-1

 Attachment B: Maps of the Existing and Future Land Uses within the 100-year
 Floodplain..... B-1

 Attachment C: Maps of the Existing and Future Land Uses within Wildfire
 Susceptible Areas C-1

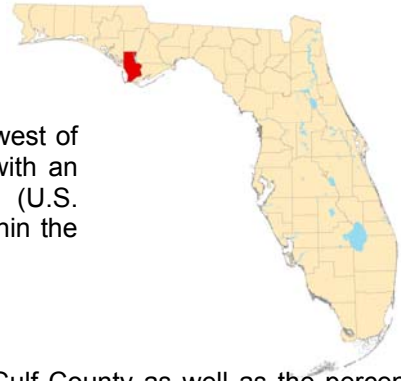
 Attachment D: Gulf County Local Mitigation Strategy Goals and Objectives D-1

 Attachment E: Gulf County Comprehensive Plan Excerpts Related to Hazard
 Mitigation E-1

1. County Overview

Geography and Jurisdictions

Gulf County is located on the Emerald Coast of Florida, just west of the Big Bend region. It covers a total of 555 square miles with an average population density of 24 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 Gulf 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 Gulf County is 16,171 people (University of Florida, Bureau of Economic and Business Research, 2004). The incorporated cities of Port St. Joe and Wewahitchka have a combined population of 5,389 residents, while 10,782 people (66.7% of the countywide population) live in the unincorporated portion of the County. Between 1990 and 2000, Gulf County as a whole had a growth rate of 26.6%, which was more than the statewide growth rate of 23.5% in those 10 years.

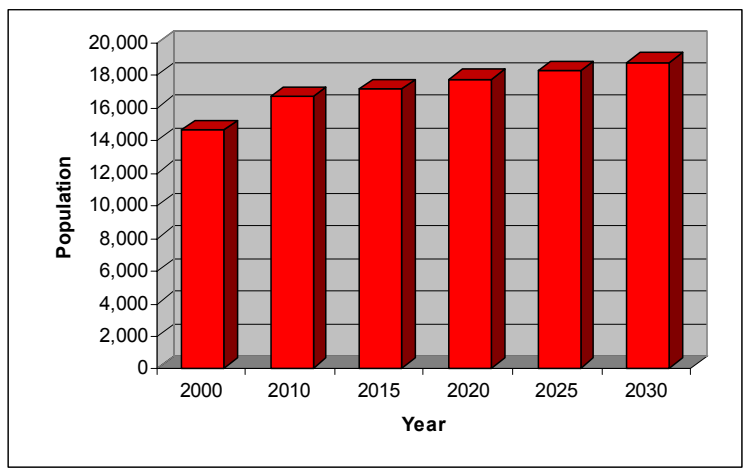
Table 1.1 Population Estimates by Jurisdiction

Jurisdiction	Population, Census 2000	Population Estimate, 2004	% Change, 2000-2004	% of Total Population (2004)
Unincorporated	9,194	10,782	17.3%	66.7%
Port St. Joe	3,644	3,661	0.5%	22.6%
Wewahitchka	1,722	1,728	0.3%	10.7%
Countywide Total	14,560	16,171	11.1%	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), Gulf County’s population is projected to grow steadily for the next 25 years, reaching 18,700 people by the year 2030. **Figure 1.1** illustrates medium population projections for Gulf County based on 2004 calculations.

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



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

Of particular concern within Gulf 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, 16.2% of Gulf County residents are listed as 65 years old or over, 20.7% are listed as having a disability, 16.7% are listed as below poverty, and 4.5% live in a home with a primary language other than English.

2. Hazard Vulnerability

Hazards Identification

The following are natural hazards that pose the highest risk for the County as identified in the County's Local Mitigation Strategy (LMS): flooding, storm surge, erosion / landslide, and wildfire. All other hazards were considered to have a moderate or low probability of occurrence.

The LMS states that in 2004, Gulf County was affected by Hurricanes Bonnie, Charlie, Frances, Ivan, and Jeanne all of which caused coastal flooding. In 1998 and 1999 the County faced wildfires that destroyed crops. No loss of life or damage of structures was reported. Also in 1998, there were several tornadoes and riverine flooding due to El Nino in the County.

The floodplains of the Apalachicola River, Chipola River, and the Dead Lakes are subject to flooding during heavy rains and tropical storms. Storm surge in a Category 3 hurricane would likely affect much of the Apalachicola River floodplain. Wildfire was identified as a high-risk threat based on the location of heavily forested rural areas in the County. Erosion is considered a high-risk priority along 4.3 miles of the County coastline including St. Joseph Peninsula, Indian Pass, and Cape San Blas.

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. The first column in the table summarizes the residents of Gulf County that live within FEMA Flood Insurance Rate Map zones that signify special flood hazard areas. According to these maps, 51.3% of the population, or 7,469 people, are within the 100-year flood zone. A majority of those at risk of flooding are either elderly and/or disabled. These special-needs citizens require extra planning by local governments to ensure their safety. Storm surge also poses a risk to 4,891 residents, or 33.6% of the county population. Almost half of the people in surge zones are disabled. Many of those people would require assistance with evacuation or shelter in the event of a storm. While wildfire is a hazard of concern

to the County, only about 12.7% of the population is within medium-high risk wildfire zones. There are no persons at risk from sinkholes.

Table 2.1 Estimated Number of Persons at Risk from Selected Hazards

Population	Flood	Sinkhole (high-adjacent risk)	Wildfire (medium-high risk)	Surge
Minority	1,520	0	67	1,086
Over 65	1,020	0	311	1,050
Disabled	2,728	0	1,178	2,306
Poverty	777	0	445	738
Language Isolated	48	0	36	63
Single Parent	389	0	139	384
Countywide Total	7,469	0	1,851	4,891

Source: Florida Department of Community Affairs, 2005a.

Evacuation and Shelters

As discussed in the previous sections, population growth in Gulf 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 Gulf County are estimated to be 7 hours for Category 1 hurricane, 9.75 hours for Category 2 and 3 hurricanes, and 10.75 hours for Category 4 and 5 hurricanes, as shown in **Table 2.2**. 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. According to Rule 9J-5, counties must maintain or reduce hurricane evacuation times. Some experts have suggested that counties should try to achieve 12 hours or less clearance time for a Category 3 hurricane. This is due to the limited amount of time between the National Hurricane Center issuing a hurricane warning and when the tropical storm-force winds make landfall. Gulf County is able to meet this recommendation for now, but with continued growth and the limited road network of the region, it will be difficult to maintain this evacuation time. Additionally, 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, further hindering evacuation progress. Thus, it is important to not only consider evacuation times for Gulf 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 Gulf 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

only 10 people in the County’s shelters, and there are 846 people that will need sheltering in the case of a Category 5 hurricane. It is projected that by 2009 the deficit will slightly increase to 894 people in need of space (FDCA, 2004). The County will need to address this deficiency but might also try to decrease the 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 Gulf County by structure type that are at risk from each of the four hazards being analyzed.

Flooding presents a large risk to property in the County, with 9,020 structures within a flood zone. A majority of those structures are single-family homes. According to the latest National Flood Insurance Program Repetitive Loss Properties list, there are 35 homes in unincorporated Gulf County that have had flood damage multiple times and received insurance payments but have not remedied the recurring problem. There also are 3,901 structures at risk from surge, as shown in **Table 2.3**. Again, a majority of those are single-family homes.

Table 2.3 also shows 2,777 structures within high to adjacent risk wildfire areas, with 50.3% of those structures being single-family homes. There are no structures at risk from sinkholes within the County. The number of structures threatened by erosion was not available from this source.

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	4,437	0	1,397	2,842
Mobile Homes	1,896	0	394	447
Multi-Family Homes	607	0	140	94
Commercial	508	0	152	304
Agriculture	979	0	595	107
Gov./Institutional	593	0	99	107
Total	9,020	0	2,777	3,901

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. Due to the very low risk of sinkholes for the County, this hazard is not analyzed in this section. 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, Florida Department of Revenue. Maps of future land uses in hazard areas were developed using the Gulf County future land use map obtained February 2005 from Gulf County.

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 is primarily east of Highway 71 along the Apalachicola River basin, along the coastline, and inland from Mexico Beach. A majority of the land in these two zones is used for agriculture or parks and conservation. Existing agricultural uses make up 59.1% of the land in the coastal hazard zone and 67.8% in the hurricane vulnerability zone (**Table 2.4**). In the coastal hazard zone, 49.4% of the currently vacant land is designated for mixed commercial/residential low density (**Table 2.5**). In the hurricane vulnerability zone, 46.9% of the vacant land is designated for agriculture in the future.

In **Attachment B**, two maps present the existing and future land uses within a 100-year flood zone. Much of the county is prone to floods. High-lying areas along the coast and in the northern portion of the County near Wewahitchka are the exception. Most of the land is currently designated agriculture comprising 75.2% of the flood zone acreage, as shown in **Table 2.4**. Unincorporated flood-prone land along the periphery of Wewahitchka and Mexico Beach currently in agriculture use is designated for residential use on the future land use map. As the County increases residential land use in flood prone areas, there may be an increase in persons and property at risk. However, 58.5% of the vacant land in flood zones is designated for agricultural use as shown in **Table 2.5**.

In **Attachment C**, maps present the land uses associated with high-risk wildfire zones. There are only a few scattered and isolated areas, totaling 4,080 acres, that are susceptible to wildfire within the County. Currently, 79.8% of these acres are in agricultural use as shown in **Table 2.4**. Of the vacant 503 acres at risk to wildfire, 62.6% are designated for future agricultural use (**Table 2.5**). This leaves the County in good shape from wildfire risk if these future land use designations are not changed.

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
Agriculture	Acres	43,125.4	101,153.8	196,708.8	3,257.9
	%	59.1	67.8	75.2	79.8
Attractions, Stadiums, Lodging	Acres	21.6	24.1	61.8	0.0
	%	0.0	0.0	0.0	0.0
Places of Worship	Acres	5.1	29.4	20.3	1.6
	%	0.0	0.0	0.0	0.0
Commercial	Acres	49.3	74.0	58.4	0.0
	%	0.1	0.0	0.0	0.0
Government, Institutional, Hospitals, Education	Acres	958.8	1,797.7	1,659.3	5.3
	%	1.3	1.2	0.6	0.1
Industrial	Acres	22.5	48.8	47.3	0.7
	%	0.0	0.0	0.0	0.0
Parks, Conservation Areas, Golf Courses	Acres	23,638.8	33,282.3	44,742.5	197.1
	%	32.4	22.3	17.1	4.8
Residential Group Quarters, Nursing Homes	Acres	0.0	2.7	0.0	0.0
	%	0.0	0.0	0.0	0.0
Residential Multi-Family	Acres	57.5	102.1	106.1	7.1
	%	0.1	0.1	0.0	0.2
Residential Mobile Home, or Commercial Parking Lot	Acres	78.5	611.1	1,101.3	29.7
	%	0.1	0.4	0.4	0.7
Residential Single-Family	Acres	810.8	1,949.1	2,302.6	55.7
	%	1.1	1.3	0.9	1.4
Submerged Lands (Water Bodies)	Acres	43.9	42.4	42.4	0.0
	%	0.1	0.0	0.0	0.0
Transportation, Communication, Rights-of-Way	Acres	29.9	31.4	99.0	0.0
	%	0.0	0.0	0.0	0.0
Utility Plants and Lines, Solid Waste Disposal	Acres	353.3	629.6	1,202.3	21.8
	%	0.5	0.4	0.5	0.5
Vacant	Acres	3,731.6	9,476.5	13,487.7	503.2
	%	5.1	6.3	5.2	12.3
Total Acres	Acres	72,927.0	149,255.0	261,639.8	4,080.1
	%	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	
		Total	Undev.	Total	Undev.	Total	Undev.	Total	Undev.
Agriculture	Acres	43,539.3	750.4	105,534.4	4,441.0	205,183.7	7,895.1	3,502.5	314.8
	%	59.7	20.1	70.7	46.9	78.4	58.5	85.8	62.6
Conservation	Acres	23,242.7	466.1	31,937.6	916.9	42,252.1	1,097.3	137.5	7.6
	%	31.9	12.5	21.4	9.7	16.1	8.1	3.4	1.5
Industrial	Acres	39.7	13.6	75.8	18.3	88.9	40.1	1.3	0.7
	%	0.1	0.4	0.1	0.2	0.0	0.3	0.0	0.1
Mixed Commercial/ Residential Low Density (MCR)	Acres	3,234.7	1,843.2	5,949.8	2,546.8	4,192.9	1,772.5	198.0	96.8
	%	4.4	49.4	4.0	26.9	1.6	13.1	4.9	19.2
Public	Acres	793.9	17.2	900.2	18.9	1,052.2	12.5	0.7	0.0
	%	1.1	0.5	0.6	0.2	0.4	0.1	0.0	0.0
Recreation	Acres	675.3	87.4	733.0	89.6	641.8	77.4	0.4	0.0
	%	0.9	2.3	0.5	0.9	0.2	0.6	0.0	0.0
Residential	Acres	1,401.6	553.8	4,124.2	1,445.0	8,161.7	2,592.9	239.7	83.4
	%	1.9	14.8	2.8	15.2	3.1	19.2	5.9	16.6
Water	Acres	0.0	0.0	0.0	0.0	66.2	0.0	0.0	0.0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	Acres	72,927.1	3,731.6	149,255.0	9,476.5	261,639.6	13,487.7	4,080.1	503.2
	%	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 Gulf County’s incorporated areas and how many of those acres are currently undeveloped. Port St. Joe is subject to all of the hazards analyzed in this table, while Wewahitchka is only at risk from flooding and wildfire. Port St. Joe has 421 acres within the coastal hazard zone, but 52.1% of these acres at risk are not yet developed, giving the City an opportunity to limit development in this area. The City is entirely within the hurricane vulnerability zone. It is also prone to flooding, containing 553 acres in the 100-year floodplain, 51.5% of which are currently vacant. Wewahitchka has 2,153 acres of land in flood zones but only 18.8% is currently vacant. Both Port St. Joe and Wewahitchka have very few acres at risk from wildfire.

Table 2.6 Total and Vacant Incorporated Acres in Hazard Areas

Jurisdiction		Coastal Hazard Zone		Hurricane Vulnerability Zone		Flood Zones		Wildfire Susceptible Areas	
		Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant
Port St. Joe	Acres	420.7	219.1	426.5	219.6	552.6	298.9	5.8	3.1
	%	100.0	52.1	100.0	51.5	20.4	54.1	12.2	53.4
Wewahitchka	Acres	0.0	0.0	0.0	0.0	2,153.1	404.2	41.9	5.1
	%	0.0	0.0	0.0	0.0	79.6	18.8	87.8	12.2
Total Acres	Acres	420.7	219.1	426.5	219.6	2,705.7	703.1	47.7	8.2
	%	100.0	52.1	100.0	51.5	100.0	26.0	100.0	17.2

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, LMSs 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 Gulf 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 was briefly reviewed for its ability to provide hazard data that can support comprehensive planning. The LMS uses detailed data on structures at risk for all of the major hazards discussed in this profile. The LMS identifies flooding, storm surge, wildfire, and erosion as the high probability natural disasters for the County. It also discusses populations at risk and projects the amount of property loss that could occur from each hazard and at different categories. The maps in the LMS show the hazard areas and incorporate this with population centers. Incorporating land use and population data into the risk assessment of the LMS provides a better source of data for planners to use in policy making and policy evaluation of the

local Comprehensive Plan. The LMS also includes a list of mitigation projects that can be used to guide capital improvement projects. (Gulf County. 2004)

Guiding Principles

The Guiding Principles section of the LMS includes a matrix of the LMS goals and objectives found in other plans including the Comprehensive Plan and the Gulf County Flood Plain Ordinance. This component is found in most counties' LMS and is useful in providing the different jurisdictions ideas for enhancing their own plans or providing the LMS committee an analysis of where there may be weaknesses in implementing mitigation strategies. This section of the LMS also includes tables showing Federal, State, Regional and Local organizations and the mitigation functions of each. (Gulf County. 2004)

LMS Goals and Objectives

The LMS Goals and Objectives can be found in **Attachment D**. 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 Gulf LMS included goals that related to broad mitigation needs and capabilities of the County and its communities rather than addressing a specific hazard type. Fourteen goals are far-reaching in nature and call for the exercise of police powers to provide a hazard mitigation strategy for the community. There are goals that support hazard mitigation through cooperation with other governmental agencies, policies, and regulations. Many goals aim to protect residents and visitors, property, institutions, places of employment, infrastructure, as well as scenic, historic, recreational and community resources. There is also a goal to limit public expenditures in hazard areas.

Comprehensive Emergency Management Plan

The Mitigation Annex of the Gulf County CEMP was reviewed for consistency with the other plans and evaluated in its effectiveness as a tool for planners. The Annex summarizes the responsibilities of hazard mitigation, response, and recovery among the different agencies and departments within the County. The Emergency Management Director acts as the Executive Coordinator for Emergency Preparedness and Emergency Management as well as Chairman of the Local Mitigation Strategy Committee. The County relies on local departments, boards, agencies to deliver services in the case of an emergency. The CEMP does provide a concept of rescue and recovery operations as well as mitigation responsibilities and goals.

Post-Disaster Redevelopment Plan

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

Gulf County, Port St. Joe, and Wewahitchka all participate in the National Flood Insurance Program. The County also participates in the Community Rating System and currently has a class 9 status.

4. Comprehensive Plan Review

Gulf County's Comprehensive Plan (adopted in ?) 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 E**. 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

Gulf County's Comprehensive Plan has many policies considered to be best management practices for mitigating hurricane and coastal surge impacts. The Coastal Management Element promotes cooperation with FEMA, Bay County and Franklin County to mitigate coastal hazards. Policies require Land Development Regulations and development to be in accordance with FEMA and State guidelines. There are policies that also limit high-intensity development and assisted-living facilities in the Coastal High Hazard Area (CHHA) as well as limit public expenditures on infrastructure and public subsidies of private development. The County also has an objective to maintain or reduce hurricane evacuation times and a policy to alleviate transportation constraints on evacuation routes. It also has a policy that requires a prioritized list of road improvements necessary for hurricane evacuation routes. The lack of evacuation shelters in the County is not addressed in the plan. There are many policies that aim to protect coastal resources including beaches and dunes. Policies also provide development regulations that mitigate flooding and erosion hazards.

Flooding Hazards

There are many policies that address flooding in the County. Land Development Regulations are used as a mechanism to regulate development in or near flood prone areas. Future land use policies protect natural drainage functions and wetlands. The County also designates flood prone areas as open space to limit development. FEMA set-back standards and guidelines are enforced within the coastal floodplains. The County also enforces the Gulf County Flood Damage Prevention Ordinance for structures that are damaged by floods and are rebuilt.

Wildfire Hazards

There are no policies in the Comprehensive Plan that related to wildfire hazards. There is a policy that aims to conserve fresh water supplies that indirectly relates to having sufficient water to put out a wildfire.

Sinkhole Hazards

Sinkhole hazards are not addressed in the Comprehensive Plan. There are policies that take soils and geological formations into account when reviewing proposed development.

Other Hazard Mitigation Policies

There were many policies that referenced the County's post-disaster redevelopment plan. Policies also limit redevelopment in areas that have experienced repeated coastal storm damage as well as limit expenditures in such areas. Cultural and historic resources are addressed in several policies.

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.

Gulf 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 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. **Table 5.1**, which will be included in the final draft of this profile, will present options for further integration as well as the basis for these recommendations in a matrix format.

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.

RECOMMENDATIONS:

- Support the Gulf County Local Mitigation Strategy in the Comprehensive Plan and consult it to identify hazard mitigation initiatives.
- Prioritize capital improvement projects that protect natural resources or reduce loss of life and property from natural disasters.
- Promote educational programs that provide the public and business community information on wildfire mitigation, flood zone locations, safe rooms, hurricane preparedness, evacuation routes, and better building practices.
- Create a Hurricane Evacuation Clearance Time Level of Service and continue to work with neighboring counties to ensure safe evacuation clearance times.
- Coordinate coastal populations and tourist populations with the regional evacuation plan.
- Create an Emergency Shelter Capacity Level of Service and continue to work with neighboring counties and the regional planning council to address shelter needs.
- Promote safe room construction in new structures outside the flood and surge zones.
- Require elevations for structures in surge zones to be higher than the base flood elevation.

- Direct population concentrations away from the CHHA.
- Limit density in the CHHA.
- Ensure the County continues involvement in the National Flood Insurance Program.
- In areas with potential high erosion, require subdivisions to occur in a linear orientation from the water body to the road in order to allow adequate setbacks.
- Provide Firewise educational materials to public.
- Promote county residential communities, Apalachicola, and Carrabelle to become Firewise USA Communities.
- Require firewise neighborhood design as condition of approval for subdivision or PUD in risk areas.

6. Sources

Gulf County. Date unknown. *Gulf County Comprehensive Plan*.

Gulf County. 2004. *Local Mitigation Strategy*.

Gulf County. Date unknown. *Comprehensive Emergency Management Plan*.

Florida Department of Community Affairs. 2004. *Statewide Emergency Shelter Plan*. Tallahassee, FL.

Florida Department of Community Affairs. 2005a. *Mapping for Emergency Management, Parallel Hazard Information System*. Tallahassee, FL.
<http://lmsmaps.methaz.org/lmsmaps/index.html>.

Florida Department of Community Affairs. 2005b. *Protecting Florida's Communities: Land Use Planning Strategies and Best Development Practices for Minimizing Vulnerability to Flooding and Coastal Storms*. Tallahassee, FL.

State of Florida. 2005. Hurricane Evacuation Study Database. Florida Department of Community Affairs, Division of Emergency Management.

University of Florida, Bureau of Economic and Business Research. 2004. *Florida Statistical Abstract*. Gainesville, FL.

U.S. Census Bureau. 2000. *State & County Quickfacts*. Retrieved in 2005 from <http://quickfacts.census.gov/qfd/index.html>.

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

Gulf County Local Mitigation Strategy Goals

1. Protect the health, safety, and welfare of the community's residents and visitors from disasters.
2. Support effective hazard mitigation programming throughout the community with local government policies and regulations.
3. Local government will have the non-delegable duty to develop, implement, and maintain effective mitigation programs.
4. Minimize property damage to homes, institutions, and places of employment in the community.
5. Maintain the condition of coastal and riverine environmental systems, especially those that provide natural protection and have economic value.
6. Maintain the availability and functioning of the community's infrastructure during a disaster.
7. Seek preventative measures that would reduce loss and the need for response and recovery measures.
8. Promote the economic vitality of the community.
9. Protect scenic, historical, and recreational community resources.
10. Promote community awareness of local hazards and the techniques to minimize vulnerability to those hazards.
11. Coordinate with other government agencies to enhance regional mitigation efforts.
12. Minimize government expenditures for public goods and services.
13. Maintain continuity of local government operations after disasters.
14. Maintain emergency response readiness.

Attachment E

**Gulf County Comprehensive Plan Excerpts
Related to Hazard Mitigation**

Future Land Use Element

- POLICY 1.1.4:** Gulf County shall require that the owner of any development project shall be responsible for the provision of adequate drainage and stormwater controls in compliance with County and State stormwater management regulations.
- POLICY 1.1.5:** During review of proposed site development plans, Gulf County shall require that continued maintenance of stormwater and drainage facilities be included as part of the proposed land development plan.
- POLICY 1.4.4:** Land Development Regulations to be adopted by January, 1991, will regulate areas subject to seasonal and periodic flooding and provide for drainage and stormwater management
- POLICY 1.4.7:** By 1995, the Board of County Commissioners shall, by resolution, identify open space areas within the County. These shall include rights-of-way along traffic corridors, undeveloped flood-prone areas, and non-use areas in public parks.

Objective 1.1: Within one year of the Comprehensive Plan’s submission due date, the County will adopt and enforce Land Development Regulations in the form of a unified development code that requires land development to be compatible with topography, natural resources, soil conditions, and the availability of facilities and services.

- POLICY 1.1.2:** Soil and slope information from the USDA Soil Conservation Service shall be investigated for compatibility of proposed land use with existing soils and slopes before a construction permit is granted by the County.
- POLICY 1.1.9:** To promote the protection of surface water resources, the following principles will be incorporated into the County’s Land Development Regulations, to be adopted by January, 1991:
 - 1) encourage infill development;
 - 2) require the use of Best Management Practices for agriculture and sivalculture;

- 3) require the use of vegetated buffer zones adjacent to surface waters.

POLICY 1.1.10: To promote the protection of wetlands, the following principles will be incorporated into the County’s Land Development Regulations, to be adopted by January, 1991:

- 1. provide innovative land development opportunities to cluster higher density development in areas that would have the least impact on wetlands, such as upland areas and existing developed areas (determinations would be made on a site-specific basis);
- 2. establish minimum distances for buffering wetlands from new development;
- 3. establish minimum setback distances for buffering wetlands from septic tank systems;
- 4. require that land uses adjacent to wetlands be of low density; and
- 5. establish minimum buffering requirements for land uses with potential for hazardous waste contamination.

Objective 1.2: Gulf County shall promote the redevelopment and renewal of blighted areas within the County by continuing to provide funding at or above existing levels for infrastructure improvements, housing rehabilitation, and related programs.

Objective 1.4: Gulf County shall protect and restore natural and historic resources by implementing Policies 1.4.1 through 1.4.10 and continuing to enforce existing regulations.

POLICY 1.4.5: When adopted, Gulf County’s Land Development Regulations shall provide for the protection of environmentally sensitive areas as specified in Policy 1.4.6.

POLICY 1.4.6: Gulf County hereby adopts the United States Geologic Survey 7.5 minute quadrangle maps as the County’s wetlands maps and the Federal Emergency Management Agency maps as the County’s floodplain maps. Wetlands and floodplains as identified on these maps shall be considered environmentally sensitive areas.

POLICY 1.4.7: By 1995, the Board of County Commissioners shall, by resolution, identify open space areas within the County. These shall include rights-of-way along traffic corridors, undeveloped flood-prone areas, and non-use areas in public parks.

- POLICY 1.4.9:** Gulf County will continue to cooperate with the Florida Division of Historical Resources, in the identification of historic and archaeological resources in the County.
- POLICY 1.4.10:** Gulf County will adopt, as part of a Unified Development Code, standards and guidelines for the preservation or adaptive reuse of historic resources.
- POLICY 1.9.4:** Gulf County will not permit school siting in flood zone or velocity hazard areas to meet hazard mitigation and shelter management criteria.
- POLICY 1.9.8:** Gulf County will work with school boards to insure that impacts on wetlands and other environmental concerns such as drainage are minimized.

Infrastructure Element

- POLICY 1.4.1:** Gulf County will coordinate with the Northwest Florida Water Management District to establish water conservation strategies and techniques designed to preclude emergency water shortage
- POLICY 1.4.2:** By 1995, Gulf County will adopt procedures for emergency water conservation considering the plans of the Northwest Florida Water Management District.
- POLICY 1.5.2:** The alteration of natural drainage features will be prohibited unless no reasonable development alternatives exist and adequate man-made drainage facilities are installed.

Coastal Management Element

Objective 1.1: The coastal resources of Gulf County, including wetlands, living marine resources, coastal barriers, and wildlife habitats, shall be protected, conserved, or enhanced through the implementation of land development regulations to be adopted by January 1, 1991, and by implementing Policies 1.1.1 through 1.1.10.

- POLICY 1.1.4:** By 1995, Gulf County will explore alternatives for the restoration or enhancement of disturbed or degraded coastal resources; develop and maintain a prioritized inventory of restoration or enhancement needs; and identify potential implementation procedures.
- POLICY 1.1.5:** By 1995, Gulf County will initiate a program of community awareness to prevent future disruptions and degradations of coastal resources.

- POLICY 1.1.6:** Gulf County Land Development Regulations, to be adopted by January 1, 1991, will consider the established Coastal Construction Control Line in establishing shoreline development guidelines.
- POLICY 1.1.9:** Gulf County land development regulations will be consistent with FEMA- based and State set back line standards
- POLICY 1.3.4:** Permit applications for marinas shall include evidence of land use compatibility, availability of upland support services, existing protective status or ownership, a hurricane contingency plan, protection of water quality, water depth, environmental disruptions and mitigation actions, availability for public use, and economic need and feasibility.

Objective 1.4: By 1993, Gulf County shall protect beach and dune systems by preparing, adopting and enforcing construction standards which minimize the impacts of development on these systems and establishes a shoreline restoration policy.

- POLICY 1.4.1:** The County will establish, adopt and enforce building code requirements to eliminate unsafe conditions in the coastal area.
- POLICY 1.4.2:** Development within coastal floodplains shall be in accordance with Federal Emergency Management Agency guidelines to reduce exposure to hazards.
- POLICY 1.4.3:** The alteration of beaches and primary dunes will be prohibited unless a prior determination has been made by the Board of County Commissioners that no reasonable alternatives exist, that adequate mitigation measures are taken and that the project is necessary to protect the health, safety, and general welfare of the citizens of Gulf County.
- POLICY 1.4.4:** New sanitary sewer facilities in the hurricane vulnerability zones shall not be issued a permit unless approval is given by the County Health Department that the facility can withstand hurricane impacts in accordance with Federal Emergency Management Agency regulations.
- POLICY 1.5.1:** Land Development regulations will require that all new Gulf front development and major re-development include dune walkover structures to provide beach access and dune protection.

Objective 1.6: Gulf County will adopt Land Development Regulations by January 1, 1991, which encourage the protection, preservation, or sensitive reuse of historic resources.

- POLICY 1.6.1:** Gulf County will continue to cooperate with the Florida Department of State, Division of Historical Resources, in the identification of historic and archaeological resources in the County.
- POLICY 1.6.2:** Sensitive reuse of historic resources will be given preference in permitting decisions over activities that would damage or destroy the resource.
- POLICY 1.6.3:** Gulf County will adopt, as part of a Unified Development Code, standards and guidelines for the preservation or adaptive reuse of historic resources.

Objective 1.8: Gulf County will coordinate coastal resource protection with adjacent local governments by implementing Policy 1.8.1.

- POLICY 1.8.1:** By 1995, Gulf County will have organized and participated in at least one working meeting with Bay and Franklin Counties to review pertinent development regulations and Comprehensive Plan goals, objectives, and policies for the purpose of ensuring consistency with regard to siting water-dependent uses, preventing estuarine pollution, controlling surface water runoff, protecting living marine resources, reducing exposure to natural hazards, and ensuring public access.

GOAL 2: To protect human life and limit public expenditures in areas subject to destruction by natural disasters

Objective 2.1: Gulf County shall adopt land development regulations by January 1, 1991, which limits high intensity development in the Coastal High Hazard Area to necessary water-dependent uses.

- POLICY 2.1.1:** “Coastal High Hazard Areas” (also “high-hazard coastal areas”) means the evacuation zone for a Category 1 hurricane as established in the regional hurricane evacuation study applicable to the local government. *(adopted 9/12/2000)*

- POLICY 2.1.2:** The County will adopt land development regulations that limit high intensity development in the CHHA except for water-dependent and water-related industrial and commercial uses.

Objective 2.2: County expenditures that subsidize development permitted in the Coastal High Hazard Area subsequent to the adoption of the Comprehensive Plan shall be limited to those developments that can provide evidence of natural disaster mitigation planning and design of those activities which restore or enhance natural resources or vital public services/facilities.

- POLICY 2.2.1:** County expenditures for infrastructure improvements in the Coastal High Hazard Area will be limited to those

necessary to protect human health safety or those necessary to protect environmental quality.

POLICY 2.2.2: Public expenditures for subsidization of private development on barrier islands, beach and dune systems, or flood prone areas shall be limited to those developments which can furnish evidence that natural resources will not be unwarrantably damaged and that the development is designed to withstand coastal storms of Category 1-3 hurricane intensity.

Objective 2.3: Gulf County will maintain or reduce hurricane evacuation times, as identified in the current Peacetime Emergency Plan, by implementing Policies 2.3.1 through 2.3.5.

POLICY 2.3.1: Gulf County will coordinate with the State Department of Transportation to alleviate transportation constraints on hurricane evacuation on SR 71 at Wewahitchka.

POLICY 2.3.2: By 1995, the County shall develop a prioritized list of road improvements necessary to alleviate transportation constraints on hurricane evacuations routes.

POLICY 2.3.3: The Gulf County Peacetime Emergency Plan will be reviewed and updated annually by the Gulf County Civil Defense Office.

POLICY 2.3.4: Gulf County will adopt land development regulations which limit the siting of group homes, nursing homes, or other uses which have special evacuation requirements in the Coastal High Hazard Area.

Objective 2.4: By 1992, Gulf County will develop post-disaster redevelopment plan which will identify guidelines for dealing with the aftermath of disasters. The main objective of this post-disaster redevelopment plan will be to reduce the future exposure of human life and public and private property to natural hazards.

POLICY 2.4.1: The County's post-disaster redevelopment plan will distinguish between immediate repair and cleanup actions needed to protect public health and safety and long-term repair and redevelopment activities.

POLICY 2.4.3: Immediate recovery actions needed to protect the public health and safety shall take priority in permitting decisions following hurricane storm events.

POLICY 2.4.4: If rebuilt, structures which suffer substantial damage as defined in the Gulf County Flood Damage Prevention Ordinance shall be rebuilt in accordance with the requirements of that ordinance.

POLICY 2.4.5: The County will adopt land development regulations which include provisions for phasing out inappropriate coastal land uses as part of economic redevelopment and post-disaster redevelopment activities.

- POLICY 2.4.6:** The County Civil Defense Department will maintain an inventory of areas which have experienced repeated damage in coastal storms.
- POLICY 2.4.7:** Gulf County will limit public expenditures in areas that have received repeated damage in coastal storms except for those expenditures necessary to protect human health and safety or to protect natural resources.
- POLICY 2.4.8:** The County will identify redevelopment opportunities and prepare a redevelopment plan for the Highland View and Oak Grove communities in conjunction with post disaster redevelopment activities.
- POLICY 2.4.9:** By 1993, Gulf County will identify areas which have experienced repeated coastal storm damage and will identify and adopt by Plan amendment, measures to limit redevelopment in such areas.

Conservation Element

GOAL 1: Protect, manage, and conserve the natural resources of Gulf County to ensure their continued best use for the current and future citizens of the County.

POLICY 1.2.3: By 1995, Gulf County will adopt procedures for emergency water conservation considering the plans of the Northwest Florida Water Management District.

Objective 1.3: Gulf County will conserve, appropriately use, and protect its natural resources, including fisheries, wildlife, wildlife habitat, marine habitat, minerals, soils, and native vegetative communities by implementing Policies 1.3.1 through 1.3.11.

POLICY 1.3.1: Gulf County Land Development Regulations will identify measures to be taken to protect native vegetative communities from destruction by development activities. These regulations will specifically address the protection of native vegetation in erosion sensitive locations in the coastal area.

POLICY 1.3.3: Through the implementation of Land Development Regulations (to be adopted by January 1, 1991) and the required compliance with Federal, State and Regional regulatory programs, Gulf County will ensure that the natural functions of the County's natural resources are not degraded.

POLICY 1.3.6: Gulf County will develop and maintain an Environmentally Sensitive Lands Inventory by 1995 to include land areas identified as wetlands on the U.S.G.S. 7.5 Minute Quadrangle Maps and land areas identified as A and V Zones on the FEMA Flood Insurance Rate Maps for Gulf County.

POLICY 1.3.7: Gulf County Land Development Regulations, to be adopted by January 1, 1991 will include specific requirements for the protection for environmentally sensitive lands such as those principles outlined for wetlands protection in Future Land Use Policy 1.1.10.

POLICY 1.3.11: Gulf County will seek grants and other sources of funding to acquire and manage lands to ensure public access to beaches, open space and other natural areas and to mitigate potential hazards

Recreation and Open Space Element

POLICY 4.1: In the County's Land Development Regulations, to be adopted by January 1, 1991, specific open space definitions and standards will be adopted which will address, at a minimum, the use of open space for buffer zones, the protection of natural resources, scenic vistas, and landscaping.