

Executive Summary

The experiences of the 2004 Hurricane Season epitomize the importance of better integrating hazard mitigation activities into local comprehensive planning. Residents from all over the state experienced significant damages from Hurricanes Charley, Frances, Jeanne, and Ivan by either winds, tornadoes, surge, or flooding. But this was not the only time that we have experienced natural disaster, 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 fire fighters best efforts, the 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 profile of Bradford County has been prepared as part of a statewide effort by the Florida Department of Community Affairs (DCA) to guide local governments on integrating hazard mitigation principles into local comprehensive plans. Through the process outlined in this profile, planners will be able to (1) convey Bradford 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 better be integrated into the Comprehensive Plan; and (4) determine if any enhancements could be made to the LMS to better support comprehensive planning. Best available statewide level data is provided to convey exposure and risk as well as to illustrate the vulnerability assessment component of the integration process.

Summary of Recommendations

Bradford County's Comprehensive Plan has good integration of hazard mitigation principles and its LMS has adequate data and goals to support comprehensive planning. There are goals, objectives, and policies that support risk reduction from floods in the LMS and Comprehensive Plan. However, there are always ways to strengthen such plans, and the following is a summary of options for the County to do so.

Comprehensive Plan Preliminary Recommendations

The following recommendations include hazard mitigation measures in which Bradford County can continue to reduce or eliminate risks from flood, wildfire, and sinkholes. These recommendations pertain to the use of vacant lands and/or redevelopment practices. Based on the land use tabulations, most of the vacant acreage is susceptible to wildfire and sinkholes. Land use tabulations were not provided for flood as the flood zones are not available in shapefile format. However, flood is considered a high risk according the Bradford County LMS. Sinkholes were discussed in the LMS, but the risk was considered to be very low for the entire county. The Comprehensive Plan addresses stormwater discharge into sinkholes in Bradford County, therefore preliminary recommendations are also provided for this hazard. For more information about the methodology and data used for the land use tabulations, please refer to Section 2. Hazard Vulnerability in this hazards profile.

Of the vacant lands, 555 acres are susceptible to wildfire and 38 acres are susceptible to sinkholes.

Flood

The georeferenced data was not available to determine the acreage susceptible to flooding, however the LMS deemed flood to be a high risk. Therefore recommendations are included for this hazard.

- The Comprehensive Plan should continue to include policies pertaining to the Suwannee River System 100-Year Floodplain Special Planning Area.
- The County should continue to give priority to those projects listed on the LMS project list.
- The County should continue policies pertaining to the preparation of a stormwater master plan to further mitigate the impacts of flooding in the community. This should be listed as a prioritized project on their LMS project list for possible funding sources such as FEMA's Hazard Mitigation Grant Program.
- The Comprehensive Plan should continue the implementation of policies for preserving and enhancing the natural environment (i.e., 100-year floodplain) through the enforcement of land development regulations for floodplain management and stormwater management to maintain the natural functions.
- The Comprehensive Plan should continue to require that the County maintain an inventory of environmentally sensitive areas which shall include 100-year floodplains.
- The County should continue to identify floodplains for acquisition under existing programs.
- The County should continue to adopt or amend land development regulations, which limit the density of dwelling units within FEMA designated 100-year floodplains such that existing flood storage is maintained and allowable densities do not create potential flood hazards, or degrade the natural functions of the floodplain.
- The County should continue to require that all structures built in the 100-year floodplain include at least one foot freeboard.
- The Comprehensive Plan should consider prohibiting septic tanks in flood hazard areas or wetlands.
- The County should consider including a policy to not approve variances to required flood elevations.
- The County should consider establishing an impact fee and/or other equitable user-oriented revenue sources for the construction of drainage facilities, either county-wide or in districts of high flooding potential.
- The County should consider requiring areas that have not established base flood elevations to be studied prior to development.
- The County should consider calling for compensating storage calculations in flood hazard areas.

Wildfire

About 35% of the 555 vacant acres that are susceptible to wildfire are to be developed for residential, commercial, industrial uses or public facilities, indicating that these risk reduction strategies should be considered prior to development of this vacant land.

- Where reasonable, the County should consider creating a policy in the Comprehensive Plan to update the Land Development Regulations for the County to include wildfire mitigation principles, such as defensible space buffering surrounding

development or multiple exits for large development. This could also include provisions for vegetation maintenance and the required removal of exotic vegetation or land cover that could be conducive to wildfire.

- The County should consider including policies for coordination with area volunteer fire departments to ensure fire protection is provided to all areas of the County.
- The County should consider participating in the Firewise Medal Community program to reduce risks within the wildland urban interface.
- The County should consider a requirement for all new development to include and implement a wildfire mitigation plan specific to that development, subject to review and approval by the County Fire Rescue Department.
- The County should consider increasing public awareness of prescribed burning and require management plans for conservation easements that address reduction in wildfire fuels.

Sinkholes

The LMS has deemed sinkhole hazard to be low risk. However the Comprehensive Plan contains sinkhole goals, objectives, and policies, so recommendations have been provided for this hazard. About 100% of the 38 vacant acres that are susceptible to sinkholes are to be developed for residential, commercial, industrial uses or public facilities, indicating that these risk reduction strategies should be considered prior to development of this vacant land.

- The County should continue to include policies in the Comprehensive Plan that designate sinkholes as environmentally sensitive areas that are protected through land development regulations.
- The County should consider promoting PDR and TDR in areas highly susceptible to sinkholes.
- Through the Comprehensive Plan and/or the overlay zones, promote the use of cluster development to mitigate sinkhole hazards. In this way, the areas highly susceptible to sinkholes could be preserved as open space, while allowing other areas to be developed at a higher density.

General

- Current growth management techniques such as clustering, conservation of floodplains and wetlands, elevating structures in special flood hazard areas and stormwater mitigation policies are employed by the community to protect natural features and to protect areas from flooding. Therefore, the County should update these policies in the Comprehensive Plan, emphasizing the benefits of hazard mitigation.
- The County should determine whether or not the conserved areas in the County have lifetime designations. In North Florida, some areas that were formally designated as uses with low densities are being slated for rural and urban development. It is important to determine if and when, all of the conservation agreements end, in order to determine if additional actions can be taken in the Comprehensive Plan to ensure that the property is protected.
- The Comprehensive Plan should consider including a policy to incorporate recommendations from existing and future interagency hazard mitigation reports into the Comprehensive Plan, and should consider including these recommendations

during the Evaluation and Appraisal Report process as determined feasible and appropriate by the Board of County Commissioners.

- Include each hazard layer on the existing and future land use maps to determine where risks are possible to target hazard mitigation strategies.
- The Comprehensive Plan should consider including a policy to incorporate applicable provisions of the Comprehensive Plan into the Comprehensive Emergency Management Plan and the Local Mitigation Strategy.
- Continue educating the public, especially those at high risk from floods and wildfires, and make them aware of proactive steps they can take to mitigate damage.

Local Mitigation Strategy Preliminary Recommendations

The following data and information could be included in an update of the LMS. This information could help convey how and where disasters impact the population and the built environment to support comprehensive planning.

- Include hazard maps with data layers to illustrate population (i.e., density) or property (i.e., value) exposure.
- Include a future land use map with hazard data layers (i.e., one FLUM per hazard) to illustrate which future land use categories are susceptible to each hazard.
- Include loss estimates by land use.
- Reference or include a list and/or map of repetitive loss properties.
- Include a quantitative risk assessment for existing and future development (i.e., loss estimates) or specific critical facilities.

Table of Contents

1. County Overview	1
2. Hazard Vulnerability.....	2
3. Existing Mitigation Measures.....	8
4. Comprehensive Plan Review.....	11
5. Data Sources	14
Attachments.....	A-1

1. County Overview

Geography and Jurisdictions

Bradford County is located in the north-central portion of the Florida peninsula. It covers a total of 300 square miles, of which approximately 293 square miles are land and seven square miles are water. There are four incorporated municipalities within Bradford County, as shown in **Table 1.1**. Starke serves as the county seat.



Population and Demographics

According to the April 1, 2004 population estimate by the University of Florida's Bureau of Economic and Business Research (BEBR), population estimates for all jurisdictions within Bradford County and the percent change from the 2000 U.S. Census are presented in **Table 1.1**. While some residents live in incorporated jurisdictions, nearly 75% live in the county's unincorporated areas. Bradford County has experienced significant population growth in recent years, a trend that is expected to continue. Between 1990 and 2000, Bradford County had a growth rate of 15.9%, which is lower than the statewide average of 23.5% for the same time period.

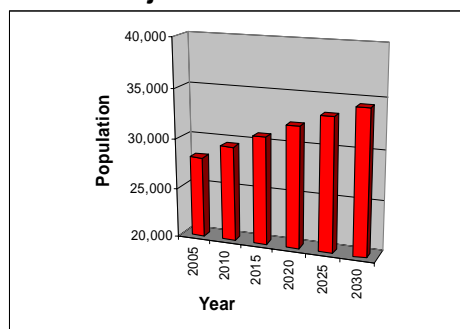
Table 1.1 Population Estimates by Jurisdiction

Jurisdiction	Population (Census 2000)	Population (Estimate 2004)	Percent Change 2000-2004	Percent of Total Population (2004)
Unincorporated	19,056	20,706	8.66%	74.64%
Brooker	352	321	-8.81%	1.16%
Hampton	431	445	3.25%	1.60%
Lawtey	656	686	4.57%	2.47%
Starke	5,593	5,582	-0.20%	20.12%
Total	26,088	27,740	6.33%	100.00%

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

According to BEBR (2004), Bradford County's population is projected to grow steadily and reach an estimated 34,400 by the year 2030, increasing the average population density of 89 to 117 persons per square mile. **Figure 1.1** illustrates medium growth population projections for Bradford County based on 2004 calculations.

Figure 1.1 Population Projections for Bradford County, 2005–2030



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

Of particular concern within Bradford County's population are those persons with special needs or perhaps limited resources such as the elderly, disabled, low-income or language isolated

residents. According to the 2000 Census, of the 26,088 persons residing in Bradford County 12.9% are listed as 65 years old or over, 25.6% are listed as having a disability, 14.6% are listed as below poverty, and 4.6% live in a home where the primary language is other than English.

2. Hazard Vulnerability

Hazards Identification

The highest risk hazards for Bradford County as identified in the County's Local Mitigation Strategy (LMS) are tropical cyclone generated high winds, flooding, wildfires, and tornadoes. Sinkholes were discussed in the LMS, but the risk was considered to be very low for the entire county. Storm surge was discussed in the LMS, but the county is not considered to be at risk to this hazard due to its inland location.

Hazards Analysis

The following analysis examines three hazard types: flood, wildfire and sinkholes. All of the information in this section 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 DMA 2K Project, and was created by Kinetic Analysis Corporation (KAC) under contract with the Florida Department of Community Affairs (DCA). Estimated exposure values were determined using FEMA's designated 100-year flood zones (A, AE, V, VE, AO, 100 IC, IN, AH) for flood; all medium-to-high risk zones from MEMPHIS for wildfire (Level 5 through Level 9); and high, very high, extreme and adjacent zones for sinkhole based on the KAC analysis. 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>).

Because the Bradford County LMS considers storm surge to be a negligible hazard and MEMPHIS data indicates that no persons or structures are exposed to storm surge, no further analysis was conducted for this hazard.

Existing Population at Risk

Table 2.1 presents the population currently exposed to each hazard throughout Bradford County. Of the 26,088 (U.S. Census 2000) people that reside in Bradford County, none are exposed to 100-year flooding or sinkholes, and 22% are exposed to wildfire.

Table 2.1 Estimated Numbers of Persons Exposed to Selected Hazards

Segment of Population	Wildfire
Total (all persons)*	5,805
Minority	1,990
Over 65	515
Disabled	1,220
Poverty	451
Language-Isolated	0
Single Parent	151

Source: Mapping for Emergency Management, Parallel Hazard Information System

*Note: The "Total" amount does not equal the sum of all segments of the population, but indicates the total population at risk to the selected hazards.

Evacuation and Shelters

As discussed in the previous sections, population growth in Bradford County has been steady, and the trend is projected to continue. Additionally, storm events requiring evacuation typically impact large areas, often forcing multiple counties to issue evacuation orders simultaneously and placing a greater cumulative number of evacuees on the roadways which may slow evacuation time further. Evacuees from coastal counties will likely evacuate to inland areas, seeking shelter in host counties such as Bradford County. Thus, it is important to not only consider evacuation times for Bradford County, but also for other counties in the region as shown in **Table 2.2**. Also, population that will reside in new housing stock might not be required to evacuate as new construction will be built to higher codes and standards.

Table 2.2 County Clearance Times per Hurricane Category (Hours)
(High Tourist Occupancy, Medium Response)

County	Category 1 Hurricane	Category 2 Hurricane	Category 3 Hurricane	Category 4 Hurricane	Category 5 Hurricane
Alachua	10.25	12	17.75	17.75	17.75
Bradford	18	18	18	18	18
Columbia	<i>Not Available</i>				
Gilchrist	6	6	8	8	10
Hamilton	<i>Not Available</i>				
Lafayette	<i>Not Available</i>				
Madison	8	8	8	8	8
Suwannee	<i>Not Available</i>				
Union	<i>Not Available</i>				

Source: DCA, DEM Hurricane Evacuation Study Database, 2005

Note: This is best available data in 2005, although data is not available for some counties.

As the population increases in the future, the demand for shelter space and the length of time to evacuate will increase, unless measures are taken now. Currently, it is expected to take between 18 hours to safely evacuate Bradford County regardless of the corresponding magnitude of the storm, as shown in **Table 2.2**. This data was derived from eleven regional Hurricane Evacuation Studies that have been produced by FEMA, the United States Army Corps of Engineers and Regional Planning Councils in Florida. The study dates range from 1995 to 2004. These regional studies are updated on a rotating basis with Northeast Florida region scheduled for completion in the fall of 2005.

Similar to most of Florida’s coastal counties, Bradford County currently has a significant shelter deficit. According to Florida’s Statewide Emergency Shelter Plan, Bradford County has an existing shelter capacity of 1,644 people. The 2004 shelter demand for a Category 4 or Category 5 hurricane is 2,067 people, leaving an existing shelter deficit of 423. In 2009, the projected shelter demand is 2,211, leaving an anticipated shelter deficit of 567. This deficit is likely to be greater due to the influx of evacuees seeking shelter from nearby counties, as Bradford is a host county. Therefore, it is essential that Bradford County continue to coordinate with nearby counties for evacuation and shelter planning. The opportunity also exists to construct new facilities to standards that will allow them to serve as shelters, and to construct future public facilities outside of floodplain areas.

It is important for Counties to maintain or reduce hurricane evacuation times. This could be accomplished by using better data to determine the hazard risk to populations to evaluate which areas to evacuate, and increasing the ability to shelter in place to decrease the number of evacuees. Bradford County could encourage new homes to be built with saferooms, community

centers in mobile home parks or developments to be built to shelter standards (outside of the hurricane vulnerability zones), or require that new schools be built or existing schools be retrofitted to shelter standards; which would be based on FEMA saferoom and American Red Cross shelter standards. Additionally, the county could establish level of service (LOS) standards that are tied to development.

Existing Built Environment

While the concern for human life is always highest in preparing for a natural disaster, there are also substantial economic impacts to local communities, regions, and even the state when property damages are incurred. To be truly sustainable in the face of natural hazards, we must work to protect the residents and also to limit, as much as possible, property losses that slow down a community’s ability to bounce back from a disaster. **Table 2.3** presents estimates of the number of structures in Bradford County by occupancy type that are exposed to each of the hazards being analyzed. The estimated exposure of Bradford County’s existing structures to the flood, wildfire, and sinkhole hazards was determined through MEMPHIS.

Table 2.3 Estimated Numbers of Structures Exposed to Selected Hazards

Occupancy Type	Flood	Wildfire	Sinkhole
Single Family	308	1,848	46
Mobile Home	64	522	0
Multi-Family	46	324	9
Commercial	71	362	3
Agriculture	47	1,330	0
Gov. / Institutional	39	490	3
Total	575	4,876	61

Source: Mapping for Emergency Management, Parallel Hazard Information System

There are 5,512 structures exposed to at least one of the three hazards. Of these structures, only 10% are exposed to flood. There are 575 structures are located within the 100-year floodplain. According to the latest National Flood Insurance Program Repetitive Loss Properties list, as of March 2005, there are two repetitive loss properties in Bradford County. Under the National Flood Insurance Program (NFIP), repetitive loss properties are defined as “any NFIP-insured property that, since 1978 and regardless of any change(s) of ownership during that period, has experienced: a) four or more paid flood losses; or b) two paid flood losses within a 10-year period that equal or exceed the current value of the insured property; or c) three or more paid losses that equal or exceed the current value of the insured property.”

Over 88%, or 4,876 structures, are exposed to wildfire, of which approximately 38% are single family dwellings and 27% are used agriculture. All of Bradford County is exposed to wildfire, and there are no known risks unique to any one jurisdiction for this hazard (Bradford County LMS, 2005). There are 61 structures that are within high or adjacent risk zones to sinkholes, with 75% of those being single family homes.

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 the probability (how often) and severity (e.g., flood depth, wildfire duration) of the hazard as it impacts people and property. Risk can be described qualitatively, using terms like high, medium or low; or quantitatively by estimating the losses to be expected from a specific hazard event expressed in dollars of future expected losses. 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 to consider where to implement risk reducing comprehensive planning measures.

Analysis of Current and Future Vulnerability Based on Land Use

The previous hazards analysis section discussed population and existing structures exposed to flooding, sinkholes, and wildfire according to MEMPHIS estimates. This section is used to demonstrate the County's vulnerabilities to these hazards in both tabular format and spatially, in relation to existing and future land uses. Existing land use data was acquired from County Property Appraisers and the Florida Department of Revenue in 2004 for tabulation of the total amount of acres and percentage of land in identified hazard areas, sorted by existing land use category for the unincorporated areas. The total amount of acres and percentage of land in the identified hazards areas was tabulated and sorted by future land use category according to the local Future Land Use Map (FLUM), as well as the amount of these lands listed as vacant according to existing land use. Bradford County future land use data was acquired in February 2001 from the North Central Florida Regional Planning Council and might not reflect changes per recent future land use amendments. Maps of existing land use within hazard areas are based on the 2004 County Property Appraiser geographic information system (GIS) shapefiles. Maps of future land uses in hazard areas were developed using the Bradford County future land use map dated February 2001. A series of maps were created as part of the analysis and are available as attachments to the county profile. All maps are for general planning purposes only.

For the purposes of this profile, the identified hazard areas include flood zones in relation to the 100-year flood, wildfire susceptible areas, and sinkhole susceptible areas.

In **Attachment A**, two maps present the existing and future land uses within a 100-year flood zone. These areas are particularly located around the large shallow-basin lakes in the unincorporated areas of the county and along Alligator Creek in the southeast quadrant of the City of Starke. Land use data and shapefiles for flood are not currently available for analysis and are therefore not included in this analysis. Maps were made from scanned images of the flood zones overlaid with the existing land use maps and FLUMs. Data was obtained from the Suwannee River Water Management District.

In **Attachment B**, two maps present the existing and future land uses within wildfire susceptible areas. These areas are scattered across the county. The total amount of land in the sinkhole susceptible areas is 9,336.3 acres. As shown in **Table 2.4**, 73.6% are used for agriculture; 7.9% are single family residential homes; and 7.2% are residential mobile homes or commercial parking lots. **Table 2.5** shows that of the 555.3 undeveloped acres, 59.8% are designated for agricultural use with less than one dwelling units per five acres. The County should continue to take measures to reduce wildfire risk within the urban/rural interface.

In **Attachment C**, two maps present the existing and future land uses within sinkhole susceptible areas. These areas are located in central and southeastern portions of the county. The total amount of land in the sinkhole susceptible areas is 90.6 acres. As shown in **Table 2.4**, 41.6% are undeveloped; 30.8% are single family residential homes; and 17.8% are used for agriculture. **Table 2.5** shows that of the 37.7 undeveloped acres, 85.1% are designated for low-density residential use with less than two dwelling units per acre. The County has the opportunity to further research sinkhole vulnerability to determine if mitigation measures are necessary.

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

Existing Land Use Category		Wildfire Susceptible Areas	Sinkhole Susceptible Areas
Agriculture	Acres	6,874.5	16.1
	%	73.6	17.8
Attractions, Stadiums, Lodging	Acres	0.4	0.0
	%	0.0	0.0
Places of Worship	Acres	24.5	1.1
	%	0.3	1.2
Commercial	Acres	3.8	1.8
	%	0.0	2.0
Government, Institutional, Hospitals, Education	Acres	184.6	6.0
	%	2.0	6.6
Industrial	Acres	4.9	0.0
	%	0.1	0.0
Parks, Conservation Areas, Golf Courses	Acres	263.5	0.0
	%	2.8	0.0
Residential Group Quarters, Nursing Homes	Acres	3.3	0.0
	%	0.0	0.0
Residential Multi-Family	Acres	0.4	0.0
	%	0.0	0.0
Residential Mobile Home, or Commercial Parking Lot	Acres	670.8	0.0
	%	7.2	0.0
Residential Single-Family	Acres	738.3	27.9
	%	7.9	30.8
Transportation, Communication, Rights of Way	Acres	9.8	0.0
	%	0.1	0.0
Utility Plants and Lines, Solid Waste Disposal	Acres	2.2	0.0
	%	0.0	0.0
Vacant	Acres	555.3	37.7
	%	5.9	41.6
Total	Acres	9,336.3	90.6
	%	100.0	100.0

Source: Department of Community Affairs

**Table 2.5
Total Unincorporated Acres in Hazard Areas by Future Land Use Category**

Future Land Use Category		Wildfire Susceptible Areas		Sinkhole Susceptible Areas	
		Total	Vacant	Total	Vacant
Agriculture - 1 (< 1 d.u. per 15 acres)	Acres	1,968.9	29.4	0.0	0.0
	%	21.1	5.3	0.0	0.0
Agriculture - 2 (< 1 d.u. per 5 acres)	Acres	5,917.2	331.9	0.0	0.0
	%	63.4	59.8	0.0	0.0
Conservation	Acres	78.9	0.0	0.0	0.0
	%	0.8	0.0	0.0	0.0
Environmentally Sensitive Areas (< 1 d.u. per 10 acres)	Acres	13.4	0.9	0.0	0.0
	%	0.1	0.2	0.0	0.0
Industrial	Acres	33.9	0.9	0.0	0.0
	%	0.4	0.2	0.0	0.0
None	Acres	189.5	37.0	25.2	5.6
	%	2.0	6.7	27.8	14.9
Public	Acres	222.7	0.9	0.0	0.0
	%	2.4	0.2	0.0	0.0
Residential - Low Density (< 2 d.u. per acre)	Acres	845.6	139.1	65.3	32.1
	%	9.1	25.0	72.2	85.1
Residential - Estate (< 1 d.u. per acre)	Acres	66.4	15.2	0.0	0.0
	%	0.7	2.7	0.0	0.0
Total	Acres	9,336.5	555.3	90.5	37.7
	%	100.0	100.0	100.0	100.0

Source: Department of Community Affairs

The amount of total land and existing vacant land in identified hazard areas was also tabulated for each of Bradford County’s four incorporated municipalities. These amounts are listed in **Table 2.6**. The intent of this table is to show the vacant acreage in hazard zones in each municipality, and to show the percentage of vacant acreage in each hazard zone for each municipality. In the total column for each hazard, the percentage for each municipality is the hazard zone acreage as a percent of total acreage for all municipalities. In the vacant column for each hazard, the percentage for each municipality is the percent of area in the hazard zone for the respective municipality. The total municipal percent of vacant acreage is the percent of acreage in the hazard zones for all municipalities.

Flood zone shapefiles were not available to perform calculations of acreage in the flood zone for the municipalities. Starke has the most acres in wildfire susceptible areas, but Hampton has the largest proportion of wildfire susceptible acres out of its vacant land area. No municipalities have any sinkhole susceptible acres.

Vacant land is often destined to be developed. It is prudent to conduct further analyses of what the vacant lands will be used for, to determine whether they will be populated, and at what level of intensity/density, to ensure that hazard risks are minimized or eliminated. Each of the municipalities in Bradford County has vacant lands that are in hazard areas. Since hazards cross jurisdictional boundaries, it is important to consider all hazard areas to collaboratively formulate hazard mitigation strategies and policies throughout the county.

Table 2.6
Total Land and Existing Vacant Land in Hazard Areas by Municipal Jurisdiction

Jurisdiction		Wildfire Susceptible Areas		Sinkhole Susceptible Areas	
		Total	Vacant	Total	Vacant
Brooker	Acres	14.5	3.6	0.0	0.0
	%	7.9	24.8	0.0	0.0
Hampton	Acres	20.1	5.6	0.0	0.0
	%	10.9	27.9	0.0	0.0
Lawtey	Acres	70.4	14.3	0.0	0.0
	%	38.2	20.3	0.0	0.0
Starke	Acres	79.1	5.1	0.0	0.0
	%	43.0	6.4	0.0	0.0
Total Municipal Acres	Acres	184.1	28.5	0.0	0.0
	%	100.0	15.5	0.0	0.0

Source: Department of Community Affairs\

3. Existing Mitigation Measures

Local Mitigation Strategy (LMS) Assessment –

The Local Mitigation Strategy is suited to be a repository for all hazard mitigation analyses (i.e., vulnerability and risk assessment), programs, policies and projects for the county and municipalities. The LMS identifies hazard mitigation needs in a community and alternative structural and nonstructural initiatives that can be employed to reduce community vulnerability to natural hazards. The LMS is multi-jurisdictional and intergovernmental in nature. Communities can reduce their vulnerability to natural hazards by integrating the LMS analyses and mitigation priorities into the local government comprehensive plan.

As noted in DCA’s *Protecting Florida’s Communities* Guide, one significant strategy for reducing community vulnerability is to manage the development and redevelopment of land exposed to natural hazards. Where vacant land is exposed to hazard forces, local government decisions about allowable land uses, and the provision of public facilities and infrastructure to support those uses, can have major impacts on the extent to which the community makes itself vulnerable to natural hazards. Where communities are already established and land is predominately “built out,” local governments can take initiatives to reduce existing levels of vulnerability by altering current land uses both in the aftermath of disasters, when opportunities for redevelopment may arise, and under “blue sky” conditions as part of planned redevelopment initiatives.

Per the *DCA’s Protecting Florida’s Communities* Guide, LMSes prepared pursuant to the state’s guidelines (Florida Department of Community Affairs, 1998) have three substantive components:

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 to which the community is susceptible. According to FEMA, LMSes 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 to which the jurisdiction is exposed, 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 dollar 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. This section typically contains 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 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 Bradford County LMS (adopted in 2005) was assessed to determine if the hazard analysis and vulnerability assessment (i.e., flood, and wildfire; sinkhole was deemed by the LMS committee to pose a low risk) data can support comprehensive planning and whether the LMS goals and objectives support comprehensive planning goals, objectives, and policies (GOP). Future updates to the assessment will include working with Bradford County to determine if the county's capital improvement projects are included in the LMS hazard mitigation project list.

Hazard Analysis and Vulnerability Assessment (LMS pp. 3 - 72)

The strengths and weaknesses of the Hazard Analysis and Vulnerability Assessment are as follows:

Strengths:

- Provides information about demographic, income, and special needs population.
- Provides information about population and property exposure to certain hazards.
- Provides a hazards analysis and a qualitative vulnerability assessment for the county.
- Includes maps for each of the hazards for the county for certain hazards.
- Includes a list of types and map of critical facilities.
- Includes a qualitative risk assessment for each hazard, along with tabular data showing risks to the county and its municipalities.

Weaknesses:

- Hazard maps do not include data layers to illustrate population (i.e., density) or property (i.e., value) exposure.
- Does not include a future land use maps that include hazard data layers to illustrate which future land use categories are susceptible to each hazard.
- Does not include loss estimates by land use.
- Does not provide a list and map of repetitive losses.
- Does not include a quantitative risk assessment for existing and future development (i.e., loss estimates) or specific critical facilities.

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 sets a standard for the quality of data that should be used in determining risk and thereby used to determine mitigation policies.

Guiding Principles

The Bradford County LMS does not include a Guiding Principles section for the county nor each municipality. The Guiding Principles section is found in most counties' LMSes 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. It is recommended that Bradford County's next LMS update include a Guiding Principles section.

LMS Goals and Objectives

The Bradford County LMS has goals that support mitigation principles that are found in the comprehensive plan. A list of the LMS goals pertaining to comprehensive planning can be found in **Attachment D**. An assessment of whether the LMS goals are reflected in the comprehensive plan (and vice versa) is provided in **Table 5.1** as part of the preliminary recommendations. Final recommendations will result from a collaborative process between DCA, Bradford County, and PBS&J. The following is a summary of the LMS goals that support comprehensive planning:

Goal 3.1 seeks to maintain current levels and rates of riverine erosion by limiting development within, and directing development away from the 100-year floodplains of rivers, streams and creeks.

Goal 4.1 strives to minimize damage to future buildings and infrastructure by identifying/ mapping sinkholes and areas of known sinkhole formation and providing policy direction in local government comprehensive plans which limits and/or guides development away from such areas.

Goals 6.1 and 6.2 aim to reduce the number of buildings without public utility services, as well as the length of time that buildings are without public utility services, in the aftermath of a hurricane or coastal storm. Goal 6.3 hopes to reduce the susceptibility to damage of existing and future buildings to damage caused by high winds associated with hurricanes and tropical storms.

Goals 7.1 and 8.1 strive to minimize damage to existing/ future buildings/infrastructure as a result of flooding and wildfires, respectively. Goal 10.1 seeks to minimize declines in water table levels as a result of drought.

Goals 10.2, 11.1, and 12.1 aim to minimize loss of lives as a result of droughts and heat waves, winter storms and freezes, and tornado events, respectively.

Maintaining consistent language for outlining goals and objectives in both the LMS and comprehensive plan presents a united front on decreasing risk in the county. While the LMS may not be able to regulate land use as the comprehensive plan does, having these common goals and objectives increases the likelihood of the jurisdictions of Bradford County adopting and implementing corresponding policies that are legally enforceable.

Comprehensive Emergency Operations Plan (CEMP)

The Bradford County CEMP references the LMS in Annex C: Mitigation Strategy. The CEMP notes that the purpose of this annex is to serve as a bridge between the County's Comprehensive Plan, CEMP, the County Emergency Management Scope of Work Plan, the County Land Development Regulations and Flood Damage Prevention Regulations, County Building Regulations, as well as the long range economic plans of the County Chamber of Commerce and any applicable plans, ordinances or other publications from each of the municipalities. The CEMP notes that all pre-disaster mitigation priorities and projects are generated through the Mitigation Committee. Post-disaster mitigation priorities consider the LMS analyses and project lists, in addition to damage assessment reports and the County Emergency Management Director's expertise. The CEMP discusses hazard mitigation in the context of standard operating procedures, activities, responsibilities and available programs. This includes the post-disaster implementation of the Hazard Mitigation Grant Program and related disaster mitigation, response and recovery assistance programs, as well as pre-disaster mitigation programs such as the National Flood Insurance Program, Community Rating System and Flood Mitigation Assistance Program.

Though the identification of mitigation opportunities lies predominately with the County Emergency Management Director and the LMS working group, the document lists numerous activities and supporting agencies to assist in supporting mitigation in the County. In addition to various county departments providing management and assistance in managing plans and strategies for pre-and post-disaster mitigation, municipal departments also support these efforts. The CEMP indicates that the Mitigation Committee will coordinate the short and long term recovery in the event of a disaster. Municipal Public Works Departments will provide assistance to identify and accomplish mitigation projects to improve the design, construction and placement of infrastructure (e.g. roads, bridges, culverts). Municipal Building and Zoning Departments will identify, develop and recommend changes to building and zoning codes that will assist with mitigation, as well as ensure enforcement. Municipal Fire Departments will identify and recommend mitigation goals that will reduce the impact of structure and wildfires within their jurisdiction, as well as provide training that will assist in accomplishing mitigation goals and objectives.

As such, the CEMP is a good tool for planners, which includes collaborative procedures for working with emergency managers to reduce vulnerability from hazards.

Post-Disaster Redevelopment Plan (PDRP)

Bradford County is not required to develop a PDRP, but it is recommended.

National Flood Insurance Program/Community Rating System

Bradford County (unincorporated areas) and the municipalities of Brooker, Hampton, Lawtey and Starke participate in the National Flood Insurance Program (NFIP). Neither Bradford County (unincorporated areas) nor any of its municipalities participate in the NFIP Community Rating System (CRS).

4. Comprehensive Plan Review

Purpose and Intent

The Bradford County Comprehensive Plan (Adopted December 12, 1991, updated January 11, 1994) was reviewed for the purpose of developing this profile. This review was undertaken in order to assess what steps Bradford County has taken to integrate hazard mitigation initiatives from their Local Mitigation Strategy (LMS), and hazard mitigation initiatives in general, into the local planning process. Each Element of the Plan was evaluated to establish the extent to which the principles from the LMS were incorporated into the objectives and policies of the existing Comprehensive Plan.

Approach

This review includes an assessment of the flooding, wildfire and sinkhole hazards. A preliminary list of objectives and policies currently contained in the Plan that pertain to hazard mitigation and any policies related to these hazards is found in **Attachment E**. The following is a discussion of the extent to which the Plan appears to address each of the hazards. Recent policy amendments may not have been available for review, or proposed policies might be in the process of creation, which address these hazards. As a result, this assessment is considered preliminary and subject to input from the local government.

Summary of Findings

The highest risk hazards for Bradford County as identified in the County's Local Mitigation Strategy (LMS) are flooding, and wildfires. Sinkholes were discussed in the LMS, but the risk was considered to be very low for the entire county. The Comprehensive Plan addresses

stormwater discharge into sinkholes in Bradford County, enough to warrant a discussion in this assessment.

Bradford County is not a coastal county, so policies are not geared toward coastal management and coastal resource protection. Policies relating to hazard mitigation within the Plan primarily include those relating to flooding and stormwater control. Wildfire mitigation is not a hazard referred to in the Plan.

The Bradford County Comprehensive Plan primarily focuses on the protection of natural features such as floodplains and sinkholes, through development controls and stormwater management. References to emergency management were not located in the Plan. However, a section of the Plan is dedicated to the Suwannee River System, defined as the 100-year floodplain of the Santa Fe River.

Flooding

Flooding is addressed primarily to protect the natural features along the Suwannee River System. However, these policies consequently protect life and property within the 100-year floodplain. Intergovernmental coordination is exceptional between the County and the Suwannee River Water Management District with the development review of these lands. Development standards include setbacks from the floodplain, lower densities, and roadway construction design to prevent increase in floodway obstructions. In addition, development standards must conform to the National Flood Insurance Program for all properties within the 100-year floodplain of the Suwannee River System.

The County has also adopted level of service standards for drainage to include Florida Administrative Code standards. Peak rate of post development runoff cannot exceed the peak-rate of pre-development runoff for storm events. In addition, the County requires construction of structure or landscape alterations which maintain natural drainage flows including sheet flow and flow to isolated wetland systems

Sheltering

As with many inland counties in Florida, in the event of a hurricane, Bradford County may receive evacuees from coastal counties. The County is currently has a significant shelter deficit. According to Florida's Statewide Emergency Shelter Plan, Bradford County has an existing shelter capacity of 1,644 people. The 2004 shelter demand for a Category 4 or Category 5 hurricane is 2,067 people, leaving an existing shelter deficit of 423. The opportunity also exists to construct new facilities to standards that will allow them to serve as shelters, and to construct future public facilities outside of floodplain areas. This deficit is likely to be greater due to the influx of evacuees seeking shelter from nearby counties, as Bradford is a host county. Therefore, it is essential that Bradford County continue to coordinate with nearby counties for evacuation and shelter planning. The opportunity also exists to construct new facilities to standards that will allow them to serve as shelters, and to construct future public facilities outside of floodplain areas.

Sinkholes

Policies found during this review to reduce sinkhole hazards included prohibition of the discharge of stormwater into sinkholes, or reducing the quantity of water into such sinkholes. Stormwater conveyance must be designed to percolate 80 percent of the runoff from a three year, one hour design storm within 72 hours after a storm event. No policies were located that prohibit development within an identified sinkhole area.

Wildfire

No policies were identified in the Bradford County Comprehensive Plan to reduce wildfire hazards.

5. Data Sources

County Overview:

Florida Statistical Abstract – 2004 (38th Edition). Bureau of Economic and Business Research, Warrington College of Business, University of Florida. Gainesville, Florida.

State and County QuickFacts. U.S. Census Bureau. Data derived from 2000 Census of Population and Housing.

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

Hazard Vulnerability:

Florida Repetitive Loss List March 05. Florida Department of Community Affairs, Division of Emergency Management, Flood Mitigation Assistance Office. March 2005.

Mapping for Emergency Management, Parallel Hazard Information System (MEMPHIS). Florida Department of Community Affairs, Division of Emergency Management.
<http://lmsmaps.methaz.org/lmsmaps/>

Protecting Florida's Communities – Land Use Planning Strategies and Best Development Practices for Minimizing Vulnerability to Flooding and Coastal Storms. Florida Department of Community Affairs, Division of Community Planning and Division of Emergency Management. September 2004.

State of Florida 2004 Statewide Emergency Shelter Plan. Florida Department of Community Affairs, Division of Emergency Management.

GIS Data:

Flood Zone FLOOD GIS DATA NOT AVAILABLE—ONLY IMAGES

Source: FEMA FIRM maps, supplied by Suwannee River Water Management District (digitized images)

Sinkhole Hazard GIS Data

Source: Kinetic Analysis Corporation web site (2005),
at: http://lmsmaps.methaz.org/lmsmaps/final_cty/

- Areas shown/analyzed are those areas in the “Rawsink1.shp” GIS coverage supplied by KAC, where the value in the field “Gridcode” is 3 to 6, representing “High”, or Very High”, “Extremely High”, or “Adjacent”, based on the classification system used in the sinkhole hazard maps found on the website.

Wildfire Susceptibility GIS Data

Source: Florida Department of Agriculture and Consumer Services/Division of Forestry, Florida Fire Risk Assessment System (FRAS) data, 2004.

- Areas shown as “wildfire susceptible areas” and that were analyzed are those areas with a “Wildfire Susceptibility Index” value of greater than 10,000 (in north Florida counties) or greater than 0.1 (in south Florida counties)*, based on the FRAS model, and that are also within areas of forest or shrub vegetation or “low impact urban” land cover, based on the Florida Fish and Wildlife Conservation Commission “Florida Vegetation and Land Cover - 2003” GIS data.

Municipal Boundaries

Source: Boundaries of municipalities were extracted from the U.S. Census 2000 "Places" GIS coverage for the State of Florida.

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

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

**ATTACHMENT C
Maps of the Existing and Future Land Uses within Sinkhole Susceptible Areas**

ATTACHMENT D
Local Mitigation Strategy Goals and Objectives
Related to Comprehensive Planning

Bradford County's LMS includes the following goals that are directly related to local comprehensive planning and growth management:

- **Goal 3.1** – *Maintain current levels and rates of riverine erosion by limiting development within, and directing development away from the 100-year floodplains of rivers, streams and creeks.*
- **Goal 4.1** – *Minimize damage to future buildings and infrastructure by identifying and mapping sinkholes and areas of known sinkhole formation and providing policy direction in local government comprehensive plans which limits and/or guides development away from such areas.*
- **Goal 7.1** – *Minimize damage to existing and future buildings and infrastructure as a result of flooding.*
- **Goal 8.1** – *Minimize damage to existing and future buildings and infrastructure as a result of wildfires.*

ATTACHMENT E
Bradford County Comprehensive Plan Excerpts Related to Hazard Mitigation

FUTURE LAND USE ELEMENT

Policy I.1.4 The County shall, prior to action on a site and development plan, determine the sufficiency of proposed screens and buffers to preserve internal and external harmony and compatibility with uses inside and outside the proposed development so that proposed urban development near agriculture or forested areas, wetlands and 100-year floodplain areas avoids adverse impact upon such areas.

Within the Environmentally Sensitive Area – 2 category, dwelling units may be clustered on smaller lots with no lot being less than 5 acres, if the site is developed as a Planned Residential Development and a density of 1 dwelling unit per 10 acres is maintained on site as follows:

Policy I.1.6(e) the developed area of the development, shall be located outside of (1) wetlands; (2) floodplains; (3) native upland vegetation; and (4) active agricultural areas, unless the entire development site consists of any or a combination of such areas. If the entire development site consists of any or a combination of such areas, the developed area shall be located in the least sensitive of such areas. Least sensitive areas shall be determined according to the order of priority of the above listing of such areas. Least sensitive areas shall be determined according to the order of priority of the above listing of such areas from most sensitive to least sensitive. In addition, if any developed area is located within any such sensitive areas, the development of such area shall be in accordance with Policies V.2.7 and V.2.8.

Policy I.2.2 (in part) All Planned Rural Residential Developments shall be developed as follows:

(e) the developed area of the development, shall be located outside of (1) wetlands; (2) floodplains; (3) native upland vegetation; and (4) active agriculture areas, unless the entire development site consists of any or a combination of such areas. If the entire development site consists of any or a combinations of such areas, the developed area shall be located in the least sensitive of such areas. Least sensitive areas shall be determined according to the order of priority of the above listing of such areas from most sensitive to least sensitive. In addition, if any developed area is located within any such sensitive as, the development of such area shall be in accordance with Policies V.2.7 and V.2.8.

Policy I.3.6 National Flood Insurance Program requirements shall be included within the County's Land Development Regulations, to apply to all development within the areas of special flood hazard, floodways, areas of shallow flooding.

Policy I.3.9 The County shall participate in the National Flood Insurance Program and regulate the development and the installation of utilities in flood hazard areas in conformance with the program's requirements.

OBJECTIVE I.7 The County shall adopt regulations to protect natural resources and environmentally sensitive lands (including but not limited to wetlands and floodplains (by July 1, 1992).

Policy I.7.3 (in part) The County shall protect high groundwater aquifer recharge areas by: preventing area drainage wells and sinkholes to be used for stormwater disposal; requiring well construction, modification and closure to be regulated by the Water Management District and Florida Department of Health and Rehabilitative Services.

Policy I.7.5 The County's high groundwater aquifer recharge areas as shown on illustration A-XI of this Comprehensive Plan are defined as areas of high groundwater aquifer recharge where limestone is at or nearly at the land surface and infiltration is immediate (cenotes may be a common feature on this terrain) and where limestone is covered by a limited (approximately 20

feet or less) thickness of highly permeable sediment and infiltration is rapid, movement of water between the limestone and the overlying surficial (sic) sediments is unrestricted, small, cover-collapse sinkholes may be common and some may expose limestone in the bottom and groundwater level may be either below the top of the limestone or in the surficial (sic) sediments, depending on local conditions.

Policy I.10.1 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.

Policy I.12.1 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:

- (d) Regulate areas subject to seasonal and periodic flooding and provide for drainage and stormwater management;

SUWANNEE RIVER SYSTEM 100-YEAR FLOODPLAIN SPECIAL PLANNING AREA

OVERALL GOAL To protect and maintain the natural functions of the Suwannee River system (defined as the 100-year floodplain of the Santa Fe River as shown on the Future Land Use Plan Map) including floodwater storage and conveyance, water quality assurance, and fish and wildlife habitat, while allowing for the appropriate use and development of the land.

OBJECTIVE S.1 To help ensure that development proposals and activities wholly or partially within the 100-year floodplain of the Suwannee River system are conducted in accordance with the physical limitations of this environmentally sensitive area, the County shall establish coordination provisions between the County and all agencies with jurisdiction within the 100-year floodplain of the Suwannee River system by July 1, 1992. Such coordination provisions shall provide a mechanism for all such agencies to review and make comment on such proposals or activities.

Policy S.1.2 The County shall notify the Suwannee River Water Management District of preliminary subdivision plats, site and development plans, rezoning or reclassification of lands, and special exception hearings within the 100-year floodplain of the Suwannee River system. The purpose of such notification is to provide opportunity for the District to coordinate, among appropriate agencies, the review and commenting on the potential impact of such plans or proposals on the natural resources of the Suwannee River system. The review and comment period shall be within the development review timeframes established in the County's land development regulations.

Policy S.1.3 The review of preliminary subdivision plats and site and development plans within the 100-year floodplain of the Suwannee River system shall be based on the best available information regarding the physical characteristics of the site, including floodplain and wetlands delineation, soil conditions, vegetative cover, and critical wildlife habitat areas .

Policy S.2.2 The County shall require a 10 foot undisturbed regulated buffer on public lands along the property lines of public lands within the 100-year floodplain of the Suwannee River system for the purposes of visual screening, stormwater runoff and erosion control, public safety, and buffering potentially incompatible land uses. Variations in the width of this buffer shall be made only for cases of undue hardship and on a site-specific review.

Policy S.2.3 The County shall participate in the acquisition planning process (prior to actual purchase) of state and regional agencies for lands and unique natural areas located within the 100-year floodplain of the Suwannee River system.

OBJECTIVE S.3 The County will adopt land development regulations by June 1, 1992 that regulate land use types, densities, and intensities for all lands within the 100-year floodplain of the Suwannee River system and will define and provide a mechanism to phase out nonconforming platted subdivisions which are unimproved and undeveloped, discontinue nonconforming uses, and bring nonconforming structures into compliance within the floodplain.

Policy S.3.2 (in part) The lands within the 100-year floodplain, (as designated by the Federal Emergency Management Agency, Flood Insurance Rate Map, November 15, 1989) of the Suwannee River System which are located outside the designated urban development areas shall conform with the following densities provided that within the Environmentally Sensitive Areas -2 category dwelling units may be clustered on smaller lots with no lot being less than 5 acres, if the site is developed as a Planned Residential Development and a density of 1 dwelling unit per 10 acres be maintained on site.

Policy S.3.3 The County shall, inside designated urban development areas within the 100-year floodplain of the Suwannee River System, limit dwelling unit density of residential uses to no greater than 1.0 dwelling units per ten acres in areas not served by centralized potable water systems and sanitary sewer systems and 4.0 dwelling units per acre, provided a centralized potable water system and sanitary sewer system exists and each individual parcel conforms to all applicable state and County regulations. This higher density shall require approval of an amendment to the Future Land Use Plan Map to establish a district which allows 4.0 dwelling units per acre.

OBJECTIVE S.4 The County shall ensure that all development and redevelopment occurring in the 100-year floodplain of the Suwannee River system meet the building and design standards of the National Flood Insurance Program, the County, and the Suwannee River and St. John's Water Management Districts.

Policy 5.4.1 The County's land development regulations shall conform with the National Flood Insurance Program requirements for construction activities undertaken in the 100-year floodplain of the Suwannee River system.

Policy S.4.2 The County's land development regulations shall require all new habitable structures be elevated no less than 1 foot above the 100-year flood elevation without the use of fill materials within the regulatory floodway of the Suwannee River system.

Policy S.4.3 The County's land development regulations shall require all road construction and improvement projects within the 100-year floodplain of the Suwannee River system be designed in such a manner as to avoid any increase in floodway obstruction any increase in the peak rate or volume of stormwater runoff, and any increase in pollutant loading to the receiving waters.

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

OBJECTIVE IV.1 The County, upon the adoption of this Comprehensive Plan, shall mitigate existing deficiencies by undertaking capital improvement projects in accordance with the schedule contained in the Capital Improvements Element of this Comprehensive Plan.

Policies For Drainage

Policy IV.2.8 (in part) The County hereby establishes the following level of service standards for drainage facilities:

Level of Service Standard

For all projects not exempted from Chapter 40B-4 and 17.-25, Florida Administrative Code and as administered and regulated by the appropriate State agency, in effect upon adoption of this comprehensive Plan within the County, stormwater management systems will be installed such that the peak rate of post development runoff will not exceed the peak-rate of pre-development runoff for storm events up through and including either:

1. A design storm with a 10-year, 24-hour rainfall depth with Soil Conservation Service Type II distribution falling on average antecedent moisture conditions for projects serving exclusively agricultural, forest, conservation, or recreational uses;
2. A design storm with 100-year critical duration rainfall depth for projects serving any land use other than agricultural, silvicultural, conservation, or recreational issues.

Any development exempt from Chapter 17-25 or 40B-4 as cited above and which is adjacent to or drains into a surface water, canal, or stream, or which empties into a sinkhole, shall first allow the runoff to enter a grassed swale or other conveyance designed to percolate 80 percent of the runoff from a three year, one hour design storm within 72 hours after a storm event.

Policy IV.2.9 The County shall require the construction of structures or landscape alterations which maintain natural drainage flows including sheet flow and flow to isolated wetland systems.

Policy IV.2.10 The County, by July 1, 1992, in response to written recommendations of the Florida Department of Environmental Regulations, shall request the Florida Department of Environmental Regulation to fund and conduct a detailed stormwater study and prepare a stormwater master plan to (1) determine the design, capacities and hydraulic demands on the County's stormwater management facilities, (2) assess the performance of existing facilities with regard to flood control, water quality treatment and impact on the area's surface and groundwater, and (3) identify opportunities and funding options to correct existing quality and quantity problems. Upon completion of this master plan, and if stormwater management facilities are determined to be needed or modified, the County shall request the Florida Department of Environmental Regulation to fund and construct such needed facilities to be turned over to the County for subsequent operation and maintenance. The County shall amend this Comprehensive Plan to include the findings and recommendations (including projects in the five-year schedule of capital improvements) of the master plan.

CONSERVATION ELEMENT

Policy V.2.6 The County's land development regulations shall require all new development to maintain the natural functions of 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 shall regulate development within the 100- year floodplain of the Santa Fe River by establishing this area as an Environmentally Sensitive Area in accordance with Policy 1.2.2. In addition, the County shall participate in the National Flood Insurance Program and regulate all development and the installation of utilities in the County within flood hazard areas in conformance with the program requirements. Further, the County shall require all structures in the County to be clustered on the non-floodprone portion of a site. Where the entire site is in a flood prone area, or an insufficient buildable area on the non-flood prone portion of a site exists, all structures, located in floodplains, shall be elevated no lower than 1 foot above base flood elevation. Non-residential structures located in floodplains, may be flood proofed in lieu of being elevated provided that all areas of the structure below the required elevation are water tight. In addition, where the entire site is in a flood prone area or an insufficient buildable area on the non-flood prone portion of site exists, all structures located in areas of shallow flooding shall be elevated at least two feet above the highest adjacent grade.

Policy V. 2.8 (in part) County shall allow only minimal residential development activity in those areas designated as wetlands within this Comprehensive Plan. In addition, such development

activity shall comply with the following densities and performance standards: 1. Residences and any support buildings shall be elevated no lower than 1 foot above the highest recorded flood level in the wetland. If flooding data is not available, residences and any support buildings shall be built at least 2 feet above the highest seasonal water level.

Policy V.4.4 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 alter the natural functions of these 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, as provided in Policies V.2.7 and V.2.8 of this Comprehensive Plan.

INTERGOVERNMENTAL COORDINATION ELEMENT

Policy VII.1.1 The County shall establish a procedure, as part of the Comprehensive Plan review and amendment process, that all plan amendments proposed within the Comprehensive Plan are coordinated with adjacent local governments, the School Board, Water Management District, Regional Planning Council, State and other units of government providing services but not having regulatory authority over the use of land.

CAPITAL IMPROVEMENTS ELEMENT

Policy VIII.1.2 The County, upon identification of a need for drainage facility improvements due to deficiencies based upon the established level of service standards within the Comprehensive Plan, shall coordinate plans for improvements with the Water Management District prior to scheduling such drainage facility improvement.

Policy VIII .2.1 (in part) The County shall use the following level of service standards in reviewing impacts of new development and redevelopment upon the provision of public facilities:

Drainage Level Of Service Standards

The County hereby establishes the following level of service standards for drainage facilities: For all projects not exempted from Chapter 40B-4 and 17-25, Florida Administrative Code and as administered and regulated by the appropriate State agency, in effect upon adoption of this Comprehensive Plan within the County, stormwater management systems will be installed such that the peak rate of post-development runoff will not exceed the peak-rate of predevelopment runoff for storm events up through and including either:

1. A design storm with a 10-year, 24-hour rainfall depth with Soil Conservation Service Type I1 distribution falling on average antecedent moisture conditions for projects serving exclusively agricultural, forest, conservation, or recreational uses;
2. A design storm with 100-year critical duration rainfall depth for projects serving any land use other than agricultural, silvicultural, conservation, or recreational issues. Any development exempt from Chapter 17-25 or 40B-4 as cited above and which is adjacent to or drains into a surface water, canal, or stream, or which empties into a sinkhole, shall first allow the runoff to enter a grassed swale or other conveyance designed to percolate 80 percent of the runoff from a three year, one hour design storm within 72 hours after a storm event.

Any development exempt from Chapter 17-25 or 40B-4 as cited above and which is adjacent to or drains into a surface water, canal, or stream, or which empties into a sinkhole, shall first allow the runoff to enter a grassed swale or other conveyance designed to percolate 80 percent of the runoff from a three year, one hour design storm within 72 hours after a storm event.