

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 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 Baker 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 Baker 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

Baker 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 hurricanes and 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 which Baker County can continue to use to reduce or eliminate risks from flooding and wildfires. 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 flood. Sinkholes were discussed in the LMS, but the potential for occurrence was considered to be very low. Therefore, Baker County's Comprehensive Plan elements were not reviewed for policies pertaining to sinkhole hazards. 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, 969 acres are susceptible to wildfire and 16,474 acres are susceptible to 100-year flood.

Flood

About 7% of the 16,474 vacant acres in the 100-year floodplain 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 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.
- The Comprehensive Plan should continue to require that developers demonstrate that dredge and fill activities to maintain natural topography and hydrological functions of the flood plains, provide incentives to cluster housing on the non-flood prone portion of the site and maintain 50 foot buffers from wetlands, reduce densities in flood prone areas, prohibit the storage of hazardous waste or materials in the floodplain, and assure that post-development runoff rates do not exceed pre-development conditions.
- The Comprehensive Plan should continue to require that all structures must be elevated on pilings, in development areas entirely within the 100-year floodplain.
- The Comprehensive Plan should continue to allow for identification of floodplains for acquisition under existing programs.
- The Comprehensive Plan should continue to require that all structures built in the 100-year floodplain include at least one foot freeboard.
- The Comprehensive Plan should continue to consider promoting the use of vegetated swales, sodding, landscaping, and retention of natural vegetation as components of the drainage system for natural runoff through the use of landscape and subdivision ordinances.
- The County should consider requiring on-site compensating storage if filling occurs in the 100-year floodplain, and coordinate with Florida DER and DNR, NFWFMD, and USACE to improve compliance with the dredge and fill state permitting process.
- The County should consider requiring that new or expansions of existing critical facilities (including schools) not occur in floodways and in areas where potential for flooding exists.
- The County should consider retrofitting stormwater management facilities.
- The County should consider including a policy for reducing future losses through transfers of development rights from areas within the 100-year floodplain to areas outside the 100-year floodplain.
- 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 that the maintenance and operation of private stormwater systems be funded by private sources.
- 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 10% of the 969 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.

- The County should continue to coordinate 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.
- Where reasonable, consideration should be made to design structures and sites within the County to minimize potential for loss of life and property (e.g., outdoor sprinkler systems, fire-resistant building materials or treatments, and landscaping and site design practices); review proposals for subdivisions, lot splits, and other developments for fire protection needs during site plan review process; coordinate with fire protection service or agencies to determine guidelines for use and development in wildfire-prone areas.
- 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.

Sinkhole

Sinkholes were discussed in the LMS, but the risk was considered to be very low for the entire county. The Comprehensive Plan does not address the sinkhole hazard, therefore preliminary recommendations were not provided for this hazard.

- Sinkhole hazards could be evaluated further in the next update of the hazards analysis of the LMS to determine the risk. However, based on available data, it appears that sinkhole risk is very low.

General

- The County should consider including a policy to incorporate recommendations from existing and future interagency hazard mitigation reports into the Comprehensive Plan, and consider including these recommendations during the Evaluation and Appraisal Report process as determined feasible and appropriate by the Board of County Commissioners.
- The County should consider including each hazard layer on the existing and future land use maps to determine where risks are possible to target hazard mitigation strategies.
- The County 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 data for population and property exposure to flood, or wildfire.

- Include a clear description of geographic areas exposed to each of the hazards that the community is most susceptible to.
- Include hazard maps which include data layers to illustrate population (i.e., density) or property (i.e, value) exposure.
- Include future land use maps that include hazard data layers to illustrate which future land use categories are susceptible to each hazard.
- Include loss estimates by land use.
- Include a quantitative risk assessment for existing and future development (i.e., loss estimates) or specific critical facilities. The LMS Committee is planning on including this information in the future.

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1. County Overview

Geography and Jurisdictions

Baker County is located in northeast Florida. It covers a total of 589 square miles, of which approximately 585 square miles are land and four square miles are water. There are two incorporated municipalities within Baker County as shown in **Table 1.1**. The City of Macclenny 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 Baker County and the percent change from the 2000 U.S. Census are presented in **Table 1.1**. While some of these residents live in incorporated jurisdictions, approximately 77% live in the county's unincorporated areas. Baker County has experienced significant population growth in recent years, a trend that is expected to continue. Between 1990 and 2000, Baker County had a growth rate of 20.4%, which is slightly less than the statewide average of 23.5% for the same time period.

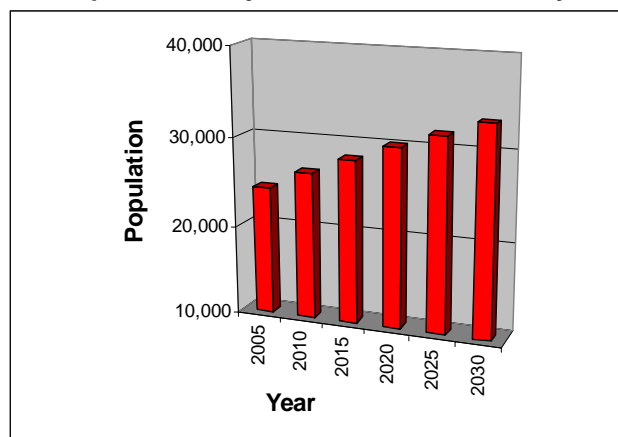
Table 1.1 Population Estimates by Jurisdiction

Jurisdiction	Population (Census 2000)	Population (Estimate 2004)	Percent Change 2000-2004	Percent of Total Population (2004)
Unincorporated	17,327	18,456	6.52%	77.02%
Glen Saint Mary	473	488	3.17%	2.04%
Macclenny	4,459	5,019	12.56%	20.94%
Countywide Total	22,259	23,963	7.66%	100.00%

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

According to BEBR (2004), Baker County's population is projected to grow steadily and is to reach an estimated 33,300 by the year 2030, increasing the average population density of 41 to 57 persons per square mile. **Figure 1.1** illustrates medium growth population projections for Baker County based on 2004 calculations.

Figure 1.1 Population Projections for Baker County, 2005–2030



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

Of particular concern within Baker 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 22,259 persons residing in Baker County approximately 9% are listed as 65 years old or over, 23.7% are listed as having a disability; 14.7% are listed as below poverty, and 3.9% live in a home where the primary language is other than English.

2. Hazard Vulnerability

Hazards Identification

The highest risk hazards for Baker County as identified in the County’s Local Mitigation Strategy (LMS) are considered to be wildfires, localized flooding, hazardous materials/chemicals releases, hurricanes, tornadoes or severe storms, and terrorism attacks. Storm surge and sinkholes were discussed in the LMS, but the risk was considered to be very low for the entire county.

Hazards Analysis

The following analysis examines two major hazard types: flood and wildfire. 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 DMA2K revision 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 and all medium-to-high risk zones from MEMPHIS for wildfire (Level 5 through Level 9). 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 Baker County LMS considers storm surge and sinkholes to be very low risk hazards and MEMPHIS data indicates that no persons or structures are exposed to surge or sinkholes, no further analysis was conducted for these hazards.

Existing Population at Risk

Table 2.1 presents the population currently exposed to each hazard throughout Baker County. Of the 22,259 (U.S. Census 2000) people that reside in Baker County, nearly 7% are exposed to 100-year flooding and 12% are exposed to wildfire. Of the 1,523 people exposed to flood, 6% are over age 65 and 36% are disabled.

Table 2.1 Estimated Number of Persons Exposed to Selected Hazards

Segment of Population	Flood	Wildfire
Total (all persons)	1,523	2,681
Minority	66	951
Over 65	90	245
Disabled	550	1,041
Poverty	21	904
Language Isolated	0	0
Single Parent	31	341

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 Baker 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. Thus, it is important to not only consider evacuation times for Baker 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
Baker	12	12	19.5	19.5	19.5
Clay	9	9	11.25	11.25	11.25
Duval	8.5	12	16.75	19.5	19.5
Nassau	10.25	12.25	12.75	13.25	13.25
Putnam	10	12	17.75	18	18
St. Johns	11	14	16	16.75	16.75

Source: DCA, DEM Hurricane Evacuation Study Database, 2005

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 12 and 19.5 hours to safely evacuate Baker County depending on 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, Baker County currently has a significant shelter deficit. According to Florida’s Statewide Emergency Shelter Plan, Baker County has an existing shelter capacity of 295 people. The 2004 shelter demand for a Category 4 or Category 5 hurricane is 2,114 people, leaving an existing shelter deficit of 1,819. In 2009, the projected shelter demand is 2,303, leaving an anticipated shelter deficit of 2,008.

Per an objective in the Coastal Element (9J-5.012(3)(b)7.), counties must maintain or reduce hurricane evacuation times. This could be accomplished by using better topographical data to determine the surge risk to populations to evaluate which areas to evacuate, and increasing the ability to shelter in place to decrease the number of evacuees. Baker 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 Exposure

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 Baker County by occupancy type that are exposed to each of the two hazards being analyzed. Exposure refers to the number of people or structures that are susceptible to loss of life, property damage and economic impact due to a particular hazard. The estimated exposure of Baker County’s existing structures to the flood and wildfire hazards was determined through MEMPHIS.

Table 2.3 Estimated Number of Structures Exposed to Selected Hazards

Occupancy Type	Flood	Wildfire
Single Family	2,026	1,553
Mobile Home	637	569
Multi-Family	432	250
Commercial	387	169
Agriculture	2,091	1,569
Gov. / Institutional	549	457
Total	6,122	4,567

Source: Mapping for Emergency Management, Parallel Hazard Information System

There are 10,689 structures exposed to at least one of the two hazards, of which most are single-family homes in subdivisions or used for agriculture. Of these structures, 57% are exposed to flood. Over 6,000 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 three repetitive loss properties in unincorporated Baker 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 42% or 4,567 structures are exposed to wildfire, of which 39% are single-family dwellings and another 34% are used for agricultural purposes. The Florida Division of Forestry (FDOF) has identified areas located in the urban/rural interface in the vicinity of Macclenny and Glen St. Mary which are particularly susceptible to wildfire (Baker County LMS, 2004). The County should continue to take measures to reduce wildfire risk within the urban/rural interface.

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, storm surge velocity, 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 at risk from flooding 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 the identified hazards 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. Baker County future land use data was acquired in March 1994 and might not reflect changes per recent future land use amendments. Maps of existing land use within hazard areas based on the 2004 County Property Appraiser geographic information system (GIS) shapefiles. Maps of future land uses in hazard areas were developed using the Baker County future land use map dated March 1994. 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 and wildfire susceptible areas.

In **Attachment A**, two maps present the existing and future land uses within a 100-year flood zone. There are flood-prone areas scattered across the County. The total amount of land in the special flood hazard area is 366,559.8 acres. As shown in **Table 2.4**, 27.5% are parks, conservation areas and golf courses; 49.6% are in agricultural use; 4.5% are currently undeveloped; and 15.5% are used for government, institutional, hospitals or education purposes. **Table 2.5** shows that of the 16,474.3 undeveloped acres, 88.5% are designated for agricultural use; 4.2% are preserved lands; and 3.8% are designated for single family residential development. Since a large portion of the acreage is designated agricultural, the County has the opportunity to maintain this land use and low density development to prevent increased vulnerability to flooding. Although stormwater management systems are designed to eliminate flooding, these systems can fail during a storm if debris blocks drainage channels or culverts washout.

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 wildfire susceptible areas is 15,472.2 acres. As shown in **Table 2.4**, 49.6% are used for agriculture; 27.5% are used for Parks, Conservation Areas, and Golf Courses; and 15.5% are used for Government, Institutional, Hospitals, and Education. **Table 2.5** shows that of the 968.6 undeveloped acres, 78.6% are used for agriculture; 11.4% are preserved lands; and 7% are single family residential homes. The County should continue to take measures to reduce wildfire risk within the urban/rural interface.

In the analysis, no risk was detected for the coastal hazards zone in relation to storm surge, hurricane vulnerability zones in relation to evacuation clearance times, and sinkhole susceptibility.

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

Existing Land Use Category		Flood Zones	Wildfire Susceptible Areas
Agriculture	Acres	181,773.8	9,649.3
	%	49.6	62.4
Attractions, Stadiums, Lodging	Acres	7.1	0.0
	%	0.0	0.0
Places of Worship	Acres	219.6	22.7
	%	0.1	0.2
Commercial	Acres	269.1	8.3
	%	0.1	0.1
Government, Institutional, Hospitals, Education	Acres	56,919.6	2,776.8
	%	15.5	18.0
Industrial	Acres	160.7	5.4
	%	0.0	0.0
Parks, Conservation Areas, Golf Courses	Acres	100,891.0	1,378.8
	%	27.5	8.9
Residential Group Quarters, Nursing Homes	Acres	107.2	2.0
	%	0.0	0.0
Residential Multi-Family	Acres	148.3	2.5
	%	0.0	0.0
Residential Mobile Home, or Commercial Parking Lot	Acres	3,401.9	308.5
	%	0.9	2.0
Residential Single-Family	Acres	4,497.8	270.6
	%	1.2	1.8
Transportation, Communication	Acres	708.7	29.0
	%	0.2	0.2
Utility Plants and Lines, Solid Waste Disposal	Acres	980.7	49.7
	%	0.3	0.3
Vacant	Acres	16,474.3	968.6
	%	4.5	6.3
Total Acres	Acres	366,559.8	15,472.2
	%	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		Flood Zones		Wildfire Susceptible Areas	
		Total	Vacant	Total	Vacant
Agricultural	Acres	321,482.7	14,583.2	12,923.0	760.9
	%	87.7	88.5	83.5	78.6
Commercial	Acres	907.3	105.5	26.3	0.9
	%	0.3	0.6	0.2	0.1
Industrial	Acres	173.9	31.4	13.8	0.0
	%	0.1	0.2	0.1	0.0
Multi-Family	Acres	4,176.2	439.6	272.2	28.8
	%	1.1	2.7	1.8	3.0
Preserve	Acres	33,584.4	688.0	1,697.8	110.1
	%	9.2	4.2	11.0	11.4
Single Family	Acres	6,235.4	626.7	539.0	68.0
	%	1.7	3.8	3.5	7.0
Total	Acres	366,559.8	16,474.3	15,472.2	968.6
	%	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 by DCA for each of Baker County's two incorporated municipalities. These amounts are listed in **Table 2.6**. The City of Macclenny has the most amount of total acreage susceptible to all of the hazards listed in **Table 2.6**. Macclenny is the only municipality with acreage in the flood zones, and has the most vacant acreage in the wildfire susceptible areas. 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 Baker 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		Flood Zones		Wildfire Susceptible Areas	
		Total	Vacant	Total	Vacant
Glen St. Mary	Acres	0.0	0.0	3.8	0.5
	%	0.0	0.0	100.0	7.8
Macclenny	Acres	98.5	17.4	163.0	5.4
	%	100.0	100.0	100.0	92.2
Total Acres	Acres	98.5	17.4	166.8	5.8
	%	100.0	100.0	100.0	100.0

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, LMSs 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, 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 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 Baker County LMS (adopted in 2004) was assessed to determine if the hazard analysis and vulnerability assessment (i.e., flood and wildfire) data can support comprehensive planning, whether the guiding principles include a comprehensive list of policies for the county and municipalities, and whether the LMS goals and objectives support comprehensive planning goals, objectives, and policies (GOP). Future updates to the assessment will include working with Baker

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. 26-64).

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 county property values for occupancy classes.
- Provides a hazards analysis and a qualitative vulnerability assessment.
- Includes maps for each of the hazards.
- Includes a map of critical facilities.
- Provides a map of repetitive losses.
- Includes a qualitative risk assessment for each hazard (Table A-1. Hazards Identification Information Table)

Weaknesses:

- Does not include data for population and property exposure to flood, or wildfire.
- Does not provide a clear description of geographic areas exposed to each of the hazards that the community is most susceptible to.
- 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 include a quantitative risk assessment for existing and future development (i.e., loss estimates) or specific critical facilities. However, the LMS Committee is planning on including this information in the future.

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 Baker County LMS Guiding Principles section contains a list of policies for the county and each municipality. Table 1 in the Baker County LMS includes the mitigation category (e.g., flood, hazardous materials), objective/policy, source (e.g., comprehensive plan, Northeast Florida Strategic Regional Policy Plan), and notes. The Guiding Principles section is found in most counties' LMSs 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.

LMS Goals and Objectives

The Baker County LMS has goals that support mitigation principles that are found in the comprehensive plan. A full list of the LMS goals and objectives pertaining to comprehensive planning can be found in **Attachment C**. The following is a summary of the LMS goals that support comprehensive plan GOPs:

Goal 1 refers to the protection of family life from hazards. An objective includes basing all future land use decisions on the carrying capacity of evacuation routes and the ability to evacuate in a major hurricane.

Goal 5 strives to protect homes and provide for security of people and investments. An objective includes the notification of home buyers that property is in the floodplain.

Goal 6 emphasizes to the protection of infrastructure to ensure its availability during and after a disaster.

Goal 8 refers to the protection of the environment. Objectives include the reduction or prevention of storm damage by protecting natural systems which serve as buffers against those storms; the protection of floodplains and regulation of development in undisturbed areas; and the protection of wetlands and submerged lands.

Goal 9 includes the regulation of hazardous waste sites by enforcing siting and construction requirements. An objective includes the protection of protect natural resources from contamination by any hazardous substances.

Goal 10 encourages owners of large tracts of wooded land to obtain annual permits for control burning.

An assessment of whether the LMS goals and objectives 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, Baker County, and PBS&J.

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 Baker County adopting and implementing corresponding policies that are legally enforceable.

Comprehensive Emergency Operations Plan (CEMP)

The Baker County CEMP references the LMS in Annex II which includes standard operating procedures for the County's Mitigation Task Force. The CEMP notes that all pre-disaster mitigation priorities and projects are generated through the LMS. 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, and responsibilities. This includes the post-disaster implementation of disaster mitigation, response and recovery assistance programs, as well as pre-disaster mitigation programs such as the National Flood Insurance 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 general, the CEMP can be used as a tool for planners to outline collaborative procedures for working with emergency managers to reduce vulnerability from hazards. The CEMP indicates that the Planning Department and building officials will serve as a primary/secondary support agencies to the Division of Emergency Management. However, the CEMP does not currently outline specific activities for planners to collaborate with emergency managers on (e.g., pre-storm vulnerability assessment, or post-storm damage assessment for mitigation project identification/prioritization).

Post-Disaster Redevelopment Plan (PDRP)

The Baker County PDRP was not available for review at the time that this profile was developed.

National Flood Insurance Program/Community Rating System

Baker County (unincorporated areas) as well as the municipality of Macclenny participates in the National Flood Insurance Program (NFIP). The municipality of Glen Saint Mary does not participate in the NFIP. Baker County participates in the NFIP Community Rating System (CRS) with a rating of seven. No municipalities currently participate in the NFIP Community Rating System (CRS).

4. Comprehensive Plan Review

Purpose and Intent

The Baker County 2000-2010 Comprehensive Plan (Adopted July 2004) was reviewed for the purpose of developing this profile. This review was undertaken in order to assess what steps Baker 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 following hazards: flooding and wildfires. Storm surge and sinkholes were discussed in the LMS, but the risk was considered to be very low for the entire county. Therefore, the Baker County Comprehensive Plan elements were not reviewed for policies pertaining to storm surge or 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 D**. 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 Baker County Plan primarily focuses on the protection of natural features such as floodplains, through development controls and stormwater management. The hazard primarily addressed in the Plan is flooding. There is a general emphasis placed on relationships with the Northeast Florida Regional Planning Council and the Florida Department of Community Affairs, in order to maintain and update the Comprehensive Plan and Land Development Code. However, there is no emphasis on intergovernmental relationships as related to emergency management.

The Comprehensive Plan has many policies related to the protection of natural drainage features, wetlands, and floodplains. The northern portion of the County is situated on the St. Mary's River, and as a result is vulnerable to the flood hazard. However, references to emergency management are limited in the Plan. Baker County is not a coastal county, so policies are not geared toward coastal management and coastal resource protection.

Flooding

Flooding is addressed from two vantage points, the need to protect natural resources, and the protection of vulnerable populations and properties. Land uses are to be controlled within flood-prone areas, and policies promote the acquisition of flood-prone areas along the St. Mary's River. There are also elevation requirements within the 100-year floodplain.

Stormwater and flooding are addressed through the discussion of a Stormwater Management Plan. There are also policies designed to prevent the exacerbation of stormwater issues brought on by new development. Along those lines, there is a policy in place to ensure that post-development runoff is no greater than pre-development runoff.

Hurricane Evacuation

Although Baker County is not coastal, as with many counties in Florida, the County faces a shelter deficit in the event of a hurricane. According to Florida's Statewide Emergency Shelter Plan, Baker County had a shelter deficit of 1,819 people in 2004. The opportunity 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.

Wildfire

No policies directly related to wildfire mitigation were found during this review. However, there was a policy contained in the Future Land Use Element that pertained to limiting development in designated Conservation areas. "These lands will be permitted to have no development except that required for the Public Good such as to improve drainage or transportation, reduce fire hazard, etc." This policy recognizes that wildfire protection could represent a potential need in Conservation areas.

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.

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

Source: FEMA FIRM GIS coverages (1996), supplied by University of Florida GeoPlan Center Florida Geographic Data Library Version 3.0.

- Areas with an “A_”, “V_”, “FPQ”, “D”, “100IC”, or “FWIC” value in the “Zone” field in these coverages were considered to be in the 100-year flood zone, and were used in the mapping/analysis.

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.
- * The rating scale in the “Wildfire Susceptibility Index” GIS coverages has a range of 0 to 100,000 in north Florida counties, and a range of 0 to 1.0 in south Florida counties.

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
Local Mitigation Strategy
Goals and Objectives Related to Comprehensive Planning

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

- **Goal 1** – *Protect the children and overall family life of Baker County and its Municipalities from hazards.*
 - 1.1 Base all future land use decisions on the carrying capacity of evacuation routes and the ability to evacuate in a major hurricane.

- **Goal 5** – *Protect the homes and provide for personal security and investment security.*
 - 5.1 Notify home buyers that property is in the floodplain.

- **Goal 6** – *Protect infrastructure so that it is available during and after a disaster.*

- **Goal 8** – *Protect the environment to ensure that quality of life and economic well being are preserved.*
 - 8.1 Reduce or prevent storm damage by protecting natural systems which serve as buffers against those storms.

 - 8.2 Protect the floodplain and regulate development in the remaining undisturbed areas.

 - 8.3 Protect wetlands and submerged lands through regulatory measures.

- **Goal 9** – *Regulate hazardous waste sites by enforcing siting and construction requirements.*
 - 9.1 Protect natural resources of the County and its municipalities from contamination by any hazardous substances.

- **Goal 10** – *Encourage owners of large tracts of wooded land to obtain permits for control burning and to do so annually.*

ATTACHMENT D
Baker County Comprehensive Plan Excerpts Related to Hazard Mitigation

FUTURE LAND USE ELEMENT

Objective A.1.1 The County shall coordinate future land uses with the appropriate topography, soil conditions and the availability of facilities and services.

Policy A.1.1.1 Baker County shall use the latest version of the Flood Damage Prevention Ordinance promulgated by FEMA to determine the location of the 100-year floodplain and flood prone areas in the County. The County shall require development in the FEMA 100-year flood hazard zone to be constructed so that the lowest floor elevation is at least one foot above the base flood elevation as established by the FEMA Flood Insurance Rate Maps. Dredging and filling of lands within floodplains shall not be permitted to adversely impact upon the natural functions of the 100-year floodplain. All proposed development shall be located on the non-floodplain portions of the site, or, for proposed development areas that lie entirely within the 100-year floodplain, all structures shall be required to be elevated on pilings. In addition, the following criteria will apply to development in the 100-year floodplain: a. No hazardous materials or waste shall be stored within the 100-year floodplain; b. Clearing of native vegetation will be minimized in the 100-year floodplain by establishing the following open space ratios for the land uses identified below: Residential land use 60% open space; Commercial land use 50% open space Industrial land use 45% open space c. Use of septic tanks in flood prone areas will be restricted as specified by the County Department of Health and all such sewage disposal systems shall be required to connect to central sewage systems when system collection lines are within 200 feet of subject property; and d. Any development within a flood prone area will maintain the natural topography and hydrology of the development site.

Policy A.1.1.2 Baker County shall adopt a site plan review ordinance which requires that any required permits, (including dredge and fill), from the appropriate agency such as the Water Management District, Department of Environmental Protection, and Corps of Engineers be secured prior to the issuance of a building permit.

Policy A.1.1.4 The County Subdivision and Zoning Code shall be reviewed and where necessary revised to The County Subdivision and Zoning Code shall be reviewed and where necessary revised to address drainage and storm water issues as identified in the Public Facility Element; open space requirements as addressed in the Recreation and Open Space Element; and, on-site traffic flow and vehicle parking as addressed in the Traffic Circulation Element. a. Drainage and stormwater management will identify interim measures to be adopted until a County-wide Stormwater Master Drainage Plan is adopted. b. Open space requirements will meet the LOS adopted in the Recreation and Open Space Element. c. On-site traffic will, at a minimum, require that adjacent commercial, high density/medium density (or combinations thereof) properties provide interconnections to reduce requirements for road trips. d. Parking requirements shall be specified in terms of number of parking space units per type and size of facility.

Objective A.1.3 Baker County shall encourage the elimination or reduction of land uses inconsistent with the uses identified on the Future Land Use Map or associated adopted Goals, Objectives and Policies.

Policy A.1.3.3 The County's Subdivision Regulations and Zoning Code shall be reviewed and where necessary revised to ensure that land use categories are regulated in accordance with the Future Land Use Map and that controls are adopted for the regulation of sub-divisions and the use of land in flood prone areas. Land use in flood prone areas shall be limited to low density residential (up to 2 dwelling units per acre) and nonresidential construction controlled by the specifications identified in Policy A.1.1.1, with the height of floor level and the use of septic tanks limited to that permitted by FEMA and County Health Department Regulations.

Objective A.1.4 Baker County shall ensure the protection of natural resources and historic resources through implementing Policies A.1.4.1 through A.1.4.18.

Policy A.1.4.4 Areas designated as Conservation on the Future Land Use Map shall limit development as follows: a. All conservation designated land use on the Future Land Use Map is under public ownership. These lands will be permitted to have no development except that required for the Public Good such as to improve drainage or transportation, reduce fire hazard, etc. In such cases, an amendment to the land use designation shall be required in accordance with s.163.3187, F.S. (See Policy A.1.9.3,A.,8). b. Recreational development must be compatible with the surrounding land uses and shall be subject to standards adopted in the land development regulations. (See Policy A.1.9.3.,A.,5).

Policy A.1.4.8 The County, through its agricultural agent, shall require agriculture (row crops, ranching, silviculture, etc.) to use Best Management Practices (BMP's) which will minimize soil erosion, minimize impact on wetlands, and maintain wildlife habitat.

Policy A.1.4.11 A minimum 50-foot upland buffer of existing native vegetation (tree canopy, understory and ground cover) shall be established for the St. Mary's River, and the South Prong St. Mary's River. The buffer shall begin at the ordinary high water line. No development (buildings, accessory structures, patios, pavement etc.) shall be allowed within the buffer, however, dirt walkways to access the river shall be allowed within the buffer. Development immediately adjacent to ecologically sensitive water bodies (as identified in the survey to be conducted under Policy E.1.7.4) shall be restricted to low density/low intensity land uses and to non-polluting land use activities as identified in Policy A.1.3.3, paragraph 2 and Policy A.1.4.5, paragraph 2.

Policy A.1.4.12 A minimum 25-foot upland buffer of existing native vegetation, (tree canopy, understory and ground cover) shall be required for new developments located adjacent to contiguous wetlands as defined in Rule 40C-4.021(30), F.A.C. A wider buffer of up to 50 feet may be required on a site specific basis depending on the characteristics of the particular site (wetland composition, size and quality; topography; hydrology, soil types and /or proposed land uses).

Policy A.1.4.13 Dredge and fill in wetlands shall be subject to applicable state regulations.

Policy A.1.4.14 By August 2001 the County shall adopt a storm water management ordinance which will regulate the quality and quantity of stormwater run-off for all development.

Policy A.1.4.15 By 2001 the County shall initiate the development of a Stormwater Management Plan.

Policy A.1.4.17 Development adjacent to the St. Mary's River shall be designed so as not to affect the water quality of adjacent waters. Design standards shall include: density; set back of buildings from waterfront; setback of sanitary sewer drain field (septic tanks) from water's edge and a 50-foot vegetative buffer required between development and the water body consistent with Policy A.1.4.11 above.

Policy A.1.4.18 The County shall, through available state and federal programs, promote the acquisition of floodplains along the St. Mary's River.

Objective A.1.9 The County shall manage future growth and development through the preparation, adoption, implementation and enforcement of land development regulations.

Policy A.1.9.3 Land Development Regulations adopted to implement this Plan shall be based on the land uses standards described below and spatially displayed on the Future Land Use Map.

Where land uses on the Future Land Use Map (Figure A-9) overlay Floodplains as shown on Figure A-8, the limitations and controlling factors for development in floodplains as described in Policies A.1.1.1, A.1.3.3, E.1.3.4, E.1.3.5, E.1.3.6, and E.1.4.6 prevail.

A. Land Use Districts: 2. Residential- Residential development within the 100-year floodplain will be required to meet FEMA regulations regarding the height of floor level above the floodplain level and County Health Department regulations regarding the installation of septic tanks.

B. Overlays (in part) 2. Conservation Overlay Area The Conservation Area Overlay will preserve interconnected natural resources associated with the St. Mary's River and the South Prong tributary, north of Macclenny, to protect the drainage systems and headwaters of the regional tributaries and implement regional water quality/quantity management and protection. Increase in Land Use intensity within the Conservation Overlay areas shall be prohibited unless it can be shown that such development will not adversely affect water storage or natural resources, or if this development is mitigated for in such a manner that the integrity of the natural system is not degraded. (See Policy E.1.3.1) Development immediately adjacent to ecologically sensitive water bodies shall be restricted to low density/low intensity land uses of up to (2) residential units per acre and to non-polluting land use activities as defined in Policy E.1.2.3 paragraph 2.

INTERGOVERNMENTAL COORDINATION

Objective G.1.5 The County shall ensure the availability of adequate funding and staff resources to implement all of the adopted Goals, Objectives and Policies in the Comprehensive Plan.

Policy G.1.5.2 The County shall continue to coordinate with the Northeast Florida Regional Planning Council and the Department of Community Affairs in seeking out all potential funding sources which could assist the County in implementing the Comprehensive Plan and related Land Development Regulations.

PUBLIC FACILITIES ELEMENT

Objective D.1.6 The County shall take specific flood protection measures, which will also protect all surface water bodies from pollutants.

Policy D.1.6.1 The County shall by 2005 develop a stormwater master plan which delineates strategies for 1) determining the volume, rate, timing, and pollutant load of the runoffs where improvements have been made; 2) identifying areas which have recurring drainage problems and evaluating the extent to which water bodies are being impacted by the stormwater discharges; 3) determining where additional improvements are needed; 4) a priority listing of drainage projects based upon Policy D.1.1.1, and costs and time associated with the completion of each project required to correct current deficiencies and meet future needs. Upon approval by the Baker County Board of County Commissioners, the Stormwater Master Plan shall be incorporated in a stormwater management ordinance and made part of the Public Facilities Element through the amendment process presented in s.163.3187, F.S.

Policy D.1.6.2 The County shall implement a routine maintenance program of drainage ditches, the costs of which are incorporated into the County's operating budget.

Policy D.1.6.3 The County shall coordinate with the Department of Transportation to implement a maintenance program of drainage ditches along state maintained roads.

Policy D.1.6.4 The County shall adopt Land Development Regulations which require development to maintain buffers of native vegetation adjacent to water bodies and wetlands which provide filtration of stormwater pollutants.

Policy D.1.6.5 The County shall adopt Land Development Regulations which require that new dirt roads and driveways be designed to reduce erosion due to stormwater runoff which can adversely affect adjacent surface water bodies and wetlands.

Policy D.1.6.7 The County shall not issue a building permit until applicable permits from jurisdictional agencies for dredge and fill, stormwater, and drainage are secured.

Policy D.1.6.8 The County shall adopt Land Development Regulations which require that surface water runoff from new construction sites be retained on-site to permit no greater runoff than existed prior to construction activities. Exempted from this policy are single family residence sites, subdivisions with a master drainage plan and construction associated with a DRI.

CONSERVATION ELEMENT

Objective E.1.4 The County shall regulate development within the 100 year floodplain in order to protect its flood carrying and flood storage capacity, water purification, and habitat functions, and the health, safety, and welfare of the public through implementing the following policies.

Policy E.1.4.1 By 1993, the County shall begin development of a Stormwater Master Plan. The plan shall be developed in phases and completed by 1994. (The contents of this plan, adoption and inclusion into the Comprehensive Plan is discussed in Policy D.1.6.1 of the Public Facilities Element).

Policy E.1.4.6 The County shall require development in the FEMA 100-year flood hazard zone to be constructed so that the lowest floor elevation is at least one foot above the base flood elevation as established by the FEMA Flood Insurance Rate Maps. Dredging and filling of lands within floodplains shall not be permitted to adversely impact upon the natural functions of the 100-year floodplain. All proposed development shall be located on the nonfloodplain portions of the site, or for proposed development areas that lie entirely within the 100 yr. Floodplain, all structures shall be required to be elevated on pilings. In addition, the following criteria will apply to development in the 100 year floodplain: a) No hazardous materials or waste shall be stored within the 100-year floodplain. b) Clearing of native vegetation will be minimized in the 100 year floodplain by establishing the following open space ratios for the land uses identified below; Residential land uses 60% open space; Commercial land use 50% open space; and Industrial land use 45% open space. c) Use of septic tanks in flood prone areas will be restricted as specified by the County Department of Health and all such sewage disposal systems shall be required to connect to central systems when system collection lines are within 200 feet of subject property; and d) Any development within a flood prone area will maintain the natural topography and hydrology of the development site.

Objective E.1. The County shall conserve, appropriately use and protect the quality and quantity of waters that flow into estuarine waters.

Policy E.1.3.2 Dredge and fill in wetlands shall require that state permits in accordance with Ch. 62-312 F.A.C. and federal permits be secured before a development permit is issued by the County in accordance with adopted LDRs which address specific requirements of depth of dredge, type of permitted fill material and required open space in dredge.

Policy E.1.3.3 The County shall coordinate with the County Agricultural agent to implement guidelines as found in Best Management Guidelines for Forested Wetlands in Florida as published by the Division of Forestry.

Policy E.1.3.4 Development order and permits for development in wetland shall be specific as to controlling the density/intensity of use as well as the type of land use permitted to protect the overall integrity and quality of wetland systems such as vegetative cover, and quantity and quality of surface water, including such regional wetland resources as Pinhook Swamp, Impassable Bay, Moccasin Swamp, Big Gum Swamp, and New River Swamp.

Policy E.1.3.6 The natural functions and hydro period of wetlands shall be maintained.

Policy E.1.3.7 The County shall continue to work with the State and The Nature Conservancy to identify and promote the purchase and conservation of significant wetlands.

Policy E.1.3.8 Use of appropriate wetlands for stormwater management and for tertiary treatment of wastewater shall be encouraged. Such use shall not exceed the assimilative capacity of the wetlands being used, and shall ensure the continued natural functioning of the wetland system.

Policy E.1.3.9 Development located adjacent to the St. Mary's River or the South Prong of the St. Mary's River shall have a 50-foot set back from the shoreline. The buffer shall be measured from the ordinary high water line of the river and no development (buildings, accessory structures, patios, pavement etc.) shall be allowed within the buffer. Existing undisturbed native vegetation (tree canopy, understory and ground cover) shall be retained within the buffer, however, dirt walkways to access the water body shall be allowed within the buffer. Development immediately adjacent to ecologically sensitive water bodies (as identified in the survey to be conducted under Policy E.1.7.4) shall be restricted to low density/low intensity land uses and to non-polluting land use activities as identified in Policy A.1.3.3, paragraph 2 and Policy A.1.4.5, paragraph 2.

Policy E.1.3.10 A minimum 25-foot upland buffer of existing native vegetation, (tree canopy, understory and ground cover) shall be required for new developments located adjacent to contiguous wetlands as defined in Rule 40C-4.021(30), F.A.C. A wider buffer of up to 50 feet may be required on a site specific basis depending on the characteristics of the particular site (wetland composition, size and quality; topography; hydrology, soil types and /or proposed land uses).

Objective E.1.4 The County shall regulate development within the 100 year floodplain in order to protect its flood carrying and flood storage capacity, water purification, and habitat functions, and the health, safety, and welfare of the public through implementing the following policies.

Policy E.1.4.1 By 1993, the County shall begin development of a Stormwater Master Plan. The plan shall be developed in phases and completed by 1994. (The contents of this plan, adoption and inclusion into the Comprehensive Plan is discussed in Policy D.1.6.1 of the Public Facilities Element)

Policy E.1.4.2 Stormwater shall be regulated in accordance with Policy D.1.2.3 of the Public Facilities Element.

Policy E.1.4.6 The County shall require development in the FEMA 100-year flood hazard zone to be constructed so that the lowest floor elevation is at least one foot above the base flood elevation as established by the FEMA Flood Insurance Rate Maps. Dredging and filling of lands within floodplains shall not be permitted to adversely impact upon the natural functions of the 100-year floodplain. All proposed development shall be located on the nonfloodplain portions of the site, or for proposed development areas that lie entirely within the 100 yr. Floodplain, all structures shall be required to be elevated on pilings. In addition, the following criteria will apply to development in the 100 year floodplain: a) No hazardous materials or waste shall be stored within the 100-year floodplain. b) Clearing of native vegetation will be minimized in the 100 year floodplain by establishing the following open space ratios for the land uses identified below; Residential land uses 60% open space Commercial land use 50% open space Industrial land use 45% open space c) Use of septic tanks in flood prone areas will be restricted as specified by the County Department of Health and all such sewage disposal systems shall be required to connect to central systems when system collection lines are within 200 feet of subject property; and d) Any development within a flood prone area will maintain the natural topography and hydrology of the development site.

Objective E.1.7 The county shall implement measures to protect and conserve wildlife, and native plant communities in a healthy environment and for the enjoyment of future generations.

Policy E.1.7.2 The County shall promote the acquisition of floodplains along the St. Mary's River through such programs as the Save Our River program and/or Conservation and Recreational Lands program.

Policy E.1.7.4 The County shall coordinate with the Florida Fish and Wildlife Conservation Service by 2001 to prepare a conservation map and overlay to its Future Land Use Map which identifies areas of ecological concern. Development within these identify areas shall be restricted as to low density/intensity of uses and to non-polluting land use applications. Upon completion, the map overlay shall be reviewed by the Board of County Commissioners and upon approval shall be made part of the Comprehensive Plan Future Land Use and Conservation Elements by amendment in accordance with s. 163.3187, F.S. Restriction on development in areas identified on the conservation overlay shall include: a. Set back requirements from wetlands; b. Density restrictions based upon the level of ecological sensitivity and recommendations from the Florida Game and Fresh Water Fish Commission; c. Water quality and water quantity requirements.