

SEMINOLE COUNTY

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

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1. County Overview

Geography and the Environment

Seminole County is located along the northeastern coast of Florida. It covers a total of 308 square miles with an average population density of 1,184.9 people per square mile (U.S. Census, 2000).

There are seven incorporated municipalities within the County, and these are listed in **Table 1.1** below.

Population and Demographics

Official 2004 population estimates for all jurisdictions within Seminole County, as well as, the percent change from the 2000 U.S. Census are presented in **Table 1.1**. The most current estimated countywide population of Seminole is 403,361 people (University of Florida, Bureau of Economic and Business Research, 2004). About half of the residents live in the unincorporated County. Between 1990 and 2000, Seminole County as a whole had a growth rate of 27%, which is greater than the statewide growth rate of 23.5% in those 10 years.

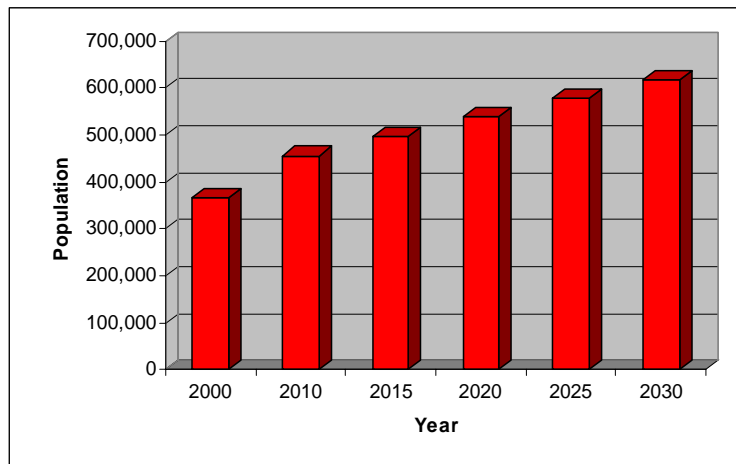
Table 1.1. Population by Jurisdiction

| Jurisdiction | Population, Census 2000 | Population Estimate, 2004 | % Change, 2000-2004 |
|-------------------------|-------------------------|---------------------------|---------------------|
| Unincorporated | 179,891 | 199,482 | 10.9% |
| Altamonte Springs | 41,200 | 42,499 | 3.2% |
| Casselberry | 23,438 | 24,741 | 5.6% |
| Lake Mary | 11,458 | 13,792 | 20.4% |
| Longwood | 13,745 | 13,886 | 1.0% |
| Oviedo | 26,316 | 29,928 | 13.7% |
| Sanford | 38,291 | 46,078 | 20.3% |
| Winter Springs | 30,860 | 32,955 | 6.8% |
| Countywide Total | 365,199 | 403,361 | 10.4% |

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

According to the University of Florida, Bureau of Economic and Business Research (2004), Seminole County's population is projected to continue to grow rapidly, reaching 615,800 people by the year 2030. **Figure 1.1** illustrates medium population projections for Seminole County based on 2004 calculations.

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



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

Of particular concern within Seminole County's population, are those persons with special needs and/or limited resources such as the elderly, disabled, low-income, or language-isolated residents. According to the 2000 U.S. Census, 10.6% of Seminole County residents are listed as 65 years old or over, 16.0% are listed as having a disability, 7.4% are listed as below poverty, and 15.6% live in a home with a primary language other than English.

2. Hazard Vulnerability

Hazards Identification

The highest risk hazards for Seminole County as identified in the County's Local Mitigation Strategy (LMS) are high winds, crime, lightning, hail, hazardous materials, major fire-urban, and drought. Sinkholes were not considered a high risk to the County or its municipalities.

The County had severe wind damages from the 2004 hurricanes. Lightning has also been a problem for the County, with the City of Sanford having \$25,000 damage to water utilities from multiple lightning strikes. Altamonte Springs and Winter Springs have had problems with hazardous materials and fires causing millions in damage.

Hazards Analysis

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

Existing Population at Risk

Table 2.1 presents the countywide population at risk from hazards, as well as, a breakdown of the sensitive needs populations at risk. The first column in the table summarizes the residents of Seminole County that live within Federal Emergency Management Agency Flood Insurance Rate Map zones, which signify special flood hazard areas. According to these maps, 16.6% of the population, or 60,530 people, are within the 100-year flood zone. In Seminole County, sinkholes are a major risk, with almost all of the population living within a medium- to adjacent-risk sinkhole zone. The last column of the table shows the amount of people that fall in medium- to high-risk wildfire zones, which is based on many factors, including vegetation and ease of access to the homes. A total of 193,261 people countywide, or 52.9% of the total population, are at medium- to high-risk from wildfire. A total of 26.9% of those at risk are disabled, making a quick evacuation difficult.

Table 2.1 Countywide and Special Needs Populations at Risk from Hazards

| Population | Flood | Sinkhole (med.-adjacent risk) | Wildfire (med-high risk) |
|-------------------------|---------------|----------------------------------|-----------------------------|
| Minority | 9,238 | 61,955 | 35,553 |
| Over 65 | 7,371 | 37,571 | 20,140 |
| Disabled | 17,881 | 97,999 | 52,014 |
| Poverty | 4,342 | 25,931 | 14,816 |
| Language-Isolated | 0 | 0 | 0 |
| Single Parent | 3,257 | 19,929 | 11,241 |
| Countywide Total | 60,530 | 352,531 | 193,261 |

Source: Florida Department of Community Affairs, 2005a.

Evacuation and Shelters

As discussed in the previous sections, population growth in Seminole County has been steady, and this trend is projected to continue. As the population increases in the future, the demand for shelter space is only going to increase. Also, evacuees of neighboring counties could need sheltering in Seminole County during a hurricane as well. Currently, there is space for 8,497 people in the County’s shelters, leaving enough space in shelter facilities for an additional 5,092 beyond the County’s current demand in the case of a Category 5 hurricane. In the next 4 years, there will be enough space to shelter 4,687 more people than the expected demand (FDCA, 2004).

Existing Built Environment

While the concern for human life is always highest in preparing for a natural disaster, there also are large economic impacts to local communities, regions, and even the State when property damages are incurred. To be truly sustainable in the face of natural hazards, we must work to protect the residents and also to limit, as much as possible, property losses that slow down a community’s ability to bounce back from a disaster. **Table 2.2** presents estimates of the number

of buildings in Seminole County by structure type that are at risk from each of the three hazards being analyzed. As seen in the estimated population at risk statistics in **Table 2.1**, sinkholes put the largest amount of structures at risk as well. Regardless of hazard, the structure type most at risk is single-family homes.

Flooding is also a risk to property in the County, with 42,804 structures within a flood zone. According to the latest National Flood Insurance Program Repetitive Loss Properties list, there are six homes in unincorporated Seminole County that have had flood damage multiple times and received insurance payments (FDCA, 2005b).

Table 2.2 also shows 70,971 structures within medium- to high-risk wildfire areas, with over half of those being single-family homes.

Table 2.2 Countywide Number of Structures at Risk from Hazards

| Structure Type | Flood | Sinkhole (med- adjacent risk) | Wildfire (med-high risk) |
|---------------------|---------------|----------------------------------|-----------------------------|
| Single-Family Homes | 17,861 | 94,817 | 54,188 |
| Mobile Homes | 12,365 | 1,382 | 3,756 |
| Multi-Family Homes | 5,912 | 12,350 | 7,062 |
| Commercial | 4,222 | 4,170 | 2,821 |
| Agriculture | 2,099 | 3,566 | 2,364 |
| Gov./Institutional | 345 | 1,088 | 780 |
| Total | 42,804 | 117,373 | 70,971 |

Source: Florida Department of Community Affairs, 2005a.

Analysis of Current and Future Vulnerability

The previous hazards analysis section discussed population and existing structures at risk from flooding, sinkholes, and wildfire according to MEMPHIS estimates. This section is used to demonstrate the County’s vulnerabilities to these hazards spatially and in relation to existing and future land uses. The FDCA has provided maps of existing land use within hazard areas based on the 2004 County Property Appraiser geographic information system (GIS) shapefiles. Maps of future land uses in hazard areas were developed using the Seminole County future land use map dated October 2003.

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; however, a majority of the large swaths surround Lake Monroe, Jessup, Harney, and the rivers. The total amount of land in these special flood hazard areas is 46,742 acres. As shown in **Table 2.3**, 34.3% of these acres are in parks and conservation, 20.2% are currently undeveloped, 19.5% are in agricultural use, and 11.3% have single-family homes. **Table 2.4** shows that 30% of the undeveloped lands are designated for future rural uses with 1 dwelling unit (du) per 5 acres allowed.

In **Attachment B**, maps present the land uses associated with high-risk wildfire zones. These wildfire risk areas are scattered across the County. A total of 31.5% of the land within these wildfire zones is currently used for single-family homes, according to the data in **Table 2.3**. Of the 2,706 undeveloped acres, 53.7% is shown to be designated for rural (1 du/5 acres) or suburban estate uses in the future (**Table 2.4**). These rural uses will not decrease the risk of wildfire since the lots will most likely remain wooded, but they will introduce more property and people into the risk zone.

Maps showing the sinkhole hazard zones and associated existing and future land uses can be found in **Attachment C**. A majority of the County is at risk from sinkholes, including the most populated western portion of the county. **Table 2.3** shows that 21.7% of this area is undeveloped, while 29.4% is single-family residential. **Table 2.4** shows that 18.9% of the undeveloped land at risk is designated for low-density residential in the future. Ideally this hazard zone should be restricted from development or at least regulated so that geological testing must be done before structures can be built.

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

| Existing Land Use Category | | Flood | Wildfire Susceptible Areas | Sinkholes |
|--|-------|----------|----------------------------|-----------|
| Agriculture | Acres | 9,125.0 | 2,426.2 | 20,295.1 |
| | % | 19.5 | 15.9 | 14.6 |
| Attractions, Stadiums, Lodging | Acres | 43.7 | 10.7 | 176.1 |
| | % | 0.1 | 0.1 | 0.1 |
| Places of Worship | Acres | 122.2 | 154.1 | 1,256.0 |
| | % | 0.3 | 1.0 | 0.9 |
| Commercial | Acres | 185.5 | 92.1 | 4,871.0 |
| | % | 0.4 | 0.6 | 3.5 |
| Government, Institutional, Hospitals, Education | Acres | 2,740.5 | 1,118.2 | 6,828.8 |
| | % | 5.9 | 7.3 | 4.9 |
| Industrial | Acres | 46.4 | 30.5 | 2,378.0 |
| | % | 0.1 | 0.2 | 1.7 |
| Parks, Conservation Areas, Golf Courses | Acres | 16,047.0 | 2,425.0 | 20,538.8 |
| | % | 34.3 | 15.9 | 14.8 |
| Residential Group Quarters, Nursing Homes | Acres | 22.1 | 29.9 | 212.9 |
| | % | 0.1 | 0.2 | 0.2 |
| Residential Multi-Family | Acres | 414.9 | 272.4 | 3,819.2 |
| | % | 0.9 | 1.8 | 2.8 |
| Residential Mobile Home, or Commercial Parking Lot | Acres | 1,301.9 | 1,060.5 | 1,479.1 |
| | % | 2.8 | 7.0 | 1.1 |
| Residential Single-Family | Acres | 5,288.8 | 4,804.1 | 40,872.7 |
| | % | 11.3 | 31.5 | 29.4 |
| Submerged Land (Water Bodies) | Acres | 555.1 | 8.3 | 1,131.4 |
| | % | 1.2 | 0.1 | 0.8 |
| Transportation, Communication, Rights-of-Way | Acres | 130.6 | 44.8 | 3,067.7 |
| | % | 0.3 | 0.3 | 2.2 |
| Utility Plants and Lines, Solid Waste Disposal | Acres | 1,266.0 | 54.8 | 1,933.5 |
| | % | 2.7 | 0.4 | 1.4 |
| Vacant | Acres | 9,452.2 | 2,706.4 | 30,198.3 |
| | % | 20.2 | 17.8 | 21.7 |
| Total | Acres | 46,741.7 | 15,237.9 | 139,058.6 |
| | % | 100.0 | 100.0 | 100.0 |

Data from: Florida Department of Community Affairs, 2005.

Table 2.4 Total and Undeveloped Acres in Hazard Areas by Future Land Use Category

| Future Land Use Category | | Flood | | Wildfire Susceptible Areas | | Sinkhole | |
|---|-------|-------|--------|----------------------------|--------|----------|--------|
| | | Total | Undev. | Total | Undev. | Total | Undev. |
| Activity Core | Acres | 0 | 0 | 0 | 0 | 35 | 8 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Airport Industry and Commerce | Acres | 0 | 0 | 4 | 0 | 96 | 0 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% |
| Central Business District | Acres | 0 | 0 | 0 | 0 | 86 | 19 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% |
| Commercial | Acres | 233 | 94 | 58 | 21 | 3,430 | 1,042 |
| | % | 0.5% | 1.0% | 0.4% | 0.8% | 2.5% | 3.4% |
| Conservation | Acres | 4 | 1 | 7 | 7 | 2,744 | 1,208 |
| | % | 0.0% | 0.0% | 0.0% | 0.2% | 2.0% | 4.0% |
| Downtown Historic | Acres | 0 | 0 | 0 | 0 | 20 | 4 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Downtown/Mixed Use | Acres | 0 | 0 | 0 | 0 | 356 | 79 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.3% |
| General Commercial | Acres | 0 | 0 | 0 | 0 | 903 | 202 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.7% |
| General Office | Acres | 0 | 0 | 0 | 0 | 86 | 18 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% |
| High Density Residential | Acres | 115 | 62 | 38 | 14 | 1,378 | 462 |
| | % | 0.2% | 0.7% | 0.2% | 0.5% | 1.0% | 1.5% |
| High Intensity (I-4) | Acres | 0 | 0 | 0 | 0 | 270 | 60 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.2% |
| High Intensity Non-Residential/Medium Density Residential | Acres | 0 | 0 | 0 | 0 | 0 | 0 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| High Intensity Planned Development | Acres | 251 | 148 | 136 | 61 | 2,424 | 940 |
| | % | 0.5% | 1.6% | 0.9% | 2.2% | 1.7% | 3.1% |
| Industrial | Acres | 257 | 110 | 141 | 75 | 4,347 | 1,311 |
| | % | 0.6% | 1.2% | 0.9% | 2.8% | 3.1% | 4.3% |
| Institutional | Acres | 0 | 0 | 4 | 0 | 211 | 4 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% |
| Light Industrial | Acres | 0 | 0 | 0 | 0 | 149 | 41 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% |
| Low Density Residential | Acres | 4,544 | 1,501 | 2,153 | 525 | 27,405 | 5,693 |
| | % | 9.7% | 15.9% | 14.1% | 19.4% | 19.7% | 18.9% |
| Low Density Residential - Mobile Home | Acres | 0 | 0 | 0 | 0 | 70 | 2 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% |
| Low Density Residential - Single Family | Acres | 4 | 3 | 5 | 4 | 1,372 | 237 |
| | % | 0.0% | 0.0% | 0.0% | 0.1% | 1.0% | 0.8% |
| Low Intensity Non-Residential | Acres | 0 | 0 | 0 | 0 | 229 | 106 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.4% |

Table 2.4 Total and Undeveloped Acres in Hazard Areas by Future Land Use Category

| Future Land Use Category | | Flood | | Wildfire Susceptible Areas | | Sinkhole | |
|--|-------|-------|--------|----------------------------|--------|----------|--------|
| | | Total | Undev. | Total | Undev. | Total | Undev. |
| Low/Medium Density Residential | Acres | 0 | 0 | 0 | 0 | 222 | 55 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.2% |
| Medium Density Residential | Acres | 211 | 100 | 233 | 74 | 4,315 | 1,373 |
| | % | 0.5% | 1.1% | 1.5% | 2.7% | 3.1% | 4.5% |
| Medium Density Residential 10:1 | Acres | 0 | 0 | 0 | 0 | 242 | 95 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.3% |
| Medium Density Residential 15:1 | Acres | 0 | 0 | 1 | 1 | 535 | 220 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.7% |
| Mixed Office Commercial, High Intensity | Acres | 0 | 0 | 0 | 0 | 147 | 26 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% |
| Mixed Office Commercial, Low Intensity | Acres | 0 | 0 | 0 | 0 | 148 | 12 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% |
| Mixed Office Commercial, Medium Intensity | Acres | 0 | 0 | 1 | 1 | 173 | 27 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% |
| Mixed Office Industrial, Low Intensity | Acres | 0 | 0 | 0 | 0 | 33 | 6 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Mixed Office Industrial, Medium Intensity | Acres | 0 | 0 | 0 | 0 | 97 | 17 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% |
| Mixed Office Residential, High Intensity | Acres | 0 | 0 | 0 | 0 | 121 | 70 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.2% |
| Mixed Office Residential, Low Intensity | Acres | 0 | 0 | 0 | 0 | 76 | 33 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% |
| Mixed Office Residential, Medium Intensity | Acres | 0 | 0 | 0 | 0 | 243 | 63 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.2% |
| Mixed Use | Acres | 0 | 0 | 1 | 0 | 387 | 73 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.2% |
| Moderate Density Residential | Acres | 0 | 0 | 1 | 0 | 824 | 280 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.9% |
| Neighborhood Commercial | Acres | 0 | 0 | 0 | 0 | 74 | 18 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% |
| NOFLU | Acres | 4 | 1 | 4 | 2 | 4,362 | 626 |
| | % | 0.0% | 0.0% | 0.0% | 0.1% | 3.1% | 2.1% |
| Office | Acres | 19 | 7 | 20 | 6 | 505 | 180 |
| | % | 0.0% | 0.1% | 0.1% | 0.2% | 0.4% | 0.6% |
| Office Commercial | Acres | 0 | 0 | 0 | 0 | 31 | 7 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Parks and Recreational | Acres | 0 | 0 | 0 | 0 | 150 | 12 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% |
| Planned Development | Acres | 3,005 | 1,439 | 1,077 | 279 | 13,431 | 3,927 |
| | % | 6.4% | 15.2% | 7.1% | 10.3% | 9.7% | 13.0% |

Table 2.4 Total and Undeveloped Acres in Hazard Areas by Future Land Use Category

| Future Land Use Category | | Flood | | Wildfire Susceptible Areas | | Sinkhole | |
|--------------------------------------|-------|--------|--------|----------------------------|--------|----------|--------|
| | | Total | Undev. | Total | Undev. | Total | Undev. |
| Planned Unit Development/Mixed Use | Acres | 1 | 0 | 3 | 0 | 1,843 | 519 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 1.7% |
| Planned Unit Development/Residential | Acres | 0 | 0 | 0 | 0 | 375 | 88 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.3% |
| Public | Acres | 0 | 0 | 0 | 0 | 216 | 10 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% |
| Public and Semi Public | Acres | 7,025 | 577 | 1,545 | 67 | 6,777 | 303 |
| | % | 15.0% | 6.1% | 10.1% | 2.5% | 4.9% | 1.0% |
| Recreation | Acres | 3,069 | 35 | 1,163 | 7 | 6,316 | 391 |
| | % | 6.6% | 0.4% | 7.6% | 0.2% | 4.5% | 1.3% |
| Residential Activity Core | Acres | 0 | 0 | 0 | 0 | 19 | 8 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Residential Professional | Acres | 0 | 0 | 0 | 0 | 37 | 10 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Residential/Office/Commercial | Acres | 0 | 0 | 0 | 0 | 148 | 49 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.2% |
| Resource Protection | Acres | 11 | 2 | 2 | 0 | 931 | 552 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 1.8% |
| Restricted Commercial | Acres | 0 | 0 | 0 | 0 | 85 | 21 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% |
| Right-of-Way | Acres | 45 | 12 | 17 | 5 | 333 | 112 |
| | % | 0.1% | 0.1% | 0.1% | 0.2% | 0.2% | 0.4% |
| Rural | Acres | 0 | 0 | 0 | 0 | 777 | 542 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 1.8% |
| Rural 1:10 | Acres | 10,948 | 589 | 905 | 95 | 16,428 | 554 |
| | % | 23.4% | 6.2% | 5.9% | 3.5% | 11.8% | 1.8% |
| Rural 1:3 | Acres | 188 | 126 | 13 | 8 | 655 | 309 |
| | % | 0.4% | 1.3% | 0.1% | 0.3% | 0.5% | 1.0% |
| Rural 1:5 | Acres | 8,400 | 2,836 | 4,453 | 764 | 8,637 | 1,849 |
| | % | 18.0% | 30.0% | 29.2% | 28.2% | 6.2% | 6.1% |
| Rural Residential | Acres | 0 | 0 | 0 | 0 | 1,186 | 215 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.7% |
| Suburban Estate | Acres | 7,903 | 1,730 | 3,243 | 689 | 19,460 | 5,135 |
| | % | 16.9% | 18.3% | 21.3% | 25.5% | 14.0% | 17.0% |
| Urban Density Residential | Acres | 0 | 0 | 0 | 0 | 174 | 44 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% |
| Utility Installations | Acres | 0 | 0 | 4 | 0 | 432 | 72 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.2% |
| Water Bodies | Acres | 504 | 78 | 3 | 1 | 1,701 | 582 |
| | % | 1.1% | 0.8% | 0.0% | 0.0% | 1.2% | 1.9% |

Table 2.4 Total and Undeveloped Acres in Hazard Areas by Future Land Use Category

| Future Land Use Category | | Flood | | Wildfire Susceptible Areas | | Sinkhole | |
|--------------------------------|-------|--------|--------|----------------------------|--------|----------|--------|
| | | Total | Undev. | Total | Undev. | Total | Undev. |
| Westside Industry and Commerce | Acres | 0 | 0 | 2 | 0 | 723 | 261 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.9% |
| Total | Acres | 46,742 | 9,452 | 15,238 | 2,706 | 139,059 | 30,198 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Data from: Florida Department of Community Affairs, 2005.

Table 2.5 presents the existing land uses for the acres in Seminole County that are incorporated within one of the five municipalities. A majority of the hazard areas that are incorporated are either in residential use or vacant. Most vacant acres within the municipalities are probably designated for future residential use. The municipalities therefore have even more reason to make changes to their land use patterns since hazard zones within their boundaries are more likely to be populated than those in the unincorporated county.

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

| Existing Land Use Category | | Flood | Wildfire Susceptible Areas | Sinkholes |
|---|--------------|----------------|----------------------------|-----------------|
| Agriculture | Acres | 719.4 | 187.3 | 2,121.4 |
| | % | 8.5 | 4.5 | 5.0 |
| Attractions, Stadiums, Lodging | Acres | 14.3 | 0.0 | 118.6 |
| | % | 0.2 | 0.0 | 0.3 |
| Places of Worship | Acres | 66.9 | 44.8 | 466.4 |
| | % | 0.8 | 1.1 | 1.1 |
| Commercial | Acres | 224.9 | 53.7 | 3,183.0 |
| | % | 2.7 | 1.3 | 7.5 |
| Government, Institutional, Hospitals, Education | Acres | 511.2 | 511.9 | 3,618.2 |
| | % | 6.0 | 12.2 | 8.6 |
| Industrial | Acres | 89.6 | 83.6 | 1,561.2 |
| | % | 1.1 | 2.0 | 3.7 |
| Parks, Conservation Areas, Golf Courses | Acres | 1,087.7 | 546.4 | 1,344.7 |
| | % | 12.8 | 13.0 | 3.2 |
| Residential Group Quarters, Nursing Homes | Acres | 14.9 | 1.3 | 85.4 |
| | % | 0.2 | 0.0 | 0.2 |
| Residential Multi-Family | Acres | 243.0 | 39.9 | 1,919.0 |
| | % | 2.9 | 1.0 | 4.5 |
| Residential Mobile Home, or Commercial Parking Lot | Acres | 90.7 | 19.8 | 456.6 |
| | % | 1.1 | 0.5 | 1.1 |
| Residential Single-Family | Acres | 1,487.4 | 980.7 | 13,618.6 |
| | % | 17.5 | 23.3 | 32.2 |
| Submerged Land (Water Bodies) | Acres | 494.7 | 15.8 | 546.9 |
| | % | 5.8 | 0.4 | 1.3 |
| Transportation, Communication, Rights-of-Way | Acres | 73.1 | 701.8 | 1,971.4 |
| | % | 0.9 | 16.7 | 4.7 |
| Utility Plants and Lines, Solid Waste Disposal | Acres | 107.9 | 53.3 | 471.1 |
| | % | 1.3 | 1.3 | 1.1 |
| Vacant | Acres | 3,276.4 | 967.5 | 10,777.6 |
| | % | 38.5 | 23.0 | 25.5 |
| Total | Acres | 8,502.1 | 4,207.8 | 42,259.7 |
| | % | 100.0 | 100.0 | 100.0 |

Data from: Florida Department of Community Affairs, 2005.

3. Existing Mitigation Measures

Local Mitigation Strategy

Seminole County's LMS includes the following goals and objectives:

1. Local government will have the capability to develop, implement, and maintain effective mitigation programs

- Data and information needed for defining hazards, risk areas, and vulnerabilities in the community will be obtained
- The capability to effectively utilize available data and information related to mitigation planning and program development will be available
- The effectiveness of mitigation initiatives implemented in the community will be measured and documented
- There will be a program to derive mitigation "lessons learned" from each significant disaster event occurring in or near the community
- Up-to-date technical skills in mitigation planning and programming will be available for the community

2. All sectors of the community will work together to create a disaster-resistant community by the year 2020

- A business continuity and recovery program will be established and implemented in the community
- Local agencies and organizations will establish specific interagency agreements for the development and implementation of mitigation-related projects and programs
- Local elected governing bodies will promulgate the local mitigation plan and support community mitigation programming
- Outreach programs to gain participation in mitigation programs by business, industry, institutions, and community groups will be developed and implemented
- The community will be periodically updated regarding local efforts in mitigation planning and programming
- The community's public and private sector organizations will partner to promote hazard mitigation programming throughout the community

3. The community will have the capability to initiate and sustain emergency response operations during and after a disaster

- Designated evacuation routes will be relocated, retrofitted, or modified to remain open before, during, and after disaster events
- Designated evacuation shelters will be retrofitted or relocated to ensure their operability during and after disaster events
- Emergency services organizations will have the capability to detect emergency situations and promptly initiate emergency response operations
- Local emergency services facilities will be retrofitted or relocated to withstand the structural impact of disasters
- Response capabilities will be available to protect visitors, special needs individuals, and the homeless from a disaster's health and safety impacts
- Shelters or structures for vehicles and equipment needed for emergency services operation will be retrofitted or relocated to withstand disaster impacts
- Utility and communications systems supporting emergency services operations will be retrofitted or relocated to withstand the impacts of disasters
- Vehicle access routes to key health care facilities will be protected from blockage as a result of a disaster

4. The continuity of local government operations will not be significantly disrupted by disasters

- Buildings and facilities used for the routine operations of government will be retrofitted or relocated to withstand the impacts of disasters
- Community redevelopment plans will be prepared to guide decision-making and resource allocation by local government in the aftermath of a disaster
- Important local government records and documents will be protected from the impacts of disasters
- Plans and programs will be available to assist local government employees in retrofitting or relocating their homes to ensure their availability during a disaster
- Plans will be developed, and resources identified, to facilitate reestablishing local government operations after a disaster
- Redundant equipment, facilities, and/or supplies will be obtained to facilitate reestablishing local government operations after a disaster

5. The health, safety, and welfare of the community's residents and visitors will not be threatened by disasters

- Adequate systems for notifying the public at risk and providing emergency instruction during a disaster will be available in all identified hazard areas
- Effective structural measures will be developed to protect residential areas from the physical impacts of disasters
- Facilities in the community posing an extra health or safety risk when damaged or disrupted will be made less vulnerable to the impacts of a disaster
- Public and private medical and health care facilities in the community will be retrofitted or relocated to withstand the impacts of disasters
- Residential structures will be removed or relocated from defined hazard areas
- Residential structures will be retrofitted to withstand the physical impacts of disasters
- Safety devices on transportation networks will not fail because of a disaster
- Structures, facilities, and systems serving visitors to the community will be prepared to meet their immediate health and safety needs
- There will be adequate resources, equipment, and supplies to meet victims' health and safety needs after a disaster

6. The policies and regulations of local government will support effective hazard mitigation programming throughout the community

- All reconstruction or rehabilitation of local government facilities will incorporate techniques to minimize the physical or operational vulnerability to disasters
- Land use policies, plans, and regulations will discourage or prohibit inappropriate location of structures or infrastructure components in areas of higher risk
- Local government will ensure that hazard mitigation needs and programs are given appropriate emphasis in resource allocation and decision-making
- Local governments will establish and enforce building and land development codes that are effective in addressing the hazards threatening the community
- Local governments will protect high hazard natural areas from new or continuing development
- Local jurisdictions will participate fully in the National Flood Insurance Program and the associated Community Rating System
- New local government facilities will be located outside of hazard areas and/or will be designed to not be vulnerable to the impacts of such hazards
- Reconstruction and rehabilitation of structures and utilities in the community will incorporate appropriate hazard mitigation techniques
- Regulations will be established and enforced to ensure that public and private property maintenance is consistent with minimizing vulnerabilities to disaster

7. Residents of the community will have homes, institutions, and places of employment that are not vulnerable to disasters

- Economic incentive programs for the general public, businesses, and industry to implement structural and non-structural mitigation measures will be established
- Local government will support key employers in the community in the implementation of mitigation measures for their facilities and systems
- Programs for removal, relocation, or retrofitting of vulnerable structures and utilities in hazard areas will be established and implemented
- The vulnerability to disasters of schools, libraries, museums, and other institutions important to the daily lives of the community will be minimized

8. The economic vitality of the community will not be threatened by a disaster

- Components of the infrastructure needed by the community's businesses and industries will be protected from the impacts of disaster
- Local government emergency response and disaster recovery plans will appropriately consider the needs of key employers in the community
- Local government will encourage community businesses and industries to make their facilities and operations disaster resistant
- Local government will establish programs, facilities, and resources to support business resumption activities by impacted local businesses and industry
- Local government will implement programs to address public perceptions of community condition and functioning in the aftermath of a disaster
- Local government will strive to diversify the employment base of the community

9. The availability and functioning of the community's infrastructure will not be significantly disrupted by a disaster here

- Local governments will encourage hazard mitigation programming by private sector organizations owning or operating key community utilities
- Routine maintenance of the community's infrastructure will be done to minimize the potential for system failure because of or during a disaster
- Sources of energy normally used by the community will not be unwarrantedly vulnerable to the impacts of a disaster
- The telecommunications systems and facilities serving the community will not be unwarrantedly vulnerable to the impacts a disaster
- Transportation facilities and systems serving the community will be constructed and/or retrofitted to minimize the potential for disruption during a disaster
- Water and sewer services in the community will not fail because of a disaster

10. All members of the community will understand the hazards threatening local areas and the techniques to minimize vulnerability to those hazards

- All interested individuals will be encouraged to participate in hazard mitigation planning and training activities
- Education programs in risk communication and hazard mitigation will be established and implemented
- Managers of public facilities will be knowledgeable in hazard mitigation techniques and the components of the community's mitigation plan
- Technical training in mitigation planning and programming will be given to appropriate local government employees
- The owners and operators of businesses and industries in the community will be knowledgeable in appropriate hazard mitigation techniques
- The public living or working in defined hazard areas will be aware of that fact, understand their vulnerability, and know appropriate mitigation techniques
- The public will have facilitated access to information needed to understand their vulnerability to disasters and effective mitigation techniques

Comprehensive Emergency Management Plan

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

Post-Disaster Redevelopment Plan

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

National Flood Insurance Program/Community Rating System

The County as well as the Cities of Altamonte Springs, Longwood, and Winter Springs participate in the National Flood Insurance Program's Community Rating System (CRS).

4. Comprehensive Plan Review

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

Seminole's Comprehensive Plan has many policies considered to be best management practices for protecting the functioning of natural drainage features, wetlands, and floodplains. There are dozens of these policies that aim at preserving natural hazard protection features of the environment through land acquisition, land use designations, and land use regulations for development. Specific waterbodies, such as the Wekiva and Econlockhatchee Rivers, and their surrounding environments are protected through overlay zones on the Future Land Use Map and innovative policies. Clustering of development and buffers or setbacks were repeatedly encouraged for protection of wetlands, floodplains, and overall drainage. All of these policies greatly contribute to mitigating flooding by using the natural ability of the environment to contain floodwaters. In addition to these protection techniques, the Plan also has several policies for stormwater management. There were also policies that require proper identification of flood zones and analysis of stormwater system needs, which corresponds with some of the objectives under Goal 1 of the LMS.

No policies were found during this review that directly related to sinkhole hazards, however, there were several that related to groundwater recharge and protection of the aquifer. By keeping as much water as possible in the aquifer, the County is helping to prevent human-induced sinkholes that can be caused by decreases in the aquifer levels beneath karst features that are already susceptible to sinkhole activity.

No policies related to wildfire mitigation were found during this review.

5. Recommendations

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

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

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

Comprehensive Plan

The LMS has several objectives that relate to identifying hazard areas and reviewing the effectiveness of mitigation measures. This should definitely be a first step in planning for hazards, yet there are only Comprehensive Plan policies relating to flood hazards that highlight the need to identify these hazard zones. It is recommended that the County also work to include data and analysis in their Plan to identify geographic areas, such as the analyses included in this profile for sinkholes and wildfire. This sort of information can lead to planning policies such as overlay zones that could increase building code or site design requirements for only those areas that are at risk from the hazard. Having a few policies that define the high-risk hazard zones and require that they be updated and maintained on a regular basis will make all mitigation policies more easily implemented and their effectiveness will be easier to measure.

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

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

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

Another important issue not mentioned in the Comprehensive Plan is evacuation and sheltering, which is referred to in the LMS under Goal 3. While Seminole is not a coastal county, it still should mention the need to provide shelters and evacuation routes as related to population growth. These emergency response functions are also necessary in the circumstance of a large wildfire.

Seminole's LMS also refers to supporting the business community and especially key employers in becoming more disaster resistant in several objectives. This could be reflected in the Comprehensive Plan as well. The County could encourage business continuity planning and could provide information to interested businesses. They also could assist businesses through information or incentives in implementing mitigation measures to their facilities. The LMS also refers to economic development initiatives such as diversifying the economic base and addressing negative public perceptions after a disaster. An economic development program to make the County's economy more resilient to disasters could be included in the Comprehensive Plan and could also be part of a PDRP if the County decides to develop one.

There are also several issues concerning hazard mitigation that are not found in either the LMS or the Comprehensive Plan that should be in these documents. According to the data found in **Table 2.1** of this document, wildfire puts 52.9% of the population at risk and yet it is not mentioned in the Plan. There are many policies that could be included to mitigate wildfires, the best of which is through land use regulations that limit residential development in the wildland interface or intermix zone. Development could be limited or at least clustered when in proximity to large natural areas that are at high risk for wildfire, or adequate buffer areas could be implemented between natural areas and development so that prescribed burns may be used as a routine maintenance measure in the natural area. Requiring firewise site design, building materials, and landscaping in developments within risk zones will also help to protect property. Requirements for multiple entrances or exits to a subdivision in a risk area could help save lives by allowing a quicker evacuation in the event that a wildfire threatens the neighborhood.

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

There are many other policies that are considered best management practices for hazard mitigation that could be considered by the County as they update their Comprehensive Plan. The final draft of this profile will include more of these options.

Local Mitigation Strategy

The LMS also could be enhanced to include some of the items that the Comprehensive Plan already has or that are recommended for inclusion. For instance, the identification of hazard zones with existing and future land uses overlain could be included in both plans. Also the objectives in the LMS are broad and could include more detailed policies related to specific hazard types. For instance, there are no objectives that relate directly to wildfire or sinkhole hazards despite the fact that more of the population is at risk from these hazards than they are from flooding. Using the existing objectives, more specific policies could perhaps be included under each objective referring to how they could be implemented in relation to a certain hazard. Overall, the LMS could be enhanced and further connected with the County Comprehensive Plan.

6. Sources

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Attachment A

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

Attachment B

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

Attachment C

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

Attachment D

Seminole County Comprehensive Plan Excerpts Related to Hazard Mitigation

Conservation Element

GOAL

Preserve, properly manage and, where possible, enhance the quantity, quality and function of Seminole County's natural resources for existing and future generations; to include, but not be limited to the following natural resources: air, surface waters, groundwater supplies, soils/minerals, wetlands, native habitat and wildlife, floodplain, endangered, threatened and species of special concern, open spaces, aquifer recharge areas, and historic and archaeological resources.

Policy CON 1.3 Recharge Area Protection

The County shall evaluate its aquifer recharge overlay zoning classification which sets alternative design criteria and standards to protect the functions of most effective aquifer recharge areas as part of each Comprehensive Plan Evaluation and Appraisal Report (EAR).

Policy CON 1.13 Safe Withdrawal Rates

The County shall coordinate with the St. Johns River Water Management District and surrounding jurisdictions to determine safe withdrawal rates and appropriate land use intensities to ensure an adequate water supply for existing and future needs and shall seek cooperation with the District on continued development of a water budget model.

Policy CON 2.3 Best Management Practices

The County shall evaluate every five years, after coordination with the Agricultural Extension Agency, Soil Conservation Service and other appropriate agencies, its Water Conservation and Sensitive Lands Plan and Best Management Practices (BMPs) to minimize agricultural, horticultural and silvicultural impacts to both surface water quantity and quality, wetland and floodplain areas. This shall include a review and incorporation of applicable new BMP's established by the Division of Forestry and other agencies. In addition to this Plan, all activities permitted within designated wetland and flood prone areas, including agriculture and silviculture shall, at a minimum, comply with the County's Existing Wetland, Flood Prone and Arbor Ordinances to ensure the protection and function of these resource areas.

Policy CON 2.4 Water Body/Building Setback

The County shall continue to require that building setbacks for new development be placed at least 50 feet from the ordinary high water mark of water bodies.

OBJECTIVE CON 3 FLOODPLAIN, WETLANDS AND UPLAND COMMUNITIES

The County shall protect ecological systems including wetlands and uplands, which are sensitive to development impacts and provide important natural functions for maintenance of environmental quality and wildlife habitats.

Policy CON 3.1 Conservation Land Use

The County shall maintain the conservation land use designation and continue to map conservation areas (100 year flood prone and wetland areas) on the County's Land Use Map for the purpose of identifying and protecting conservation areas/corridors where special zoning regulations and performance standards apply.

Policy CON 3.2 Countywide Wetland/Flood Regulations

The County shall encourage local governments, through joint planning agreements and inter-governmental agreements, to adopt the County's flood prone and wetland performance standards, and regulations for use in reviewing and approving all new development proposals.

Policy CON 3.3 Wetlands Management Program

The County shall continue to rely on the Flood Prone (FP-1) and Wetland (W-1) Overlay Zoning Classifications to prevent public harm; to protect the public health, safety and welfare; guide and protect, and preserve wetlands, and other environmentally sensitive areas for natural water management and hydrologic functions; for use by aquatic and wetland dependent wildlife; habitat of endangered, threatened or species of special concern; recreation, open space and buffer areas. Species (both plant and animal) identified as endangered, threatened or of special concern are those listed by the U.S. Fish and Wildlife Service, Florida Game and Florida Fish and Wildlife Conservation Commission, Florida Natural Areas Inventory, U.S. Department of Agriculture or otherwise listed under Chapter 39-27, Florida Administrative Code or its successor provisions. (See detailed "Comprehensive Wetlands Management Strategy" at rear of this element.)

Policy CON 3.4 Wetlands Regulation

In order to protect and sustain the functions and values provided by wetlands, the County shall by July 2001 make all appropriate changes to the W-1 and FP-1 Zoning Overlay Classifications to accomplish the following, which shall serve as the general guidelines for regulation of wetlands:

- A Evaluate appropriate buffer zones, size thresholds, and wetland classification methods for use in assessing wetland impacts in urban and rural portions of the County,
- B Develop a strategy to ensure the retention of wetland functions and values throughout the County,
- C Modify the Land Development Code to establish areas where no loss of wetlands is appropriate and to require the conservation of wetland systems (including upland buffers, the mosaic of isolated and connected wetlands, natural hydrologic patterns, and natural processes such as fire) in the Econlockhatchee and Lake Jesup Basins, the Wekiva River Protection Areas (consistent with Future Land Use Policy 14.9), which are shown in *Exhibit CON: Econlockhatchee and Wekiva River Protection Area*, and the rural areas of the County, which are depicted in *Exhibit FLU: Special Area Boundaries*.
- D Coordinate efforts with the SJRWMD and the ACOE that maximizes the benefits of receiving mitigation projects (preservation and restoration) in the Wekiva, Jesup, and Econlockhatchee River basins, and in the rural areas of the County,
- E Identify intact wetland systems for which comprehensive protection is necessary, and consider means of providing permanent protection through regulation, acquisition, purchase of development rights, external partnerships, and other measures,
- F Work with local, state, and federal entities that own land in the County to establish a cohesive plan for the management of wetlands and other natural resources, and
- G Assess the effectiveness of wetland conservation, permitting, and regulatory programs of the SJRWMD and the AOCE on an annual basis.

Policy CON 3.5 Flood Prone Overlay Zoning District

The County shall continue to rely on the Flood Prone (FP-1) Overlay Zoning Classifications (shown in *Exhibit FLU: Flood Plains*) and develop Planning Guidelines for Surface Water Management for the protection and identification of allowable uses in flood prone areas, and to maintain effective surface water management practices.

Policy CON 3.6 Wetland/Flood Prone Regulations

Impacts to wetlands/floodplains beyond what is otherwise allowed in the land development regulations and Comprehensive Plan is prohibited unless the project has a special reason or need to locate within wetlands (or wetland protection areas), there is a clear demonstration of overriding public interest, and there is no feasible alternative. In such cases, impacts to wetlands shall be kept to the minimum feasible alteration, while preserving the functional viability of the wetland to the maximum extent feasible. All impacts to wetlands shall be mitigated in accordance with the applicable provisions in the Comprehensive Plan and land development regulations.

Policy CON 3.8 PUD/Cluster Developments

The County shall encourage planned unit developments and cluster type developments in order to preserve large contiguous areas of wetlands and other environmentally sensitive communities.

Editors note: Policies 3.7 and 3.8 operate under the assumption that there is no right to any particular land use within a PCD or a PUD. All uses within a PCD or PUD are subject to the approval of BCC and are dependent upon compatibility with adjacent development, neighborhoods, development trends, etc. The BCC may impose reasonable conditions at the time of zoning approval of PCD's and PUD's.

Policy CON 3.9 Conservation Easements/Dedication

The County shall continue to rely upon conservation easements or require dedication of open space areas to an appropriate agency as a tool for preserving floodplain, wetland, and ecologically significant communities.

Policy CON 4.5 Erosion/Stream Bank Stabilization

The County shall, as part of the water quality program, evaluate a program to minimize erosion and stabilize stream banks through planting of trees, shrubs, and other vegetation to stabilize soils and treat storm runoff.

OBJECTIVE CON 7 COMPREHENSIVE PROTECTION OF WETLANDS

The County shall protect the functions provided by wetlands. These functions vary depending upon the type, location, and classification, but could be affected by the degree of historic alteration. For purposes of fulfilling this objective, Urban wetlands will refer to wetlands within the Urban Services Area that are not contained in the Wekiva River Protection Area. Through intense study, it has been identified that in aggregate, the wetland systems in the Wekiva Basin, Lake Jesup Basin, and the Rural Area are higher in quality and function, and provide connectivity of a regional significance. The County's strategy for sustaining the functions of those wetland systems in the urban service area, and in rural areas shall include the following directives:

Policy CON 7.1 Land Acquisition

The County shall continue to acquire (as part of its Natural Lands Program) and partner with other agencies to acquire areas of environmental sensitivity, including wetlands that exist in the Wekiva Basin, The Lake Jesup Basin, and The Rural Area.

Policy CON 7.3 Future Land Use Designations

The County shall continue to utilize the Future Land Use Designations as contained within this plan to direct incompatible uses away from wetlands, including:

- A The use of special planning techniques; and
- B The application of the Conservation Land Use; and
- C Reliance on the Urban/Rural Boundary and the associated protection provided therein to wetlands.

Policy CON 7.4 Wetland Regulation-Buffers

Upland buffers adjacent to protected wetlands provide habitat for some wetland dependent species, and protection from deleterious effects of development adjacent to the wetland. By December 31, 2001, the County shall establish a minimum buffer requirement in the Urban Service Area, and in rural areas, and specially protected basins that will protect the function of the wetlands and the organisms that depend on them. Acceptable uses within the designated upland buffers include restoration, enhancement, and pervious trails.

Policy CON 7.7 Wetland Regulation-Location: Urban

Urban wetlands still maintain functions that provide value to the community; predevelopment hydrology/hydro-period in these wetlands shall be maintained. In addition, the ability of urban wetland systems to retain their existing functions shall not be compromised by development activities in Seminole County.

Policy CON 7.8 Wetland Regulation-Location: Rural

Wetlands in the rural areas also retain those functions listed above in Policy CON 7.7 and, because of the existing mosaic of upland and wetland systems provide additional functions and values related to the habitat component of wetlands. By December 31, 2001, the County shall amend the Seminole County Land Development Code to require additional measures for protection of this habitat component. These additional measures of habitat protection will include a concentrated effort to sustain large tracts of intact wetland systems through acquisition, conservation easement, and the encouragement of comprehensive mitigation tracts.

Policy CON 7.11 Management of Publicly Owned Wetlands

Seminole County shall continue to work with local, state, and federal entities that own land in the County to establish a cohesive plan for the management of wetlands and other natural resources.

Design Element**Policy DES 7.6 Design Principles**

The preservation and enhancement of historic, archeological, and natural resources are important in the design of the community. The design principles are:

-Urban wetlands and natural lands are important as visual amenities, compliments to stormwater and open space systems, habitats for urban wildlife, temperature mediators, nutrient and particulate filters, and green space. Urban wetlands should be preserved where practical in combination with compatible and complimentary uses.

Drainage Element**GOAL**

The County will continue to implement a cost effective stormwater program, which minimizes flooding and the adverse impacts of uncontrolled stormwater runoff to the public safety and to the quantity and quality of natural resources.

Policy DRG 1.4 Right-of-Way Acquisition

The County will continue to secure legal access and/or acquire rights-of-way associated with primary stormwater conveyances in order to correct deficiencies and maintain facilities.

Policy DRG 1.5 Deficiency Correction

The County shall maximize the use of existing facilities through increased capacity, operation and maintenance and consider area-wide stormwater facilities in correcting existing deficiencies and meeting growth needs.

Policy DRG 1.6 Strategy for Deficiency Correction/Study Implementation

The following chronology of events shall be used as a guide to facilitate the completion of basin evaluations, correction of deficiencies and maintenance of facility performance:

- A BASIN EVALUATIONS: Basin evaluations shall be completed in priority order based on Policy 1.1 and adopted within the Capital Improvements Element. Basin evaluations shall include the components outlined in Policy 1.1 and contain immediate and long term improvements and identification of the design storm to which long term improvements will be made and maintained for each basin.
- B DEFICIENCY CORRECTION: The Capital Improvements Element of the Comprehensive Plan shall be amended as each study is completed to adopt the improvements necessary to accommodate a 25 year design storm, or the following facility based standards:

- 1 A 100-year/24-hour design storm standard will be assigned to bridges with spans greater than twenty feet and to any modeled stormwater structure intended to keep evacuation routes and emergency service buildings identified by the County operational.
 - 2 A 50-year/24-hour design storm standard will be assigned to all cross drains and bridges with spans less than 20-feet intended to keep operational evacuation routes and emergency services buildings identified by the County operational.
 - 3 A 25-year/24-hour design storm standard (as identified above) will be assigned to the primary drainage system and all retention/detention facilities included in the stormwater model that are not subject to the criteria listed above.
 - 4 A 10-year/24-hour design storm standard will be assigned to all closed pipe conveyance systems and roadside swales included in the stormwater model that are not subject to the criteria listed above.
- C FACILITY IMPROVEMENT DESIGN: All structural improvements to the Countywide conveyance system shall be consistent with the standards and criteria adopted in Policies DRG 5.1 and DRG 5.2 and *Exhibit DRG: Level of Service Standards For New Development* as implemented within the County's Land Development Code.
- D OPERATION AND MAINTENANCE STANDARDS: Upon completion of individual basin evaluations an ongoing operation and maintenance program shall be evaluated by the County to maintain the optimum level of flood protection as defined in the basin evaluations and adopted in the Comprehensive Plan. The Plan shall be amended to adopt criteria and standards for maintenance as to each basin.

OBJECTIVE DRG 2 FACILITY REGULATION, CONSTRUCTION, DESIGN AND MAINTENANCE

Protect the public safety, welfare, and property from hazards of flooding through effective regulation, design, and maintenance of stormwater facilities and systems.

Policy DRG 2.1 Land Development Code

The County shall continue to amend the Land Development Code (including surface water management standards) to ensure consistency with Chapter 40C-47, F.A.C, and 40C-4 F.A.C., of the St. Johns River Water Management District governing stormwater management.

Policy DRG 2.2 Flood Prone Area Delineation

The County shall continue to administer FEMA regulatory program requirements and adopt FIRM in the absence of site specific mapping.

Policy DRG 2.3 Flood Prone Area Regulation

The County shall address areas subject to flooding problems collaboratively with the development community, and in the development review process permit only minor modification with compensating storage of the 100-year flood elevation.

Policy DRG 2.4 Conservation Easements

The County shall continue to require the dedication of conservation easements as a means of protecting the functions of floodways.

Policy DRG 2.5 Facility Construction

The County shall prohibit alteration of existing structures and natural drainage systems that would potentially endanger public safety and/or have an adverse effect on property, water quality or other natural resources.

OBJECTIVE DRG 3 NATURAL RESOURCE IMPACTS

The County shall maintain or improve the quality and function of natural drainage systems, ground and surface waterways, recharge areas, and associated natural resources through emphasis on non-structural approaches to floodplain management. Ground water and recharge areas are further protected by *Objective: CON 1: GROUNDWATER PROTECTION* and its

associated policies; and, *Objective CON 2: SURFACE WATER PROTECTION* and its associated policies.

Policy DRG 3.1 Non-Structural Floodplain Management

The County shall continue to rely on a non-structural approach to floodplain management in order to maximize flood-holding capacity and minimize public expenditure for capital and maintenance costs.

Policy DRG 3.6 Groundwater Recharge/Facility Design

The County shall encourage on-site detention and/or retention facilities placement in upland areas to maximize groundwater recharge.

Policy DRG 3.8 Groundwater Recharge

The County shall continue to evaluate its protection of recharge areas with each Evaluation and Appraisal Reporting cycle and amend regulations as necessary to ensure that natural recharge of groundwater from rainfall is not decreased.

Future Land Use Element

Policy FLU 1.1 Conservation Land Use

The County shall continue to regulate development and preserve environmentally sensitive areas by means of the Conservation future land use designation and associated provisions of the Land Development Code where soils, topography, wetlands, floodplains, land use, and other constraints exist.

Policy FLU 1.2 Flood Plain Protection

The County shall continue to implement the Conservation land use designation through the regulation of development consistent with the Flood Prone Area Zone Classification (FP-1) which:

- A Restricts uses which are dangerous to health, safety and property, and minimize public and private losses due to flood conditions;
- B Prohibits land filling and grade changes where such activity will cause erosion or inhibit flood waters;
- C Requires development to comply with the requirements and rules of the National Flood Insurance Program and Florida Department of Health; and
- D Requires all subdivisions and site plans to maintain pre-development run off characteristics, provide compensating storage, comply with wetland regulations, and dedicate post-development flood prone and wetland areas to the County as a conservation easement.

Policy FLU 1.3 Wetlands Protection

The County shall implement the Conservation land use designation through the regulation of development consistent with the Wetlands Overlay Zoning Classification (W-1) which shall be revised by July 2001 to include the following:

- E Regulates development activities according to wetland significance;
- F Requires the identification of wetland type, land use, extent, significance, development compatibility, and applicable performance standards prior to County review and approval of development activities;
- G Requires, at a minimum, compliance with all performance standards set forth in the Planning Standards for Natural Resources (Land Development Code of Seminole County, appendix H), which standards and guidelines are accepted herein verbatim by this reference;
- H Provides for development flexibility through mitigation/compensation measures where more beneficial environmental results may be achieved; and
- I Requires dedication to the County of all post-development wetlands as conservation easements.

Policy FLU 1.4 Conservation Easements

The County shall continue to require conservation easements in accordance with Section 704.06, Florida Statutes, or dedication of post-development flood prone, and wetland areas as a limitation to any future encroachment or development of these environmentally sensitive areas.

Policy FLU 1.5 Cluster Development

The County shall provide for clustering of uses within planned unit developments to:

- A Preserve conservation areas and other open space and groundwater aquifer recharge areas;
- B Allow for creative design;
- C Provide for open space;
- D Promote the efficient use of infrastructure;
- E Provide sites for schools; and
- F Promote affordable housing opportunities.

Policy FLU 1.7 Wekiva River Protection

The County shall continue to regulate the development of land along the Wekiva River and its wetlands and tributaries to implement Protection Zone policies and regulations regarding maintaining rural density and character in the aggregate, development setbacks, concentrating permitted development farthest from surface waters and wetlands where permitted, minimizing development impacts on water quantity and quality, and restricting open space areas to passive recreational uses.

Regardless of the land use designation or zoning classification assigned to any parcel of property located within the Wekiva River Protection Area as defined in Section 369.303(9), Florida Statutes, no development may be approved upon parcels so located unless the proposed development conforms to the provisions of the Wekiva River Protection Act (Part III, Chapter 369, Florida Statutes), and the provisions of this Plan adopted to conform to said Act. See Future Land Use Objective 14 for additional policies regarding the goals of the of the Wekiva River Protection Area.

Notwithstanding any other provision of this Plan, middle schools and high schools shall not be permitted on property located within the Wekiva River Protection Area except for 8.7 acres owned by the Seminole County School Board prior to October 26, 1999, which is located in the East Lake Sylvan Transitional Area, which is depicted in Exhibit FLU: East Lake Sylvan Transitional Area/School Site.

Policy FLU 1.8 Econlockhatchee River Basin Protection

The County shall, at a minimum, continue to regulate development consistent with the Seminole County Econlockhatchee River Protection Overlay Standards Classification to ensure the preservation of the Econlockhatchee River as an recognized outstanding natural resource. Minimum ordinance provisions necessary to ensure protection of the Econlockhatchee River Basin shall include:

- A A 550 foot development restriction zone;
- B Provisions for density transfers outside of protection zones and critical habitats;
- C Protection of floodplain, wetlands and critical native upland habitat;
- D Historic and archaeological resource assessments; and
- E Minimal removal of native habitats.

Policy FLU 1.10 Water Quality and Drainage Control

The County shall continue to require water quality and drainage control for all new subdivisions and site plans adjacent to water bodies to prevent unnecessary shoreline disruption and maintain water quality through existing Land Development Code provisions which requires, at a minimum:

- A A permit for all water quality and drainage control activities in waters and wetlands; and
- B Restoration of disturbed areas to their natural state.

Policy FLU 8.2 Private Utilities

Private electric public utilities needed to support growth may be permitted in all land use designations subject to the following:

- A All electrical service to subdivisions shall be installed underground;

Policy FLU 11.12 Methods of Managing Stormwater

Consistent with the provision of services and facilities within the Rural Area, the County shall:

- A Regulate stormwater management consistent with Countywide regulations with the objective of maximizing aquifer recharge, minimizing flooding, and protecting wetland systems; and
- B Continue to use Municipal Service Benefit Units to fund drainage improvements when appropriate.

Policy FLU 11.14 Protection of Natural Resources

The County shall:

- A Protect wetland and flood prone areas in the Rural Area consistent with the provisions of the Future Land Use and Conservation Elements of this Plan and through the potential purchase of properties with funds deriving from the Natural Lands Program authorized by voter referendum in 1990.
- B Periodically re-evaluate the effectiveness of the County Arbor Ordinance, referenced by Policy FLU 1.6.
- C Protect groundwater systems in the Rural Area as depicted in *Exhibit FLU: Special Area Boundaries*, including, but not limited to, the “Geneva Lens” by:
 - 1 Continuing to permit only large lot residential development in the Rural Area to minimize water consumption and maximize aquifer recharge due to small impervious surface areas;
 - 2 Relying on a system of small individual residential wells for the provision of potable water that disperse the potentially adverse effects of groundwater drawdown associated with excessive pumping of the aquifer;
 - 3 Relying on properly installed and periodically inspected septic tanks on large lots that return water to the aquifer to be the primary system of wastewater disposal; and
 - 4 Relying on stormwater management systems designed as required by the Rural Subdivision standards enacted in accordance with the provisions of this Plan to maximize recharge of stormwater into the aquifer.
- D Protect the Econlockhatchee River in East Seminole County by:
 - 1 Regulating development adjacent to the River in accordance with the existing Wetlands Overlay Zoning Classification (see Policy FLU 1.3);
 - 2 Regulating development adjacent to the Econlockhatchee River in accordance with the Econlockhatchee River Protection Overlay Standards Classification;
 - 3 Purchasing properties, when appropriate, with funds from the Natural Lands Program and other Federal, State, and regional programs; and
 - 4 Enforcing provisions in the Land Development Code regarding additional bridge crossings of the Econlockhatchee River.
- E Protect the St. Johns River by:
 - 1 Continuing to enforce the existing Wetlands Overlay Zoning Classification (see Policy FLU 1.3); and
 - 2 Purchasing properties, when appropriate, with funds from the Natural Lands program and other Federal, State and regional programs.

Public Safety Element**GOAL**

The County shall provide county fire protection, emergency rescue, hazardous materials incident mitigation, prehospital emergency care, disaster management, animal control, and other emergency services which are cost effective and serve existing and future populations in Seminole County.

OBJECTIVE PUB 1 HEALTH, SAFETY AND WELFARE

The County shall protect County residents from the effects of natural and technological disasters, unsafe conditions which might otherwise occur in commercial occupancies, hazardous materials releases from products stored or transported through the County, and uncontrolled animals.

Policy PUB 2.3 Emergency Operations Center (EOC)

The County shall continue to maintain, support, and upgrade as necessary the Emergency Operations Center to enable effective and adequate disaster coordination with all agencies.

Recreation and Open Space Element**Policy REC 7.2 Conservation Land Use**

The County shall preserve the Conservation land use designation through continued implementation of the Wetland (W-1) and Flood Prone (FP-1) zoning classifications as a means of preserving major open space areas in order to prevent public harms by maintaining the mosaic of high quality wetland habitat found in the Wekiva and Econ Basins, the Lake Jesup Basin, and the Rural area of the County.

Policy REC 7.3 Wekiva and Econlockhatchee River Protection Zone

The County shall enforce all clearing and building setbacks or protection/buffer zones, and areas along the Wekiva River, and Econlockhatchee River and such other water bodies as imposed by rules of the St. Johns River Water Management District, any State agency, or as may be otherwise imposed by law, provided that a minimum 200 foot clearing and building setback shall be set along the Wekiva River, as measured from the ordinary high water elevation or the landward limit of established conservation areas, to serve as a scenic and environmental buffer to maintain the status quo of the natural environment and prevent public harms.

Transportation Element**Policy TRA 12.4 Enforcement of Environmental Regulations**

In the planning, design and construction of new transportation facilities, the County shall continue to enforce policies, standards and regulations which provide for the protection of wetland areas by requiring documented evidence of an overriding public interest, and appropriate mitigation of any unavoidable disturbance of the wetland areas as required by other environmental agencies.