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 Clay 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 Clay 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

Clay 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 through which Clay County can continue to reduce or eliminate risks from storm surge, flood and wildfire. 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 storm surge, wildfire and flood. Sinkholes were discussed in the LMS, but the potential for occurrence was considered to be very low. Therefore, Clay 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, 2,840 acres are susceptible to Category 1 storm surge (CHZ), 3,117 acres are susceptible to Category 1 – 3 storm surge (HVZ), 13,114 are susceptible to 100-year flood, and 2,452 acres are susceptible to wildfire.

Storm Surge

Nearly 34% of the 2,840 vacant acres in the Coastal Hazard Zone and 34% of the 3,117 vacant acres in the Hurricane Vulnerability Zone 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 to maintain low density residential development in the CHHA, prohibit new or expanded mobile home or recreational vehicle developments in V-Zones, protect the coastline naturally, and other existing measures to minimize risk.

- The Comprehensive Plan should consider transfer of development rights to from areas within the CHHA to outside the CHHA, as another measure to reduce density in the CHHA.

- The County should consider retrofitting essential public facilities that exist in the CHHA to mitigate impacts from surge.

- The County should consider prohibiting septic tanks in the CHHA except in cases of excessive hardship where (1) no reasonable alternative exists, (2) a discharge from a septic tank will not adversely affect public health and will not degrade surface or ground water and (3) where the Health Department determines that soil conditions, water table elevation and setback provisions are adequate to meet state requirements.

- The County should consider prohibiting new schools in the CHHA and retrofitting new schools as shelters outside the HVZ, where possible.

- The County should consider only allowing new on-site shelters outside the HVZ, where possible.

- The Comprehensive Plan should consider prohibiting the development of nursing homes, adult congregate living facilities, and hospitals inside the Coastal High Hazard Area and other high-risk developments, similar to how most county funded facilities have been regulated. Building these facilities out of harm's way reduces evacuation needs of the special needs population. In addition, the number of evacuees is reduced who are under medical supervision or need medical staff chaperones, potentially reducing hurricane evacuation clearance times.

Flood

About 35% of the 13,114 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 for floodplain management and stormwater management to maintain the natural functions.
- The Comprehensive Plan should continue to require that the County maintain an inventory of environmentally sensitive areas which shall include 100-year floodplains.
- The Comprehensive Plan should continue to require that all proposed developments submit drainage plans meeting minimum adopted level of service standards.
- The Comprehensive Plan should continue to require that the Comprehensive Stormwater Management Plan identify projected future drainage needs based on the

Future Land Use Map. Projects identified as required to maintain the adopted LOS shall be funded through a stormwater utility to be implemented within two years of adoption of the Comprehensive Stormwater Management Plan.

- The County should continue to identify floodplains for acquisition under existing programs.
- The County should continue to adopt or amend land development regulations which limit the density of dwelling units within FEMA designated 100-year floodplains.
- The County shall continue to coordinate with appropriate governmental entities to protect environmentally sensitive lands and native vegetative communities which extend into adjacent counties and municipalities.
- The Comprehensive Plan should consider prohibiting septic tanks in flood hazard areas or wetlands.
- The County should consider requiring on-site compensating storage if filling occurs in the 100-year floodplain, and require buffers from creeks and rivers.
- The County should consider requiring that developers demonstrate that dredge and fill activities are consistent with best management practices 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 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 requiring that structures be elevated on pilings on existing sites which do not contain sufficient uplands, and not allow lots or parcels to be created without sufficient uplands.
- 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 all structures built in the 100-year floodplain include at least one foot freeboard.
- The County should 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 that the maintenance and operation of private stormwater systems is funded by private sources.
- The County should consider requiring areas that have not established base flood elevations to be studied prior to development.

Wildfire

About 53% of the 2,452 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.
- 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 storm surge, 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 storm surge, flood, or wildfire.
- Include a description of geographic areas exposed to each of the hazards that the community is most susceptible to.
- Include hazard maps that 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. LMS Committee is planning on including this information in the future.

Table of Contents

1. County Overview

Geography and Jurisdictions

Clay County is located in northeast Florida. It covers a total of 644 square miles, of which approximately 601 square miles are land and 43 square miles are water. There are four incorporated municipalities within Clay County, as shown in **Table 1.1**. Green Cove Springs 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 Clay County and the percent change from the 2000 U.S. Census are presented in **Table 1.1**. While some residents live in incorporated jurisdictions, approximately 90% live in the county's unincorporated areas. Clay County has experienced rapid population growth in recent years, a trend that is expected to continue. Between 1990 and 2000, Clay County had a growth rate of 32.9%, which is nearly one third greater than the statewide average of 23.5% for the same time period.

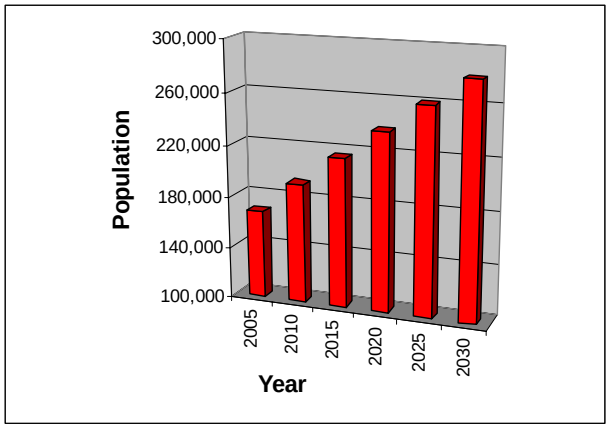
Table 1.1 Population Estimates by Jurisdiction

Jurisdiction	Population (Census 2000)	Population (Estimate 2004)	Percent Change 2000-2004	Percent of Total Population (2004)
Unincorporated	124,430	146,401	17.66%	89.56%
Green Cove Springs	5,378	5,957	10.77%	3.64%
Keystone Heights	1,345	1,383	2.83%	0.85%
Orange Park	9,081	9,093	0.13%	5.56%
Penney Farms	580	627	8.10%	0.38%
Total	**140,814**	**163,461**	**16.08%**	**100.00%**

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

According to BEBR (2004), Clay County's population is projected to grow steadily and reach an estimated 279,500 by the year 2030, increasing the average population density of 272 to 465 persons per square mile. **Figure 1.1** illustrates medium growth population projections for Clay County based on 2004 calculations.

Figure 1.1 Population Projections for Clay County, 2005–2030



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

Of particular concern within Clay 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 140,814 persons residing in Clay County 9.8% are listed as 65 years old or over, 19.3% are listed as having a disability, 6.8% are listed as below poverty, and 7.7% live in a home where the primary language is other than English.

2. Hazard Vulnerability

Hazards Identification

The highest risk hazards for Clay County as identified in the County's Local Mitigation Strategy (LMS) are considered to be tropical cyclone generated storm surge and high winds, localized flooding, wildfires, hazardous materials/chemicals releases, tornadoes or severe storms, and weapons of mass destruction. Sinkholes were discussed in the LMS, but the potential for occurrence was considered to be low for the entire county.

Hazards Analysis

The following analysis examines four major hazard types: surge from tropical cyclones, flood, wildfire and sinkholes. All of the information in this section was obtained through the online Mapping for Emergency Management, Parallel Hazard Information System (MEMPHIS). MEMPHIS provides a variety of hazard related data in support of the Florida Local Mitigation Strategy 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 the Category 3 Maxima Scenario for storm surge; FEMA's designated 100-year flood zones (A, AE, V, VE, AO, 100 IC, IN, AH) for flood; all medium-to-high risk zones from MEMPHIS for wildfire (Level 5 through Level 9); and high, very high, extreme and adjacent zones for sinkhole based on the KAC analysis. Storm surge exposure data is a subset of flood exposure; therefore, the storm surge results are also included in the flood results. For more details on a particular hazard or an explanation of the MEMPHIS methodology, consult the MEMPHIS Web site (http://lmsmaps.methaz.org/lmsmaps/index.html).

Existing Population Exposure

Table 2.1 presents the population currently exposed to each hazard throughout Clay County. Of the 140,814 (U.S. Census 2000) people that reside in Clay County, nearly 7% are exposed to 100-year flooding, 14.4% are exposed to wildfire, less than 1% are exposed to sinkholes and no persons are exposed to storm surge. Of the 9,237 people exposed to flood, 11% are minorities and 30% are disabled.

Table 2.1 Estimated Number of Persons Exposed to Selected Hazards

Segment of Population	Storm Surge	Flood	Wildfire	Sinkhole
Total (all persons)*	0	9,237	20,240	1,012
Minority	0	1,048	1,881	0
Over 65	0	920	1,607	367
Disabled	0	2,795	5,939	491
Poverty	0	535	1,295	51
Language-Isolated	0	70	182	39
Single Parent	0	468	979	39

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 Clay 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 Clay 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 9 and 11.25 hours to safely evacuate Clay 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, Clay County currently has a significant shelter deficit. According to Florida's Statewide Emergency Shelter Plan, Clay County has an existing shelter capacity of 3,212 people. The 2004 shelter demand for a Category 4 or Category 5 hurricane is 10,332 people, leaving an existing shelter deficit of 7,120. In 2009, the projected shelter demand is 11,712, leaving an anticipated shelter deficit of 8,500.

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. Clay 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 Clay County by occupancy type that are exposed to each of the four 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 Clay County's existing structures to the storm surge, flood, wildfire, and sinkhole hazards was determined through MEMPHIS.

Table 2.3 Estimated Number of Structures Exposed to Selected Hazards

Occupancy Type	Storm Surge	Flood	Wildfire	Sinkhole
Single Family	162	15,095	648	511
Mobile Home	3	3,822	251	115
Multi-Family	1	2,437	1,408	25
Commercial	7	1,528	2,122	64
Agriculture	0	1,360	1,649	61
Gov. / Institutional	2	290	6,078	4
Total	**175**	**24,532**	**14,766**	**780**

Source: Mapping for Emergency Management, Parallel Hazard Information System

*Note: Storm surge related flooding building exposure results are a subset of the flood results.

There are 40,078 structures exposed to at least one of the four hazards, of which most are single-family homes in subdivisions. Of these structures, 61.2% are exposed to flood. Over 24,500 structures are located within the 100-year floodplain, of which 0.7% are exposed to storm surge induced flooding. Over 92% of the structures exposed to surge are single family homes. Typically, structures at risk from surge are high-value real estate due to their proximity to the ocean or tidally influenced water bodies such as the St. Johns River. According to the latest National Flood Insurance Program Repetitive Loss Properties list, as of March 2005, there are 49 repetitive loss properties in unincorporated Clay 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 36% or 14,766 structures exposed to wildfire, of which 41% are government/institutional buildings. Most susceptible areas are generally located at the urban/rural interface in the northwest and southwest of Clay County, especially in areas where subdivisions occur adjacent to large undeveloped areas of forestland (Clay County LMS, 2004). Nearly 2% or 780 structures are located within sinkhole susceptible areas, of which 65.5% are single-family homes. However, the County LMS risk assessment indicated sinkhole that sinkhole is a low risk hazard.

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 surge, flooding, sinkholes, and wildfire according to MEMPHIS estimates. This section is used to

demonstrate the County's vulnerabilities to these hazards in both tabular format and spatially, in relation to existing and future land uses. Existing land use data was acquired from County Property Appraisers and the Florida Department of Revenue in 2004 for tabulation of the total amount of acres and percentage of land in identified hazard areas, sorted by existing land use category for the unincorporated areas. The total amount of acres and percentage of land in the identified hazards areas was tabulated and sorted by their 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. Clay County future land use data was acquired in March 2005 and might not reflect changes per recent future land use amendments. Maps of existing land use within hazard areas are based on the 2004 County Property Appraiser geographic information system (GIS) shapefiles. Maps of future land uses in hazard areas were developed using the Clay County future land use map dated March 2005. 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 the coastal hazards zone in relation to storm surge, hurricane vulnerability zones in relation to evacuation clearance times, flood zones in relation to the 100-year flood, wildfire susceptible areas, and sinkhole susceptible areas.

In **Attachment A**, two maps present the existing and future land uses within the Coastal Hazards Zone (CHZ), which represents the Category 1 Hurricane Evacuation Zone joined with the Category 1 Storm Surge Zone. The areas that are most susceptible to storm surge are located along the St. Johns River. The total amount of land in the CHZ is 12,606.7 acres. As shown in **Table 2.4**, 40.9% are parks, conservation areas and golf courses; 22.5% are currently undeveloped; 14.7% are used for residential single family homes; and 12.7% are currently used for agriculture. **Table 2.5** shows that of the 2,840.4 undeveloped acres, 47.8% are designated for conservation. The County is taking favorable action in preserving this land to limit population in the CHHA, further eliminating any additional evacuation or shelter demands.

In **Attachment B**, two maps present the existing and future land uses within the Hurricane Vulnerability Zone (HVZ), which represents Category 1 to 3 Hurricane Evacuation Zones. The HVZ is predominantly located along the St. Johns River. The total amount of land in the HVZ is 15,673.5 acres. As shown in **Table 2.4**, 37.4% are parks, conservation areas and golf courses; 23.1% are used for residential single family homes; 19.9% are currently undeveloped; and 12.4% are currently used for agriculture. **Table 2.5** shows that of the 3,116.8 undeveloped acres, 40.2% are designated for conservation. The County is taking positive action in designating a large portion of the acreage as low to medium density and conservation to reduce vulnerability and limiting the amount of people who would need to evacuate or be sheltered from a hurricane.

In **Attachment C**, 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 the many creeks, streams and tidal wetlands including the St. Johns River. The total amount of land in the special flood hazard area is 76,805.4 acres. As shown in **Table 2.4**, 34.5% are in agricultural use; 31.4% are parks, conservation areas and golf courses; 17.1% are currently undeveloped; and 6.8% are used for residential single family homes. **Table 2.5** shows that of the 13,114.3 undeveloped acres, 24.8% are designated for conservation. 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 D**, 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 18,459.5 acres. As shown in **Table 2.4**, 53.5% are used for agriculture; 18.9% are used for parks, conservation areas, and golf courses; and 13.3% is undeveloped. **Table 2.5** shows that of the 2,452.2 undeveloped acres, 28.3% are used for

agriculture/residential purposes; 24.1 % are rural fringe areas; and 15.6% are used for agriculture. The County should continue to take measures to reduce wildfire risk within the urban/rural interface.

In **Attachment E**, two maps present the existing and future land uses within sinkhole susceptible areas. These areas are located in the southwestern corner of the county, in and around Keystone Heights. The total amount of land in the sinkhole susceptible areas is 1,979.6 acres. As shown in **Table 2.4**, 42.3% are used for parks, conservation areas, and golf courses; 31.8% are currently undeveloped; and 16.7% is used for single family residential homes. **Table 2.5** shows that of the 629.8 undeveloped acres, 64.6% are water; 29.2% are rural fringe areas; and 6.2% are used for commercial purposes. The County has taken proactive measures in designating lands in sinkhole susceptible areas for predominantly conservation and recreational uses.

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

Existing Land Use Category		Coastal Hazard Zone	Hurricane Vulnerability Zone	Flood Zones	Wildfire Susceptible Areas	Sinkhole Susceptible Areas
Agriculture	Acres	1,605.3	1,938.4	26,524.2	9,878.0	11.6
	%	12.7	12.4	34.5	53.5	0.6
Attractions, Stadiums, Lodging	Acres	0.0	45.3	211.3	33.2	0.0
	%	0.0	0.3	0.3	0.2	0.0
Places of Worship	Acres	6.2	12.0	147.4	23.9	10.3
	%	0.1	0.1	0.2	0.1	0.5
Commercial	Acres	23.6	39.2	193.3	27.2	35.0
	%	0.2	0.3	0.3	0.2	1.8
Government, Institutional, Hospitals, Education	Acres	98.5	189.3	2,697.5	271.3	23.4
	%	0.8	1.2	3.5	1.5	1.2
Industrial	Acres	21.9	26.8	119.7	3.3	3.1
	%	0.2	0.2	0.2	0.0	0.2
Parks, Conservation Areas, Golf Courses	Acres	5,161.5	5,865.3	24,082.5	3,492.4	837.3
	%	40.9	37.4	31.4	18.9	42.3
Residential Group Quarters, Nursing Homes	Acres	14.3	10.3	19.8	0.0	29.6
	%	0.1	0.1	0.0	0.0	1.5
Residential Multi-Family	Acres	225.2	198.0	651.6	128.9	16.5
	%	1.8	1.3	0.9	0.7	0.8
Residential Mobile Home, or Commercial Parking Lot	Acres	171.9	257.0	2,534.1	1,200.9	49.5
	%	1.4	1.6	3.3	6.5	2.5
Residential Single-Family	Acres	1,858.4	3,618.6	5,217.5	863.9	331.1
	%	14.7	23.1	6.8	4.7	16.7
Submerged Land (Water Bodies)	Acres	73.3	78.7	279.8	0.2	0.0
	%	0.6	0.5	0.4	0.0	0.0
Transportation, Communication	Acres	109.9	60.4	176.3	4.0	0.2
	%	0.9	0.4	0.2	0.0	0.0
Utility Plants and Lines, Solid Waste Disposal	Acres	396.4	217.6	836.2	80.0	2.2
	%	3.1	1.4	1.1	0.4	0.1
Vacant	Acres	2,840.4	3,116.8	13,114.3	2,452.2	629.8
	%	22.5	19.9	17.1	13.3	31.8
Total Acres	**Acres**	**12,606.7**	**15,673.5**	**76,805.4**	**18,459.5**	**1,979.6**
	%	**100.0**	**100.0**	**100.0**	**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		Coastal Hazard Zone		Hurricane Vulnerability Zone		Flood Zones		Wildfire Susceptible Areas		Sinkhole Susceptible Areas	
		Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant
Agriculture/ Residential	Acres	0.0	0.0	0.0	0.0	4,849.8	1,633.2	1,960.7	693.1	0.0	0.0
	%	0.0	0.0	0.0	0.0	6.3	12.5	10.6	28.3	0.0	0.0
Agriculture	Acres	516.1	1.3	535.5	14.1	14,402.6	1,787.5	7,708.5	382.3	0.0	0.0
	%	4.1	0.0	3.4	0.5	18.8	13.6	41.8	15.6	0.0	0.0
Commercial	Acres	41.7	9.4	46.6	9.1	363.4	138.7	122.2	51.3	95.9	39.0
	%	0.3	0.3	0.3	0.3	0.5	1.1	0.7	2.1	4.8	6.2
Conservation	Acres	3,196.4	1,357.2	3,354.9	1,254.0	12,843.0	3,251.9	795.2	86.9	0.0	0.0
	%	25.4	47.8	21.4	40.2	16.7	24.8	4.3	3.5	0.0	0.0
Industrial	Acres	31.9	11.8	19.8	0.5	439.6	65.3	50.8	9.1	0.0	0.0
	%	0.3	0.4	0.1	0.0	0.6	0.5	0.3	0.4	0.0	0.0
Military Reservation	Acres	0.0	0.0	0.0	0.0	7,666.6	3.1	730.1	0.0	722.5	0.0
	%	0.0	0.0	0.0	0.0	10.0	0.0	4.0	0.0	36.5	0.0
Mining	Acres	15.4	0.0	0.0	0.0	3,839.5	36.1	595.7	18.1	0.0	0.0
	%	0.1	0.0	0.0	0.0	5.0	0.3	3.2	0.7	0.0	0.0
Mixed Use	Acres	0.0	0.0	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Planned Community	Acres	1,412.7	572.7	1,136.7	516.1	2,418.1	890.4	556.7	55.5	0.0	0.0
	%	11.2	20.2	7.3	16.6	3.2	6.8	3.0	2.3	0.0	0.0
Recreation/ Preservation	Acres	4,650.3	59.3	5,373.3	73.8	10,486.9	86.3	1,811.8	20.1	0.0	0.0
	%	36.9	2.1	34.3	2.4	13.7	0.7	9.8	0.8	0.0	0.0
Rural Fringe	Acres	1,189.3	282.0	2,292.2	500.7	2,279.0	698.9	1,330.0	592.1	612.2	184.1
	%	9.4	9.9	14.6	16.1	3.0	5.3	7.2	24.1	30.9	29.2
Rural Reserve	Acres	0.0	0.0	0.0	0.0	43.9	35.0	5.4	5.4	0.0	0.0
	%	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.2	0.0	0.0
Rural Residential	Acres	1,036.0	306.1	1,407.6	364.9	5,476.7	1,077.4	2,197.2	350.2	0.0	0.0
	%	8.2	10.8	9.0	11.7	7.1	8.2	11.9	14.3	0.0	0.0
Urban Core	Acres	86.5	56.4	892.4	149.8	1,984.3	690.9	297.4	124.8	0.0	0.0
	%	0.7	2.0	5.7	4.8	2.6	5.3	1.6	5.1	0.0	0.0
Urban Fringe	Acres	13.4	0.0	23.6	15.8	481.1	7.1	107.2	3.8	0.0	0.0
	%	0.1	0.0	0.2	0.5	0.6	0.1	0.6	0.2	0.0	0.0
Water	Acres	417.1	184.1	585.2	218.0	9,230.9	2,712.6	190.8	59.5	549.1	406.6
	%	3.3	6.5	3.7	7.0	12.0	20.7	1.0	2.4	27.7	64.6
Total	**Acres**	**12,606.7**	**2,840.4**	**15,673.5**	**3,116.8**	**76,805.4**	**13,114.3**	**18,459.5**	**2,452.2**	**1,979.6**	**629.8**
	%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**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 Clay County's four incorporated municipalities. These amounts are listed in **Table 2.6**. The municipality of Green Cove Springs has the most amount of total acreage susceptible to all of the hazards listed in **Table 2.6**. Green Cove Springs has the most vacant acreage in the CHZ, flood and wildfire zones; Orange Park has the most vacant acreage in the HVZ; and Keystone Heights is the only municipality with acreage in the sinkhole 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 Clay 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		Coastal Hazard Zone		Hurricane Vulnerability Zone		Flood Zones		Wildfire Susceptible Areas		Sinkhole Susceptible Areas	
		Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant
Green Cove Springs	Acres	130.9	24.5	105.2	11.8	726.5	98.1	29.2	5.1	0.0	0.0
	%	100.0	100.0	13.8	14.5	49.0	66.7	70.0	100.0	0.0	0.0
Keystone Heights	Acres	0.0	0.0	0.0	0.0	21.6	8.0	0.0	0.0	72.9	18.1
	%	0.0	0.0	0.0	0.0	1.5	5.4	0.0	0.0	100.0	100.0
Orange Park	Acres	0.0	0.0	656.1	69.8	183.9	32.1	1.3	0.0	0.0	0.0
	%	0.0	0.0	86.2	85.5	12.4	21.8	3.1	0.0	0.0	0.0
Penney Farms	Acres	0.0	0.0	0.0	0.0	551.3	8.9	11.1	0.0	0.0	0.0
	%	0.0	0.0	0.0	0.0	37.2	6.1	26.6	0.0	0.0	0.0
Total Acres	**Acres**	**130.9**	**24.5**	**761.3**	**81.6**	**1,483.4**	**147.1**	**41.7**	**5.1**	**72.9**	**18.1**
	%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**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. 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 Clay County LMS (adopted in 2005) was assessed to determine if the hazard analysis and vulnerability assessment (i.e., surge, flood, and wildfire, sinkhole risk was considered to be very low for the entire county.) 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 Clay 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. 23 - 70)

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 list of types and map of critical facilities.
- Provides a list and 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 storm surge, 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 Clay County LMS Guiding Principles section contains a list of policies for the county and each municipality. **Table 1** in the Clay County LMS includes the mitigation category (e.g, flood, hurricane, hazardous materials), objective/policy, source (e.g., comprehensive plan, GOP), and notes (none are listed). 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 Clay County LMS has goals that support mitigation principles that are found in the comprehensive plan. A list of the LMS goals and objectives pertaining to comprehensive planning can be found in **Attachment F**. 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, Clay County, and PBS&J.

The following is a summary of the LMS goals that support comprehensive plan GOPs: Goal 1 strives to protect citizens from all hazards; Goal 2 provides for adequate floodplain management; Goal 3 includes the provision of adequate fire protection during and after a disaster; Goal 4 refers to personal security and property protection during and after a disaster; Goal 7 strives to protect all types of infrastructure during and after a disaster; and Goal 9 aims to protect the environment from natural or human induced disasters.

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

Comprehensive Emergency Operations Plan (CEMP)

The Clay County CEMP references the LMS in the Mitigation Annex. 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, responsibilities and available programs. This includes the post-disaster implementation of the Hazard Mitigation Grant Program and related disaster mitigation, response and recovery assistance programs, as well as pre-disaster mitigation programs such as the National Flood Insurance Program.

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 county 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 Clay County PDRP was not available for review at the time that this profile was developed.

National Flood Insurance Program/Community Rating System

Clay County (unincorporated areas) as well as the municipalities of Green Cove Springs, Keystone Heights, and Orange Park participates in the National Flood Insurance Program (NFIP). The municipality of Penney Farms does not participate in the NFIP. Clay County participates in the NFIP Community Rating System (CRS) with a rating of eight. No municipalities participate in the CRS.

4. Comprehensive Plan Review

Purpose and Intent

The Clay County Comprehensive Plan was reviewed for the purpose of developing this profile. This review was undertaken to determine what steps Clay County has taken to integrate hazard mitigation initiatives from the Local Mitigation Strategy (LMS), and hazard mitigation in general, into the planning process. Each Element of the Plan was evaluated to establish whether the principles in the LMS were incorporated into the policies of the Comprehensive Plan.

Approach

This review includes an assessment storm surge, flooding, and wildfire hazards. Sinkholes were discussed in the LMS, but the potential for occurrence was considered to be low for the entire county. Therefore, the Clay County Comprehensive Plan elements were not reviewed for policies pertaining to 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 Clay 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. Flooding is addressed from two vantage points, the need to protect natural resources, and the protection of vulnerable populations and properties.

Flooding

The Plan provides for land use tools such as a Master Stormwater Plan, in addition to land development controls to protect both vulnerable properties and natural resources.

Intergovernmental coordination with Duval and Alachua Counties was emphasized for water resource protection and to protect specified natural areas. The Plan contains policies that require proper identification of flood zones and analysis of stormwater system needs, and policies recommending land development regulations to limit densities within the 100-year floodplain.

Hurricane Evacuation

Clay County is not a coastal county, so policies are not geared toward coastal management and coastal resource protection. However, the County which is situated on the St. Johns River, is vulnerable to both flooding and storm surge. The Comprehensive Plan has many policies considered to be best management practices related to the protection of natural drainage features, wetlands, and floodplains. However, references to emergency management are limited in the Plan. According to Florida's Statewide Emergency Shelter Plan, Clay County had a shelter deficit of 7,120 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 and storm surge areas.

Wildfire

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

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.

Hurricane Evacuation Zone/Coastal High-Hazard Area (Category 1 Hurricane Evacuation Zone)
Source: GIS coverage of hurricane zones compiled by Florida Department of Community Affairs/Division of Emergency Management (2003), from GIS data collected from county emergency management agencies in the State of Florida.

- Areas shown/analyzed are those areas in the above-referenced GIS coverage where the value in the field "Evac_cat" is equal to "Zone TS", "Zone A/1", "Zone B/2", or "Zone C/3", in the maps/tables for the Hurricane Vulnerability Zone.

- Areas shown/analyzed are those areas in the above-referenced GIS coverage where the value in the field "Evac_cat" is equal to "Zone TS" or "Zone A/1", in the maps/tables for the Coastal Hazards Zone.

Hurricane Storm Surge Zone GIS Data
Source: GIS coverage of storm surge zones compiled by Florida Department of Community Affairs/Division of Emergency Management (2004), from various storm surge studies performed by regional planning councils and the U.S. Army Corps of Engineers.

- Areas shown/analyzed are those areas in the above-referenced GIS coverage where the value in the field ACategory@ is equal to ATropical Storm@ or ACategory 1".

Sinkhole Hazard GIS Data
Source: Kinetic Analysis Corporation (2005)

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

  http://lmsmaps.methaz.org/lmsmaps/final_cty/

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 Coastal Hazards Zone

ATTACHMENT B
Maps of the Existing and Future Land Uses within Hurricane Vulnerability Zone

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

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

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

ATTACHMENT F
Local Mitigation Strategy
Goals and Objectives Pertaining to Comprehensive Planning

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

- ***Goal 1*** *– Protect the citizens of Clay County from all Hazards, natural and man-made, including terrorism.*
- ***Goal 2*** *– Provide for adequate floodplain management*
- ***Goal 3*** *– Provide adequate fire protection during and after a disaster*
- ***Goal 4*** *– Protect homes, property and provide for personal security during and after a disaster*
- ***Goal 7*** *– Protect private and public support systems (infrastructure) during and after a disaster*
- ***Goal 9*** *– Protect the environment from natural or human induced disasters*

ATTACHMENT G
Clay County Comprehensive Plan Excerpts Pertaining to Hazard Mitigation

COMMUNITY FACILITIES ELEMENT

Objective 2: The County shall prepare a Comprehensive Stormwater Management Plan to identify, existing deficiencies and the needed extension of or increase in capacity of deficient facilities prioritized. Existing deficiencies will be corrected prior to the permitting of additional discharge to the deficient facility.

Policy 2.1: In order to provide adequate county-wide drainage facilities, Clay County shall develop a Comprehensive Stormwater Management Plan. The Plan shall analyze existing hydrological and geological data, develop data on specific drainage basin boundaries, and prepare a plan for each basin (including structural needs, design specifications, and performance standards) to be included in a Stormwater Management/ Drainage Ordinance. The Stormwater Management/Drainage Ordinance shall be adopted by September 2000.

Policy 2.2: Clay County shall, identify: (1) all drainage structures which fall below adopted drainage level of service standards for major and minor management facilities; (2) costs associated with improving those water management facilities to meet minimum drainage level of service standards; and (3) availability of funding sources for those improvements. By 2002, the county shall prioritize the improvements to those structures below adopted level-of-service standards based on the threat to health, safety and welfare (including impacts to water quality and erosion).

Objective 3: The County shall ensure sufficient service of solid waste, potable water and wastewater to meet the future needs of the County and the municipalities within the County. The County shall coordinate with the Clay County Utility Authority, municipalities within the County, and private service providers to plan the efficient delivery of services to meet future demand.

Policy 3.1: The County shall require that all proposed development submit drainage plans meeting minimum adopted level of service standards, including on-site retention and positive outfall, and require that such plans meet St. Johns River Water Management District permitting requirements, in addition to local stormwater permitting requirements, prior to development approval.

Policy 3.2: The Comprehensive Stormwater Management Plan shall identify projected future drainage needs based on the Future Land Use Map. Projects identified as required to maintain the adopted LOS shall be funded through a stormwater utility to be implemented within two years of adoption of the Comprehensive Stormwater Management Plan.

Objective 8: Clay County shall protect the function of natural drainage features through preservation of adjacent vegetation and wetlands, limitation of development within the floodway and requirements for setbacks from water bodies.

Policy 8.1: By November 2003, the County shall adopt a Comprehensive Stormwater Management Plan/Drainage Ordinance. This plan shall include the following requirements:

a. Erosion and sediment control requirements during development.
b. The provision of stormwater engineering, design and construction standards for developments.
c. Ensure maintenance is provided by developer and periodic inspection is made by County Engineering Department as a condition of permitting and permit renewal.

Policy 8.3: The County shall prohibit encroachments, including fill, new construction, expansion of an existing structure and other development within the floodway unless certification is

provided demonstrating that no increase in flood levels will result.

Policy 8.5: The County shall limit development adjacent to major natural drainage features through the Conservation designation on the Future Land Use Map.

CONSERVATION ELEMENT

Objective 5: The County shall regulate new development to ensure the preservation and protection of floodplains, wetlands, upland native vegetation communities, wildlife and fisheries.

Policy 5.1: The Clay County Planning Department shall develop and maintain an inventory of environmentally sensitive areas which shall include 100-year floodplains; wetlands as identified by existing sources such as USFWS and SJRWMD; listed wildlife species, habitats supporting wildlife species officially listed by the USFWS and the GFWFC (including species of special concern); existing public and private conservation areas (such as wildlife preserves and state forests) and areas identified by the SJRWMD as having "high recharge" to the Floridan Aquifer.

Policy 5.6: Adopt or amend land development regulations which limit the density of dwelling units within FEMA designated 100-year floodplains such that existing flood storage is maintained and allowable densities do not create potential flood hazards, or degrade the natural functions of the floodplain.

Policy 5.7: The County shall coordinate with appropriate governmental entities to protect environmentally sensitive lands and native vegetative communities which extend into adjacent counties and municipalities. Specifically, the County will coordinate with the SJRWMD and Duval County to protect and preserve lands within Cecil Field, and with Alachua County to preserve and protect the Floridan Aquifer in the southwestern portion of the County.

Policy 5.10: Clay County shall coordinate in the identification of hydrologically sensitive areas which require public ownership for adequate water resource protection.

FUTURE LAND USE ELEMENT

Objective 1: Future development will neither exceed the natural ability of the land to maintain vital natural functions, nor the availability of public facilities to support that development at the adopted level of service.

Policy 1.1: The County shall review all proposed developments in relation to specific and detailed provisions which at a minimum:

a. Regulate the subdivision of land;
b. Regulate the use of land and water bodies consistent with this Element and ensure the compatibility of adjacent land uses
e. Protect the conservation areas designated on the Future Land Use Map;
f. Regulate areas subject to seasonal and periodic flooding and provide for drainage and stormwater management;
g. Protect potable water wellfields and aquifer recharge areas;
h. Ensure safe and convenient traffic flow on-and off-site and accommodate vehicle parking needs;
    a. Provide that development orders and permits issued shall not result in a reduction below the level of service standards adopted in this plan;

Objective 7: Upon plan adoption, the County shall regulate new development to ensure the preservation and protection of floodplains, wetlands, upland native vegetation communities, wildlife and fisheries.

Policy 7.1: (in part) Develop and maintain an inventory of environmentally sensitive areas which shall include 100-year floodplains.

Policy 7.2: The County shall maintain land development regulations to regulate development which impacts upon environmentally sensitive areas, as defined herein and specified in the Conservation Element.

Policy 7.9: The County shall maintain land development regulations which limit the density of dwelling units within FEMA-designated 100-year floodplains such that existing flood storage is maintained and allowable densities do not create potential flood hazards or degrade the natural functions of the floodplain.

Policy 7.11: The County shall coordinate with public agencies, programs and other organizations for the acquisition of environmentally and hydrologically sensitive lands. The County shall provide assistance to landowners with submittal to the appropriate program for consideration of purchase when appropriate.

Objective 9: The County shall ensure the availability of suitable land for water, wastewater, stormwater and solid waste facilities sufficient to support proposed development.

Policy 9.2: The County shall prepare a Comprehensive Stormwater Management Plan as specified in the Community Facilities Element.

TRANSPORTATION ELEMENT

Objective 5.2: Any improvements to the Keystone Airpark shall be consistent with state and federal permitting requirements under Section 402 (p) of the Clean Water Act of 1972 and supplemental Section 405 of the Water Quality Act of 1987, as well as applicable Water Management District Rules and State Statutes for protection of aquifer recharge areas.

Policy 5.2.1: Additional surface water runoff caused by expansion or improvements at the Airpark shall be subject to applicable stormwater requirements for aquifer recharge areas.