

BREVARD 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

Brevard County is located along the eastern coast of Central Florida. It covers a total of 1,018 square miles with an average population density of 467.7 people per square mile (U.S. Census, 2000).

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

Population and Demographics

Official 2004 population estimates for all jurisdictions within Brevard 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 Brevard is 521,422 people (University of Florida, Bureau of Economic and Business Research, 2004). The most populated city in the County is Palm Bay but 39.9% of the countywide population live in the unincorporated portion of the County. Between 1990 and 2000, Brevard County as a whole had a growth rate of 19.4%, which is less than the statewide growth rate of 23.5% in those 10 years.



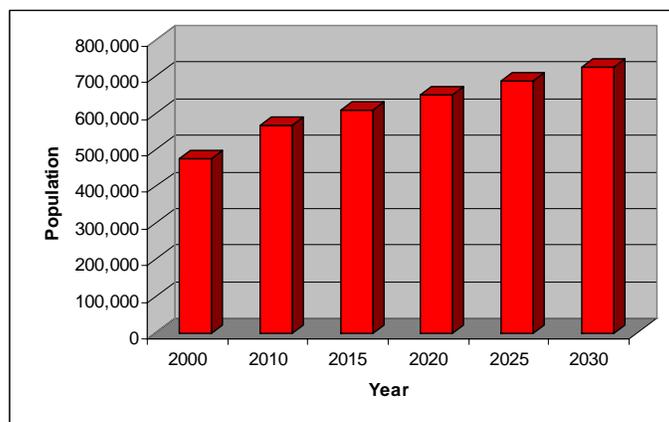
Table 1.1 Population by Jurisdiction

Jurisdiction	Population, Census 2000	Population Estimate, 2004	% Change, 2000-2004
Unincorporated	188,918	208,239	10.2%
Cape Canaveral	8,829	9,807	11.1%
Cocoa	16,412	16,610	1.2%
Cocoa Beach	12,482	12,850	2.9%
Indialantic	2,944	3,037	3.2%
Indian Harbour Beach	8,152	8,661	6.2%
Malabar	2,622	2,782	6.1%
Melbourne	71,382	74,644	4.6%
Melbourne Beach	3,335	3,422	2.6%
Melbourne Village	706	719	1.8%
Palm Bay	79,413	88,572	11.5%
Palm Shores	794	938	18.1%
Rockledge	20,170	23,383	15.9%
Satellite Beach	9,577	10,860	13.4%
Titusville	40,670	43,029	5.8%
West Melbourne	9,824	13,869	41.2%
Countywide Total	476,230	521,422	9.5%

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

According to the University of Florida, Bureau of Economic and Business Research (2004), Brevard County’s population is projected to grow slightly faster in the next 30 years, reaching 725,200 people by the year 2030. **Figure 1.1** illustrates medium population projections for Brevard County based on 2004 calculations.

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



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

Of particular concern within Brevard 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, 19.9% of Brevard County residents are listed as 65 years old or over, 19.2% are listed as having a disability, 9.5% are listed as below poverty, and 8.7% live in a home with a primary language other than English.

2. Hazard Vulnerability

Hazards Identification

The highest risk natural hazards for Brevard County as identified in the County’s Local Mitigation Strategy (LMS) are hurricanes and tropical storms (number 1), floods (number 2), freeze and droughts (number 8), wildfire (number 9), storms and tornadoes (number 10), and sinkholes (number 18).

Brevard County has been hit by multiple hurricanes in the past and was of course impacted during the 2004 hurricane season. The County was also impacted by the disastrous wildfires that swept through the region in the 1990’s brought on by drought.

Hazards Analysis

The following analysis looks at four major hazard types: hurricanes and tropical storms (specifically surge), 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 Brevard County that live within Federal Emergency Management Agency Flood Insurance Rate Map zones, which signify special flood hazard areas. According to these maps, 16% of the population, or 74,364 people, are within the 100-year flood zone. A majority of those at risk of flooding are either elderly and/or disabled. In Brevard County, sinkholes are not a major risk, and none of the population is within a high- or medium-risk sinkhole zone. There are 335,345 people living within a low-risk sinkhole zone as reported in the second column of the table. Wildfire is a hazard of concern to the County, with 35% of the population living within medium- to high-risk wildfire zones. Thirty-six percent of those at risk from wildfire are disabled, making a quick evacuation difficult. The last column represents those people in the County at risk from hurricane-related surge. Twenty percent of the countywide population would be at risk from surge due to a Category 3 hurricane. All of the residents at risk from surge would have to evacuate or go to a County shelter.

Table 2.1 Countywide and Special Needs Populations at Risk from Hazards

Population	Flood	Sinkhole (low risk)	Wildfire (medium-high risk)	Surge
Minority	9,164	51,974	22,101	5,865
Over 65	14,670	62,780	32,818	22,725
Disabled	24,810	125,795	60,069	32,582
Poverty	5,864	33,868	14,960	6,680
Language Isolated	1,220	0	1,631	2,162
Single Parent	3,418	0	9,307	4,886
Countywide Total	74,364	335,345	168,689	96,164

Source: Florida Department of Community Affairs, 2005a.

Evacuation and Shelters

As discussed in the previous sections, population growth in Brevard County has been steady, and this trend is projected to continue. Also, a 20% of the County's population is at risk from hurricane-related surge and therefore must be evacuated or sheltered. As the population increases in the future, the demand for shelter space and the length of time it takes to evacuate the County only is going to increase. Currently, evacuation clearance times for Brevard are estimated to be 12 hours for Category 1 and 2 hurricanes and 18 hours for Category 3 through 5 hurricanes (FDCA, 2005). The Florida Division of Emergency Management recommends that all counties achieve 12 hours or less clearance time for a Category 3 hurricane. This is due to the limited amount of time between the National Hurricane Center issuing a hurricane warning and when the tropical storm-force winds make landfall. Brevard County is not able to meet this standard now, and with continued growth and the limited road network of the region, it will be difficult to decrease this evacuation time.

Coupled with evacuation is the need to provide shelters. If adequate space can be provided in safe shelters for Brevard's residents, then this could be a solution to the ever-increasing clearance times for evacuation. Currently, the State Shelter Plan reports that there is space for 29,625 people in the County's shelters, and there is surplus space for 11,528 people in the case of a Category 5 hurricane. It is projected that by 2009 the surplus will decrease to space for 9,930 people (FDCA, 2004). In comparison to many other counties in the region and state, Brevard County has the most shelter space. However, the County also has the longest evacuation times, which may force people who would normally evacuate into seeking shelter within the County.

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 recover from a disaster. **Table 2.2** presents estimates of the number of buildings in Brevard County by structure type that are at risk from each of the four hazards being analyzed.

Flooding is the largest risk to property in the County, with 125,947 structures within a flood zone. According to the latest National Flood Insurance Program Repetitive Loss Properties list, there are 30 homes in unincorporated Brevard County that have had flood damage multiple times and received insurance payments (FDCA, 2005). There also are 58,562 structures at risk from surge. A total of 61.4% of the structures at risk from surge are single-family homes, and 15,038 of the rest are multi-family homes. Typically, structures at risk from surge are high-value real estate due to their proximity to the ocean.

Table 2.2 also shows 637 structures within medium to very high-risk sinkhole areas, with almost 75% of those being single-family or multi-family homes. Single-family homes are also at risk from wildfire, with 63% of the total 58,562 structures at risk being single-family homes.

Table 2.2 Countywide Number of Structures at Risk from Hazards

Structure Type	Flood	Sinkhole (medium-very high risk)	Wildfire (medium-high risk)	Surge
Single-Family Homes	58,132	206	49,488	35,974
Mobile Homes	32,037	10	10,833	1,473
Multi-Family Homes	23,524	272	11,584	15,038
Commercial	8,470	86	4,174	3,906
Agriculture	3,070	22	1,569	543
Gov./Institutional	714	41	643	1,628
Total	125,947	637	78,291	58,562

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, wildfire, and surge 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 Brevard County future land use map dated April 2002.

In **Attachment A**, four maps show the existing and future land uses within the coastal hazard zone (Category 1 storm surge zone) and the hurricane vulnerability zone (Category 1 evacuation zone). **Table 2.3** presents the acres of land in the coastal hazard zone and in the hurricane vulnerability zone. Eighty-three percent of the land in these two categories is either used for agriculture, parks and conservation, single-family residential, or is currently vacant. The largest percentage of acreage of these categories is found in parks and conservation, with 29% in the coastal hazard zone and 27.4% in the hurricane vulnerability zone. This is very positive for the County since a large portion of these hazard areas is being conserved or has not yet been developed, thereby giving the County opportunities to limit the amount of people needing evacuation or shelter and the amount of property damage that can occur from a hurricane. **Table 2.4** presents future land use estimates and a breakdown of how currently undeveloped land has been designated for future use. Unfortunately, 73% of the undeveloped land in a coastal hazard or hurricane vulnerability zone is designated for future residential uses. Despite these future land use designations, there may still be ways to control growth on these undeveloped lands.

In **Attachment B**, two maps present the existing and future land uses within a 100-year flood zone. There are large swaths of flood-prone areas scattered across the County; however, a majority of them are west of Interstate 95 where there are many wetlands. The total amount of land in these special flood hazard areas is 267,794 acres countywide. As shown in **Table 2.3**, only 12% of these acres are currently undeveloped, however, a majority of the flood prone land is in parks and conservation or agricultural uses. **Table 2.4** shows that 62.2% of the undeveloped lands are designated for future residential use. If homes are to be built in these areas, proper elevations and other mitigation measures should be enforced, but the best option would be to not allow new residents to build in flood prone areas.

In **Attachment C**, maps present the land uses associated with high-risk wildfire zones. These wildfire risk areas are scattered across the County, with many of the areas grouped around Interstate 95. A total of 31.9% of the land within these wildfire zones is currently vacant, as shown in **Table 2.3**. Of those 11,403 undeveloped acres, 74.5% is shown to be designated for

residential uses in the future (Table 2.4). If homes are built in these risk areas, Brevard's vulnerability to wildfire hazards will greatly increase.

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

Existing Land Use Category		Coastal Hazard Zone	Hurricane Vulnerability Zone	Flood	Wildfire Susceptible Areas
Agriculture	Acres	7,488	7,623	74,980	7,310
	%	17.3	16.4	28.0	20.4
Attractions, Stadiums, Lodging	Acres	62	82	144	54
	%	0.1	0.2	0.1	0.2
Places of Worship	Acres	200	227	62	90
	%	0.5	0.5	0.0	0.3
Commercial	Acres	898	1,108	648	205
	%	2.1	2.4	0.2	0.6
Government, Institutional, Hospitals, Education	Acres	4,281	4,464	11,538	1,860
	%	9.9	9.6	4.3	5.2
Industrial	Acres	343	395	366	91
	%	0.8	0.9	0.1	0.3
Parks, Conservation Areas, Golf Courses	Acres	12,553	12,733	137,851	7,372
	%	29.0	27.4	51.5	20.6
Residential Group Quarters, Nursing Homes	Acres	52	56	22	8
	%	0.1	0.1	0.0	0.0
Residential Multi-Family	Acres	477	556	371	193
	%	1.1	1.2	0.1	0.5
Residential Mobile Home, or Commercial Parking Lot	Acres	534	609	1,053	565
	%	1.2	1.3	0.4	1.6
Residential Single-Family	Acres	7,338	8,998	6,800	6,117
	%	17.0	19.4	2.5	17.1
Submerged Land (Water Bodies)	Acres	4	2	44	9
	%	0.0	0.0	0.0	0.0
Transportation, Communication, Rights-of-Way	Acres	292	198	722	325
	%	0.7	0.4	0.3	0.9
Utility Plants and Lines, Solid Waste Disposal	Acres	268	282	1,044	176
	%	0.6	0.6	0.4	0.5
Vacant	Acres	8,433	9,138	32,149	11,403
	%	19.5	19.7	12.0	31.9
Total	Acres	43,222	46,472	267,794	35,778
	%	100.0	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		Coastal Hazard Zone		Hurricane Vulnerability Zone		Flood		Wildfire Susceptible Areas	
		Total	Undev.	Total	Undev.	Total	Undev.	Total	Undev.
Agriculture	Acres	4,456	454	4,578	479	125,001	7,406	5,963	1,414
	%	10.3%	5.4%	9.9%	5.2%	46.7%	23.0%	16.7%	12.4%
Community Commercial	Acres	1,425	351	1,773	455	906	460	370	193
	%	3.3%	4.2%	3.8%	5.0%	0.3%	1.4%	1.0%	1.7%
Conservation	Acres	68	6	91	8	2,790	249	56	7
	%	0.2%	0.1%	0.2%	0.1%	1.0%	0.8%	0.2%	0.1%
Directive	Acres	1	0	2	0	0	0	0	0
	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
DRI1	Acres	0	0	0	0	1,118	816	178	111
	%	0.0%	0.0%	0.0%	0.0%	0.4%	2.5%	0.5%	1.0%
DRI2	Acres	0	0	0	0	565	74	830	128
	%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	2.3%	1.1%
DRI3	Acres	0	0	0	0	768	143	67	29
	%	0.0%	0.0%	0.0%	0.0%	0.3%	0.4%	0.2%	0.3%
Federal	Acres	535	0	553	0	196	0	52	0
	%	1.2%	0.0%	1.2%	0.0%	0.1%	0.0%	0.1%	0.0%
Industrial	Acres	180	87	204	115	1,563	958	396	238
	%	0.4%	1.0%	0.4%	1.3%	0.6%	3.0%	1.1%	2.1%
Neighborhood Commercial	Acres	727	234	894	296	1,219	544	459	200
	%	1.7%	2.8%	1.9%	3.2%	0.5%	1.7%	1.3%	1.8%
No Data	Acres	229	43	223	30	2,394	180	209	68
	%	0.5%	0.5%	0.5%	0.3%	0.9%	0.6%	0.6%	0.6%
Planned Industrial	Acres	1,104	453	1,145	506	1,253	520	654	462
	%	2.6%	5.4%	2.5%	5.5%	0.5%	1.6%	1.8%	4.1%
Port	Acres	985	12	978	11	204	3	1	0
	%	2.3%	0.1%	2.1%	0.1%	0.1%	0.0%	0.0%	0.0%
Private Conservation	Acres	851	199	901	200	2,002	215	24	6
	%	2.0%	2.4%	1.9%	2.2%	0.7%	0.7%	0.1%	0.1%
Public	Acres	556	17	600	5	945	20	446	32
	%	1.3%	0.2%	1.3%	0.1%	0.4%	0.1%	1.2%	0.3%
Public Conservation	Acres	6,626	325	6,661	343	60,669	520	1,775	13
	%	15.3%	3.9%	14.3%	3.8%	22.7%	1.6%	5.0%	0.1%
Recreation	Acres	1,072	34	1,174	1	1,891	27	482	8
	%	2.5%	0.4%	2.5%	0.0%	0.7%	0.1%	1.3%	0.1%
Residential 10:1*	Acres	25	4	27	4	0	0	5	1
	%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Residential 15:1*	Acres	3,538	934	4,247	1,083	3,899	1,885	1,903	591
	%	8.2%	11.1%	9.1%	11.9%	1.5%	5.9%	5.3%	5.2%
Residential 1:1*	Acres	9,446	2,559	10,024	2,711	26,544	8,867	10,077	4,068
	%	21.9%	30.4%	21.6%	29.7%	9.9%	27.6%	28.2%	35.7%
Residential 1:2.5*	Acres	4,582	824	4,522	836	13,998	2,227	2,003	852
	%	10.6%	9.8%	9.7%	9.2%	5.2%	6.9%	5.6%	7.5%

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

Future Land Use Category		Coastal Hazard Zone		Hurricane Vulnerability Zone		Flood		Wildfire Susceptible Areas	
		Total	Undev.	Total	Undev.	Total	Undev.	Total	Undev.
Residential 2:1*	Acres	2,892	1,018	3,072	1,085	10,941	3,183	4,345	1,020
	%	6.7%	12.1%	6.6%	11.9%	4.1%	9.9%	12.1%	8.9%
Residential 30:1*	Acres	3	0	3	2	1	0	0	0
	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Residential 4:1*	Acres	2,767	815	3,125	903	8,674	3,821	5,475	1,962
	%	6.4%	9.7%	6.7%	9.9%	3.2%	11.9%	15.3%	17.2%
Residential 6:1*	Acres	1,157	63	1,674	64	251	30	10	0
	%	2.7%	0.7%	3.6%	0.7%	0.1%	0.1%	0.0%	0.0%
Total	Acres	43,222	8,433	46,472	9,138	267,794	32,149	35,778	11,403
	%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*Ratio represents number of dwelling units per acre.

Data from: Florida Department of Community Affairs, 2005.

Table 2.5 presents the existing land uses for the acres in Brevard 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. Also 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		Coastal Hazard Zone	Hurricane Vulnerability Zone	Flood	Wildfire Susceptible Areas
Agriculture	Acres	93	94	1,106	626
	%	0.6	0.6	5.7	5.0
Attractions, Stadiums, Lodging	Acres	140	140	20	2
	%	0.9	0.9	0.1	0.0
Places of Worship	Acres	290	278	72	62
	%	1.8	1.7	0.4	0.5
Commercial	Acres	1,292	1,297	391	214
	%	7.9	8.0	2.0	1.7
Government, Institutional, Hospitals, Education	Acres	1,772	1,747	3,710	1,914
	%	10.9	10.8	19.2	15.4
Industrial	Acres	264	263	684	229
	%	1.6	1.6	3.5	1.8
Parks, Conservation Areas, Golf Courses	Acres	516	462	1,588	1,314
	%	3.2	2.9	8.2	10.6
Residential Group Quarters, Nursing Homes	Acres	48	47	36	22
	%	0.3	0.3	0.2	0.2
Residential Multi-Family	Acres	643	630	88	130
	%	3.9	3.9	0.5	1.0
Residential Mobile Home, or Commercial Parking Lot	Acres	229	231	110	18
	%	1.4	1.4	0.6	0.1
Residential Single-Family	Acres	5,542	5,516	2,206	2,040
	%	34.0	34.2	11.4	16.4
Submerged Land (Water Bodies)	Acres	5	5	10	4
	%	0.0	0.0	0.1	0.0
Transportation, Communication, Rights-of-Way	Acres	244	246	151	81
	%	1.5	1.5	0.8	0.7
Utility Plants and Lines, Solid Waste Disposal	Acres	468	465	733	72
	%	2.9	2.9	3.8	0.6
Vacant	Acres	4,766	4,723	8,405	5,725
	%	29.2	29.3	43.5	46.0
Total	Acres	16,311	16,143	19,309	12,454
	%	100.0	100.0	100.0	100.0

Data from: Florida Department of Community Affairs, 2005.

3. Existing Mitigation Measures

Local Mitigation Strategy

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

GOAL A:

A metropolitan Brevard County that is fully involved in emergency management and strategic planning by enhancing municipalities, key industry businesses, and community based organizations.

OBJECTIVE A1: Enhance overall awareness of Public Officials and Business and Industry leaders of Disaster Preparedness/mitigation/identified hazards within Brevard County.

STRATEGY A1A: Conduct bi-annual Elected Public Officials Conference.

STRATEGY A1B: Continue Emergency and Disaster Awareness program for Business and Industry.

STRATEGY A1C: Continue pre-disaster Mitigation Awareness program for local Municipalities, Business and Industry through Brevard Prepares.

OBJECTIVE A2: Review and update Hazard and Disaster Mitigation information with local partners, as to plans and programs.

STRATEGY A2A: Through Local Mitigation Strategy, continue working as the Steering Committee to ensure on-going updates to the mitigation initiatives for Brevard County.

STRATEGY A2B: Continue to work with local municipalities and private sector to assist with the Local Mitigation Strategy continuance and Brevard Prepares/Project Impact.

STRATEGY A2C: Plan and execute community activities created by the partners and government for the benefit of Brevard County residents with Hazard Mitigation. i.e. Keep Brevard Beautiful events, Firewise workshops and Yard Debris Removal programs.

STRATEGY A2D: Assist in the development and execution of county wide disaster awareness showcases and expositions, sponsored by community based organizations with emphasis on bringing in private partners and topic related businesses.

STRATEGY A2E: Conduct FLASH workshops with local builders to promote mitigation in building techniques and trade education displays.

GOAL B:

A Metropolitan Brevard County that is well prepared and informed for all types of emergencies and hazards through improved distribution of emergency preparedness materials to local leaders, businesses, organizations and general public.

OBJECTIVE B1: Enhance disaster response capability through citizen involvement

STRATEGY B1A: Enhance Community Emergency Response Team (CERT) programs throughout Brevard County.

STRATEGY B1B: Review use of citizens for Homeland Defense.

OBJECTIVE B2: Enhance overall awareness of media representatives on Disaster Preparedness activity within Brevard County.

STRATEGY B2A: Enhance emergency and disaster education program for school age children.

STRATEGY B2B: Conduct Hurricane Awareness activities in conjunction with State and Federal hurricane activities.

OBJECTIVE B3: Improve access by general public to information and instructions for individual preparation and response during all hazard emergencies.

STRATEGY B3A: Insure the Public Service pages are updated and included in local telephone directories through the Office of Emergency Management.

STRATEGY B3B: Develop Public Awareness Program with local newspapers for publication prior to Hurricane Season.

STRATEGY B3C: Support Hazard Mitigation by giving presentations to Civic organizations, Municipality staff and private industry prior to hurricane season.

GOAL C:

To protect Brevard Residents and infrastructure from hazards identification.

OBJECTIVE C1: Identify areas that are most vulnerable to disasters within Brevard County.

STRATEGY C1A: Develop ongoing mitigation initiatives to reduce the damages associated with such all disasters, whether man made or natural.

STRATEGY C1B: Maintain current floodplain and storm surge maps with technological enhancements, as they become available.

STRATEGY C1C: Upgrade public facilities (e.g. city halls) to withstand disasters as well as critical facilities' vulnerability.

STRATEGY C1D: Upgrade/analysis of critical evacuation routes.

OBJECTIVE C2: Improve level of quality of communication systems countywide.

STRATEGY C2A: Modify and integrate emergency telecommunications with all municipalities and supporting agencies.

STRATEGY C2B: Pursue funding of Intelligent Transportation System display signs for highways in Brevard County.

STRATEGY C2C: Mitigate threats to public communications (radio & TV Broadcasts)

STRATEGY C2D: Insure all municipalities and county government protects public records.

Comprehensive Emergency Management Plan

The Brevard 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 Brevard County was not available for review at the time this profile was drafted. If Brevard 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

No information could be found regarding participation in the National Flood Insurance Program's Community Rating System by Brevard County or any of its municipalities.

4. Comprehensive Plan Review

Brevard 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 four hazards of this analysis.

Brevard's Comprehensive Plan has many policies considered to be best management practices for mitigating hurricane and coastal surge impacts. There were policies that aimed at preserving and restoring natural hazard protection features of the environment, such as beaches, dunes, and wetlands. Building upon these policies were also policies that aimed at acquiring land in the Coastal High Hazard Area (CHHA) and preserving these areas for open space and recreation. For those coastal hazard areas that cannot be preserved, the County has policies for limiting development by limiting population densities and public expenditures in the CHHA and by regulating uses seaward of the Coastal Construction Control Line (CCCL). There also is a policy enabling the County to use transfer of development rights to transfer population densities from the CHHA to areas inland. Evacuation for hurricanes was also progressively addressed in the Comprehensive Plan by allowing for development orders to be deferred until acceptable evacuation times can be obtained in areas above the acceptable time frame. Another best practices policy found in the Coastal Management Element, prohibits new mobile home developments or recreational vehicle parks on the barrier island. For RV parks in the south beaches, hurricane management plans are required of the park. There also is another policy that requires new recreational, mobile, or manufactured housing developments countywide to provide onsite sheltering for at least half of their residents. There are many other good policies regarding sheltering and special needs sheltering. The Plan also includes several criteria for rebuilding after a disaster differentiating between immediate recovery and long-term recovery needs.

Flooding was addressed in the Comprehensive Plan in multiple policies, as well. As with the coastal areas, there were many policies for protecting and limiting densities in floodplains and wetlands. There also is a policy to continue participation in the National Flood Insurance Program. Many policies are also directed at stormwater management. Policies also discourage public facilities to be located in the 100 year floodplain.

There was only one policy in the Comprehensive Plan that related to wildfire hazards. This policy only discussed fire prevention in general and did not have any specifics toward wildfire mitigation.

No policies were found during this review that directly related to sinkhole hazards. There were several policies aimed at protecting the aquifer and conserving groundwater. These policies contribute to mitigating sinkholes by decreasing the probability of human-induced sinkholes which can occur from changes in the water level of the aquifer in karst areas that are already susceptible to sinkhole activity.

There were also several policies for minimizing erosion in the County.

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.

Brevard 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 disconnection 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 through data collection and mapping. This should definitely be a first step in planning for hazards and yet the only policies found in the review discussed identifying wetlands and analyzing beach restoration projects. It is recommended that the County also work to include data and analysis in their Plan that identify geographic areas like the analysis included in this profile and that overlay land uses within hazard zones. This sort of information can lead to planning policies such as overlay zones that increase building code requirements or require impact fees for only those areas that are at risk from the hazard.

Another issue that was a major theme in the objectives of the LMS but was not addressed thoroughly in the Comprehensive Plan, is public awareness and providing informational materials. There were a couple policies for educating the public on when to evacuate and where to find shelters but the LMS suggests a need to go beyond this. It suggests public events, school lesson plans, and citizen involvement. It also suggests providing the public and businesses with Firewise and Flash materials. Individual preparation is a major factor in improving safety for the whole community and could easily be included in the Comprehensive Plan as well. For instance, if more residents were educated on the need to remove brush and overgrown vegetation from around their homes they can greatly reduce their risk of damage from wildfire and reduce the chance of the fire spreading to their neighbor's home as well.

Despite 35% of the population being at risk from wildfire as discussed earlier in this analysis, there were no policies specifically related to wildfire. It is recommended that the County identify high-risk fire zones and require that new development in those areas use Firewise principles in site design, building materials, and landscaping. This would include a requirement that subdivisions have more than one entrance or exit so that a quicker evacuation can be

accomplished if necessary. Also, clustering of development or buffers from large natural areas should be encouraged so that proper maintenance of the conservation area can be accomplished through prescribed burns. The County could also require that all conservation lands, including easements required through development approvals, have a plan for maintaining the vegetation.

While Brevard County's Coastal Management Element has numerous exemplary policies, there is always room for improvement. For instance, the policy enabling development approval to be deferred until evacuation times are acceptable could be enhanced by setting definite level of service standards for evacuation routes and time. This would give the County a better legal standing when deferring development or give them the option to require an impact fee or other mitigation from the developer.

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

While Brevard's Comprehensive Plan has already made great strides in incorporating hazard mitigation, the LMS could be strengthened. Overall the LMS could use more updating and seems to have some areas that were meant to be finished since first drafted in 1999, but that have not yet found their way into the document. A discussion of the history of natural disasters in Brevard specifically could not be found, only a discussion of hazards that have impacted the state as a whole. There also could be more definition in the plan between countywide concerns and those of the municipalities. Most counties who used this template for developing their LMS also included separate sections for the municipalities. The LMS could also 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. The goals of the LMS are limited in scope and could maybe reflect other concerns that are discussed in the "Guiding Principles" sections. Also the objectives could include more detailed policies such as the ones in the Comprehensive Plan. Overall the LMS could be enhanced and further connected with the County Comprehensive Plan.

6. Municipal Case Study: Palm Bay

As part of this study, a similar analysis to that of the County profile was completed for a statewide sample of 14 Florida municipalities, including Palm Bay in Brevard County. The results of this analysis are provided in this section.

Analysis of Current and Future Vulnerability

Palm Bay's vulnerabilities to surge, flood, and wildfire were analyzed spatially in relation to existing and future land uses within the City. The FDCA has provided maps of existing land use within hazard areas based on the 2004 County Property Appraiser GIS shapefiles. Maps of future land uses in hazard areas were developed using the Palm Bay Future Land Use Map dated April 2005.

In **Attachment A**, four maps show the existing and future land uses within the coastal hazard zone (Category 1 storm surge zone) and the hurricane vulnerability zone (Category 1 evacuation zone) for Palm Bay. **Table 6.1** presents the acres of land in the coastal hazard zone and in the hurricane vulnerability zone. Twenty-five percent of the land in each of these two categories is currently vacant. The largest percentage of developed acreage is found in single-family residential, with 20.8% for the coastal hazard zone and 25.3% for the hurricane vulnerability zone. Large percentages of land at risk from hurricanes are also found in commercial use, institutional uses, and parks and conservation. This makes the City's economy vulnerable to hurricanes, and the large number of single-family homes at risk means that the City has a great need for evacuation and sheltering. **Table 6.2** presents future land use estimates and a breakdown of how currently undeveloped land has been designated for future use. Unfortunately, 98.3% of the undeveloped land in the hurricane vulnerability zone is designated for future residential or commercial uses. Despite these future land use designations, there may still be ways to limit the City's vulnerability to hurricanes on these undeveloped lands.

In **Attachment B**, two maps present the existing and future land uses within a 100-year flood zone. Most of flood-prone areas are on the western border of the City. The total area land in these special flood hazard areas is 8258 acres. As shown in **Table 6.1**, 48.1% of these acres are currently undeveloped. **Table 6.2** shows that 85.4% of the undeveloped lands are designated for future residential use. If homes are to be built in these areas, proper elevations and other mitigation measures should be enforced, but the best option would be to not allow new residents to build in flood prone areas.

In **Attachment C**, maps present the land uses associated with high-risk wildfire zones. These wildfire risk areas are scattered throughout the City. According to the data in **Table 6.1**, total of 39.3% of the land within these wildfire zones is currently vacant and 26.7% is in parks and conservation. Of the 447 undeveloped acres, 61.8% is shown to be designated for single-family residential uses in the future (**Table 6.2**).

Table 6.1 Total Acres in Hazard Areas by Existing Land Use Category

Existing Land Use Category		Coastal Hazard Zone	Hurricane Vulnerability Zone	Flood	Wildfire Susceptible Areas
Agriculture	Acres	0	0	990	17
	%	0.0	0.0	12.0	3.7
Attractions, Stadiums, Lodging	Acres	1	0	0	0
	%	0.4	0.3	0.0	0.0
Places of Worship	Acres	4	0	12	1
	%	1.7	0.1	0.1	0.2
Commercial	Acres	27	25	61	1
	%	11.0	15.8	0.7	0.2
Government, Institutional, Hospitals, Education	Acres	39	27	1,204	65
	%	15.6	17.1	14.6	14.5
Industrial	Acres	1	2	576	0
	%	0.5	1.1	7.0	0.1
Parks, Conservation Areas, Golf Courses	Acres	38	4	670	119
	%	15.5	2.4	8.1	26.7
Residential Group Quarters, Nursing Homes	Acres	1	0	1	0
	%	0.5	0.0	0.0	0.0
Residential Multi-Family	Acres	12	13	28	3
	%	5.0	8.4	0.3	0.7
Residential Mobile Home, or Commercial Parking Lot	Acres	5	5	9	0
	%	2.2	2.9	0.1	0.0
Residential Single-Family	Acres	52	40	683	66
	%	20.8	25.3	8.3	14.7
Transportation, Communication, Rights-of-Way	Acres	2	2	44	0
	%	1.0	1.4	0.5	0.0
Utility Plants and Lines, Solid Waste Disposal	Acres	0	0	6	0
	%	0.1	0.0	0.1	0.0
Vacant	Acres	64	40	3,973	176
	%	25.9	25.2	48.1	39.3
Total	Acres	248	159	8,258	447
	%	100.0	100.0	100.0	100.0

Data from: Florida Department of Community Affairs, 2005.

Table 6.2 Total and Undeveloped Acres in Hazard Areas by Future Land Use Category

Future Land Use Category		Coastal Hazard Zone		Hurricane Vulnerability Zone		Flood		Wildfire Susceptible Areas	
		Total	Undev.	Total	Undev.	Total	Undev.	Total	Undev.
Commercial	Acres	66	14	66	14	157	117	1	0
	%	26.7%	21.9%	41.3%	34.4%	1.9%	2.9%	0.3%	0.0%
Conservation	Acres	60	19	0	0	316	34	12	0
	%	24.3%	28.8%	0.0%	0.0%	3.8%	0.9%	2.6%	0.0%
Industrial	Acres	2	0	0	0	695	76	54	54
	%	0.8%	0.3%	0.3%	0.0%	8.4%	1.9%	12.2%	30.7%
Mobile Homes/Parks	Acres	4	1	5	1	15	9	0	0
	%	1.6%	1.4%	2.9%	1.7%	0.2%	0.2%	0.0%	0.0%
Multi Family	Acres	36	20	33	20	73	47	0	0
	%	14.6%	31.2%	20.7%	48.9%	0.9%	1.2%	0.0%	0.1%
Public/Semi-Public	Acres	15	0	13	0	412	247	32	10
	%	6.0%	0.3%	8.4%	0.0%	5.0%	6.2%	7.2%	5.6%
Recreation/Open Space	Acres	9	0	2	0	530	49	18	0
	%	3.6%	0.0%	1.0%	0.0%	6.4%	1.2%	4.0%	0.3%
Rural Single Family	Acres	0	0	0	0	1,830	1	99	3
	%	0.0%	0.0%	0.0%	0.0%	22.2%	0.0%	22.1%	1.5%
Single Family	Acres	55	10	41	6	4,230	3,393	231	109
	%	22.3%	16.0%	25.5%	15.0%	51.2%	85.4%	51.6%	61.8%
Utilities	Acres	0	0	0	0	1	0	0	0
	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	Acres	248	64	159	40	8,258	3,973	447	176
	%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Data from: Florida Department of Community Affairs, 2005.

Comprehensive Plan

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

The City’s Comprehensive Plan has several good policies for mitigating hurricane and coastal surge impacts. One that is considered to be a best practice is Policy FLU 2.2E which states that impacts on evacuation will be considered in development approval and that the developer may have to mitigate any projected reductions in evacuation time. Along those same lines of thought are also policies that limit public expenditures that subsidize development in high hazard coastal areas and that limit public infrastructure to surge zones making it the developer’s responsibility if they wish to build there (Policies CIE 1.2 and CZM 1.6A). Another policy also prohibits habitable structures and septic tanks in coastal high hazard areas. There are also several policies aimed at preserving the natural protective functions of the beach by encouraging natural shoreline stabilization or acquisition of shoreline properties.

There are also many policies dealing with flood mitigation through protecting natural drainage features, such as wetlands and floodplains, as well as setting stormwater regulations. Most of the policies, however, refer to the Stormwater Management Ordinance or the Floodplain Management Ordinance without giving many details.

The only policy found during this review related to wildfire hazards is to improve water pressure for fighting fires.

There also were several policies for hazard mitigation in general. One of these is to base decisions for capital improvement expenditures on whether the project would eliminate a hazard (Policy CIE 1.1E). There also were a few policies concerning the development of a post disaster redevelopment plan by 2002. These policies should be updated to reflect whether this has been done or not but are a good start to addressing redevelopment and rebuild policies. For instance, the policies address the need to distinguish between long-term and immediate recovery and to hold reconstruction activities to current standards.

Recommendations

For the LMS to be effective in the decision-making process of growth management, its objectives and policies must be integrated into all jurisdiction's Comprehensive Plans. 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.

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

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 jurisdiction. While the Profile addresses hurricanes, flooding, and wildfire, during the update of the local comprehensive plan, the city should consider other hazards if appropriate, such as tornadoes or erosion.

Overall, the policies related to hazard mitigation in the Comprehensive Plan could be enhanced to provide more detail and make them easier to implement. Some policies are vague, for instance, many of the flood and stormwater policies only refer to ordinances. These policies could include some information on what is included in those ordinances to make the Plan clearer. Also, stormwater and floor protection requirements are alluded to in Policy FLU 1.1A, however, if this is referring to elevation standards for floodplains it should be stated more clearly with the exact height above base flood elevation included. Policy FLU 2.2E makes a great connection between development approval and evacuation and this could be even further strengthened if the City set level of service standards for evacuation times and routes so that there would be a legal basis for requiring the developer to mitigate any decrease in those standards. The policies related to post-disaster redevelopment are also exemplary policies that just need to be updated and perhaps implemented if they have not been already.

While wildfire does not seem to be a major problem for the City, there are still 447 acres of the city according to Table 6.1 that are in a high-risk wildfire area. The City could identify neighborhoods that may have a risk and encourage them to use Firewise principals in maintaining their landscaping and replace vinyl soffits and other materials around their home that make them vulnerable to wildfire with more appropriate materials. The City could also check before permitting new development to see if it is in a wildfire risk area according to the Division of Forestry's Fire Risk Assessment System which the map in **Attachment C** was based on. Simple site design and building material changes could be made to make the development safer. Also, the City could work with other agencies to make sure any conservation areas within or adjacent to the City are properly maintained and are not allowed to become overgrown and a wildfire threat to the community.

Finally, the Brevard LMS has many objectives regarding public education and awareness. The City should include a policy in their Plan that commits them to working with the County on providing the public with informational materials on hazard mitigation and preparedness.

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

7. Sources

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Attachment A

**Maps of the Existing and Future Land Uses within the
Coastal Hazard Zone and the Hurricane Vulnerability Zone**

Attachment B

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

Attachment C

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

Attachment D

Brevard County Comprehensive Plan Excerpts Related to Hazard Mitigation

Capital Improvements Element

Objective 3 Limit future public expenditures for infrastructure and service facilities which serve to subsidize growth within the coastal high hazard area of Brevard County. Expenditures for public land acquisition or enhancement of natural resources shall be encouraged.

Policy 3.1

Brevard County shall designate coastal high hazard areas to be those areas which are within the Category 1 evacuation zones; as defined in Chapter 163, Florida Statutes (see Coastal Management Element Map 4).

Policy 3.2

Brevard County shall not support or finance new local transportation corridors which lie within the coastal high hazard zone or areas zoned as Environmental Area, except where there are no other cost-feasible alternatives.

Policy 3.3

Brevard County should not locate sanitary sewer and water transmission lines within the coastal high hazard zone, except where there is no cost-feasible alternative and where practical due to engineering, safety and cost considerations, and where necessary utilizing existing rights-of-way.

Policy 3.4

If County utility lines are relocated for any purpose, they should be located outside of the coastal high hazard zone, except where there is no cost-feasible alternative.

Policy 3.5

Public facilities, except for recreational facilities, shall not be located by Brevard County within of the coastal high hazard zone, except where there are no other cost feasible alternatives.

Coastal Management Element

GOAL

Establish growth management strategies that will allow growth to continue within the coastal zone which does not damage or destroy the function of coastal resources, protects human life and limits public expenditures in areas subject to destruction by natural disasters.

Policy 2.4

Brevard County shall address modification of existing development which does not meet stormwater management standards.

Objective 4

Brevard County shall implement and improve as necessary a comprehensive beach and dune management program which protects, enhances and restores a naturally functioning beach system as funding is available.

Policy 4.1

The Land Development Regulations shall maintain regulations governing the location, construction and maintenance of development adjacent to the Atlantic shoreline. Development seaward of the Florida Department of Environmental Protection (FDEP) 1981 Coastal

Construction Control Line (CCCL), which coincides with the Brevard County Coastal Construction Line (CCL), shall be governed by the following conditions, at a minimum:

Criteria:

- A. Oceanfront development shall be required to maintain at least 50% of the native dune vegetation on site. Native dune vegetation seaward of the FDEP 1981 Coastal Construction Control Line (CCCL) shall not be removed unless necessary for approved emergency vehicle access or coastal protection needs.
- B. In order to maintain the freshwater lens of the surficial aquifer and reduce saltwater intrusion, post-development groundwater recharge volume shall equal pre-development recharge volume.
- C. No new shoreline hardening structures shall be permitted in unincorporated Brevard County south of Patrick Air Force Base (PAFB) property or within the Archie Carr National Wildlife Refuge, with exception of emergency provisions as provided for in Florida Statutes Chapter 163.3187(1)(a) "Amendment of Adopted Comprehensive Plan".
- D. North of the PAFB, no new shoreline hardening structures should be permitted.
- E. Pursuant to Criteria C and D of this policy, if a shoreline hardening structure is deemed necessary, the following criteria shall apply:
 - 1. Vertical wood or concrete structures, and rock revetments shall only be approved when less structural alternatives, such as beach renourishment, dune restoration and sandbag systems have been determined not to be feasible.
 - 2. All shoreline protection measures shall be designed to minimize adverse impacts to the naturally functioning beach and dune system and adjacent properties.
 - 3. The County may require dune restoration and revegetation as a component of the shoreline hardening approval both landward and seaward of the proposed structure.
 - 4. All shoreline protection shall be designed and constructed so as to not impede public access to or along the shore.
- F. Setbacks or other non-structural methods of shoreline protection shall be given the highest priority.
- G. Reconstruction of existing hard erosion control structures which are more than fifty (50) percent destroyed should be considered new construction projects and should be regulated as such, except for the maintenance of existing public navigational projects, such as Port Canaveral and Sebastian Inlet.
- I. Septic tank or septic tank drainfields shall not be permitted seaward of the Brevard County Coastal Setback Line (CSL). Septic tanks shall be located landward of the most seaward portion of the habitable structure.
- J. All activities seaward of the 1986 FDEP Coastal Construction Control Line (CCCL) shall be subject to FDEP permitting requirements.

Policy 4.2

Brevard County shall enforce development restrictions associated with the Brevard Coastal Setback Line (CSL), and the Brevard County Coastal Construction Line (CCL) and re-evaluate the effectiveness of these lines from time to time as coastline changes dictate. The County shall provide FDEP with their findings and request a review of the FDEP Coastal Construction Control Line, if deemed appropriate.

Policy 4.3

Brevard County shall continue to adopt and enforce standards for maintenance or re-establishment of dune areas. These standards shall include, at a minimum, the following provisions:

Criteria:

- A. Native dune vegetation shall be maintained on site unless removal or alteration is permitted by both Brevard County and the Florida Department of Environmental Protection, or other appropriate regulatory agency.
- B. Access shall be allowed only at designated cross-over sites.

- C. Erosion control strategies will be utilized at unimproved public access sites until these can be improved or alternate access provided.
- D. Dune cross-overs, boardwalks, walkways and other permissible structures seaward of the Brevard County Coastal Setback Line shall be elevated above dune vegetation and shall be designed to allow adequate light penetration.
- E. Shore-parallel boardwalks shall be prohibited seaward of the Coastal Setback Line, except as required for handicap access.
- F. Publicly owned dunes, especially those identified for beach access sites, which have been denuded or damaged by vehicular or pedestrian traffic shall be prioritized for dune renourishment and revegetation. Improvements or erosion controls shall be implemented at the time of renourishment to prevent further site degradation.
- G. Private property owners should be encouraged to re-establish dune vegetation which has been destroyed by non-designated access activities or storm damage.

Policy 4.4

Brevard County's beach and dune restoration program shall include an analysis of environmental, financial, and social criteria.

Criteria:

- A. The first priority for beach renourishment shall be given to the protection of life and property.
- B. Priority shall also be given to environmental considerations.
- C. Public areas which are heavily utilized for recreation, including surfing, fishing or swimming, shall be considered for beach or dune renourishment or restoration, as applicable. Long-term management of these areas shall be included with all site improvements.
- D. A feasibility or benefit/costs analysis should be performed for any renourishment project. Such analyses shall include, as appropriate, present and future benefits for property protection, recreation and tourism over the life of the project.

Policy 4.5

The County shall continue to utilize the information and materials available from the State regarding dune maintenance and revegetation and supplement these materials, as necessary.

Policy 4.6

Brevard County shall maintain an ongoing program to initiate and monitor data collection projects related to beach dynamics, sand transport and coastal processes. This program should include data generated by the Florida Department of Environmental Protection, the U.S. Army Corps of Engineers, the Florida Sea Grant College, universities and other appropriate agencies.

Policy 4.7

Brevard County shall develop an inter-local agreement with adjacent municipalities and the State of Florida for funding of beach maintenance and restoration programs.

Policy 4.8

Brevard County shall prohibit motorized vehicles on the dune and beach system except for governmental vehicles (police and sheriff), fire trucks, ambulances or vehicles necessary to repair utilities, or vehicles utilized during approved renourishment programs or approved scientific investigations. Pedestrian traffic within the vegetated dune areas shall be limited to emergency operations, scientific research, maintenance, cleaning or improvements as authorized by the Office of Natural Resources Management and consistent with FDEP regulations.

Policy 4.9

Brevard County shall continue to collect and make available to the public information related to sea level changes.

Policy 5.5

Brevard County shall require hurricane plans to be submitted to the Emergency Management Division in conjunction with marina site plans for review.

Policy 5.9

All new boat ramps should have parking areas constructed utilizing permeable pavement where appropriate and have the proper stormwater management system in place.

Objective 6

Limit future public expenditures for infrastructure and service facilities which subsidize growth within the coastal high hazard areas of Brevard County. Expenditures for public land acquisition or enhancement of natural resources shall be encouraged.

Policy 6.1

Brevard County shall designate coastal high hazard areas to be those areas which are within the Category 1 evacuation zones, as defined in Chapter 163, Florida Statute (see Map 7).

Policy 6.2

Brevard County shall not support or finance new local transportation corridors which lie within the coastal high hazard zone or areas zoned as Environmental Area, except where there are no other cost-feasible alternatives. Corresponding improvements may only be considered when the facilitation of such improvements is needed to support the densities programmed on the Future Land Use Map (FLUM) series of the Comprehensive Plan.

Policy 6.3

Brevard County should not locate sewer and water transmission lines within the coastal high hazard zone, except where there is no cost-feasible alternative and where practical due to engineering, safety and cost considerations, and where necessary utilizing existing rights-of-way.

Policy 6.4

If County utility lines are relocated for any purpose, they should be located outside of the coastal high hazard zone, except where there is no cost-feasible alternative.

Policy 6.5

Public facilities, except for recreational facilities, shall not be located by Brevard County within the coastal high hazard zone, except where there are no other costfeasible alternatives. Corresponding improvements may only be considered when the facilitation of such improvements is needed to support the densities programmed on the Future Land Use Map (FLUM) series of the Comprehensive Plan.

Objective 7

Limit densities within the coastal high hazard zone and direct development outside of this area.

Policy 7.1

Brevard County shall not increase residential density designations for properties located on the barrier island between the southern boundary of Melbourne Beach and the Sebastian Inlet.

Policy 7.2

Brevard County shall continue to implement the Transfer of Development Rights program which has been established to transfer density from transfer districts within the coastal high hazard area to receiving districts outside of the coastal high hazard area.

Policy 7.3

Brevard County shall continue its program of land acquisition and management for recreation and preservation contingent upon availability of funding.

Policy 7.4

Brevard County shall review federal and state development proposals which are to be located within the coastal high hazard areas, and shall support those projects which are consistent with this Plan.

Policy 7.5

Brevard County shall maintain the Brevard County Comprehensive Emergency Management Plan (BrevCemp). This plan shall be consistent with this Comprehensive Plan, and shall be coordinated with the municipalities, the appropriate state and federal agencies, and approved by the appropriate state agency(s).

Policy 7.6

The existence of sewer, water, roadways, or other public infrastructure shall not be considered adequate rationale for an increase in zoning density or intensity within the coastal high hazard area.

Policy 7.7

Once public acquisition of recreation and/or conservation lands occurs within coastal high hazard areas, the Future Land Use Map shall be amended to designate same as Recreation or Conservation lands. Such redesignation shall not serve as a basis for increasing established residential density designations in said coastal high hazard area.

Policy 7.8

Public facilities, such as hospitals, wastewater treatment plants or fire stations, shall not be located on causeways.

Objective 8

Reduce excessive evacuation times where they currently exist, and maintain all other evacuation times within the acceptable standard. Acceptable standards will be reviewed and updated as necessary.

Policy 8.1

Brevard County shall maintain acceptable hurricane evacuation times based upon the following criteria:

Criteria:

- A. The most current behavioral response scenario.
- B. The requirement to evacuate prior to sustained tropical storm force (40 mph) winds.

Policy 8.2

Brevard County shall coordinate with the municipalities and appropriate state agencies to develop Evacuation Zone Management Plans to reduce evacuation times above the current optimum behavioral response time. The following shall be considered, at a minimum:

Criteria:

- A. Roadway and other infrastructure improvements and funding mechanisms.
- B. Programs designed to improve the behavioral response to hurricane evacuation orders.
- C. Land use strategies.

Policy 8.3

Brevard County Emergency Management shall continue to coordinate with NASA to allow evacuation of North Merritt Island through Kennedy Space Center, if necessary.

Policy 8.4

Brevard County shall identify roadway and operational improvements to the hurricane evacuation network based upon the number of people who cannot be evacuated within an optimum evacuation time limit.

Criteria:

- A. Priority shall be given to improvements serving the zone with the highest number of people remaining after the current optimum evacuation time.
- B. The remaining improvements shall be given priority in descending order according to the number of people remaining after the optimum evacuation time.
- C. Brevard County, in cooperation with the Florida Department of Transportation, shall identify key hurricane evacuation routes that are vulnerable to flooding, erosion, and critical points of congestion during the established evacuation time.
- D. Brevard County shall present recommended roadway, operational, and maintenance improvements to the appropriate implementing and funding agencies.

Policy 8.5

In those areas where citizens cannot be evacuated within the acceptable time frame, based upon the most current behavioral response time study, development orders may be deferred until such time as adequate evacuation capacity has been programmed.

Policy 8.6

Brevard County shall consider hurricane evacuation times, as well as other factors, in determining the timing and priority of roadway improvements which are programmed by the Board of County Commissioners.

Policy 8.7

Brevard County shall cooperate with the Red Cross and other agencies to develop an on-going public education program to notify the public as to the necessity to evacuate as quickly as possible in order to reduce or eliminate evacuation times in excess of the optimum behavioral response time.

Policy 8.8

Brevard County's Comprehensive Emergency Management Plan (BrevCEMP) shall be consistent with the state comprehensive emergency management plans.

Policy 8.9

Based upon hurricane vulnerability concerns and excessive evacuation times, new mobile home development or recreational vehicle parks shall not be permitted on the barrier island, to the extent permitted by law. Expansions to an existing mobile home development may be permitted if such development results in a decrease in land use intensity and an overall reduction in programmed residential densities and is consistent with the character of the surrounding area.

Policy 8.10

Brevard County shall require a hurricane management plan which reduces excessive hurricane evacuation time for recreational vehicle park development within the south beaches.

Policy 8.11

Brevard County shall encourage the State of Florida to identify a dedicated funding source for the improvement of primary hurricane evacuation routes, such as US 192, SR 520 and Interstate 95. The funding source should be in addition to state and federal funds already received by Brevard County for urban area roadway improvements.

Objective 9

Provide adequate, safe hurricane shelter space to meet the needs of the at risk and special needs population ("shelter space" shall be considered to include both private and public shelters).

Policy 9.1

Brevard County shall continue to cooperate with the Red Cross and State Emergency Management to provide an emergency shelter manager training course and encourage interested citizens of Brevard County to become shelter managers.

Policy 9.2

Brevard County Office of Emergency Management shall continue to cooperate with the Red Cross to develop a public education program on hurricane preparedness, including the locations of hurricane evacuation shelters and the need for emergency shelter managers.

Policy 9.3

Brevard County shall cooperate with the Red Cross in designating appropriate public and private structures as hurricane shelters.

Policy 9.4

Brevard County shall utilize the Housing and Human Services Department to provide appropriate facilities and adequate staffing for the special needs shelters.

Policy 9.5

Brevard County shall support the School Board in their efforts to utilize enhanced hurricane shelter protection standards for all reconstruction and new development in accordance with FS 235.26.

Policy 9.6

Public buildings within Brevard County should be reviewed to determine if qualified to be utilized as hurricane sheltering. Beginning in the year 2000, all newly constructed public buildings shall meet the criteria established for enhanced shelter protection in the State Requirements for Educational Facilities (SREF).

Policy 9.7

Brevard County shall study the feasibility of increasing residential construction standards to reduce hurricane shelter deficits and ensure the delivery of safe housing for citizens of Brevard County.

Policy 9.8

Brevard County shall develop a hazard mitigation strategy in its land development regulations which prohibits the development of new recreational, mobile or manufactured housing and the expansion of existing recreational, mobile or manufactured housing unless the developer/owner has provided emergency sheltering sufficient to house a minimum of 50% of the residents of that development.

Policy 9.9

Brevard County will encourage all existing recreational, mobile or manufactured housing communities to have emergency shelter for their residents.

Objective 10

Expedite post-disaster recovery and reduce or eliminate the future risk to human life, and public and private property from natural hazards via recovery and re-development strategies adopted in the BrevCEMP.

Policy 10.1

Brevard County’s Code Compliance Department and Public Works Department shall review all non-emergency and long-term redevelopment proposals utilizing the following criteria:

Criteria:

- A. If utility lines, including but not limited to sewer, water, gas, electric, and cable TV, must be relocated after a storm event, they should be permanently located landward (west) of the 1986 FDEP Coastal Construction Control Line and underground, except for feed lines servicing individual parcels. Repair of these lines on a temporary basis to protect health and safety shall be permitted in their existing locations.
- B. Underground storage tanks which are located seaward of the Brevard County Coastal Setback Line (CSL) shall be relocated landward (west) of the 1986 FDEP Coastal Construction Control Line.
- C. Water-dependent commercial uses seaward of the 1981 FDEP Coastal Construction Control Line which are damaged by more than 50% of their assessed value or fair market value as determined by an NAI appraisal supplied by the property owner may be reconstructed seaward (east) of the 1981 FDEP CCCL consistent with the coastal zone construction requirements.
- D. Water-related commercial uses seaward (east) of the 1981 FDEP Coastal Construction Control Line which are damaged by more than 50% of their assessed value or fair market value as determined by an NAI appraisal supplied by the property owner should be relocated landward (west) of the 1981 FDEP CCCL unless the project has no feasible alternative and is found to be in the public interest.
- E. Water-enhanced commercial uses seaward (east) of the 1981 FDEP Coastal Construction Control Line which are damaged by more than 50% of their assessed value or fair market value as determined by an NAI appraisal supplied by the property owner should be relocated landward (west) of the 1981 FDEP CCCL.
- F. If non-habitable minor structures which are damaged by more than fifty (50) percent of their assessed value or fair market value as determined by an NAI appraisal supplied by the property owner are reconstructed, they shall be relocated and constructed in compliance with coastal zone construction requirements.
- G. Brevard County should develop a program for the possible relocation of residential housing, if required after a natural disaster.

Policy 10.3

By 2002, Brevard County should analyze those public structures within the coastal zone which are most likely to be damaged or destroyed during a hurricane. The analysis shall be coordinated by the Planning and Zoning Office and shall consider the following criteria, at a minimum:

Criteria:

- A. The cost effectiveness of relocation versus repair shall be analyzed.
- B. Alternatives shall be considered in the light of mitigative impacts, growth management consistency, impacts to the public, timeliness, legal issues, environmental impacts, and cost.
- C. The following alternatives, at a minimum, shall be analyzed:
 - 1. Repair of the structure to the pre-disaster conditions.
 - 2. Repair of the structure to the pre-disaster conditions with physical protective structures, such as seawalls or revetments.
 - 3. Vertical relocation of the structure, e.g. elevating roadways with bridges.
 - 4. Relocation further inland.
- D. Reconstruction or relocation of SR A1A and other roadway segments within the coastal high hazard area shall be included within this study.
- E. Analysis of County service center and other facilities shall be in conjunction with the County's Space/Needs Assessment.
- F. Those structures within the high risk vulnerability zone to be included are the Central Brevard Service Complex, District II Commission Office, District II Road and Bridge, County Sign Shop, public libraries, and County fire stations.

G. The study shall be consistent with the East Central Florida Regional Planning Council studies. The hurricane scenarios and loss estimates shall be consistent with the Hurricane Loss Study and shall be coordinated with other appropriate agencies.

H. The impact of sea level rise and the projected 30-year erosion line shall also be analyzed.

Policy 10.4

In the event of a disaster all infrastructure and other County owned improvements, which were not included within the above outlined study, shall be analyzed to determine the cost effectiveness of relocation versus repair.

Policy 10.5

The Brevard County Code Compliance Department shall provide copies of building permits which have been issued for storm damage repair to the County Hazard Mitigation Team for their evaluation for identification of areas susceptible to repeated damage by hurricane erosion and flooding.

Policy 10.6

Brevard County shall continue to conduct disaster related exercises at regular intervals, as determined by the Office of Emergency Management, or in conjunction with the East Central Florida Regional Planning Council, Local Emergency Planning Committee and other state or federal agencies.

Policy 10.9

Brevard County should require that when utility lines, including, but not limited to sewer, water, gas, electric, and TV cable, are relocated for any purpose, they shall be placed underground.

Policy 11.4

Brevard County shall continue to coordinate with all beachfront municipalities the continued development and implementation of the Brevard County Beach Management Program. The Beach Erosion Advisory Committee, established by Chapter 70-603, Laws of Florida, should continue to function as a mechanism to communicate with the beachfront municipalities on beach-related issues and as the primary technical advisory committee to the Board of County Commissioners on the beach program.

Policy 11.5

Brevard County shall continue to pursue funds for dune revegetation to be used when constructing dune crossovers as replacements for unimproved dune access.

Policy 12.10

Brevard County shall continue to utilize beach management funding derived from tourist revenues to implement its beach management strategies.

Policy 12.11

Brevard County shall continue to implement its Beach Management Program by seeking additional State and Federal cost-share funding for beach projects.

Conservation Element

Policy 3.2

Brevard County shall continue to prevent negative impacts of development in and adjacent to Class I waters by implementing and revising, as necessary, the Surface Water Protection Ordinance including the following minimum criteria:

Criteria:

A. Maintain a two hundred (200) foot shoreline protection buffer from ordinary or mean high waterline.

F. Prohibit alteration within the shoreline protection buffer unless it is in the public interest or does not adversely impact water quality and natural habitat.

Policy 3.3

Brevard County shall continue to make efforts to prevent negative impacts of development in and adjacent to the Indian River Lagoon and its tributaries designated as Class II waters, Aquatic Preserves and Outstanding Florida Waters by implementing and revising as necessary, the Surface Water Protection Ordinance, including the following minimum criteria:

Criteria:

- A. Maintain a fifty (50) foot shoreline protection buffer from the mean high water line or the safe upland line as determined by the FDEP Bureau of Survey and Mapping.
- B. No more than twenty (20) percent of the lot width or twenty-five (25) linear feet, whichever is greater, of any shoreline protection buffer of a project or parcel, or the offshore emergent vegetation associated with a project or parcel may be altered for reasonable access or for allowable development. Within the shoreline protection buffer, allowable development shall be limited to docks, boat ramps, pervious walkways, elevated walkways, and approved accessory uses, as set forth by the County land development regulations. Accessory uses shall be allowable only on existing bulkheaded lots utilizing required stormwater management techniques. The remainder of the shoreline protection buffer shall be maintained in unaltered vegetation, except for noxious species, as permanent open space. This shall not preclude mitigation projects or the planting of native species. Provisions for the alteration and/or removal of non-native noxious vegetation shall be established by the Brevard County Natural Resources Management Division.
- C. For residential lots platted or established by deed on the official record books of Brevard County prior to September 8, 1988, an alternative to the fifty (50) foot shoreline protection buffer described above shall be available for those lots which have insufficient lot depth to construct a primary structure or pool with its associated decking and features. In the case where there is insufficient lot depth to construct a primary structure, this alternative shall allow the shoreline protection buffer to be reduced to twenty five (25) feet if additional measures are taken to preserve water quality and natural habitat within the adjacent surface water body. In the case where there is insufficient lot depth to construct a pool with its associated decking and features, an encroachment of up to 720 square feet within the shoreline protection buffer shall be available if additional measures are taken to preserve water quality and natural habitat within the adjacent surface water body. These additional measures should, at a minimum, be consistent with DEP 17-25 and 17.302 F.A.C. and may include but are not limited to the provision of a stormwater system which is capable of preventing the first inch of runoff from a 25 year, 24 hour storm from entering surface waters and revegetation with native shoreline vegetation. Within the shoreline protection buffer, development shall be limited to those activities outlined in 3.4 (B).
- D. Prohibit shoreline alteration other than that allowed for reasonable access or approved accessory uses, unless the alteration is in the public interest and does not adversely impact water quality, natural habitat, and adjacent shoreline uses.

Policy 3.4

Brevard County shall continue to prevent negative impacts of development in and adjacent to Class III waters (except Outstanding Florida Waters and Aquatic Preserves) along the St. Johns River and Indian River Lagoon and its tributaries by implementing and revising as necessary, the Surface Water Protection Ordinance including the following minimum criteria:

Criteria:

- A. A twenty five (25) foot shoreline protection buffer from the mean high water line or the safe upland line as determined by the FDEP Bureau of Survey and Mapping shall be established.
- B. No more than twenty (20) percent of the lot width or twenty-five (25) linear feet, whichever is greater, of any shoreline protection buffer of a project, parcel, or the offshore emergent vegetation associated with a project or parcel may be altered for a reasonable access or for allowable development. Within the shoreline protection buffer, allowable development shall include docks,

boat ramps, pervious walkways, elevated walkways, and approved accessory uses, as set forth by the County land development regulations. Accessory uses shall be allowable only on existing bulkheaded lots utilizing required stormwater management techniques. The remainder of the shoreline protection buffer shall be maintained in unaltered vegetation, except for noxious species, as permanent open space. This shall not preclude mitigation projects or the planting of native species. Provisions for the alteration and/or removal of non-native, noxious vegetation shall be established by the Brevard County Office of Natural Resources.

C. For residential lots platted or established by deed on the official record books of Brevard County prior to September 8, 1988, an alternative to the twenty five (25) foot shoreline protection buffer described above along Class III waters shall be available for those lots which have insufficient lot depth to construct a primary structure or pool with its associated decking and features. In the case where there is insufficient lot depth to construct a primary structure, this alternative shall allow the shoreline protection buffer to be reduced to fifteen (15) feet if additional measures are taken to preserve water quality and natural habitat within the adjacent surface water body. In the case where there is insufficient lot depth to construct a pool with its associated decking and features, an encroachment of up to 720 square feet within the shoreline protection buffer shall be available if additional measures are taken to preserve water quality and natural habitat within the adjacent surface water body. These additional measures should, at a minimum, be consistent with DEP 17-25 and 17.302 F.A.C. and may include but are not limited to the provision of a stormwater system which is capable of preventing the first inch of runoff from a 25 year, 24 hour storm from entering the surface waters and revegetation with native shoreline vegetation. Within the shoreline protection buffer, development shall be limited to those activities outlined in this policy.

D. Prohibit shoreline alteration other than that allowed for reasonable access or approved accessory uses, unless it is in the public interest; or prevents or repairs erosion; or does not adversely impact water quality, natural habitat and adjacent shoreline uses.

Policy 3.6

Vertical seawalls and bulkheads shall be prohibited along the Indian River Lagoon system, excluding man-made canals. Hardening of the estuarine shoreline shall be allowed only when erosion is causing a serious (significant) threat to life or property. Rip-rap material, pervious interlocking brick systems, filter mats, and other similar stabilization methods combined with vegetation shall be used in lieu of vertical seawalls and bulkheads when hardening of the shoreline is approved.

Policy 3.14

The creation of new spoil islands should be discouraged. Existing spoil islands should be retained in public ownership and utilized as bird rookeries and recreational areas. In addition, restoration efforts such as wetland vegetation planting, upland vegetation planting, and refuse removal that could foster biological production, control erosion, and enhance the habitat, aesthetic and recreational values of the island should be undertaken.

Objective 4

Reduce loss of flood storage capacity and reduce risk to life and property by continuing to apply regulations which minimize the impact of development within flood hazard areas.

Policy 4.1

Brevard County shall continue to protect the riverine floodplain. At a minimum, the following criteria shall be the basis for the protection of the riverine floodplain:

Criteria:

A. The ten-year riverine floodplain should be maintained in its natural state unless a project has a special reason or need to be located there. These special reasons and needs are further defined in the land development regulations. These needs may include but are not limited to agriculture and passive recreation.

- B. Development within the riverine one-hundred year floodplain shall not adversely impact the drainage of adjoining properties or degrade the quality of the receiving surface water body.
- C. The following uses are not compatible with the resource requirements of the one-hundred year riverine floodplain and shall not be permitted. These include, but are not limited to:
1. Placing, depositing or dumping of solid waste except for treated municipal solid sludge.
 2. Processing and storing of threshold amounts of hazardous materials.
 3. Disposal of hazardous materials.
- D. There shall be no net loss of flood storage capacity of the twenty- five year riverine floodplain.
- E. There shall be no net change in the rate and volume of floodwater discharged from the pre-development twenty-five year riverine floodplain.
- F. Brevard County will coordinate with the SJRWMD or other appropriate agencies in determining the appropriate first floor building elevation within the twenty-five to one-hundred year floodplain and shall ensure that habitable structures are constructed above base flood elevation.

Policy 4.2

Brevard County shall continue to implement land use density restrictions within riverine floodplains in order to protect infrastructure and human life, conserve flood storage capacities, and to improve, where feasible, the quality of water within the watershed. At a minimum, the following shall apply:

- A. Within the one-hundred year riverine floodplain (that is the area that is below the 100 year flood elevation but above the 25 year flood elevation):
1. Residential density shall be limited to no more than two dwelling units per acre; and
 2. Commercial and industrial land uses shall be limited to a filled footprint of no more than 15,000 square feet per acre.
- B. Within the twenty-five year riverine floodplain (that is the area that is at or below the 25-year flood elevation but above the 10-year flood elevation):
1. Residential density shall be limited to not more than one dwelling unit per two and one half acres; and
 2. Commercial land uses shall be limited to a filled footprint of no more than 3,000 square feet per acre and commercial uses shall be no greater than one acre; and
 3. Industrial land uses shall be prohibited.
- C. Within the ten-year riverine floodplain (that is the area that is at or below the 10-year flood elevation but above the annual flood elevation):
1. Residential density shall be limited to not more than one dwelling unit per ten acres; and
 2. Commercial and industrial land uses shall be prohibited unless they are in the best public interest or the location of the use is integral to its operation.
- D. Development within the riverine floodplain should not result in a loss of floodplain storage capacity below the 25-year floodplain elevation of riverine systems, or impact adjacent property.
- E. The best available data shall be utilized to determine appropriate floodplain elevations.

Policy 4.3

Within the annual riverine floodplain (that is the area that is at or below the annual flood elevation) residential, commercial, and industrial land uses shall be prohibited unless the project has a special reason or need to locate within the annual floodplain and there is overriding public interest. The annual riverine floodplains within Brevard County should be left in their natural state, and re-established where feasible.

Policy 4.4

New dikes, levees or other such structures should not be permitted below the 100-year riverine flood elevation except for temporary earthen structures that have a maximum height of less than the 10-year flood elevation and which will not restrict the flow of the 100-year storm floodwaters. The only potential exceptions to this provision are such structures which are shown to have over-riding public benefit. Replacement or repair of dikes, levees and other such structures are permitted as long as such replacement or repair does not change the status of the floodplain and

will maintain the existing ability to utilize the property. Non-structural methods of floodplain management are given priority over structural methods.

Policy 4.5

Brevard County shall develop regulations to protect the estuarine floodplains by implementing the following minimum criteria:

Criteria:

A. Development within the one-hundred year estuarine floodplain shall not adversely impact the drainage of adjacent properties or the quality of the receiving surface water body.

B. The following specific uses are not compatible with the resource requirements of the one-hundred year estuarine floodplain and shall not be permitted. These include, but are not limited to:

1. Placing, depositing, or dumping of solid wastes.
2. Processing and storing of threshold amounts of hazardous materials.
3. Disposal of hazardous materials.

C. The annual estuarine floodplains within Brevard County should be left in their natural state, and re-established where feasible.

Policy 4.6

Brevard County shall develop regulations to ensure that alterations of isolated one-hundred year floodplains do not adversely impact the drainage of adjacent properties or public drainage facilities.

Policy 4.7

Brevard County shall continue to protect the coastal floodplain through the implementation of the following minimum criteria:

Criteria:

A. Prohibit development within the annual coastal floodplain.

B. Limit development water-ward of the Brevard County Coastal Construction Setback Line to those structures necessary to protect the natural dune system and to provide beach access.

C. Brevard County shall continue to maintain construction standards for all development within the one-hundred year storm surge zone as established by the Florida Department of Environmental Protection, the U.S. Southern Building Code, or other applicable regulations.

Policy 4.8

Brevard County shall identify structural controls within the floodplain which degrade natural systems and make recommendations for alternatives to re-establish the natural floodplain, where feasible.

Policy 4.9

Brevard County shall continue to participate in the National Flood Insurance Program administered by the Federal Emergency Management Administration (FEMA). Amendments to the County's flood ordinance shall be adopted as necessitated by changes in FEMA regulations.

Policy 4.10

Public facilities should not be located within the 100-year riverine or estuarine floodplain unless the following apply:

Criteria:

A. The facilities are water-dependent, such as mosquito control facilities; or,

B. The facilities are water-related, such as boat ramps, docks or surface water management facilities; or,

C. The facilities are not adversely affected by periodic flooding or standing water, such as highway bridges and some recreational facilities; or,

- D. The building structures are flood-proofed and located above the 100-year flood elevation, or removed from the floodplain by appropriately constructed dikes or levees; or,
- E. The facilities are found to be in the public interest and there is no feasible alternative.

Objective 5

Preserve, protect, restore, and replace wetlands to achieve no net loss of functional wetlands in Brevard County after September, 1990. The County shall ensure the protection of wetlands and wetland functional values by prioritizing protective activities with avoidance of impacts as the first priority, minimization of impacts as the second priority, and mitigation for impacts as the third priority.

Policy 5.1

Brevard County shall utilize the same methodology, soil types, hydrological requirements, and vegetation types as the FDEP and the SJRWMD in delineating wetlands.

Policy 5.2

Brevard County shall adopt regulations which promote no net loss of functional wetlands. At a minimum, the following criteria shall be included in the land development regulations:

Criteria:

- A. The basis for no net loss shall be established as of the effective date of the required ordinance.
- B. Wetlands shall be considered functional unless the applicant demonstrates that the water regime has been permanently altered, either artificially or naturally, in a manner to preclude the area from maintaining surface water or hydroperiodicity necessary to sustain wetland functions.
- C. If an activity is undertaken which degrades or destroys a functional wetland, the person performing such an activity shall be responsible for repairing and maintaining the wetland. If it is not feasible or desirable for the responsible person to perform the repair and maintenance of the wetland, then the responsible person shall mitigate for the wetland loss. Mitigation can include, but not be limited to: wetland restoration, wetland replacement, wetland enhancement, monetary compensation, or wetland preservation.
- D. Wetland activity conducted by a public agency may not be utilized for wetland mitigation credit by private persons unless approved by Brevard County.
- E. The following land use and density restrictions are established as a maximum density or most intense land use that may be considered only if the other criteria established in Conservation Element Policy 5.2 are met:
 - 1. Residential land uses shall be limited to not more than one (1) dwelling unit per five (5) acres unless strict application of this policy renders a legally established parcel as of September 9, 1988, which is less than five (5) acres, as unbuildable. For development activities on property greater than five (5) acres, density may be transferred to an upland portion of the site if consistent with all county land development regulations and compatible with adjacent uses. Residential property which includes wetland areas shall be subdivided in such a way that buildable areas are included in each lot. Subdivided lots shall contain sufficient uplands for the intended use and for any buffering necessary to maintain the function of the wetland(s), and shall be compatible with adjacent uses.
 - 2. Commercial and industrial land development activities shall be prohibited in wetlands contained in properties designated on the Future Land Use Map as commercial and industrial after February 23, 1996, and in surrounding buffers for such wetlands, with specifications based on the Buffer Zones for Water, Wetlands, and Wildlife in the East Central Florida Region, (1990, Brown, M.T., Schaefer, and K. Brandt, published by the Center for Wetlands, University of Florida), except for certain commercial development at I-95 interchanges that are consistent with the following criteria:
 - a. There will be no less than 100,000 square feet of commercial building within a project;
 - b. There is current overcapacity on the adjacent roadways, and it is projected that roadway capacity within four (4) miles of the intersection will be no more than 80% of the congestion ratio (the ratio of projected volume to maximum allowable volume) after 500,000 square feet of

commercial space has been developed within one-half mile of the intersection of the off-ramp with the connecting roadway;

c. Wetland mitigation shall equal or exceed 125% of the mitigation which is otherwise required;

d. The development is located within one-half mile of the intersection of the off-ramp with the connecting roadway;

e. There will be no more than two curb cuts on each quadrangle of the interchange within one-half mile of the connection of the off-ramp and the connecting roadway; and

f. A maximum of forty (40) acres shall be allotted in proximity to the interchange, counting both sides.

3. Commercial and industrial land development activities may be permitted in wetlands contained in properties designated on the Future Land Use Map as commercial and industrial prior to February 23, 1996, only if all of the following criteria are met:

a. The property is substantially surrounded by land(s) developed as commercial or industrial as of February 23, 1996, and has sufficient infrastructure in place to serve the commercial or industrial use.

b. The proposed land development activity will not result in increased flooding problems on adjacent properties.

c. The wetland is not classified by the Florida Land Use, Cover and Forms Classification System (1985) as a Stream and Lake Swamp (FLUCS 615), Cypress (FLUCS 621), Atlantic White Cedar (FLUCS 623), Wetland Forested Mixed (FLUCS 630), or Wet Prairies (FLUCS 643).

For wetlands specified in 5.2.F.3(c), the wetland functionality shall be maintained and protected by a 15 foot natural, native vegetative buffer for isolated wetlands and by a 50 foot natural, native vegetative buffer for other wetlands.

The Forested Wetlands Location Map depicts the location of the following wetland types (FLUCS 615, 621, 623, 630, and 643), which also possess commercial or industrial zoning classifications and Future Land Use Map designations as of February 23, 1996, and is incorporated herein by this reference.

4. In the event that the denial of commercial or industrial development activities in wetlands results in an inordinate burden under the Bert Harris Property Rights Act or a taking under state or federal law, an affected property owner may appeal such denial to the Board of County Commissioners in the manner provided in Section 62-507(b)(2), Code of Ordinances of Brevard County, Florida.

5. The utilization of fill should be kept to a minimum and related primarily to structural building area requirements, on-site disposal system requirements, the 100 year flood elevation requirement for first floor elevations, and to one primary access to the on site structures.

6. Dumping of solid or liquid wastes shall be prohibited.

7. Applying or storing pesticides and herbicides should be prohibited unless such application is required for protection of the public health.

F. An exemption for agricultural pursuits, utilizing best management practices, which do not result in permanent degradation or destruction of the wetland shall be included within the land development regulation.

Policy 5.3

Wetland regulations adopted by Brevard County should avoid duplication of wetland regulation unless regulated activities will result in the destruction and/or degradation of functional wetlands. Where the wetland degradation or destruction has been permitted by FDEP or SJRWMD based on FDEP and SJRWMD professional staff application of criteria and evaluation the County shall apply the land use and density requirements of Policy 5.2 and the avoidance, minimization of impacts, and mitigation priorities established by Objective 5. Any permitted wetland degradation or destruction shall provide for mitigation as designated in the Conservation Element.

Policy 5.5

Natural, isolated wetlands should be incorporated into water management systems where practical and appropriate, as an alternative to destruction of wetlands. Whenever wetlands are utilized within water management systems, quality of the water discharged to the wetlands, hydroperiods and stage elevations should be designed to maintain or enhance the wetland.

Policy 6.1

Mining regulations entitled *Land Alteration* shall continue to include, at a minimum, the following provisions to prevent adverse effects on water quality and quantity.

Criteria:

A. Mining operations are not permitted within Type 1 aquifer recharge areas, as defined by this Comprehensive Plan.

Policy 6.2

The County's mining regulations shall continue to include, at a minimum, the following provisions to minimize adverse impacts to environmental resources.

Criteria:

A. Mining operations should not adversely impact protected wetlands or other water dependent systems, and shall be set back a minimum of 100 feet from such wetlands.

Objective 7

Eliminate inappropriate land use practices causing soil erosion and reduce sediment accumulation in the Indian River Lagoon, St. Johns River and other large surface water bodies.

Policy 7.1

Brevard County shall continue to implement its adopted land clearing, tree protection, and landscaping ordinances to address revegetation and premature land clearing.

Criteria:

D. Require areas cleared of vegetation to be revegetated with biologically appropriate vegetation, to prevent wind or water erosion, within ninety (90) days of initial land clearing activity where no approved landscape plan exists or no active development order has been issued. Native vegetation should be utilized to the maximum extent possible.

Policy 7.2

Where localized soil erosion is noted by Code Enforcement, Office of Natural Resources Management, or other County agency, the Brevard Soil and Water Conservation District will be contacted and their recommendations shall be incorporated into a program instituted to assist the landowner to renourish and stabilize such areas.

Policy 7.6

Brevard County shall utilize techniques in the installation of new facilities or improvement of existing facilities to minimize sediment accumulation within surface water bodies and wetlands.

Criteria:

D. Areas cleared of vegetation should be revegetated with appropriate vegetation, to prevent wind or water erosion, within ninety (90) days of initial land clearing activity where no approved landscape plan exists or no active development order has been issued.

Objective 8

Conserve, appropriately use and protect native vegetative communities, including forests as appropriate, by regulating land clearing and landscaping practices within Brevard County.

Objective 10

Maintain the surficial and Floridan aquifer systems for reasonable and beneficial uses.

Policy 10.2

Until an aquifer management plan is adopted by Brevard County, at a minimum the following criteria shall be incorporated into the land development regulations to protect the aquifer.

Criteria:

A. In Type 1, 2, and 3 aquifer recharge areas, post-development groundwater recharge volume shall equal pre-development recharge volume. The maximum allowable impervious surfaces in these areas shall be: Type 1 - 25%; Type 2 - 35%; and Type 3 – 45% unless the developer can demonstrate that post-development recharge volume shall equal predevelopment recharge volume and dependent upon additional regulations and local conditions. Citrus, improved pasture, row crop agricultural operations, and normal silvicultural operations using Best Management Practices shall be exempt.

Intergovernmental Coordination Element**Policy 1.20**

Brevard County shall cooperate with the incorporated municipalities within its boundaries and adjacent counties in the development of any regional stormwater management planning

Policy 2.2

Brevard County shall coordinate with appropriate local governments and Florida Department of Natural Resources in the development of a Mangrove Protection Ordinance and a Wetland Ordinance for uniform regulation of these valuable resources. Specific guidelines are set forth in the Conservation Element and described in the criteria below.

Criteria:

- A. Policy 5.1 Wetlands
- B. Policy 5.2 Wetlands
- C. Policy 5.3 Mangroves
- D. Policy 5.4 Wetlands

Policy 2.5

Brevard County shall coordinate with the municipalities and appropriate state agencies to develop Evacuation Zone Management Plans as described in the Coastal High Hazard section of the Coastal Management Element as well as the recommendations found within the Brevard County Comprehensive Emergency Management Plan (CEMP).

Policy 3.9

Brevard County shall reduce fire loss and personal injury through intergovernmentally coordinated fire prevention programs and early detection systems. Brevard County should support the volunteer fire department efforts by providing data and financial assistance consistent with defined needs and the services provided. Brevard County shall maintain and improve the Fire Insurance Rating for the unincorporated areas of the County, and coordinate with incorporated areas in order to achieve fire rating objectives.

Future Land Use Element**Objective 1**

Brevard County shall facilitate the development of residential neighborhoods that offer the highest quality of life to the citizenry through the implementation of policies that accomplish the following:

Criteria:

- D. Strive to decrease identified hurricane evacuation deficiencies;

Policy 1.11

The construction of additional infrastructure intended to remedy existing deficiencies, such as any new bridges or improvements to existing causeways over the Indian River Lagoon, shall not serve as a basis for increasing residential densities nor allowing residential density bonuses within the Coastal High Hazard Area above those programmed on the Future Land Use Map.

Objective 2

Brevard County shall provide for adequate and appropriate lands for the location of commercial land uses, through the Land Development Regulations, to serve the needs of the projected residents and visitors to the County. Brevard County shall direct new commercial land use designations to areas which are determined to be appropriate based upon a suitability analysis, character of the area, compatibility with surrounding land uses, and public facilities and services. These uses shall be directed to sites where there are sufficient uplands for the intended use and for all other measures to ensure wetland function. During the review of proposed amendments to the Future Land Use Map, which would allow commercial uses, Brevard County shall ensure that the site is suitable for the proposed use with regard to environmental features. The proposed designation shall be consistent with the following suitability criteria:

Criteria:

- A. Floodplain policies contained within Conservation Objective 4;
- B. Aquifer protection policies contained within Conservation Objective 11;
- C. Types, values, conditions, functions, and locations of wetlands, and wetlands protection policies contained in Conservation Objective 5.

Objective 3

Brevard County shall provide for adequate and appropriate lands for the location of industrial land uses, through the Land Development Regulations, to support the role of these uses in the County's economy. Brevard County shall direct new industrial land use designations to areas which are determined to be appropriate based upon a suitability analysis, character of the area, compatibility with surrounding land uses, and public facilities and services. These uses shall be directed to sites where there are sufficient uplands for the intended use and for all other measures to ensure wetland function. During the review of proposed amendments to the Future Land Use Map, which would allow industrial uses, Brevard County shall ensure that the site is suitable for the proposed use with regard to environmental features. The proposed designation shall be consistent with the following suitability criteria:

Criteria:

- A. Floodplain policies contained within Conservation Objective 4.
- B. Aquifer protection policies contained within Conservation Objective 11.
- C. Types, values, conditions, functions, and locations of wetlands, and wetland protection policies contained in Conservation Objective 5.

Policy 5.2

The Future Land Use Map shall designate lands as Public Conservation to provide for the protection of publicly held environmentally sensitive areas. The Public Conservation future land use designation is intended to accommodate lands and facilities which are managed by federal, state and local governments. Such uses shall conform with the following minimum criteria:

Criteria:

- A. The Public Conservation land use designation should include lands under the ownership of Brevard County, the St. Johns River Water Management District, or other such agencies, for the purpose of environmental protection, publicly owned lands within the Environmental Area (EA) zoning classification, and publicly owned areas in which it is demonstrated that the preservation of environmentally sensitive resources will provide an overriding public benefit.
- B. Development activities within lands designated as Public Conservation shall be consistent with the specific policies in the Conservation Element related to natural resources, and the intent of this Comprehensive Plan.
- C. Other environmentally sensitive lands (i.e., floodplains, wetlands, or aquifer recharge areas) which are located outside of the Conservation land use designation are protected through the policies of the Conservation Element of this Comprehensive Plan.

D. Privately owned land shall not be designated as Public Conservation. Any such lands which fall into public ownership shall be redesignated as Public Conservation on the Future Land Use Map.

Potable Water Element

Policy 2.3

Brevard County, municipalities, the School Board, and all primary and support agencies designated within the Brevard County Comprehensive Emergency Management Plan (CEMP), being governed by the authority of Public Law 93-288, Chapter 62-22, F.A.C, Chapter 252, F.S. and the St. Johns River Water Management District Water Shortage Plan (40C-21, F.A.C.), shall ensure the provision of potable water supplies to users of potable water within Brevard County during or after natural or man-made

Surface Water Management Element

Policy 1.1

Brevard County shall continue to implement and update a Master Stormwater Management Plan which establishes criteria and methodologies for drainage basin analysis and Level of Service standards. Drainage basins will be prioritized and analyzed based on severity of problems and available funding. The analysis, shall identify the following information, at a minimum:

Criteria:

- A. Surface water drainage basins and sub-basins.
- B. Public and private stormwater treatment facilities, including detention/retention facilities, and the entity having operations responsibility.
 - 1. For shared facilities, the proportional capacity allocated to each entity shall be identified.
 - 2. The geographic service area of each facility and the predominant types of land use served by the facility.
 - 3. The design capacity of the facility.
 - 4. The current demand on the facility.
 - 5. The impact of the drainage facility on adjacent natural resources, including water quality of receiving waters.
- C. Estimated timeframe and costs of correcting deficiencies.

Policy 1.2

Priorities for basin analysis and retrofitting shall be established using a matrix approach and the following criteria, at a minimum:

Criteria:

- B. Flooding potential.

Policy 1.5

Brevard County shall address modification of existing development, which does not meet stormwater management standards within the Master Stormwater Management Plan, and should use available financial mechanisms for the modification of such development.

Criteria:

- B. Properties with bulkheads or seawalls should be modified so that runoff is detained prior to release to the receiving body. This may be achieved by planting native or other appropriate vegetation along the shoreline to retain silt, sediment and nutrients so that the rate of runoff is equivalent to the pre-development state.
- C. Properties with vegetated shorelines should modify the shorelines to retain silt, sediment and nutrients by planting native vegetation or other appropriate vegetation. A detention structure, swale, and/or berm may be used to allow sediments to settle and nutrient uptake to occur only if

non-native vegetation is predominant. Runoff rates should be equivalent to the pre-development state.

Policy 1.8

Brevard County shall determine the feasibility of innovative methods of stormwater treatment. Innovative methods of stormwater treatment should be construed as any technique other than standard retention and detention basin, and shall include such alternatives as stormwater reuse and area wide stormwater management facilities.

Policy 1.9

Brevard County shall pursue funding from federal, state, and regional sources to investigate and utilize innovative methods of stormwater treatment.

Policy 1.11

Brevard County shall continue to implement the stormwater utility as a reliable long-term funding mechanism to correct existing deficiencies and to provide for future stormwater management needs. Fee structure may be related to type of development, quantity of runoff generated, impervious surface, or other "user related" standard.

Policy 1.13

During development of the Master Stormwater Management Plan, the County shall provide for the adoption of retention and detention standards for stormwater throughout Brevard County.

Policy 1.16

No new structures (such as dams, weirs, locks, levees, or other artificial mechanisms) designed to control the stage and/or flow of waters of the State shall be constructed, except where no practical alternative exists and where such structures are necessary to protect the public safety, safeguard existing flood control structures, habitable structures and other public investments, or restore the function of the natural water dependent ecosystem.

The use of temporary structural modifications to control the stage or flow of a water body as a part of any government sanctioned program of flood control, water quality restoration, habitat restoration or exotic plant control should be designed and operated so as to minimize harm to non-target organisms or natural ecosystems.

Objective 2

Require stormwater management facilities to meet future development requirements, consistent with the County's Master Stormwater Management Plan and this Comprehensive Plan.

Policy 2.1

Brevard County's Master Stormwater Management Plan shall coordinate the timing and location of stormwater management facilities to projected future needs and the future land use plan. Intensity and levels of stormwater services shall be tied to the development of an area, and consistent with level of service standards.

Policy 2.2

The Master Stormwater Management Plan shall also contain alternative methods of funding for the provision of projected future stormwater management needs. These may include, but are not limited to impact fees, capacity reservation fees, or hookup fees, to pay for new public facilities or improvements to existing public facilities required for new development.

Objective 3

Require new development to adequately manage stormwater generated by the development.

Objective 4

Maintain the function of natural drainage features within Brevard County by reducing loss of flood storage capacity, protecting the functional value of wetlands, and by reducing the interbasin

diversion of waters from the St. Johns River basin into the Indian River Lagoon. Quality of waters which are diverted into the Lagoon system shall be improved.

Policy 4.5

Development within areas prone to flooding due to localized soil conditions or hydrology shall not negatively impact adjacent properties or receiving surface water body quality.

Policy 4.8

Public facilities should not be located within the 100-year floodplain or wetland areas unless the following apply:

Criteria:

- A. The facilities are water-dependent, such as mosquito control facilities excluding their chemical storage areas; or,
- B. The facilities are water-related, such as boat ramps, docks, or surface water management facilities; or,
- C. The facilities are not adversely affected by periodic flooding or standing water, such as highway bridges and some recreational facilities; or,
- D. The building structures are flood proofed and located above the 100-year flood elevation or removed from the floodplain by appropriately constructed dikes or levees; or,
- E. The facilities are found to be in the public interest and there is no feasible alternative.

Transportation Element**Policy 2.4**

Major transportation system improvement proposals and associated ancillary facilities shall be thoroughly evaluated for consistency with the Comprehensive Plan, applicable Florida Statutes and federal regulations to minimize adverse environmental impacts and maximize economic and social benefits. A "major improvement" could involve roadway, rail, airport, port, and/or other mode.

Criteria:

- 2. Project impacts to natural resources, including floodplains, aquifer recharge areas, soils, wetlands, surface water, groundwater, drainage, natural communities, and wildlife, spheres of influence, air quality, and species listed as endangered, threatened, or species of special concern as designated by federal, state, or local agencies;
- 6. Hurricane evacuation strategies and capacities;

Policy 2.6

Brevard County shall monitor the needs of the coastal population and identify major transportation improvements to maintain performance levels, as set forth in the Coastal Management Element, for ensuring timely evacuation prior to an impending natural disaster.

Attachment E

Palm Bay Comprehensive Plan Excerpts Related to Hazard Mitigation

Future Land Use Element

POLICIES:

- | | |
|----------|---|
| FLU-1.1A | <p>Adopt land development regulations to implement the Comprehensive Plan which, at minimum, would:</p> <ul style="list-style-type: none"> e. Provide stormwater and flood protection requirements. f. Protect aquifer recharge areas and potable water well-fields. |
| FLU-2.1B | <p>Continue to utilize Planned Unit Development (PUD) techniques to protect environmentally sensitive areas, protect amenities, and mitigate flood hazards.</p> |
| FLU-2.2E | <p>Assess the impact of new residential development upon hurricane evacuation times prior to approval of such developments and require the developer to mitigate projected reductions in these evacuation times.</p> |
| FLU-5.1H | <p>The City shall review recommendations provided by local agencies and in any interagency hazard mitigation reports and implement such recommendations if deemed appropriate by City Council.</p> |
| FLU-6.1A | <p>Land use decisions shall be based upon the support capability of the natural environment as determined by conformance to the Floodplain Management Ordinance, the Stormwater Management and Conservation Ordinance, the Trees and Shrubbery Ordinance, and Zoning Ordinance.</p> |
| FLU-6.1B | <p>No later than one year following submission of this amendment, the City of Palm Bay shall modify land development regulations which protect and preserve wetlands. These land development regulations shall include, at minimum, the following standards:</p> <ul style="list-style-type: none"> 10. Restrictive or conservation easements to preserve the wetland shall be required as a condition to permitting alteration or development of any identified wetland; and 12. Vegetated buffer zones or strips shall be maintained or created between all developed areas and wetlands, measured from the upland/wetland interface, as determined by vegetative dominance or from the new high water line (as determined in accordance with Section 174.022, Florida Administrative Code), whichever is greater. The width of this buffer shall be sufficient to prevent erosion and trap the sediments in overland runoff but shall be at least the following minimum distances: |

12a. For natural creeks, rivers, and water bodies connected to waters of the state, a minimum twenty-five (25) foot wide buffer zone of native upland and transitional vegetation shall be preserved and maintained.

12c. For isolated wetland areas, a minimum twenty-five (25) foot buffer zone of appropriate native vegetation shall be provided and maintained from the landward extent of wetlands vegetation.

FLU-6.1D Continue to strictly enforce the floodplain management ordinance.

FLU-6.1E Continue to strictly enforce the stormwater and driveway/swale ordinances.

Capital Improvements Element

POLICIES:

CIE-1.1^E The City shall establish an evaluation system for determining capital improvement priorities which considers the following :

1. Elimination of public hazards.

OBJECTIVE:

CIE-1.2 Limit public expenditures that subsidize development in identified high hazard coastal area of the City to those identified in the Coastal Management Element.

Coastal Management Element

OBJECTIVE:

CZM-1.4 Avoid damage to coastal structures from hurricanes and other similar hazards.

POLICIES:

CZM-1.4A The City will develop and adopt Land Development Regulations which encourage natural means of shoreline stabilization over shoreline hardening where shoreline alteration is needed.

CZM-1.4B The City will continue to enforce the Floodplain Management Ordinance.

OBJECTIVE:

CZM-1.5 Provide for timely and safe evacuation, maintain current evaluation times, and provide adequate public sheltering in the event of a hurricane, consistent with the ECFRPC Hurricane Evacuation Plan.

POLICIES:

- CZM-1.5A The City will request that the appropriate agencies ensure that designated public shelters have self-supporting or emergency power sources available.

- CZM-1.5B The City will develop and implement a plan for ensuring the special needs of the elderly and handicapped are met for hurricane evacuation.

- CZM-1.5C The City shall prepare and adopt land development regulations to assure that hurricane evacuation times are maintained.

OBJECTIVE:

- CZM-1.6 Limit public expenditures for infrastructure in high hazard or storm surge areas of the Coastal Zone, when such areas are determined to exist.

POLICIES:

- CZM-1.6A When any high hazard or storm surge areas are identified, those not currently served with public infrastructure must be provided infrastructure by the developer of such areas.

- CZM-1.6B The City shall prepare and adopt, by 2002, post-disaster redevelopment plans which include an analysis of public expenditures in the Coastal Management Zone.

- CZM-1.6C The City shall not permit any new septic tanks to locate within high hazard areas of the coastal zone nor permit habitable structures within any high hazard zone.

- CZM-1.6D The City shall develop, no later than May 2002, procedures concerning post-disaster actions which distinguish between immediate repair and clean-up activities needed to protect the public health and safety, versus long-term repair and redevelopment activities.

- CZM-1.6E Post-disaster reconstruction activities shall be required to meet current standards for coastal construction including floodplain codes, water and sewer service and setbacks from water bodies.

- CZM-1.6F The City shall utilize the following criteria for post-disaster redevelopment of public structures/facilities:
 - 1. An analysis of the cost effectiveness of relocation versus repair;

 - 2. Consideration of vertical relocation of the structure out of high hazard zones; and

 - 3. Consideration of the need for physical protective structures such as seawalls.

-

CZM-1.7C The City shall develop and adopt Land Development Regulations which limit the specific and cumulative impacts of developments upon wetlands, water quality, water quantity, wildlife habitat, and living marine resources.

Conservation Element

POLICIES:

CON-1.2D Strictly enforce the provisions of the Stormwater Management Ordinance.

CON-1.2H The City shall give technical advice to developers and landowners on the best ways to manage stormwater.

CON-1.4E Utilize the Planned Unit Development provisions of the Land Development Regulations to protect major aquifer recharge areas from development impacts. Promote cluster development away from the primary recharge areas.

OBJECTIVE:

CON-1.8 Conserve wetlands in the City and protect them from physical and hydrologic alterations consistent with the regulations of the St. Johns River Water Management District.

POLICIES:

CON-1.8A Request dedication and/or apply for grants to purchase wetland areas identified through the St. Johns River Water Management District Land Use Mapping Project. Priority shall be given to Turkey Creek and the Indian River and to other relatively undisturbed wetlands and wetlands facing development pressures.

CON-1.8B The City shall continue to require review and approval by the St. Johns River Water Management District for all wetlands.

CON-1.8D The administrative site plan review process will continue to direct land uses which are incompatible with the protection of wetlands and wetland functions away from such wetland areas.

CON-1.8E Where wetland impact does occur, mitigation shall be required consistent with the requirements of the St. Johns River Water Management District.

OBJECTIVE:

CON-1.10 By 2000, adopt Land Development Regulations which reduce the rate of soil erosion in the City.

POLICIES:

CON-1.10A The City shall assist the U.S. Soil Conservation Service in those activities directed at minimizing soil erosion by distributing information to the public in brochures and/or newsletter.

OBJECTIVE:

CON-1.12 Protect the 100 year floodplain so that flood carrying and flood storage capacity are maintained.

POLICIES:

CON-1.12A Building in the floodplain must be consistent with the requirements of the Federal Flood Insurance Program.

CON-1.12B Strictly enforce the Floodplain Management Ordinance.

CON-1.12C The City shall continue to control development in the 100-year floodplain utilizing the following criteria:

1. Prohibit encroachment by new construction, including fill, within any designated floodway.
2. Protection of human life and health shall be maximized.
3. Prevent the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands.
4. Determine the availability of alternative locations, not subject to flooding, for any proposed use and the necessity and importance of the facility.
5. The safety and access to the property in times of flood for emergency vehicles.
6. The expected heights, velocity, duration, rate of rise and sediment transport of the flood waters.

Infrastructure Element

GOAL:

INF-3 To provide adequate drainage facilities and services which meet current and future needs, affords reasonable protection from flooding, prevents and reduces degradation of surface and groundwater quality, maintains the functions of natural systems, protects the environment, and promotes orderly, compact urban growth.

OBJECTIVE:

INF-3 Provide for protection and conservation of the environment and natural drainage features, protection and reduction in the degradation of surface and groundwater quality, the prohibition of higher intensity development within the floodprone areas, and to ensure the compatibility of future development.

POLICIES:

INF-3.1B The City of Palm Bay shall require that all new development be compatible with, and developed in conformance with, the Stormwater Management and Conservation Ordinance.

INF-4.1B Continue to implement the goals and improvements program delineated in the City of Palm Bay Master Plan to improve hydraulics and fire flow.

Intergovernmental Coordination Element

OBJECTIVE:

ICE-1.4 Acquire, subject to funding availability, critical shoreline sites in order to ensure public access, scenic preservation and conservation objectives of the Coastal Management Element.

POLICIES:

ICE-1.4A The City will continue to explore federal, state, and local funding sources for acquisition of shoreline sites.