

COASTAL MANAGEMENT ELEMENT – DATA AND ANALYSIS

I. Introduction

Chapter 163, Florida Statutes requires that local coastal governments plan for, and where appropriate, restrict development where development would damage or destroy coastal resources and protect human life and limit public expenditures in areas that are subject to destruction by natural disaster.

Conformity with the Florida Building Code, the Coastal Construction Control Line, and the density allowed by the Future Land Use Plan are the primary methods for satisfying the requirements of Chapter 163, Florida Statutes. Most of the structures along the beach are not in compliance with the above regulations because they were built prior to the implementation of these requirements. Requiring that most of these structures to conform if they are substantially destroyed in a natural disaster would prevent future fatalities and property losses. Historical structures, if still sound, should be an exception.

Reducing evacuation times and hazards is another critical component of protecting residents and their property. More assistance, education, and prohibiting uses that will slow down or pose a danger during evacuation will reduce the risk of loss of life during a disaster. Maintaining or rebuilding and replanting dunes along the beach will protect structures and help prevent beach erosion during a storm.

Chapter 9J-5, Florida Administrative Code, provides definitions of the coastal boundaries used in developing this element. Immediately following the Table of Contents for Volume II are additional definitions of technical terms related to the Coastal Management Element.

II. Existing Conditions and Analysis

The City of Fort Lauderdale has approximately seven miles of beachfront representing twenty-six percent of the total county length. Much of the City is located within two miles of the Atlantic Ocean. Approximately 70 percent of the City is located in the 100-year flood plain. Therefore, this element discusses coastal erosion of developed areas and disaster planning.

The coastal area contains mostly residential areas with commercial activity on major streets such as US 1, A1A, S.E. 17th Street, Sunrise, Oakland Park, Commercial and Las Olas Boulevards. The coastal high hazard area east of the Intracoastal has a concentration of single and multi-family residential development and strips of commercial activity, much of which is oriented to tourism. Considerable redevelopment has been occurring in the Central Beach area since the early 1990's.

The waterways in the coastal area contain numerous water-dependent and water-related uses, which are in response to recreational, boating and port needs. The beach, Hugh Taylor Birch State Park, Alexander Park and the Bonnet House property are public open spaces in the coastal high hazard area.

Both point and non-point sources of pollution continue to create environmental problems in the City's waterways. The City is improving the water quality of its waterways through the Water Works 2011 program, which includes upgrades to the drainage and sewer system. This program also includes the conversion of septic tanks to sanitary sewer.

Disaster planning is a focus of coastal planning and the Coastal Management Element because much of the City is located in the 100-year flood plain area. There are, however, two ridges identified as high enough in elevation to not be flooded during a storm. Coordination with County, Regional and State authorities regarding construction in flood zones will be a focus point over the next planning period. The City of Fort Lauderdale Comprehensive Emergency Management Plan guides emergency response procedures for hurricanes and other catastrophic events.

Vegetation in the coast continues to be a mix of native and exotic species; the coastal area's built-out status is not anticipated to impact the mix of vegetation. Local birds are protected in parks and open space found at the Bonnet House and the tern rookery areas. Several wildlife habitats exist in the area and measures are in place to protect them. Wildlife and vegetative species continue to be identified through coordination with County and State agencies and are preserved in part through development review processes. Many coastal area water, wildlife and vegetation issues are addressed in more detail in the Conservation Element.

There is continuous public access to the beach from South Beach north to N.E. 19th Street, or for approximately four miles. Limited auto access is available north of 19th Street to Oakland Park Boulevard via eight intersecting streets between A1A and the beach. Development of the Beach Promenade from 19th Street to the South Beach parking lot has increased accessibility by providing a clearly delineated walking and biking pathway.

Map 1 shows public access points to the City's six miles of beach. Inventories and analysis of public access to the water facilities is further discussed in the Parks and Recreation Element.

Public infrastructure in the coastal area consists of roadways, a major sewer system, water and sewer lines, water tanks and secondary drainage systems. Improvements to the City's wastewater and potable water infrastructure are occurring throughout the City as part of Water Works 2011. Some of the beach areas included in this infrastructure improvement program are as follows: Vista Mar, Birch Road, Sunrise Key, Sunrise Intracoastal, East Las Olas, Seven Isles, Harbor Beach and Galt Mile.

Map Inventory of Land Uses, Conflicts Among Shoreline Uses, Economic Base, Need for Water-Dependent and Water-Related Uses

Map 2 shows existing land uses in the coastal area. The most predominate land use in the coastal area is residential. Commercial uses are located along major roadways, such as A1A, Federal Highway, Commercial, Oakland Park, Sunrise, and Las Olas Boulevards and 17th Street. Other uses are interspersed throughout the coastal area.

Existing land uses for the barrier island were analyzed based on the Broward County Property Appraiser's data and ground truthing by City staff. Single family detached housing occupies 329 acres. Multi-family residential developments consisting of less than 10 units occupy 39 acres and multi-family housing with 10 units or more occupy 253 acres. There are approximately 62 acres of commercial and office uses. Hotels comprise 128 acres of the barrier island. There are also significant government facilities including 20 acres of community facilities, 245 acres of park space and 30 acres of other government facilities.

The land inventory in the coastal area has had minimal changes in recent years. There has been retail redevelopment (replacing old retail), primarily along US 1, and some retail development on previously vacant land on A1A. Several mid and high rise time-share, condo-hotels and residential developments have been completed or are under development along A1A.

Land use at the shoreline proper is recreational (public beach). Recreational and commercial uses are adjacent to the shoreline along the Central Beach Regional Activity Center (Central Beach RAC) from Sunrise Boulevard to near Harbor Drive, commercial and residential uses are adjacent to the shoreline north and south of the Central Beach RAC.

The economic base of the coastal area is comprised mainly of commercial/tourist activities and residential uses, including seasonal. The coastal area provides numerous job opportunities and generates revenues both directly and indirectly for the City. Port Everglades (industrial) occupies 146 acres of City land.

Coastal High Hazard Area Land Uses

The coastal high hazard area contains a mixture of residential, commercial, recreational, marine-related and community facility land uses. The Central Beach RAC is heavily commercial with retail, restaurants and entertainment facilities. The

North Beach area (Sunrise Boulevard to Oakland Park Boulevard) contains more recreational and residential uses. The South Beach area (near Harbor

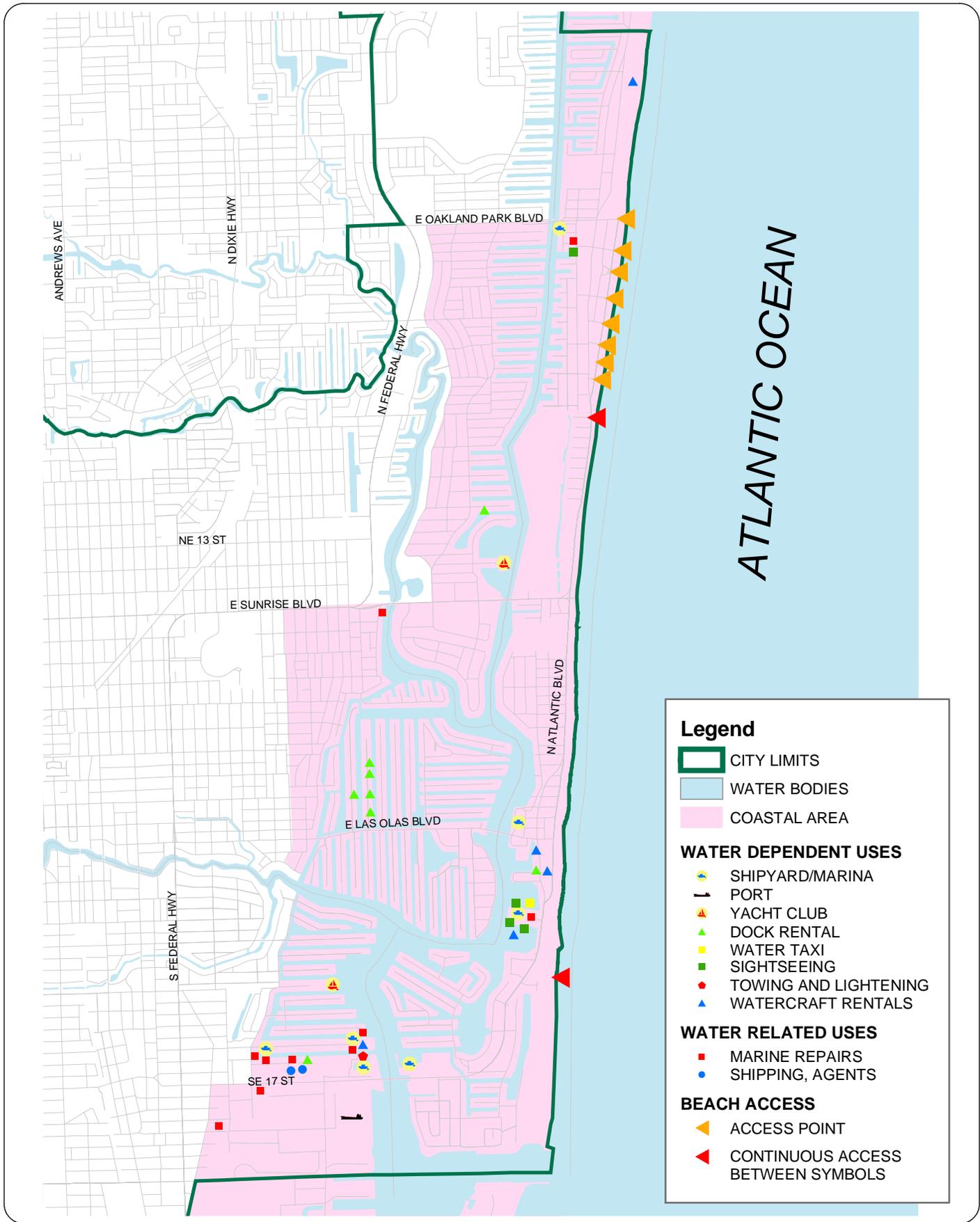
Drive to Port Everglades Inlet) contains beach uses, hotels and residential. New development is occurring primarily in the Central Beach RAC. In the late 1980's it was determined that the Central Beach RAC zoning districts had been degraded by blight and crime, a situation, which contributed to the decline in the area's physical appearance and attractiveness to tourists and residents. In 1987, the City Commission approved a Comprehensive Central Beach Revitalization Plan for the 425-acre area. A Community Redevelopment Area Plan was adopted for the Central Beach in 1989, followed by design guidelines in 1990. Map 3 shows zoning for the Central Beach area. To date, substantial new infrastructure improvements have been made through public funding sources and the private sector has developed significant new projects. The Central Beach redevelopment process is on going.

Water-Dependent & Water Related Uses

The rivers and other waterways feeding into the Intracoastal Waterway are a natural location for water-dependent and water-related uses. Water-dependent and water-related uses are shown on Map 1.

Water-dependent uses are those activities which can be carried out only on, in, or adjacent to water because the use requires access to the water body for: waterborne transportation including ports or marinas, recreation, electrical generating facilities, or water supply. The following water-dependent uses occur in the coastal area of the City; deepwater port activities, recreation (the beach), marinas, and boating ramps.

Water-related uses are those activities, which are not directly dependent upon access to a water body, but which provide goods and services that are directly associated with water-dependent or waterway uses. Water-related uses in the City's coastal area include dry storage and boat maintenance.

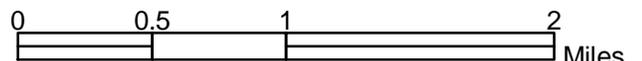


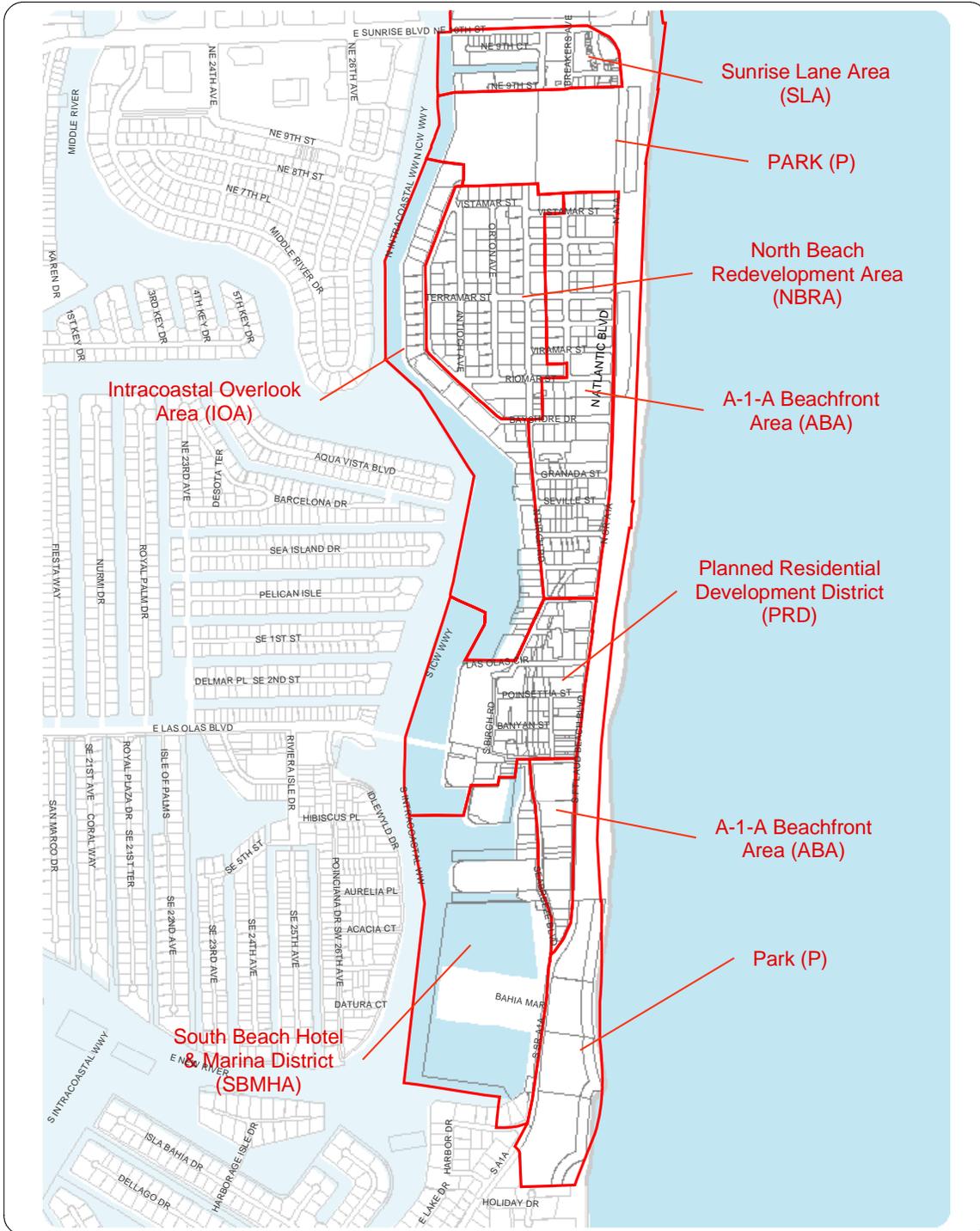
WATER DEPENDENT & WATER RELATED USES

MAP 1



DATA SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT - JULY, 2006
 MAP SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT - JULY, 2006

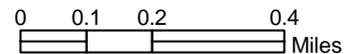




CENTRAL BEACH AREA ZONING

MAP 3

DATA SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT JAN. 2007
 MAP SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT- JAN. 2007



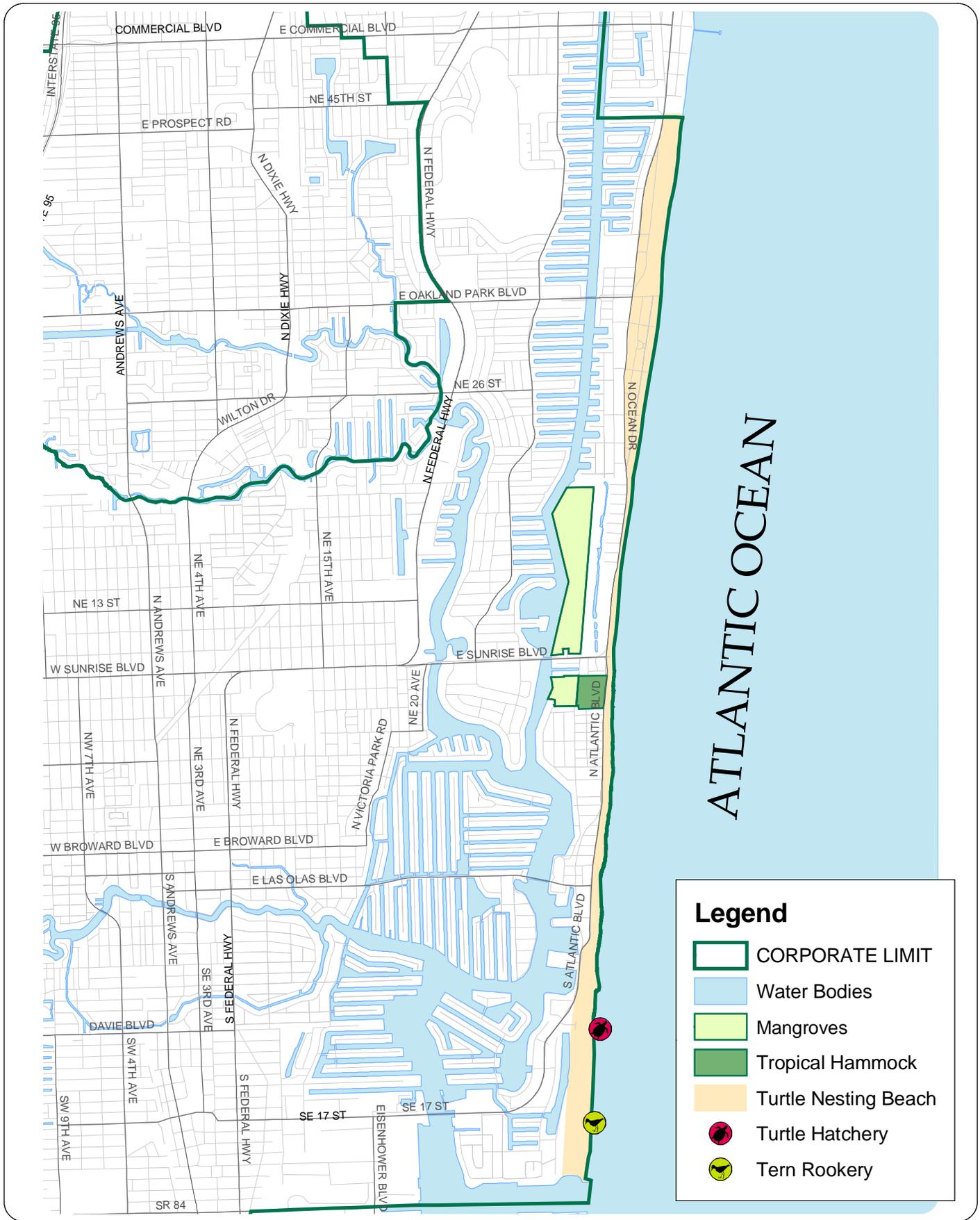
Future Land Use Impact on Natural Resources

Map 4 shows natural resources in the coastal area including wildlife habitats, marine resources, wetlands, and vegetation. Map 5 shows wetlands in the coastal area. Map 6 shows areas subject to coastal flooding, including the coastal high hazard area. Hugh Taylor Birch State Park, and the Bonnet House are the only remaining undisturbed areas. These properties will be preserved in their natural state so that there will be no additional impact on the natural resources. Vegetative cover in the coastal area is a mix of native and exotic species common to the South Florida coastal landscape. Threatened and/or endangered plant species in the coastal area include the Beach Star and the Beach Creeper. As the City is nearly built-out, new development is unlikely to impact threatened and endangered species in the coastal area. Coastal vegetation is not likely to be impacted by development because there are very few vacant development sites and redevelopment sites are already disturbed. Redevelopment projects should enhance vegetative cover and add to the tree canopy by incorporating additional vegetation into development plans.

Birch State Park provides habitat for over 200 species of birds. The sandy beach provides habitat to the laughing gull, the ring-billed gull, the roseate spoonbill, and the tern. Species are fairly well protected within the park and at the Bonnet House by virtue of the uses of these facilities. In addition there is a tern rookery located just north of Port Everglades Inlet.

Mammals sited in the coastal area include the gray squirrel, marsh rabbit, and opossum at Birch State Park, the raccoon at Birch State Park and Bonnet House, the Brazilian Tree Monkey at Bonnet House, and the West Indian Manatee (threatened) at Port Everglades.

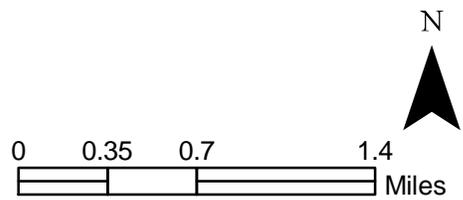
The manatee is attracted to the warm currents flowing from the outfall canals of the Florida Power & Light (FP&L) plant located at Port Everglades located outside the City limits. The manatee does, however, pass through Fort Lauderdale waters to get to Port Everglades. Due to heavy activity in the Intracoastal Waterway, the animals are sometimes injured or killed by the propellers of powerboats. Because of the frequency of these occurrences in the Port Everglades area, a portion of the port outside the City limits has been declared a Manatee Sanctuary under the Florida Manatee Protection Act of 1978. This law, enforced by the Florida Marine Patrol (DEP), provides for reduced powerboat speeds in recognized sanctuaries throughout the state. In addition to protection afforded by reduced powerboat speeds, the City of Fort Lauderdale land development regulations, consistent with Broward County Future Land Use Policy 9.03.10, require water-dependent uses to be located in a manner that protects manatees.

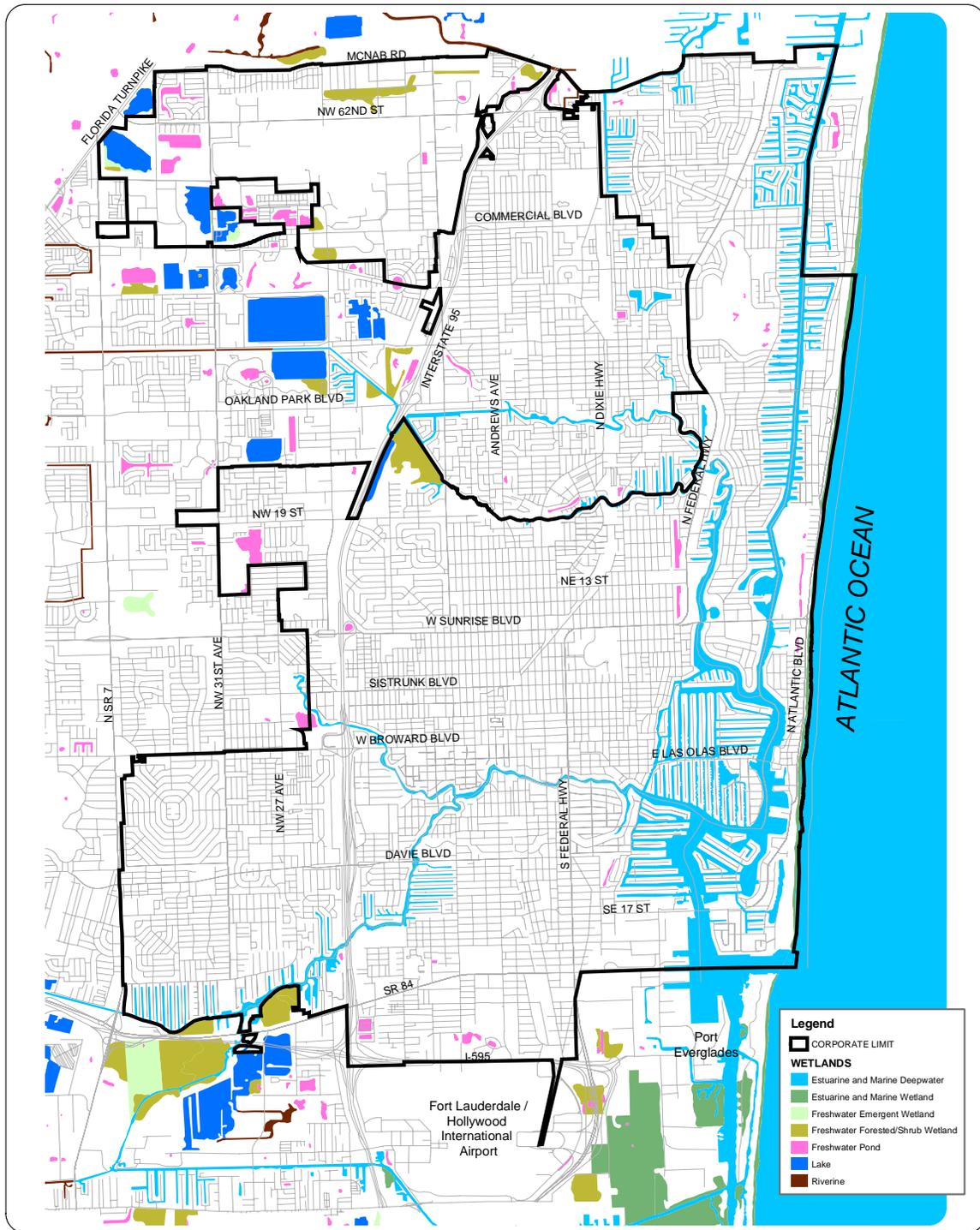


NATURAL RESOURCES

MAP 4

DATA and MAP SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT JAN, 2007



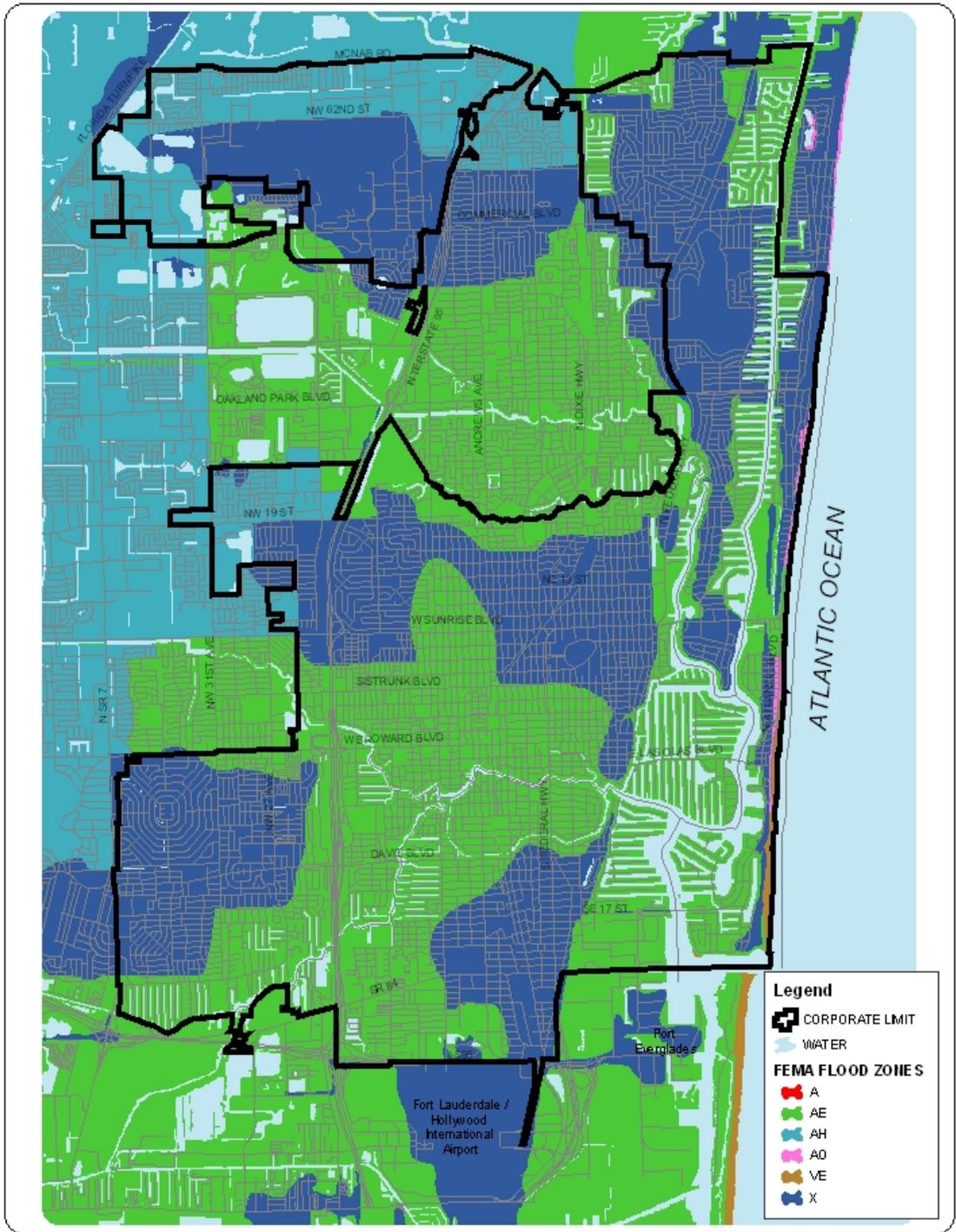


WETLANDS

MAP 5

DATA SOURCE: U.S FISH AND WILDLIFE SERVICE - NATIONAL WETLANDS INVENTORY (NWI)
 MAP SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT- JULY, 2006





FEMA FLOODPLAINS

MAP 6

DATA SOURCE: BROWARD COUNTY PLANNING SERVICES DIVISION / FEMA - NOV, 2000
 MAP SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT - JULY, 2006



Estuarine Pollution

All natural estuaries were destroyed as the City developed. The Intracoastal Waterway is the main body of surface water in Fort Lauderdale's coastal area. It is used extensively for boating and water sports. Shipping activities occur in the Port Everglades area. There have been high bacteria counts of the New River and Intracoastal Waterway area of Fort Lauderdale.

The primary sources of point source pollution in the Intracoastal are fuel discharges through boating activities and port operations and stormwater outfalls. Stormwater runoff is the principal source of non-point pollution to the City's surface and ground waters; within the coastal area, the Intracoastal Waterway and the finger canals receive the runoff. Water quality is thus degraded for recreation uses as well as impacting fish and wildlife inhabiting the canals, waterways, and adjacent areas. Stormwater runoff refers to stormwater from impervious and pervious surfaces. Petroleum discharges and animal litter are among the many contaminants carried by runoff. In addition, the City's stormwater drainage system collects stormwater from streets and discharges the runoff into surface waters. The system was constructed prior to increased environmental concerns of the effects of urban runoff on water bodies.

Actions in place to deal with existing pollution problems in the coastal area include improved stormwater drainage requirements, storage tank licensing, hazardous waste licensing, hazardous waste assessment, industrial sludge tank licensing, industrial wastewater treatment and industrial pretreatment.

The revitalization of the Central Beach includes providing for stormwater collection systems designed to eliminate direct stormwater runoff onto the beach and into the Intracoastal Waterway. Although there has been improvement, the described point and non-point sources continue to be the primary pollution problem in the City.

In May 1997, the City adopted Ordinance C-97-11 requiring that vessels, where habitation is occurring, be connected to a marine sanitation system. The ordinance also requires all vessels to be connected to a marine sanitation system when certain water quality standards have not been met. Habitation aboard a floating vessel means overnight occupation of it by one or more persons, while the vessel is moored, docked or anchored in any of the public waterways within the City. Habitable vessel means a vessel that has a fitting that allows for the overboard discharge of wastewater from a toilet facility.

This ordinance requires that all habitable vessels be connected at all times to a marine sanitation system when water quality test (s), taken adjacent to any real property located in certain zoning districts, exceed the fecal coliform density level. If test results, in accordance with the City's testing protocol, exceed an acceptable level, the property owner will require the vessel(s) be connected to a marine sanitation system while moored or docked at the property.

Existing water quality data can be used by the City and, after being told by the City that water quality is degraded, adjacent property owners have six months to comply with the marine sanitation pump out requirement.

The use of alternative marine sanitation systems, as they become available, and incineration devices have been included in the ordinance as authorized marine sanitation systems.

Alternative marine sanitation system is a marine sanitation device that discharges effluent overboard that meets standards approved for surface water discharge by all applicable federal, state and local agencies having authority to enforce water quality standards. The City continues to utilize Florida Department of Environmental Protection funds through the Federal Clean Vessel Act to upgrade marine sanitation facilities.

The Community Inspections Bureau will initiate enforcement as it relates to the marine sanitation system and density, parking, landscaping and other applicable Building Codes and City Code of Ordinances. The City will require that each property owner complete an affidavit attesting to the number of live aboard vessels at the property. Based upon the information obtained in the affidavit, City Code inspectors will insure that all property owners comply with the applicable code regulations.

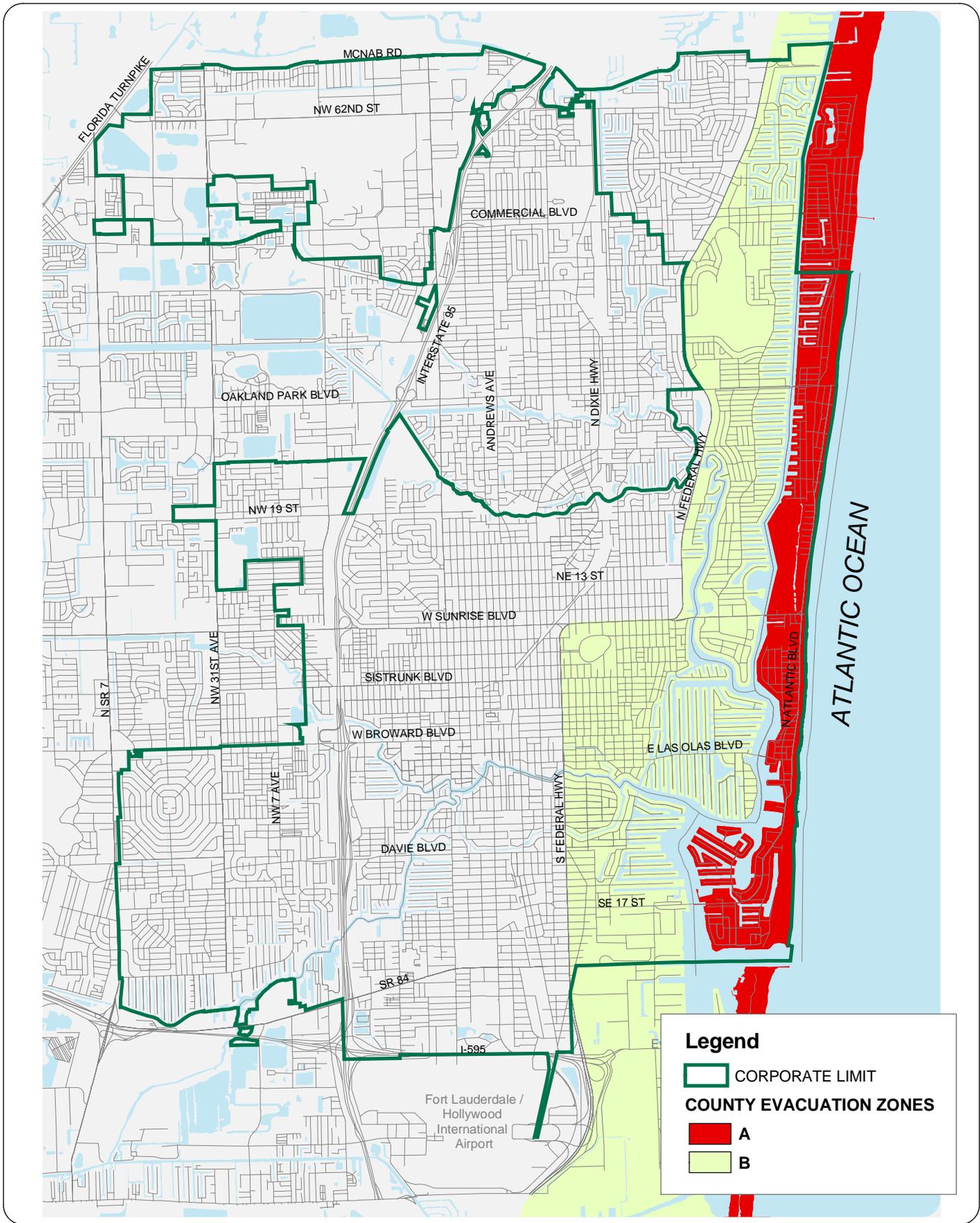
Port Everglades

Port Everglades, a deepwater port, is partially located in the City. The Port Everglades Master Plan has been incorporated by reference into the Broward County and City of Fort Lauderdale Coastal Management Elements to satisfy s.9J-5.012(4), Florida Administrative Code, and as required in ss.163.3178(2)(K) Florida Statutes.

Natural Disaster Planning

The City is under the authority of the Broward County Emergency Management Agency for hurricane evacuation and procedures. As shown in Map 7, Broward County defines the "hurricane vulnerability zone," as the land east of Federal Highway. Since Broward County is primarily responsible for hurricane evacuation planning according to the County's Charter, Federal Highway is also the western boundary for hurricane evacuation.

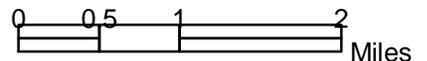
Chapter 9J-5, Florida Administrative Code, defines the hurricane vulnerability zone as the areas delineated by the regional or local hurricane evacuation plan as requiring evacuation in the event of a 100-year storm or Category 3 storm. The Broward County Florida Coastal Evacuation Plan, the effective local plan for Fort Lauderdale, necessitated the evacuation of all residents residing from the coastline



HURRICANE EVACUATION ZONES MAP 7



DATA SOURCE: SOUTH FLORIDA REGIONAL PLANNING COUNCIL (SFRPC) - SEPT, 2006
 MAP SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT- JULY, 2006



to US 1, as well as all mobile home residents. Therefore, the hurricane vulnerability zone uses US 1 as its western boundary and extends eastward to the shoreline. Mobile home parks are considered part of the zone.

There are two City hurricane vulnerability zones as defined by Broward County. These zones are: Plan A and Plan B. All mobile home residents are subject to evacuation in Category 1 - 5 storms.

Persons Who May Need to Evacuate: Plan A area residents are required to evacuate during Category 1 through 5 hurricanes. Approximately 15,742 people live in the Plan A area. Plan B area residents are required to evacuate during Category 3 through 5 hurricanes. Approximately 37,951 people live in the Plan B area.

All mobile home residents are subject to evacuation in Category 1-5 storms. Table 1 lists the mobile home parks in the City of Fort Lauderdale.

**Table 1
Mobile Home Parks**

Mobile Home Park	Units	Residents
Azalea Trailer Court	43	65
Cypress Creek Trailer Park	144	196
Floridale Mobile Home Colony	85	128
Lauderdale Lakes Mobile Home Park	102	153
Pan American	239	717
Sunset Colony	410	615
Davie Blvd	77	139
TOTAL	1,100	2,013

Special Needs of the Existing Population

For persons with special needs, (PSN), the Broward County Social Services Division (SSD), in accordance with s.252.355, Florida Statutes, is charged with primary responsibility to determine disabled citizens who would need assistance in an evacuation and provide for their evacuation.

Residents of nursing homes, adult congregate living facilities and other institutions are not part of the County’s PSN assistance. Institutional facilities are required by the Florida Department of Health and Rehabilitative Services (HRS) to prepare their own evacuation plan and submit it to the EPD for certification.

Persons Requiring Public Shelter

The percentage of population choosing or forced to evacuate Broward County, as estimated was estimated by the SFRPC as part of the *2006 South Florida Regional Hurricane Evacuation Traffic Study* and is shown Table 2. Tables 3 and 4 show destination choices for evacuees.

**Table 2
Broward County Hurricane Evacuation Participation Rates**

Broward County	Category 1-2	Category 3	Category 4-5
Permanent Occupied Units			
County Evacuation Zone A	100%	100%	100%
County Evacuation Zone B	10%	100%	100%
Inland Areas	5%	5%	10%
Mobile Home Units			
County Evacuation Zone A	100%	100%	100%
County Evacuation Zone B	100%	100%	100%
Inland Areas	100%	100%	100%
Tourist Units			
County Evacuation Zone A	100%	100%	100%
County Evacuation Zone B	80%	100%	100%
Inland Areas	80%	90%	100%

Source: Broward County Emergency Management Agency Policy, Hurricane Jeanne FEMA Post-storm Assessment; Hurricane Frances FEMA Post-storm Assessment; F-DEM Post-Hurricane Floyd Behavioral Study and PBS&J 2004 Regional Hurricane Evacuation Model

**Table 3
Broward County Residents Living in Permanent Occupied Units
Destination Choices**

Unit Destination Choice	Category 1 - 2	Category 3	Category 4-5
Out-of-County			
County Evacuation Zone A	30%	30%	35%
County Evacuation Zone B	30%	30%	35%
Inland Areas	30%	30%	35%
To Local Shelter			
County Evacuation Zone A	2%	5%	10%
County Evacuation Zone B	2%	5%	10%
Inland Areas	2%	5%	10%
To Local Residence			
County Evacuation Zone A	58%	55%	45%
County Evacuation Zone B	63%	60%	50%
Inland Areas	67%	64%	50%
To Hotel/Motel			
County Evacuation Zone A	10%	10%	10%
County Evacuation Zone B	5%	5%	5%
Inland Areas	1%	1%	5%

Sources: Hurricane Jeanne FEMA Post-storm Assessment; Hurricane Frances; FEMA Post-storm Assessment; F-DEM Hurricane Floyd Behavioral Study; Hurricane Floyd Evacuation Measured by the FIU/Florida Poll, Dr. Hugh Gladwin, Florida International University International Hurricane Center and Institute for Public Opinion Research, 1999; 10 Years After Hurricane Andrew, Dr. Hugh Gladwin, Florida International University Institute for Public Opinion Research, 2002.

**Table 4
Residents Living in Mobile Home Units
Destination Choices**

Unit Destination Choice	Category 1 -2	Category 3	Category 4-5
Out-of-County	30%	30%	35%
To Local Shelter	5%	8%	10%
To Local Residence	64%	61%	54%
To Hotel/Motel	1%	1%	1%

Tables 5 and 6 provide the estimated number of Fort Lauderdale evacuation zone residents who would seek public shelter.

**Table 5
City of Fort Lauderdale Residents Living in Permanent Occupied Units
Seeking Public Shelters**

Evacuation Zone	Evacuation Zone Population 2006	Percentage of Evacuees Seeking Public Shelter	Population Seeking Public Shelter
Category 1-2			
A	15,741	2%	315
B	37,921	2%	758
Category 3			
A	15,741	5%	787
B	37,921	5%	1,896
Category 4-5			
A	15,741	10%	1,574
B	37,921	10%	3,792

**Table 6
City of Fort Lauderdale Residents Living in Mobile Home Units Seeking Public Shelters**

Storm	Mobile Home Population 2006	Percentage of Evacuees Seeking Public Shelter	Population Seeking Public Shelter
Category 1-2	2,013	5%	101
Category 3	2,013	8%	161
Category 4-5	2,013	10%	201

Available Shelter Spaces

The City has one primary shelter located at Rock Island Elementary. It has capacity for 2,400 evacuees. Evacuees can be shifted between shelter facilities so that all Broward County residents seeking shelter can be accommodated. The Broward County School Board voted in 1995 that all new school facilities shall be constructed to meet shelter specifications. They will need to be approved by the American Red Cross before being designated as shelter space. This may require longer drives for Fort Lauderdale residents because new schools are primarily being built in western Broward County.

Evacuation Routes

Table 7 indicates primary evacuation routes.

Table 7
Hurricane Evacuation Routes and Other Pertinent Information

Route	General Area Served for Evacuation	Lanes
Commercial Blvd.	Terra Mar Dr. to north boundary of Ft. Lauderdale	4 & 6
Oakland Park Blvd.	North boundary of Ft. Lauderdale to Sunrise Blvd.	4 & 6
Sunrise Blvd.	Sunrise Blvd. to Las Olas Blvd.	6
Las Olas Blvd.	Sunrise Blvd. to SE 17 th Street	4
17th Street	Las Olas Blvd. to Port Everglades	4 & 6 l
I-95	City of Fort Lauderdale	10

Source: Broward County Transportation Planning Department and South Florida Regional Planning Council

Transportation and Hazard Conditions

The ability to evacuate the affected population is affected by transportation and hazard constraints on evacuation routes. Hazards include the unpredicted early arrival of gale force winds blowing debris into evacuation routes and, thereby, interrupting vehicular movements. Strong winds could prevent transit-dependent persons from reaching pick-up points.

Access to evacuation routes for residents east of the Intracoastal Waterway is greatly dependent on maintenance of good traffic flow on A1A, which is the main

north-south thoroughfare east of the Intracoastal. This roadway is particularly vulnerable to inundation by severe wave action and tidal surge, which would prevent access to one or more of the evacuation routes. Since there are bridges connecting the barrier islands to the mainland in Broward County, there is also concern regarding the potential hazard caused by a bridge remaining in the up-position.

Normal travel speeds on evacuation routes are vulnerable to being significantly reduced due to the high numbers of evacuees utilizing private automobiles. Evacuation flow is also potentially constrained by the passage of the CSX Railroad trains, which cross evacuation routes (and could continue to run during a hurricane).

Evacuation Times

Evacuation times are anticipated to remain constant and most likely be reduced. Four variables are cited as working to reduce evacuation times since the last EAR: reduced development densities imposed in some beach areas by the Central Beach Regional Activity Center section of the Unified Land Development Regulations and by several beach area rezonings; hurricane and tourist seasons do not coincide, so that fewer tourists are here during the hurricane season; the increased capacity at Sunrise Boulevard Bridge following its reconstruction; and the higher 17th Street bridge. The City will strive to maintain or reduce the times for hurricane evacuation clearance.

The *South Florida Regional Hurricane Evacuation Traffic Study* analyzed evacuation scenarios based on population and storm strength (Table 8). Table 9 describes clearance times for each scenario.

**Table 8
Broward County Evacuees**

County/Region of Origin	1A	1B	2A	2B	3A	3B
Broward County	219,402	227,723	312,270	320,177	391,293	400,640

Source: South Florida Regional Planning Council

- NOTES: 1A Category 1-2 Storm Conditions with Low Tourist Occupancy
 1B Category 1-2 Storm Conditions with High Tourist Occupancy
 2A Category 3 Storm Conditions with Low Tourist Occupancy
 2B Category 3 Storm Conditions with High Tourist Occupancy
 3A Category 4-5 Storm Conditions with Low Tourist Occupancy
 3B Category 4-5 Storm Conditions with High Tourist Occupancy

**Table 9
Evacuation Clearance Times (Hours)**

Fort Lauderdale Critical Links	1A	1B	2A	2B	3A	3B
Sunrise Blvd. bridge over the ICW	4.5	4.8	4.6	4.8	4.5	4.7
Oakland Park Blvd. bridge over the ICW	5.4	5.7	5.4	5.7	5.4	5.7
SE 17 th Street bridge over the ICW	4.4	4.7	5.0	5.2	5.0	5.3
East Commercial Blvd. bridge over the ICW	5.9	6.1	6.1	6.2	6.0	6.2
Las Olas bridge over the ICW	3.7	3.9	3.0	3.2	3.0	3.2
I-95 (Includes Broward, Miami-Dade and Monroe Counties)	Not Part of Study					9.9
Broward County	Not Part of Study					6.2

Source: South Florida Regional Planning Council

Land Uses

The City will undertake immediate repair efforts following a hurricane in accordance with the City’s Comprehensive Emergency Management Plan.

Future land uses will be retained following storm damage or destruction. Should areas of high density be destroyed, densities for redevelopment will be reduced to a maximum of 60 units per acre. New development in the coastal high hazard area would be required to meet DEP standards and City approval prior to permitting. Project review considers proposed use, project location in relation to hazards, changes in the shoreline as a result of storm activity and safety of future occupants.

Post-disaster redevelopment in the high hazard area will resemble development currently in place, with the exception of the “central beach” area, which will reflect the new plans.

Structures with a History of Repeated Damage

There are no public facilities in Fort Lauderdale’s high hazard area having a history of being damaged or undermined by coastal storms.

Fort Lauderdale Comprehensive Emergency Management Plan

Since 1995, the Fort Lauderdale Comprehensive Emergency Management Plan (Fort Lauderdale CEMP) has guided the emergency response of the City of Fort Lauderdale to disasters and catastrophic events. The Fort Lauderdale CEMP identifies the basic emergency preparedness, response, and recovery mechanisms necessary for all City departments, the Office of the City Manager, the City Attorney and other supporting organizations to receive notification of emergency events, to mobilize needed resources, to evaluate emergency situations and make policy decisions thereon, to implement and conduct emergency response and disaster

recovery actions, and to de-mobilize resources and personnel as needed. This plan is designed to be consistent with the Broward County and the State of Florida's emergency plans. This plan is maintained by the City of Fort Lauderdale's Emergency Manager and is implemented by the City of Fort Lauderdale Emergency Management Team.

The purpose of the Fort Lauderdale CEMP is to establish the operational framework whereby the City of Fort Lauderdale, its government and its City departments and supporting organizations can effectively prepare for, respond to, and recover from the impacts of a major disaster or catastrophic event. As identified under Chapter 252, Florida Statutes this plan allows for integrated and coordinated emergency response efforts between the City of Fort Lauderdale, Broward County, and the State of Florida. The plan is also consistent with Federal disaster response and relief plans and procedures thereby facilitating coordination between all levels of government. This integration of the emergency response and recovery actions undertaken by different government agencies and volunteer organizations following a disaster is intended to attain the following objectives for the City of Fort Lauderdale:

- Reduce the vulnerability of the people, property and valuable environmental resources to injury and damage caused by natural, technological or man-made emergencies, major disasters, and catastrophic events;
- Prepare for prompt and effective response and recovery operations designed to protect the lives, property and environmental resources threatened by the incident;
- Respond to emergencies using all systems, plans, and resources necessary to protect the health, safety, and welfare of persons;
- Recover from emergencies and disasters by providing for the rapid and orderly restoration and rehabilitation of persons and property affected by the emergency event,
- Provide an emergency management system encompassing all aspects of pre-emergency preparedness and post-emergency response, recovery and mitigation.

As in the case of all areas of the City, the Fort Lauderdale Comprehensive Emergency Management Plan is a plan established for the purpose of organizing concepts for an effective system to be utilized in conjunction with the Broward County Comprehensive Emergency Operations Recovery and Mitigation Actions Plan (adopted June 1, 1997). The City of Fort Lauderdale coordinates with Broward County to ensure that residents of the City are evacuated upon the order by Broward County for evacuation in accordance with Chapter 252, Florida Statutes.

Additionally, the City is part of assigned County teams regarding recovery functions for mitigation immediately following a disaster.

The Broward County Department of Community Services Department and Mass Transit Division are designated as the lead Department and Primary Agency for evacuating persons from immediate peril. In the event of a hurricane, Mass Transit is responsible for the mass evacuation of transit - dependent coastal residents as well as transit - dependent residents in storm-affected areas to refuge shelters located in more western areas of the county.

General recovery functions begin immediately following a disaster. Preliminary Damage and Impact assessments, restoration of essential services, Individual and Public Assistance, long term recovery, the National Flood Insurance program and hazard mitigation are conducted at the various stages of emergency management. Representatives from the County, municipal, and public sector agencies form damage assessment teams based on areas of expertise.

If the response to an emergency is beyond the capabilities of local resources, the Broward County Administrator will sign a “declaration of a local state emergency” and direct the County Division of Emergency Management to implement the County’s Comprehensive Emergency Operations Plan to ensure proper coordination of overall emergency response activities.

Beach and Dune Systems

Fort Lauderdale benefits from a southerly migration of sand. The trend has been for Fort Lauderdale’s beach to lose sand during the winter and gain it back in the summer. If sand is dispersed due to a storm, the City’s Public Services Department has the responsibility of replacing the sand. A beach protection measure was implemented in 1985 to re-vegetate the north end of the beach through the City’s Parks and Recreation Department. Lastly, Fort Lauderdale’s beach raking/cleaning program serves to clear out any seaweed or tar that may have washed ashore. (Map 8)

The natural historic dune system still exists in at Birch State Park.

In an effort to mitigate development’s adverse effects on the beach system and as natural protection against flooding, dunes were recreated as a part of a development project in the southern portion of Fort Lauderdale’s beach.

Central Beach Revitalization plans take into account the creation of dunes as a means of protecting the beach system and as flood control. Any such effort requires vegetation to maintain the integrity of the newly created dunes. Since 1989, City Public Services Department and County environmental agencies have coordinated to complete beach revegetation through demonstration projects. In 1996, beach renourishment and dune construction continued to be a focus of coastal planning as additional redevelopment and improvement projects along the beach are

constructed and planned. Changes in Federal and State regulations may require the City to pursue new grant resources and inter-agency agreements to complete future beach renourishment projects. Federal commitments to funding for coastal resource planning are uncertain because of budget cutbacks.

Fort Lauderdale has over seven miles of beach. Map 1, shows the areas of public access to the beach, as well as areas of limited auto access at the end of eight streets, north of 19th Street and A1A. Traffic lights have been installed at various locations to provide for the safe crossing of A1A by pedestrians accessing the beach. Inventories and analysis of public access facilities is further addressed in the adopted Recreation and Open Space Element.

The City maintains two major for-pay public parking lots and several smaller metered parking lots, which include handicapped spaces. Broward County bus service provides transportation to the beach areas.

A Beach Promenade from Sunrise to the South Beach parking lot has increased pedestrian accessibility by providing a clearly delineated walking and biking pathway.

A water taxi service provides passenger transport and access to a variety of locations along the Intracoastal Waterway and the New River.

A1A, in the coastal high hazard area, provides motorists with an unobstructed ocean view for several miles between just north of Holiday Drive to N.E. 19th Street.

The City of Fort Lauderdale operates over 200 boat slips in the beach area. The Birch/Las Olas docking facility was completely renovated in 1998. It provides a full range of amenities including: rest rooms, showers, laundry facilities, water, electric, telephones, pumpout facilities and gated security. The other municipal dockages are the new River marina and at the S.W. 7th Avenue Colee's Landing marina. The City provides adequate access to boat ramps at the beach, 15th Street, 7th Avenue, and George English Park (Sunrise Boulevard). There are no public fishing piers in the City.

Coastal Area Infrastructure

The coastal area is fully served by potable water, sanitary sewer, drainage, transportation and other infrastructure.

Some potable water and sanitary sewer pipelines in the high hazard coastal area have been replaced since 1989 (A1A north of Sunrise Boulevard). Should water or sewer mains or sanitary sewer pump stations be damaged or destroyed as a result of storms they will be replaced. Additional infrastructure improvements are planned as part of Water Works 2011.

There are three water towers located within the coastal area: one at Sunrise and U.S. 1, the second at N.E. 1st Street and Victoria park Road, and one in the Central Beach Area (coastal high hazard area) in Alexander park. Of these three City water tanks, the tank at Alexander Park is considered the most critical and necessary, as it is difficult to transport water across the Intracoastal Waterway. Should this structure be damaged by a storm, it would be repaired or replaced in its present strategic location.

The second water tank, located on Victoria Park Road is not considered as useful to the City as the tank located near the beach. Should this tank be substantially damaged by a storm, it will be replaced at an alternative location, if it was determined to be still needed, at that time. The third tank, on Sunrise Boulevard, will not be replaced if it sustains substantial damage. This structure is no longer useful to the City.

The G.T. Lohmeyer Sewage Treatment Plant, located within the coastal area adjacent to the Port, was completed in 1978 and has been expanded since then (see Infrastructure Element). The facility has an indefinite lifespan beyond the Comprehensive Plan's planning timeframe and should operate well into the next century. The service area includes a majority of the City, the Port, plus those municipalities served by large user agreements. The current level of service is sufficient for the service area.

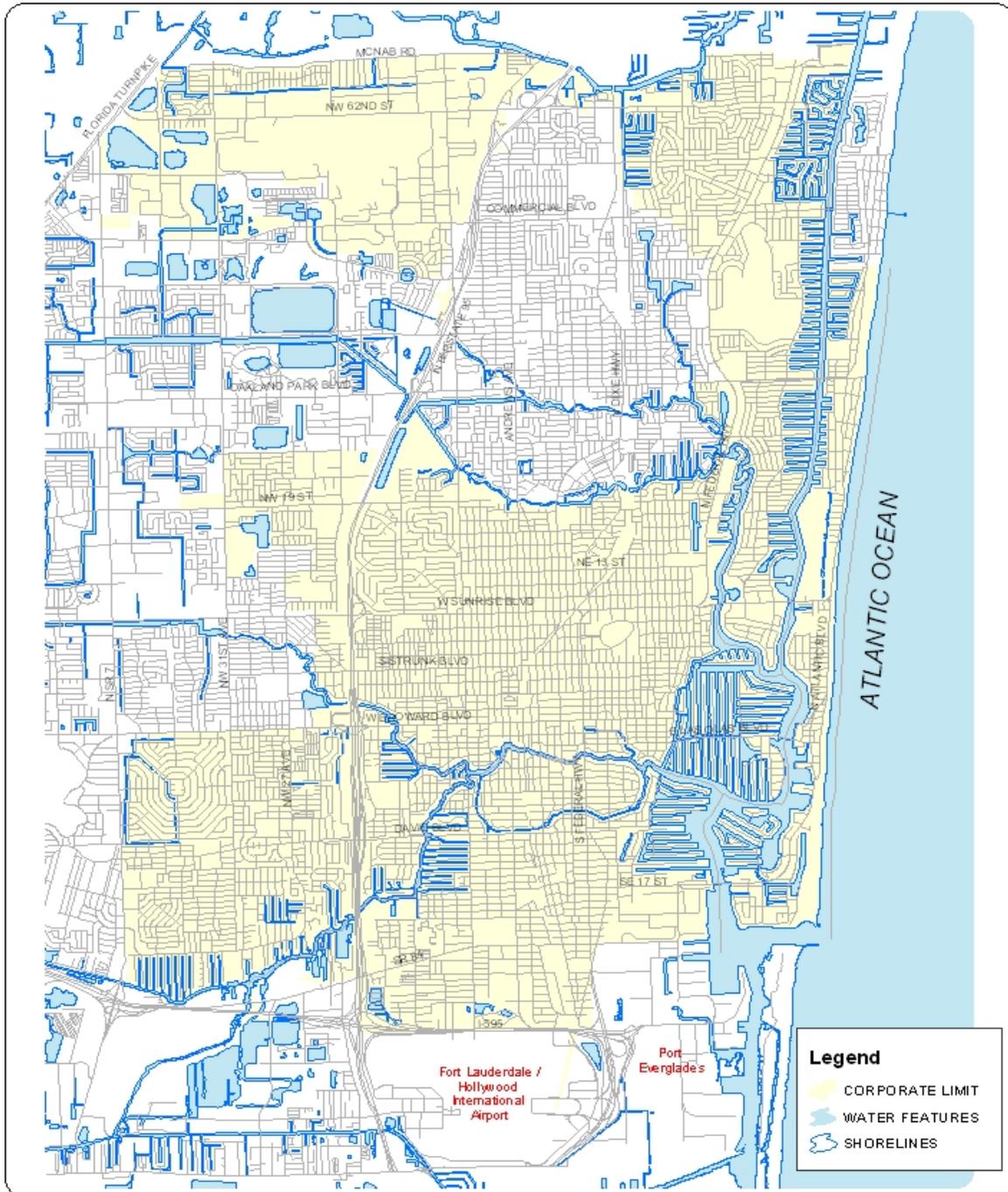
Secondary drainage facilities in the coastal area include the extensive canal system. In addition, territory improvements cover approximately 50 percent of the local roadways in the coastal area, and almost all arterials. In addition, approximately fifty percent of properties in the coastal area have passive drainage systems. No problems were cited in the area. New drainage shall be designed to meet City, County and regional standards (see the Infrastructure Element for additional information on drainage).

Major roadways in the coastal area are:

A1A	NE 26th Street
Oakland Park Boulevard	Sunrise Boulevard
U.S. 1 (Federal Highway)	Broward Boulevard
Commercial Boulevard	Las Olas Boulevard
N.E. 56th Street	N.E. 38th Street
S.E. 17th Street	Bayview Drive

The locations of these roadways are indicated on maps in this element.

The Intracoastal bridges connecting the coastal high hazard area to the mainland are at: Commercial Boulevard, Oakland Park Boulevard, Sunrise Boulevard, Las Olas Boulevard, and S.E. 17th Street Causeway. The Sunrise Bridge is six-lanes. The S.E. 17th Street Bridge was replaced, with a new, taller six-lane bridge. The other bridges are four lanes.



BEACHES AND SHORES

MAP 8

DATA SOURCE: CITY OF FORT LAUDERDALE GIS DATA - AUG, 2006
 MAP SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT - JULY, 2006

