

**CITY OF PALM BEACH GARDENS
COMPREHENSIVE PLAN**

COASTAL MANAGEMENT ELEMENT

SUPPORT DOCUMENT

**The City of Palm Beach Gardens
June 2008**

I. INTRODUCTION

The purpose of this support document as defined in Rule 9J-5.012, Florida Administrative Code (FAC), is to plan for and where appropriate restrict development activities where such activities would damage or destroy coastal resources, and protect human life and limit public expenditures in areas that are subject to destruction by natural disaster. In accordance with Rule 9J-5.012 Florida Administrative Code (FAC), the City of Palm Beach Gardens must prepare the Coastal Management element, and the following applicable items shall be included:

- Inventory of existing land uses in the coastal planning area. Conflicts among shoreline uses shall be analyzed and the need for water-dependent and water-related development sites shall be estimated. Any areas in need of redevelopment shall be identified. An analysis of the economic base of the coastal planning area based on the future land use element shall be included. A map or map series showing existing land uses and detailing existing water-dependent and water-related uses shall be prepared.
- Inventories and analyses of the effect of the future land uses as required to be shown on the future land use map or map series on the natural resources in the coastal planning area shall be prepared including: vegetative cover, including wetlands; areas subject to coastal flooding; wildlife habitats; and living marine resources. Maps shall be prepared of vegetative cover, wildlife habitat, areas subject to coastal flooding, and other areas of special concern to local government.
- An inventory and analysis of the impacts of development and redevelopment proposed in the future land use element on historic resources, and sites in the coastal planning area shall be included along with a map of areas designated for historic preservation.
- An inventory and analysis shall be prepared of estuarine pollution conditions and actions needed to maintain estuaries including: an assessment of general estuarine conditions and identification of known existing point and non-point source pollution problems; an assessment of the impact of the development and redevelopment proposed in the future land use element and the impacts of facilities proposed in the traffic circulation and general sanitary sewer, solid waste, drainage, potable water, and natural groundwater aquifer recharge elements upon water quality, circulation patterns, and accumulation of contaminants in sediments; identification of actions needed to remedy existing pollution problems; and identification of existing state, regional and local

regulatory programs which will be used to maintain or improve estuarine environmental quality.

- The following natural disaster planning concerns shall be inventoried or analyzed:
 - Hurricane evacuation planning based on the hurricane evacuation plan contained in the local peacetime emergency plan shall be analyzed and shall consider the hurricane vulnerability zone, the number of persons requiring evacuation, the number of persons requiring public hurricane shelter, the number of hurricane shelter spaces available, evacuation routes, transportation and hazard constraints on the evacuation routes, and evacuation times. The projected impact of the anticipated population density proposed in the future land use element and any special needs of the elderly, handicapped, hospitalized, or other special needs of the existing and anticipated populations on the above items shall be estimated. The analysis shall also consider measures that the local government could adopt to maintain or reduce hurricane evacuation times.
 - Post-disaster redevelopment including: existing and proposed land use in coastal high-hazard areas; structures with a history of repeated damage in coastal storms; coastal or shore protection structures; infrastructure in coastal high-hazard areas; and beach and dune conditions. Measures which could be used to reduce exposure to hazards shall be analyzed, including relocation, structural modification, and public acquisition.
 - Coastal high-hazard areas shall be identified and the infrastructure within the coastal high-hazard area shall be inventoried. The potential for relocating threatened infrastructure shall be analyzed.
- Public access facilities shall be inventoried, including: all public access points to the beach or shoreline through public lands, private property open to the general public, or other legal means; parking facilities for beach or shoreline access; coastal roads and facilities providing scenic overlooks; marinas; boat ramps; public docks; fishing piers; or other traditional shoreline fishing areas. The capacity of and need for the above facilities shall be analyzed. Public access facilities shall be shown on the map or map series required by paragraph (2)(a) as water-dependent uses or facilities. These inventories and analyses shall be coordinated with the recreation and open space element and any countywide marina siting plan if adopted by the local government.
- Existing infrastructure in the coastal planning area shall be inventoried, including: roadways, bridges or causeways, sanitary sewer facilities, potable water facilities, man-made drainage facilities, public coastal or shore protection

structures, and beach renourishment projects. The demand upon, capacity of, and area served by the existing infrastructure shall be analyzed. Analyses shall be prepared which estimate future needs for those facilities listed above, and which shall address the fiscal impact in terms of estimated costs, funding sources and phasing of any needed improvements.

An analysis of the City's coastal planning area did not reveal the presence of beaches or dunes or the presence of any deepwater ports as defined in 9J-5.003 FAC. Therefore, the requirement to include an objective for the protection of beaches and dunes is not applicable to the City. To include a policy for the orderly development of deepwater ports is also not applicable. The City is therefore exempt from the requirements of 9J-5.012(3)(b)4, 9J-5.012(3)(c)11 and 12.

Boundaries of Coastal Planning Area

In general the coastal boundaries include a disjointed area that is located east of Prosperity Farms Road to the eastern municipal boundary, with some exceptions as follows. Parcels located in the coastal planning area west of Prosperity Farms Road include a northeastern portion of Frenchman's Creek DRI, a small southeastern section of Frenchman's Forest Eco-site, the ditch along the west side of Prosperity Farms Road and the eastern 400 feet of the ditch on the south side of RCA Boulevard that lies west of Prosperity Farms Road. Concerning the area East of Prosperity Farms Road and located east of the Intracoastal Waterway, the following parcels are included in the coastal planning area with the remaining areas being excluded: Bridge Center, Hidden Key Condominiums, Oakbrook Shopping Center, Golden Bear Plaza, and the First Union Bank. Furthermore, a small shoreline along Little Lake Worth and 2,550 feet of shoreline along the Intracoastal Waterway (ICWW) are included in the coastal planning area (See Map A.8.).

II. EXISTING CONDITIONS

Natural Resources

The City's coastal planning area includes approximately 2,550 linear feet of frontage on the Intracoastal Waterway and approximately 150 linear feet of frontage on the west side of Little Lake Worth. Most of the frontage on these two water bodies has been developed and much of the coastal planning area consists of impervious surfaces or open water. The primary exceptions to this are the Frenchman's Creek Marina and accessory vacant and preserve areas.

The Frenchmen's Creek development is an approved Development of Regional Impact (DRI) that was reviewed by the County and the Treasure Coast Regional Planning Council prior to its being annexed into the City. Therefore, while the marina is not yet fully developed, future development has already been reviewed and is permitted to take place in accordance with the conditions of the DRI. A southeast portion of the Frenchman's Forest Eco-site is also included in the Coastal High Hazard Area. This site was acquired by the County for conservation and the land use of this parcel is Conservation (C).

Vegetative Cover and Wetlands

Much of the native vegetation within the coastal planning area of Palm Beach Gardens was removed during land development and has been replaced with turf, landscape plants, exotics, or impervious surfaces. The areas where native vegetation remains or has become established are primarily the oak forest on both sides of Prosperity Farms Road and the mangroves in the tidal ditches on the west side of Prosperity Farms Road and the south side of RCA Boulevard. The oak forest is part of the original land cover whereas the mangroves are fairly recent volunteers in a man-made ditch. Many areas are heavily invaded or dominated by Brazilian pepper. Map A.13 illustrates the ecological communities of the City.

The shorelines on the ICWW and Little Lake Worth have been bulkheaded and there are only isolated specimens of wetland vegetation. However, the tidal ditches mentioned above have red, black, and white mangroves that succeed, red through white, according to the distance from the connection to the ICWW.

Terrestrial and Aquatic Wildlife

Habitat for terrestrial wildlife in developed areas is very sparse with trees and landscaping providing limited nesting sites for smaller birds. Reptiles and insects occupy smaller habitat niches.

Some properties along Prosperity Farms Road have preserved live oak trees as part of their landscaping. However, the understory is generally absent and therefore, the habitat remains sparse. There are occasional sightings of small mammals such as raccoons, opossums, and rabbits, but these are likely to be visitors from adjacent unincorporated area.

The open waters of the ICWW, Soverel Harbor – PGA Marina site, Frenchman's Creek Marina basin, and, especially Little Lake Worth are inhabited by numerous fish and

somewhat more limited varieties of shellfish and crustaceans. Bulkheading of the waterways has eliminated most of the shallow benthic habitats, but it does provide a limited hard substrate for oysters and mussels which, in turn, create a specific type of habitat. This habitat supports smaller crustaceans, copepods, and other invertebrates which are sources of food for fish. Since the ICWW in the coastal planning area of the City is a man-made waterbody, it has steep sideslopes which limit the productive benthic area (i.e., 0–4 feet below the mean high water mark) even without bulkheading. The bulkheads have thus only further reduced the diversity of species and the overall biomass productivity in the coastal planning area of the City.

The tidal portions of the ditches west of Prosperity Farms Road contain mangroves in the ditch bottom. The area closest to the ICWW has several red mangroves mingled with the black mangroves and grade into the white mangroves in the farther reaches of the ditches. The steep sideslopes of the ditches create an abrupt transition from marine waters to upland vegetation. Upland vegetation is primarily Brazilian pepper. The ditches provide a very limited area of marine habitat.

Sampling for the fish species that inhabit or transit the ICWW on Palm Beach Gardens has not been conducted. However, Table 5.1. provides a list of species found in the Indian River Lagoon Aquatic Preserve located in Martin and St. Lucie counties. The Palm Beach Gardens ICWW habitat does vary from that of the Indian River Lagoon, but in most aspects the two are similar. Therefore, although the Palm Beach Gardens ICWW may not provide habitat for all of these species, it is likely that many of them transit to the area.

Table 5.1. includes two different habitat areas. The first includes fish species from the marine grassbed areas and the second includes species from mangrove communities. While the City has no grassbed areas, it is likely these fish transit the area to grassbed areas located on Lake Worth. The City does, however, provide a limited mangrove area adjacent to the Frenchmen's Creek Marina.

Table 5.1. Species Found in the Indian River Lagoon

FISHES GENERALLY ASSOCIATED WITH MARINE GRASSBED AREAS

Fishes

bullshark	ladyfish
tarpon	scaled sardine
striped anchovy	sea catfish
rainwater killifish	gulf killifish
longnose killifish	sheepshead minnow
sailfin molly	gulf pipefish
crevalle jack	snook
gray snapper	pigfish
spotfin mojarra	silver jenny
silver perch	spotted seatrout
spot	southern kingfish
red drum	sheepshead
pinfish	striped mullet
white mullet	tidewater silverside
lined sole	

Invertebrates

Northern quahog	Southern quahog
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FISHES COMMONLY ASSOCIATED WITH THE MANGROVE COMMUNITY

Fishes

tarpon	bay anchovy
rainwater killifish	sheepshead minnow
mosquitofish	sailfin molly
tarpon snook	gray snapper

Invertebrates

mangrove tree crab	fiddler crab
blue crab	oysters
shrimp	snails

Source: Indian River Lagoon Aquatic Preserve Management Plan.

Areas of Special Concern

Due to the limited size of the coastal planning area, and the development that has already taken place, habitat for wildlife is sparse. Concern for endangered or threatened species is essentially limited to those terrestrial and marine animals that transit the coastal planning area. The City, by local ordinance, has established its incorporated area as a bird sanctuary. This provides a measure of protection for both resident and visiting birds. Since no terrestrial endangered or threatened species transit the area, the areas of special concern are limited to marine environments.

The snook is listed as a species of special concern by the Florida Game and Fresh Water Fish Commission (GFWFC). Although there is essentially no prime habitat for snook in the coastal planning area of the City, this fish does transit and feed there. Restoration or creation of habitat for snook within the coastal planning area of the City is not seen as a practical alternative.

The manatee is an endangered mammal which does visit the coastal planning area of the City, mainly from December through March. There is no suitable feeding area within the City's coastal planning area, but suitable habitat is located near the frontage on Little Lake Worth, and the majority of manatee sightings have been in this area (personal communication with Department of Natural Resources Marine Mammal Research Center). The manatees also transit the ICWW from Jupiter Inlet to Palm Beach Inlet (and vice versa) during the same season.

Since the most common human-induced cause of death of manatees is boat collisions, the manatee is obviously at considerable risk using the ICWW during the winter when the waterway has its most intensive boating traffic. Since most visitors and many local residents may not be aware of the seasonal influx of manatees, the posting of warning signs at the marinas and ICWW constrictions (i.e., the PGA Boulevard Bridge) may increase public awareness of the presence of manatees. Boat speeds in the ICWW are set by the U.S. Coast Guard and Florida Marine Patrol. Therefore, any desired speed changes in the ICWW must be proposed to these agencies.

Boat Facility Siting Plan

Manatee protection in County waterways includes State speed zone enforcement, wetlands protection regulations, County environmental enhancement programs, and education. The biggest threat to manatees is motorized boating. A Boat Facility Siting Plan (BFSP) including manatee protection provisions has been adopted with the goal of

identifying sites for facilities in a manner that will help reduce the number of manatees killed by boats.

In 1995, the Boat Facility Siting Plan for Palm Beach County was prepared under contract to Florida Department of Environmental Protection (FDEP) by the Treasure Coast Regional Planning Council (TCRPC). Palm Beach County and other agencies had concerns that impacts to seagrasses and land use compatibility were not adequately addressed. In response, FDEP, now Florida Fish and Wildlife Conservation Commission (FFWC) evaluated seagrasses at 110 existing and potential boat facility sites. Steps remaining to complete a manatee protection plan (MPP) are to: 1) update the boat facility siting plan to factor seagrass impacts and land use compatibility into site ratings; 2) update development status of sites; compile all components of a manatee protection plan into one document; 3) obtain FFWC approval; and, 4) amend county comprehensive land use plan to adopt MPP.

In 2007, the County approved the Palm Beach County Manatee Protection Plan, prepared by Catanese Center for Urban and Environmental Solutions at Florida Atlantic University. The Boat Facility Siting Plan (BFSP) is a component of the MPP and this plan determines the most appropriate locations for marinas, docking structures, and boat launching.

The BFSP indicates desirable locations for development of boat facilities based on an evaluation of natural resources, manatee protection needs and economic demands. The main objective of the BFSP is to minimize the amount of interaction between manatees and boats, and to reduce the number of manatees killed by boats. The study evaluates manatee location, abundance and behavior patterns in Palm Beach County coastal waterways and then identifies boat facilities and possible sites and future development, redevelopment, or expansion of these sites. The study builds on this data and provides criteria and methodology to identify areas of the coastal waterway designated as low, medium or high impact to manatees. Finally, the BFSP provides thresholds and policies to explain how the plan is to be used to site facilities. The BFSP and the MPP lists policies to assist in implementing the plan. The City shall implement these policies by incorporating the Palm Beach County MPP into the Comprehensive Plan through goals, objectives, and policies.

The BFSP separates the coastal waterway of Palm Beach County into 49 segments each approximately 1.25 miles in length. Palm Beach Gardens has parcels of property located in Segments 10, 12, 13, and 16. Relative to other waterway segments throughout the County, the abundance of manatees was quite low in each segment for the Palm Beach Gardens coastal waterway. The BSFP indicated that the coastal

planning area in Palm Beach Gardens does not contain an ecological habitat (i.e., feeding and breeding area) for manatees. However, the study indicated that Palm Beach Gardens coastal waterways was used quite frequently by manatees concerning migration patterns. Considering the migration patterns, the BSFP identifies the Intracoastal Waterway adjacent to the City's municipal boundary, and its future annexation area as having a "high probability of impact to manatees."

The BSFP identified three existing boating facility sites which included Frenchman's Creek Marina, Soverel Harbor and PGA Marina (indicating PGA Marina and Soverel Harbor as separate sites). Furthermore, the Siting Plan identified one potential boat facility in the municipal boundary as the Bridge Center PUD. According to the BSFP, the future annexation areas of the City included three existing and four potential boat facility sites.

As noted, the BSFP indicated that all coastal waterbodies in the City were located in a high probability area. As mentioned above, the BSFP regulates the future development, redevelopment and expansion of boating facilities. Consequently pursuant to the BSFP, in areas of high probability of impact to manatees, new multi-family and dry storage facilities are not permitted, and the total number of wetslips are limited to a maximum of 50 slips per jurisdiction, provided that the local government has demonstrated a need for additional public access in the comprehensive plan. For boat ramps in high probability areas, one additional single-lane public boat ramp with a limit of 15 parking spaces for vehicles having a trailer may be permitted per jurisdiction, provided that the local government has demonstrated a need for the additional public access in its comprehensive plan.

Coastal Flooding

Section 9J-5.012, FAC, requires identification of areas subject to flooding. The areas subject to coastal flooding are identified by the U.S. Department of Housing and Urban Development Flood Insurance Rate Maps and Post, Buckley, Schuh and Jernigan, Lower Southeast Florida Hurricane Evacuation Study, Technical Report, June 1983. There is no velocity factor in these flood zones, but hurricane storm surge could flood the area east of U.S. Highway 1. The Conservation Element of this Comprehensive Plan describes the floodplain areas of the City, including those in the Coastal Planning Area, in detail. Map A.8 shows the areas subject to the 100-year flood.

Development that has occurred is characterized as infill development which is encouraged to curtail urban sprawl. The relatively small size of the coastal planning

Policy 5.2.1.4.: *The City shall continue hazard mitigation by participating in the National Flood Insurance Program's (NFIP) Community Rating System, and administration of building and rebuilding construction techniques consistent with the Federal Emergency Management Agency (FEMA) regulations within "A Zones" as designated by FEMA*

area and few residential parcels located within the coastal planning area provide minimal impacts for flood evacuation of residents.

Land Use Inventory and Analysis

Existing Land Use

The coastal planning area is approximately 194 acres comprised mostly of commercial land uses. These include both the Soverel Harbor–PGA Marina site and the Frenchman’s Creek Marina. Furthermore, boat sales are located at the Soverel Harbor–PGA Marina site. The Soverel Harbor–PGA Marina site is one marina site under two different owners: PGA Marina and Soverel Harbor. The PGA Marina includes 20 wetslips and 264 dry slips which are located in a boat storage warehouse. The PGA Marina also includes an area for boat sales and brokerage, boat storage and repair, boat rentals and fuel sales. The Soverel Harbor portion of the site includes 140 wetslips from the original Soverel Harbor PUD. Since, as mentioned above, the Soverel Harbor–PGA Marina site is under different ownership, the site shall be either termed the “Soverel Harbor–PGA Marina site” or noted separately as appropriate throughout this document. In total, the Soverel Harbor–PGA Marina site includes 160 wetslips and 264 dry slips.

The Frenchmen’s Creek Marina has been approved for 134 wetslips and fuel sales upon completion. The marina does have upland space available for the possible future provision of dry storage space; however, plans for the provision of additional facilities were not included in the approved DRI. Neither of the marinas have boat ramps and both are private. Thus, public access to the ICWW is not available through either of these facilities.

The waterfront restaurant on the south side of PGA Boulevard has space for a few boats (depending on boat size), but the restaurant is neither water-dependent nor water-related. Due to the narrowness of the ICWW in this area and the reflection of boat wakes from the bulkheads, docking or boat launching along the ICWW is rather hazardous in this area.

Estimate of the Need for Water-Dependent and Water-Related Uses

As discussed in the Public Access section of this support document, there is no formal public access in the Palm Beach Gardens coastal planning area other than informal access for fishing at the PGA Boulevard bridge over the ICWW and the Little Lake Worth bridge (a.k.a., “Burnt Bridge”). The only undeveloped area of access is a parcel

of approximately two and nine-tenths (2.9) acres on the east side of the ICWW, north of PGA Boulevard. This parcel known as the Bridge Center is approved for restaurant/office use with two docks (wetslips). However, this parcel is on the Atlantic Coastal Ridge and the approach to the ICWW is quite steep for a public access area. Other than this parcel, public access could not be readily obtained without redevelopment of existing lands. The preserve area adjacent to the Frenchmen’s Creek Marina is still privately controlled but is to be dedicated to the county, as a condition of the DRI, as a preserve area. As such, the area will have no development including public access facilities.

Using facility guidelines and median population served as identified in the DNR Outdoor Recreation in Florida, 1993, and the City’s population estimates and projections, the estimated need for resource-based outdoor recreation facilities is presented in Table 5-2. In reviewing Table 5-2., it becomes obvious that there is insufficient coastal planning area in the City to satisfy a significant portion of the estimated water-dependent recreation needs. Likewise, the suitable area for marina sites has already been utilized as a marina site and additional demands for water-dependent and water-related facilities will need to be satisfied outside of the corporate limits of the City or through future annexations.

TABLE 5-2. City of Palm Beach Gardens Estimated Need for Water-Dependent Recreation Facilities

Activity	Facility	2000
Population	–	40,369
Swimming	Miles of Beach	.47
Fishing	Linear Ft. of Shore, Pier or Catwalk	7,481
Boating	Boat Ramp Lanes	10
Source:	Florida DNR, Outdoor Recreation in Florida, 1986; and REP/Inc.	
Revision:	City of Palm Beach Gardens, July 1997	

Shoreline Land Use Conflicts

All existing land uses within the coastal planning area are in compliance with the City’s current land development regulations. In addition, none of these uses are known to have significant tentative impact upon each other or any of the adjoining water resources. Therefore, there are no known shoreline land use conflicts.

Recommendations for Siting Water-Dependent and Water-Related Uses and Minimizing Shoreline Land Use Conflicts

The highly developed state and disjointed configuration of the Palm Beach Gardens' coastal planning area leaves few opportunities for the location of additional water-dependent or water-related uses. As noted, the City has two marinas located within its municipal boundaries. The facilities are: Frenchman's Creek Marina (134 wetslips); Soverel Harbor–PGA Marina site (160 wetslips and 264 dry racks).

The Boat Facility Siting Plan (BFSP) identifies the Intracoastal Waterway adjacent to the City's municipal boundary and its future annexation area as having a "high probability of impact to manatees." The plan also identifies three existing boat facilities and one potential site for a boat site or boat ramp in the City. This included Frenchman's Creek, and Soverel Harbor–PGA Marina, noted as three separate marinas with The Bridge Center noted as a potential site. In the City's future annexation area, four potential and three existing boat facility sites along the Intracoastal Waterway are identified. Currently, the City does not have a municipal boat ramp facility within its jurisdiction.

The major components of the current economic base of the coastal planning area of the City of Palm Beach Gardens are retail commercial, office commercial, marine services, and tourism. The City's economy is directly linked to adjacent municipalities and unincorporated areas of Palm Beach County as the adjacent areas may compliment or compete with facilities within the City.

While the population of the City places a significant, unmet demand on water-dependent and water-related uses, the City's coastal planning area is not large enough to accommodate this demand. In addition, much of the shoreline is inappropriately configured to support most water-dependent and water-related uses. Therefore, even though the City could benefit greatly from an increased provision of water-dependent and water-related uses, it lacks the appropriate land area to capture the demand.

Estuarine Pollution

No data is available on the water quality of those portion so f ICWW or Little Lake Worth in the City of Palm Beach Gardens. The Department of Environmental Protection (DEP) has some water quality data on portions of the ICWW and Little Lake Worth in areas near the City; however, the sampling points are located near point source discharges and thus probably do not accurately reflect water quality conditions within the City. However, inferences regarding water quality can be made by analyzing the water quality

of surface water bodies in the City that discharge to the ICWW and the land uses of the coastal planning area.

The Conservation Element Support Document of this Comprehensive Plan provides a summary of the water quality of those surface water bodies in the City for which such information is available. In general, the quality of these water bodies is good and varies, as expected, with seasonal precipitation conditions. In addition, most major discharge locations are located outside of the corporate limits of the City. Therefore, the main source of estuarine pollution within the coastal planning area of the City of Palm Beach Gardens is most likely non-point stormwater runoff. Only those areas fronting the ICWW have direct discharge to this water body.

Soverel Harbor–PGA Marina site is an upland marina that is another potential source of estuarine pollution. Probably pollutants primarily include fuel spillage and anti-fouling paints. Since this is an upland marina, poor circulation is also expected to contribute to water quality degradation. As the marina provides a sewage holding tank pump-out system and complete dockside shower and restroom facilities for live-aboard boats, these types of pollutant discharges should be minimal. The Soverel Harbor portion of the site has yet to submit a contingency plan for fuel spills. The marina relies on outside contractors for cleaning up fuel spills and the marina does not have containment or cleanup equipment on-site. The PGA Marina portion of the Soverel Harbor–PGA Marina site has provided a contingency plan with recent site plan approval.

The Frenchmen’s Creek Marina is still under construction in accordance with this approved DRI and is not yet in operation. Like Soverel Harbor, the marina presents a potential pollution source through fuel spills and anti-fouling paints. However, unlike Soverel Harbor, the Frenchmen’s Creek Marina basin is part of a large upland drainage system and is not a dead-end canal. Much of the stormwater drainage of the Frenchmen’s Creek residential and golf course development located on the west side of Prosperity Farms Road is channeled through the marina for eventual outfall in the ICWW. Thus, the marina basin waters circulate, and pollutants are less likely to be concentrated in the sediments of the basin. The marina has received all necessary state approvals for the operation of the marina, and the marina has provided the City with a fuel spill contingency plan.

Impact of Proposed Land Uses and Facilities on Estuaries

The coastal planning area as shown in Map A.8 is predominately built up with most of the vacant land already included in projects previously approved. Other portions of vacant land are in conservation. The existing land uses which cover most of the coastal

planning area include a combination of single and multi-family residential, conservation, retail commercial, service commercial and marine commercial land uses. The vacant parcels included in projects under construction or previously approved are predominantly commercial.

More specifically the coastal high hazard area, as defined by Category 1 Hurricane Evacuation Area, includes 72 single family home (Frenchman's Creek), 20 multi-family units (Hidden key Condominiums), 13 non-residential projects, totaling approximately 631,553 square feet, the Frenchman's Creek Marina and the Soverel Harbor–PGA Marina site. As mentioned above, the vacant sites located in the coastal planning area include: the Bridge Center PUD approved however not yet constructed, a parcel located near Soverel Harbor–PGA Marina, three parcels located near Frenchman's Creek Marina and a portion of the Frenchman's Forest eco-site.

All vacant properties in the coastal planning area have been disturbed in one way or another. There is very little native vegetation left in the coastal planning areas as a result of the site disturbance and an invasion of exotic species which is a common occurrence on disturbed sites. The development of the vacant properties in the coastal planning area of the City as discussed above is not expected to have any adverse impact on the natural resources of the coastal planning area. On the contrary, by requiring the removal of exotic species and planting of native vegetation, the development of the vacant properties could greatly enhance the environmental quality of the coastal planning area. Development of the vacant land in the coastal planning area must also be carefully regulated and monitored to ensure that proper storm water drainage methods are used to protect the estuarine water quality. The strict enforcement of the existing City and the SFWMD storm water drainage regulations is critical in protecting the water quality in the coastal planning area. The City-wide master drainage study was completed in 2002 and is currently being implementing. The study assessed the sufficiency of the existing storm water drainage regulations in protecting the water quality in the coastal planning area and included a detailed analysis (model) of the sub-basin examined the system response relative to the performance standards and levels of service set forth in the Comprehensive Plan and Land Development Regulations. Furthermore, there was a conscious effort to combine resources to develop the Surface Water Management Plan, the Drainage Plan, and the GIS database simultaneously to expedite their completion.

Analysis of Needed Remedial Action

Soverel Harbor, PGA Marina, and the Frenchmen's Creek Marina need to implement their contingency plans for fuel spills and provide spill containment equipment/materials

at their refueling facilities. Only small spills have been reported at Soverel Harbor and they were cleaned up by boat owners or outside contractors. A copy of the Soverel Harbor contingency plan has yet to be filed with the City Fire Marshal. The City will obtain a Contingency Plan for Soverel Harbor. Frenchman's Creek Marina has submitted a contingency plan with site plan approval. The PGA Marina has submitted a contingency plan as part of site plan approval. New stormwater management systems should provide retention/detention or other treatment in accordance with DER Rule 17-25, FAC.

Any commercial facilities that store hazardous materials or hazardous wastes equivalent to the reportable quantities in the Federal Register/Vol. 52, No. 77, April 22, 1987 (SARA, Title III), should have spill control and countermeasure plans and secondary containment for storage systems.

State, Regional, and Local Regulatory Programs to Reduce Estuarine Pollution

State pollution regulation is largely vested in the Florida Department of Environmental Protection (DEP). The DEP regulates dredge and fill waters of the state and adjacent wetlands. Dredge and fill permitting is done in accordance with similar federal permitting. DEP also regulates discharges of pollutants into natural or artificial bodies of water, establishes water quality standards, sets minimum treatment requirements, issues permits, licenses operations of wastewater treatment plants, administers construction grants for sewage treatment plants and regulates discharges of stormwater. A special permit program can be used to obtain long-term permits for dredging deep water ports.

DEP and the South Florida Water Management District (SFWMD) regulate the withdrawal, diversion, storage, and consumption of water, with the SFWMD responsible for most of the permitting and operational aspects. DEP certifies the siting of power plants and must consider the cooling water needs and environmental impacts of the proposed power plant.

The Florida Department of Environmental Protection (DEP) is also involved in controlling estuarine pollution. The DEP is responsible for selling or leasing state-owned submerged lands if the lease is not "contrary to the public interest." The proposed use of the conveyed or leased submerged land must not "interfere with the conservation of fish, marine, or wildlife, or other natural resources." Deeds or leases may contain restrictions on dredging and filling.

The DEP is also responsible for managing the aquatic preserves throughout the state. No aquatic preserve is located within Palm Beach Gardens. However, the Loxahatchee River Aquatic Preserve is located in northern Palm Beach County. Aquatic preserves are state-owned submerged lands which the state wishes to maintain in "an essentially natural condition." Special requirements pertain to the sale or lease of state-owned submerged land within the aquatic preserves. A management plan for the Loxahatchee River Aquatic Preserve has been prepared. The DEP also regulates exploration, drilling, and production of oil, gas, or other petroleum products, including drilling in estuaries.

The DEP is the chief land purchasing agent and land manager for the state. The state, through several land acquisition programs, purchases environmentally sensitive lands which are vital for estuarine water quality.

The Department of Health and Rehabilitative Services (HRS) administers a mosquito control program. This program sets limits on the type and amounts of oil and chemicals used to control mosquitoes. Special exceptions to state dredge and fill requirements are given to mosquito control projects. The program provides financial aid to the Palm Beach County Mosquito Control District.

The principle regional agency involved in controlling estuarine pollution is the South Florida Water Management District (SFWMD). The SFWMD is responsible for the major flood control and drainage structures and, therefore, responsible for the quantity and timing of much of the fresh water delivered to the estuary. The SFWMD is also responsible for certain regulatory activities delegated from DEP. Chief among these is stormwater permitting for projects greater than ten (10) acres in size. The District is also assigned responsibility for regulating agricultural activities in wetlands under the Warren Henderson Act. The SFWMD has a land acquisition program, the "Save Our Rivers Program," which allow sit to purchase environmentally sensitive lands. The intent of the program is to improve, through land acquisition, the quality of the fresh water entering the estuary.

The Treasure Coast Regional Planning Council (TCRPC), along with the Department of Community Affairs (DCA), has some control over land use and development regulations through local comprehensive plan reviews and the Development of Regional Impact (DRI) program. The DRI process can require reviews of certain large developments' impacts on significant state and regional resources such as aquatic preserves or Outstanding Florida Waters. The impacts can be mitigated through conditions on the development order issued by the local government. TCRPC has appeal rights if they feel that the development order does not adequately address regional concerns.

Soil and water conservation districts are established pursuant to state law. The Palm Beach Soil and Water Conservation District is county-wide in area and is its own taxing authority. The District's functions include control of soil erosion and mapping the soils in the county. Erosion prevention efforts assist in maintaining estuarine water quality by reducing the sediment loads of waters flowing into the estuary.

The City, through its police power, can regulate numerous activities which impact estuarine water quality. The City may: enforce utility hookups, regulate stormwater and drainage, control the disposal of domestic solid waste including yard debris, control land use through zoning and comprehensive planning, and enforce site planning and subdivision requirements.

Beach and Dune Systems

There are no beach or dune systems within the coastal planning area of the City of Palm Beach Gardens. The Atlantic Coastal Ridge on the east side of the ICWW and west of U.S. Highway 1 is a relic dune that does not function as an ocean shore (barrier island) dune, but it does provide the western limit of hurricane storm surge. Part of this ridge has remnants of the coastal xeric upland plant communities as mentioned previously in the Natural Resources section of this element. However, the ridge is not a functional dune system.

Archaeological, Cultural and Historic Resources of the Coastal Planning Area

The Florida Department of State, Division of Historical Resources has not identified any state historical resources located in the coastal planning area. The U.S. National Register of Historic Places does not list any structures identified as historical places in the City. The City has identified a location of historical significance—the original gateway into Palm Beach Gardens. This entry is located on MacArthur Boulevard at its intersection with Northlake Boulevard. J.S. MacArthur moved two banyan trees to the location in the early 1960s and ornated the entry with fountains and landscaping. The two trees, which still stand at this location, have since grown into one “tree.” The City would like to maintain this location as a symbolic gateway and greenway into the original neighborhoods. A historic overlay has been created to protect the area as the adjacent parcels, which are currently vacant, develop in the near future. The Goals, Objectives, and Policies section of the Coastal Management and Future Land Use Element of this Comprehensive Plan calls for the addition of such ordinances in the City's land development code.

The EAR-based amendments...

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Public Access

Inventory of Existing Facilities

There is no public access to the ICWW or Little Lake Worth in the City of Palm Beach Gardens. The only opportunities to provide public access to the ICWW, within the existing City limits, would be to purchase and redevelop the parcel of land within the future annexation area. Other potential access points are already privately developed and owned. As noted in the Boat Facility Siting plan, there are opportunities within the future annexation area just north of the Soverel Harbor–PGA Marina site. This includes an area adjacent to the Intracoastal with three parcels characterized as industrial and one vacant parcel owned by the Florida Inland Navigational District (FIND). These parcels are listed by the Boat Siting Facility Plan since they have the potential to have boat facilities. The Facility Siting Plan also indicated three potential sites further north of this area located within the City's future annexation boundaries. Since the opportunity to provide public access within the City does not exist for beaches and is very slight for the ICWW, residents of the City will need to seek public access to beaches and the ICWW through other municipalities or through Palm Beach County parks and beaches unless there is an annexation of coastal property in the future.

Ocean beach access with parking is provided approximately one mile east of the City at the John D. MacArthur State Recreation Area. This park has 8,500 feet of beach and is currently being upgraded by the state to include additional parking and restroom facilities. Beach access areas in all of Palm Beach County receive heavy usage.

At present, the closest coastal planning area access point is at Palm Beach County Juno Park on the east side of the ICWW. This facility has a one-lane boat ramp and unpaved parking for approximately fifteen vehicles with boat trailers. Additional access points for the ICWW are severely limited, but there is a possibility that spoil deposit sites owned by the Florida Inland Navigation District (FIND) located along the ICWW could be improved to provide public access. The City has expressed interest to annex the above-mentioned FIND vacant parcel north of the Soverel Harbor–PGA Marina site to potentially have it developed into a boat ramp or passive park. Thus far, this concept is only in the preliminary stages. Funds for these types of improvements may be funded

by grants from the DEP Florida Boating Improvement Program. Although there are none of these sites within the City, the City would be supportive of efforts by Palm Beach County or other municipalities to provide such improvements in the north county area.

Future Needs

As discussed in the Land Use Inventory and Analysis section and as demonstrated in Table 5-2 of this element, the public access needs to shorelines will continue to grow with the population growth of the City. However, the privatization of shoreline lands in the City and their developed state make it very difficult for the City to satisfy this growing demand. In addition, most of the shoreline lands are physically unsuited for all but the least intense public access facilities. Therefore, the demand for public access to shorelines will have to be met by the County or adjacent municipalities with larger and more suitable shorelines.

Demand Analysis for Wetslips

According to the DEP Toward a Proactive Statewide Marina Siting Program, April 1985, it is projected that the demand for wetslips in Palm Beach County will increase between 64%–89% from the year 1982 to 2005. Since there is not sufficient undeveloped land within the City's coastal planning area to support another marina, an analysis of the demand that could be satisfied by the City would not be useful. Together the Soverel Harbor–PGA Marina site and Frenchmen's Creek Marinas provide 294 wetslips. However, as these marinas are private, the need for public marinas continues to go unmet in the City.

IV. TRENDS AND CHALLENGES

Hurricane Evacuation

The most recent hurricane evacuation plan pertaining to Palm Beach Gardens is in the Palm Beach County, Comprehensive Emergency Management Plan (CEMP) 2002 edition prepared by the Palm Beach County Department of Public Safety, Division of Emergency Management. The CEMP identifies certain mitigation efforts intended to mitigate the effect of minor, major, and catastrophic disasters.

As part of the City's Vision process, an objective was established to create plans, procedures, and policies for Emergency/Disaster situations. The following strategies were developed to assist in the implementation of this objective:

- Update the City's Emergency Management Plan;
- Budget and procure equipment and material consistent with the City's Emergency Management Plan. All City departments shall be prepared to undertake assigned task and responsibilities need to assist this strategy;
- Provide information on the contents of the City's Emergency Management Plan to residents and property owners, in advance of an emergency situation, so that all are familiar with pre- and post-emergency, procedures, policies, and activities that will be instituted by the City;
- Utilize code enforcement procedures or take other steps as necessary to protect rights-of-way, canal, drainage and utility easements and other facilities which may become critical for emergency access situations.

(9)(a) Local governments may elect to comply with rule 9J-5.012(3)(b)6. and 7., Florida Administrative Code, through the process provided in this section. A proposed comprehensive plan amendment shall be found in compliance with state coastal high-hazard provisions pursuant to rule 9J-5.012(3)(b)6. and 7., Florida Administrative Code, if:

1. The adopted level of service for out-of-county hurricane evacuation is maintained for a category 5 storm event as measured on the Saffir-Simpson scale;
2. A 12-hour evacuation time to shelter is maintained for a category 5 storm event as measured on the Saffir-Simpson scale and shelter space reasonably expected to accommodate the residents of the development contemplated by a proposed comprehensive plan amendment is available; or
3. Appropriate mitigation is provided that will satisfy the provisions of subparagraph 1. or subparagraph 2. Appropriate mitigation shall include, without limitation, payment of money, contribution of land, and construction of hurricane shelters and transportation facilities. Required mitigation shall not exceed the amount required for a developer to accommodate impacts reasonably attributable to development. A local government and a developer shall enter into a binding agreement to memorialize the mitigation plan.

(b) For those local governments that have not established a level of service for out-of-county hurricane evacuation by July 1, 2008, but elect to comply with rule 9J-5.012(3)(b)6 and 7., Florida Administrative Code, by following the process in paragraph (a), the level of service shall be no greater than 16 hours for a category 5 storm event as measured on the Saffir-Simpson scale.

(c) This subsection shall become effective immediately and shall apply to all local governments. No later than July 1, 2008, local governments shall amend their future land use map and coastal management element to include the new definition of coastal high-hazard area and to depict the coastal high-hazard area on the future land use map.

The City of Palm Beach Gardens responds to hurricane evacuation, or other emergencies, with an Emergency Management Team. The team consists of the City Manager as administrative director, the Fire chief as deputy director in the field, and the department heads of public works, police, parks and recreation, etc., as commanders of their own departments. The City team interfaces with their Palm Beach County counterparts through the County Emergency Management Office or directly through Palm Beach County Fire Rescue radio band (154.265 MHz). Palm Beach Gardens Fire Rescue, Palm Beach County Fire Rescue, or others may be deployed in the City as additional support for the City's primary hurricane evacuation shelter; William T. Dwyer High School. As a last resort, secondary shelters Palm Beach Gardens High School, Timber Trace Elementary School and Watson B. Duncan Middle School will be used (see Table 5-3).

Add

Red Cross Shelters are subject to change on a year-to-year basis. The number of shelters requested by Emergency Management to be opened is dependent upon expected shelter demand according to storm intensity and population at risk. The location of all Red Cross Shelters is publicized each year and residents are encouraged to learn the route from their residence to the closest shelter.

Table 5-3. American Red Cross Hurricane

SHELTER	CAPACITY at 20 square feet per evacuee
<p><u>Primary</u></p> <p>William T. Dwyer High School 13601 N. Military Trail, Palm Beach Gardens</p>	<p>2,000</p>
<p><u>Secondary</u></p> <p>Watson B. Duncan Middle School 5150 117th Court North, Palm Beach Gardens</p> <p>Palm Beach Gardens High School 4245 Holly Drive, Palm Beach Gardens</p>	<p>350</p> <p>2,500</p>
<p><u>Last Resort</u></p> <p>Timber Trace Elementary School 5200 117th Court North, Palm Beach Gardens</p>	<p>250</p>

Note: All shelters listed have facilities for the handicapped.

Source: American Red Cross, Palm Beach County Chapter, 1995.

The Division of Emergency Management is currently updating all 11 regional evacuation studies and is relying on Treasure Coast Regional Planning Council (TCRPC) to update our region's evacuation study. TCRPC has prepared a draft transportation analysis, Hurricane Evacuation Study, prepared by Post, Buckley, Schuh and Jernigan, Inc. in 2003. Until the regional evacuation study for the Treasure Coast Region is completed, the City shall utilize the existing Palm Beach County evacuation route map prepared by the Florida Division of Emergency Management and the draft Hurricane Evacuation Study for planning purposes.

Most of the coastal planning area of the City is developed for commercial use. Therefore, some of the features of the Palm Beach County plan, such as population at risk and clearance times, are not as appropriate for this City. The only vulnerable residential area in the CHHA is the multi-family development on Little Lake Worth. This

area is in the coastal flooding zone, but since it is on the mainland near the edge of this flooding, the residents can be evacuated more readily than those on the barrier island or other such CHHA.

Although there would be relatively few evacuees from the City's CHHA, PGA Boulevard is the evacuation route for several other coastal communities and Palm Beach Gardens High School is a designated hurricane evacuation shelter. Therefore, evacuees from the Town of Juno Beach, Village of North Palm Beach and the unincorporated areas in the vicinity of the City are anticipated to use PGA Boulevard and Palm Beach Gardens High School (See Map 5-5). The coastal planning area of the City is in Traffic Evacuation Zone 5 of the Palm Beach County Evacuation Plan, but all of the north county evacuation shelters are listed on Table 5-3 to assist in route planning for the City.

State Road A1A and PGA Boulevard are critical links in the evacuation plan. The Florida Department of Transportation (DOT) operates the drawbridge on PGA Boulevard at the ICWW, but the drawbridge is controlled by the U.S. Coast Guard (USCG). The USCG will relinquish control to the Palm Beach County Office of Emergency Management during a hurricane warning if an evacuation is ordered. When an evacuation is ordered, the drawbridges will remain closed and boats may be prevented from seeking shelter. Therefore, boat owners should plan ahead (i.e., before or during the hurricane watch phase) to seek shelter for their boats.

Fortunately, the bridge approaches for the PGA Boulevard drawbridge are not subject to flooding as are some other drawbridges in the county. As a result, road conditions after an evacuation order is given will be relatively stable. Therefore, clearance times for the CHHA will be minimized, but evacuation routes in the City will be heavily traveled by evacuees from outlying areas.

The evacuation route as of 1995, for William T. Dwyer High School, is as follows: Indiantown Road, west to Military Trail; south to shelter. As of 1995, the evacuation route for Watson B. Duncan Middle School includes Donald Ross Road west to Central Boulevard; south 2½ miles to 117th Court North. These two additional shelters will provide traffic relief to PGA Boulevard used as the main route to Palm Beach Gardens High School.

According to the Comprehensive Emergency Management Plan, as of 2002, Palm Beach County in cooperation with the American Red Cross currently operates 21 hurricane evacuation shelters with a capacity of 29,665 persons. The Treasure Coast Regional Hurricane Evacuation Transportation Analysis Study, updated in 2003 estimates that with a 100% evacuation participation that between 309,551 persons at

low tourist occupancy and 425,617 persons at high tourist occupancy will need to be evacuated for a Category 4–5 hurricane (see Table 5-3). Clearance times for in-county movement for a Category 4-5 hurricane vary from 15 ¼ to 20 hours, depending on different scenarios and Treasure Coast regional movement for a Category 4-5 hurricane vary from 20 ½ to 30 hours. However, if south Florida regional traffic is included in the evacuation, the regional movement for a Category 4-5 hurricane is 46 to 64 hours.

Table 5-4. Evacuating People Statistics

	Year 2000 Permanent Population	People Evacuating	Public Shelter Demand	Local Public Shelter Capacity
Palm Beach	1,131,184 People			
Low Tourist Occupancy Category 1-2 Category 3-5	Includes 46,900 mobile home residents countywide	194,962/87,250 309,551/136,681	25,256 People 39,591 People	28,465 People 28,465 People
High Tourist Occupancy Category 1-2 Category 3-5		276,577/115,814 425,617/177,310	26,078 People 40,751 People	28,465 People 28,465 People

CATEGORY 4–5		
Low Seasonal Occupancy	w/o FIRM Impacted Areas	w/FIRM Impacted Areas
Evacuees to Public Shelter	39,300 persons	55,550 persons
Evacuees to Out of County	160,700	174,600
Evacuees to Other Local	77,900	94,200
Total Evacuees	277,900	324,300
High Seasonal Occupancy	w/o FIRM Impacted Areas	w/FIRM Impacted Areas
Evacuees to Public Shelter	41,700	57,900
Evacuees to Out of County	206,200	220,100
Evacuees to Other Local	77,900	94,200
Total Evacuees	325,800	372,200

Source: Treasure Coast Regional Planning Council Hurricane Evacuation Transportation Analysis Draft Study. Post Buckley, Schuh & Jernigan, 2003

Estimated and Projected Population at Risk During Hurricanes

Based on analysis of aerial maps, the Sea, Lake, Overland Surges from Hurricanes (SLOSH) Model and field studies there are two residential developments located in the CHHA—Category 1 hurricane evacuation zone: a portion of Frenchman’s Creek DRI and Hidden Key Condominiums. Currently there is no vacant land in the municipal

boundaries designated for future residential development in the CHHA. The estimated and projected number of evacuees for the City is presented on Table 5-4. The City's one mobile home park is also included in Table 5-5 since the Comprehensive Emergency Management plan indicates all mobile home parks need to be evacuated during any type of hurricane.

Table 5-5. City of Palm Beach Gardens Population at Risk

			CATEGOR Y 1	CATEGORY 2-3	CATEGORY 4-5
Coastal Planning Area Development	Total Units	Total Evacuees	5%/50%/10 %/35%	5%/50%/10%/35%	5%/35%/10%/50%
			ps/ f-r/ h- m/o-c	ps/ f-r/ h-m/ o-c	ps/ f-r/ h-m/ o-c
Hidden Key Condominiums	20	48	2/ 24/ 5/ 17	2/ 24/ 5/ 17	2/ 17/5/ 24
Frenchman's Creek	72	173	9/ 87/ 17/ 61	9/ 87/ 17/ 61	9/ 61/ 17/ 87
Mobile Home Parks	Total Units	Total Evacuees	30%/55%/0 %/15%	10%/50%/0%/40%	10%/35%/10%/55%
*Meadows Mobile Home Park	282	564	169/ 310/ 0/ 85	56/ 282/ 0/ 226	56/ 197/ 56/ 310
TOTAL	402	785	180/ 421/ 22/ 163	67/ 393/ 22/ 304	67/ 275/ 78/ 421

Note: Methodology: Public Shelter%/ Friends-Relatives%/ Hotel-Motel%/ Out of County%

*Generally, mobile home residents will have a greater propensity to use public shelters than other residents. Calculations may not add up due to rounding.

Source: Palm Beach County Supplemental Emergency Transportation Planning Analysis. Post, Buckley, Schuh & Jernigan, November 1996.

Non-Mobile Home Residents Are Risk

Hidden Key Condominium is within Traffic-Evacuation Zone 5 of the Hurricane Evacuation Annex of the comprehensive Emergency Management Plan. The portion of Frenchman's Creek DRI is located just outside of Zone 4. During all but the weakest hurricanes (winds under 90 miles per hour), all residents within Zone 5 and Zone 4 are expected to evacuate. Currently, the coastal planning areas of Hidden Key multi-family development (20 total units) and the portion of the Frenchman's Creek DRI (72 units) are located in the coastal planning area. Assuming these units have a persons-per-household factor equivalent to the 1990 City-wide average (2.40), a total of 221 persons are at risk.

Traffic Evacuation Zonal Boundaries

Within Palm Beach Gardens, there are three hurricane evacuation shelters that have been assigned to specific Traffic Evacuation Zones both within and outside of the City's municipal boundaries. The following Traffic Evacuation Zone Boundaries apply to shelters within Palm Beach Gardens:

Traffic-Evacuation Zone	Zone Boundaries
1	South of Martin County Line, east of Intracoastal Waterway to Loxahatchee River, east of U.S. 1 to Indiantown Road, east of Alternative A1A (Old Dixie Highway), north of Frederick Small Road, and west of the Atlantic Ocean/Jupiter Beach Inlet Colony.
2	Eastern Section is south of the Martin County line east of U.S. 1, north of Intracoastal Waterway. Western Section is south of Martin County, east of Loxahatchee River, north of Loxahatchee River, west of Old Dixie Highway/Tequesta.
3	South of Loxahatchee River and Martin County Line, east of Loxahatchee Road to Indiantown Road, north of Indiantown Road, west of Intracoastal Waterway.
4	South of Frederick Small Road, east of Intracoastal Waterway to Donald Ross (east of U.S. 1 south of Donald Ross Road), north of Seminole Boulevard, west of Atlantic Ocean.
5	South of Seminole Boulevard, east of Intracoastal Waterway to U.S. 1 (east of U.S. 1 to Earman River), north of Earman Canal, west of the Atlantic Ocean.

Traffic Evacuation Zones 1, 2, and 3 are assigned to William T. Dwyer High School, with Traffic Evacuation Zone 4 assigned to Watson B. Duncan Middle School and Traffic Evacuation Zone 5 assigned to Palm Beach Gardens High School. This evacuation route may have a minimal effect on the small portion of Frenchman's Creek DRI that is located in the Category 1 Hurricane Evacuation Area—newly designated Coastal Management Area. However, as noted below, according to the Palm Beach County Supplemental Emergency Transportation Planning Analysis Report, few residents seek public shelter.

Evacuation Shelters

According to the Palm Beach County Supplemental Emergency Transportation Planning Analysis Report, not all residents at risk are expected to seek public shelter. To estimate how people would respond to a hurricane evacuation, the City used the Palm Beach County Supplemental Emergency Transportation Analysis report of November 1996 as it was the best available data. The study used a 100% participation rate which indicates the worst case scenario. The study projects that only 5% of residents in the coastal planning area will seek public shelter during a Category 1–5 hurricane. The remaining evacuees would seek shelter with friends or relatives, hotel/motel or outside of the County. The previously noted Table 5-4 indicates figures concerning coastal residents seeking public shelter.

As noted above, according to the Comprehensive Emergency Management Plan, residents from Zone 5 seeking public shelter are to use Palm Beach Gardens High School. This facility is located at 4245 Holly Drive in Palm Beach Gardens and has space available for 2,500 evacuees at 20 square feet per evacuee. While this is well above the number of evacuees from Palm Beach Gardens alone, the facility is expected to serve all of Zone 5.

The William T. Dwyer High School will be used as a shelter facility for persons of the Tequesta and Jupiter areas which includes Traffic Evacuation Areas 1, 2, 3. The William T. Dwyer High School is located on Military Trail, south of Donald Ross Road and north of PGA Boulevard at 13601 North Military Trail. The Watson B. Duncan Middle School will be used as a shelter facility for persons evacuating from the Juno Beach area which is Traffic Evacuation Area 4. The Watson B. Duncan Middle School is located on 117th Court, east of Central Boulevard, south of I-95, and north of PGA Boulevard. Due to its close proximity, Frenchman's Creek residents would use Traffic Evacuation Zone 4 to Watson B. Duncan Middle School in order to find public shelter.

The evacuation route as noted above, route as noted above for William T. Dwyer High School is as follows: Indiantown Road, west to Military Trail; south to shelter. As of 1995, the evacuation route for Watson B. Duncan Middle School includes Donald Ross Road west to Central Boulevard; south 2½ miles to 117th Court North. These two additional shelters will provide traffic relief to PGA Boulevard which is used as the main route to Palm Beach Gardens High School.

In addition to the three noted hurricane evacuation shelters, other nearby potential shelters include the Palm Beach Community College North Campus and Palm Beach Gardens Medical Center. The Community College is located on PGA Boulevard between Prosperity Farms Road and Alternate A1A. While no Traffic-Evacuation zones have been assigned to this facility, it does provide an additional 600 spaces.

The Palm Beach Gardens Medical Center is listed in the Comprehensive Emergency Management Plan as a Special Care Unit which will provide facilities for the infirmed and ill during hurricane events. However, neither the number of evacuees meeting this description nor the number of spaces available at the Medical Center is presently known. Therefore, all evacuees shown on Table 5-5 are assumed to be ambulatory. Furthermore, Timber Trace Elementary School is designated as a last resort shelter.

The EAR-based amendments propose the following policies in support of the state's requirement to encourage coordinating efforts in regard to evacuation shelters, procedures and routes:

Policy 5.2.2.6.: *The City shall coordinate with the Palm Beach County Emergency Management Director regarding who should evacuate, how to evacuate, the location of emergency shelters (including public schools) outside of the coastal high hazard area and what services are available for the population in a hurricane.*

Policy 5.2.2.7.: *The City shall coordinate its efforts with those of the Palm Beach County Emergency Management Division and the School District of Palm Beach County (regarding the use of public schools outside of the coastal high hazard area as emergency shelters) to identify public schools located within its boundaries which could serve as emergency shelters and to assure safe evacuation of those people who are at risk during hurricanes. All emergency shelter designations and evacuation routes are coordinated by the American Red Cross and Palm Beach County Emergency Management.*

Mobile Home Residents at Risk

In addition to those evacuating from Zone 5, the Comprehensive Emergency Management Plan recommends that all occupants of mobile homes and unsafe units evacuate during all hurricane events. The City of Palm Beach Gardens has no known unsafe units, but does have one mobile home park. The Meadows Mobile Home Park is generally located on the northwest corner of the PGA Boulevard and Prosperity Farms Road intersection. The park has 381 lots, but is currently restricted to a maximum of 282 mobile home units. The park consists almost exclusively of adults with one- and two-person occupancies. However, assuming an average occupancy of two persons per unit, a total of 564 persons would be at risk.

The Hilltop Mobile Home Park, generally located north of Northlake Boulevard and east of McArthur Boulevard, is currently abandoned and vacant. The park at full capacity was 162 spaces.

Table 5-5 presents the number of evacuees from both the Meadows Mobile Home Park and the numbers expected to seek public shelter using the Palm Beach County Supplemental Emergency Transportation Planning Analysis Report. The comprehensive Emergency Management Plan does not specifically assign shelters to either of this park; however, the shelters described previously are within close proximity of the park.

Potential Residents At Risk

All of the previously discussed residential developments are at buildout and the Future Land Use Map does not provide any new residential development in hurricane vulnerable areas as defined in the Comprehensive Emergency Management Plan. The City has a limited coastal planning area but, because of the CHHA definition, the City's population at risk estimate has increased by approximately 137 people. Both the Hidden Key Condominiums and Frenchman's Creek area located in the Category 1 Hurricane evacuation zone may require evacuation due to their proximity to waterbodies that at the very least may cause flooding in units with low floor elevations. The Frenchman's Creek marina basin is located just off of the Intracoastal and could experience storm surge levels similar to that of the Intracoastal itself. Under severe conditions, the adjacent residential area could be flooded and generate evacuees. Hidden Key Condominium is located adjacent to Little Lake Worth. This site may also experience storm surge and flooding for units located on the ground floor.

Map A.____ of the future Land Use Element indicates a sizable annexation area for the City. Most of this land lies west of the Intracoastal Waterway and not within the

Category 1 Hurricane evacuation zone. For the most part, the future annexation area lying east of the Intracoastal Waterway has existing development with the exception of a few small parcels that are vacant. Properties which abut the Intracoastal are included and much of these have or will contain residential uses. While the steep banks of the Intracoastal should be sufficient in containing storm surge, some flooding of adjacent properties may occur. In the event of hurricane evacuation for additional evacuees that may be annexed into the City, the three public shelters noted above within Palm Beach Gardens will be available to residents of this area as is currently the case. In regards to the existing municipal boundaries and the possible inclusion of future annexation areas, the City will continue to discourage any development and/or redevelopment as well as public infrastructure investment that would negatively impact evacuation in Category 1 hurricane evacuation area.

The City is considering the possibility of annexing a parcel of land located north of the Soverel Harbor–PGA Marina site that could be developed as a boat ramp or passive park. This use would not have any impact on the number of evacuees and would follow the regulation and requirements of the Palm Beach County Boat Facility Siting Plan.

The analysis presented above clearly shows that the population at risk based on the number of evacuees (1,708) as shown in Table 5-5 is rather small in the City of Palm Beach Gardens. This small population at risk can be evacuated within the time frame established in the Palm Beach County Supplemental Emergency Transportation Planning Analysis report which currently estimates an inter-county evacuation clearance times between 9½ and 20 hours, depending on the scenario as presented in Table 5-6. Table 5-7 indicates an Out of the County Migration which will most likely include lower Southeast Florida and Palm Beach County residents through the main evacuation routes of the Florida Turnpike and I-95. It is estimated that this out of county migration will have a clearance time between 10¼ hours and 64 hours, depending on each scenario.

The analysis also shows that only 5 percent of the evacuees or 99 persons are expected to seek shelter in a worst case scenario of Category 5 Hurricane. In a Category 5 scenario, it is estimated that most residents will leave the County or seek shelter with friends and relatives due to the seriousness of the event. Palm Beach Gardens High School alone provides 2,500 spaces for evacuees in the event of a hurricane.

In an effort to maintain the hurricane evacuation time as established in Palm Beach County Supplemental Emergency Transportation Planning Analysis Report, the City should maintain the residential densities in coastal planning areas to their current levels.

The City should also coordinate and cooperate with the adjoining local governments to explore the various measures through which the evacuation of coastal residents can be accomplished more effectively and in reduced time in the event of a hurricane.

Table 5-6. Inter-County Evacuation Movements Clearance Time in Hours for Palm Beach County

YEAR 2008 CLEARANCE TIMES
 Palm Beach – In-County Movements
 Treasure Coast Hurricane Evacuation Study Update 2003

<u>Category 1 – 2 Hurricane</u>	<u>Low Seasonal Occupancy</u> (hours)	<u>High Seasonal Occupancy</u> (hours)
Rapid Response	9 ½	12 ¾
Medium Response	10	13
Long Response	12	14
Worst individual household commute time – 9 ¾ hours		
<u>Category 3 5 Hurricane</u>		
Rapid Response	15 ¼	19
Medium Response	15 ½	19 ½
Long Response	16 ¼	20
Worst individual household commute time – 17 ¾ hours		

Source: Treasure Coast Regional Planning Council Hurricane Evacuation Transportation Analysis Study, updated in 2003

Table 5-7. Out of County/Region Evacuation Movements for Palm Beach County.

YEAR 2008 CLEARANCE TIMES
Regional Movements for Treasure Coast Traffic Only
Treasure Coast Hurricane Evacuation Study Update 2003

	<u>Low Seasonal Occupancy</u> (hours)	<u>High Seasonal Occupancy</u> (hours)
<u>Category 1 – 2 Hurricane</u>		
Rapid Response	10 ¼	17
Medium Response	12 ¾	17 ½
Long Response	14	18
Worst individual household commute time – 17 ½ hours		
<u>Category 3 5 Hurricane</u>		
Rapid Response	20 ½	29
Medium Response	21	29 ½
Long Response	22	30
Worst individual household commute time – 35 hours		

YEAR 2003 CURRENT CLEARANCE TIMES (in hours)
Regional Movements including South Florida Traffic
Treasure Coast Hurricane Evacuation Study Update 2003*

	<u>Low Seasonal Occupancy</u> (Hours)	<u>High Seasonal Occupancy</u> (Hours)
<u>Category 1 – 2 Hurricane</u>		
Immediate	21 ¾	29 ½
Rapid Response	22 ½	30 ½
Medium Response	22 ½	30 ½
Long Response	23	30 ¾
Worst individual household commute time – 24 ½ hours		
<u>Category 3 5 Hurricane</u>		
Immediate	46	61
Rapid Response	48	63
Medium Response	47	62
Long Response	47	62
Worst individual household commute time – 64 hours		

Source: Treasure Coast Regional Planning Council Hurricane Evacuation Transportation Analysis Study, updated in 2003

* This is the most updated information currently available

The EAR-based amendments propose the following objective and corresponding policies that support the state requirements to address hurricane preparedness:

Objective 5.2.2.: *Provide for public safety during emergency evacuation by maintaining or reducing the City's build-out emergency evacuation clearance time, maintaining an adequate emergency evacuation roadway system and providing for adequate emergency shelters located outside of the CHHA and HVZ.*

Policy 5.2.2.1.: *The City shall cooperate with Palm Beach County in maintaining the hurricane evacuation time as established in the Palm Beach County Comprehensive Emergency Management Plan.*

Policy 5.2.2.2.: *The City shall coordinate with the county to determine the most efficient evacuation routes and shelter space.*

Policy 5.2.2.4.: *By 2009, the City shall assess compliance with the adopted level of service for out-of-county hurricane evacuation for a category 5 storm event as measured on the Saffir-Simpson scale, as required by F.S. 163.3178 (9)(b)*

Policy 5.2.2.5.: *Emergency technical data reports and plans used in emergency management for hurricanes, floods, and other emergencies should be updated annually to reflect changes in population size and distribution, location of high-risk populations, adequacy of transportation systems and emergency shelters (including public schools) located outside of the coastal high hazard area and the latest scientific findings affecting emergency management.*

Policy 5.2.2.8.: *The City shall appoint a Hurricane and Disaster Preparedness Team to include the City Manager, department directors, and other staff members as identified by the departments whose directors sit on the Hurricane and Disaster Preparedness Team. At minimum, the Team shall conduct a meeting at the start of hurricane season to review and update the disaster preparedness procedures and post-disaster procedure plans to remain current. The Team shall also establish a procedure to disseminate information to staff and residents in the event of a disaster. All disaster preparedness plans shall be coordinated with Palm Beach County's Emergency Management Center.*

Policy 5.2.3.8.: *The City shall work closely with Palm Beach County and adjacent municipalities to purchase or otherwise acquire the right to use a property of 5 to 10 acres by December 31, 2012 for the dual function of open space and a debris removal site in close proximity (five miles or less) to the City.*

Post-Disaster Planning Concerns and Coastal High Hazard Areas

Following a major natural disaster such as a hurricane, there is a period of cleanup and rebuilding. Rebuilding to pre-storm conditions, however, may be imprudent in some areas and result in repeated damage to the same structures. In order to respond quickly after a storm with alternative land use and capital facility plans, it is necessary to examine in advance the areas, structures, and facilities most likely to be damaged. In addition, alternates to current land use plans and facility sites which can be adjusted following a storm event should be considered prior to a major storm event. Palm Beach County has prepared the August 2006 Countywide Post Disaster Redevelopment Plan (PDRP). State regulations in Florida require that all coastal jurisdictions include in their comprehensive plan's Coastal Management Element the intent to prepare a PDRP "which will reduce or eliminate exposure of human life and public and private property to natural hazards" (§9J-5.012(3)(b)(8) F.A.C.). On June 4, 1996, the Board of County Commissioners adopted the original PDRP by Resolution R-96-719. This latest revision of the PDRP has been developed in accordance with State requirements and the Disaster Mitigation Act of 2000 (P.L. 106-390). The City shall use this plan as a guide to redevelopment of post-disaster areas and assist the County in the plan's implementation.

Coastal High-Hazard Areas

Pursuant to F.S. 163.3178(2) (h), the designation of coastal high-hazard areas (CHHA) and the criteria for mitigation for a comprehensive plan amendment in a coastal high-hazard area as defined in subsection (9). The CHHA is the area below the elevation of the category 1 storm surge line as established by a Sea, Lake, and Overland Surges from Hurricanes (SLOSH) computerized storm surge model. Application of mitigation and the application of development and redevelopment policies, pursuant to F.S. [380.27](#)(2), and any rules adopted thereunder, shall be at the discretion of local government

The CHHA is approximately 194 acres. The Coastal Management Element Support Document provides an inventory and analysis of the natural resources, land uses, estuarine pollution, archaeological and historical resources, hurricane evacuation, post disaster planning concerns, public access, and infrastructure of the coastal planning area. A summary of the major issues is then given followed by goals, objectives, and policies that will be used to further the purpose of this element.

The Federal Emergency Management Agency has not identified any V zones within the City. In addition, there are no areas within the City that have suffered repeated destruction or severe damage from storm-driven water, although some flooding in the

City has occurred. Finally, there are no areas scientifically predicted to experience severe damage from storm-driven water.

It is possible that Little Lake Worth could experience storm surge from a storm from the south. However, the funneling effect and storm surge of Lake Worth and Little Lake Worth are unpredictable without extensive data collection and modeling. As noted, there is a CHHA within Palm Beach Gardens due to flood potential from a major storm event. This area is within the urban service area where facilities and services are available, and the area is built out with the exception of a few vacant parcels.

A conflict exists between urban infill policies and coastal high hazard policies. The City prefers to encourage the maximization of services and facilities through infill development. There are no major efforts to limit residential development or redevelopment in order to direct population from the high hazard area are foreseen. Considering the limited size of the City's CHHA, it is not believed that future development or redevelopment in the high hazard area will have a significant effect on evacuation or safety. No areas in the City have been identified as needing redevelopment to eliminate unsafe conditions or inappropriate land use. Therefore, there is not a need to limit development or redevelopment within the CHHA.

Projected Future Conditions

The Future Land Use Map of this Comprehensive Plan designates most of the CHHA as some form of commercial use. Since the entire City is fifty years old or less and has experienced few major storms since developing; it is difficult to predict from historical data the extent of damage that will be created by a major storm. As noted, the 200-year flood of October had a minimal effect on the coastal planning area/CHHA which provides some indication of viability of the coastal planning area/CHHA. There are a number of factors that indicate the development within the coastal planning area/CHHA is reasonably protected from storms and the existing land uses in the area are appropriate.

Only approximately 194 acres of the City are located in the CHHA. Since the eastern extent of the City is still approximately 1,000 feet from the barrier dune, the coastal planning area is reasonably well protected from storm surge. Second, the relatively new development of the area means modern building regulations concerning structures in floodplains and hurricane vulnerability zones were incorporated into the design and construction of the structures in the area. Finally, most of development is of a lower to moderate intensity in terms of building mass and use, thereby lessening the amount of structural exposure to a major storm.

Although the buildings of the coastal planning area appear to be protected from major storm damage, the short protection structures (i.e., bulkheads) could be at risk with a high storm surge. If the bulkheads on the ICWW or Little Lake Worth are damaged, the City will work with the necessary state agencies to rebuild or repair the bulkheads. The narrow profile of the ICWW will necessitate continued bulkheading through the City in order to ensure safe navigation. The shoreline development of Little Lake Worth will also require the continued existence of shoreline control structures to prevent structural, paving, and landscape damage caused by erosion. In order to maintain the protection of private and public property and human life, the City will continue to enforce its floodplain and hurricane vulnerability regulations through ordinances and the building code.

The City should view any post-disaster redevelopment as an opportunity to reduce exposure to hazards whenever possible. Since the CHHA in the City is relatively small, the extreme measures such as relocation of uses and public acquisition are not practical. But the City must ensure that any redevelopment that occurs conforms with the current building code and the City regulations pertaining to coastal construction. The City does not have any infrastructure in the high hazard coastal planning area. The water and sewer lines are supplied by Seacoast Utility Authority. All roadways in the coastal high hazard area are owned and maintained by Palm Beach County and the State of Florida. However, the City has adopted policies to address the location of public infrastructure under the City's control away from high hazard coastal planning areas. Therefore, the City will not provide any infrastructure in the CHHA.

The EAR-based amendments propose the following policies in support of the state's requirements for the CHHA:

Policy 5.2.1.1.: *The City's Coastal High Hazard Area (CHHA) shall be identified as Category 1 Hurricane evacuation zones, as located by the Sea, Lake and Overland Surges from Hurricanes (SLOSH) model.*

Policy 5.2.1.2.: *The City's Hurricane Vulnerability Zone (HVZ) shall be identified as Category 3 Hurricane evacuation zones, as located by the SLOSH model.*

Policy 5.2.2.3.: *The City shall maintain densities in the existing residential developments in the CHHA as approved in the development plans. Residential densities in the future annexation the CHHA shall be established consistent with the above Objective.*

Policy 5.2.4.4.: *The City shall limit public expenditures that subsidize development permitted within the CHHA.*

Coastal Infrastructure

The following section provides a brief summary of the existing and needed infrastructure serving the coastal planning area. As all the facilities listed below, with the exception of beach renourishment and shoreline protection structures, are part of larger, City-wide systems, this element's support document refers to those other support documents of this Comprehensive Plan that address each of these public facilities in detail. The small size, irregular shape, and degree of buildout in the coastal planning area do not permit a separate coastal planning area analysis of the facilities addressed in this section. Instead, this section will address any special problems or needs of the coastal planning area as they relate to these public facilities.

Existing Facilities

- Roads, Bridges, and Causeways

The existing and future traffic circulation patterns and the network of arterial/collector roads are presented in detail in the Traffic Circulation Element of this Comprehensive Plan. The City uses "Level of Service D" (LOS D) as the off-season and peak capacity standard. Projected average daily peak season trips will vary with the growth of the City and surrounding areas and as the John D. MacArthur State Recreation Area is improved to provide more parking.

The critical roadway links in the coastal planning area are SR A1A and PGA Boulevard as they connect the barrier island with the mainland roadway systems. The PGA bascule bridge currently presents constraints to east-west travel because of bridge openings for boaters and because of technical difficulties with the bascule span. PGA Boulevard at the bridge is expected to reach LOS E by 2015 unless alternative bridges and roadways are developed.

- Sanitary Sewage Facilities

Sewage collection, transmission, and treatment for all areas of the City, with the exception of some individual septic tank users, is provided by the Seacoast Utility Authority. The Utility Authority is owned and operated by a consortium of cities, including Palm Beach Gardens, and the county. Since the sewage collection and transmission system was installed after the last major hurricane, the susceptibility of the system to storm damage is unknown. However, as discussed earlier in this element, the City has a very small area designated as coastal high-hazard areas. Therefore, major damage to the system from a storm is not expected.

The built-out condition of the coastal planning area indicates additional demands on the sewage system from the area are not likely. Regardless, the system currently has excess capacity and is undergoing extensive renovation. The Sanitary Sewer Sub-Element Support Document of this Comprehensive Plan details the existing system capacities and conditions.

- Potable Water Facilities

The Seacoast Utility Authority is also the sole provider of potable water to all areas of the City including the coastal planning area. Like the sewage system, the water system was put in place after the last major hurricane. Accordingly, the vulnerability of the system to storm damage has not been tested.

The Potable Water Sub-Element Support Document and Conservation Element Support Document of this Comprehensive Plan provide annotated discussions on the potable water system condition and capacities. Again, the coastal planning area is not expected to generate a demand on potable water beyond the current level of demand.

- Drainage Facilities

The major drainage facilities in the coastal planning area are the ICWW, the ditch along the west side of Prosperity Farms Road, the ditch along RCA Boulevard/Monet Road, the stormwater system for U.S. 1 and SR A1A, and individual private on-site stormwater systems. No additions for increased capacity are required, but modifications to prevent saltwater intrusion are presented in the Drainage and Natural Groundwater Aquifer Recharge Sub-Elements' Support Documents of this comprehensive Plan. The Conservation Element Support Document also presents several objective and policies for the enhancement of existing storm water drainage regulations for the improvement of water quality.

- Beach Re-nourishment Projects

There are no beaches in the coastal planning area of the City. Therefore, an analysis of beach renourishment needs is not applicable to the City of Palm Beach Gardens.

Future Needs

- Roads, Bridges, and Causeways

The Traffic Circulation Element Support Document of this Comprehensive Plan provides detailed information on the road and bridge improvements needed throughout the City including the coastal planning area. The primary issue confronting the coastal planning

area was the widening of the PGA Boulevard Bridge over the ICWW. Since PGA is a state road and services the barrier island, which is under the jurisdiction of the county and the City of Riviera Beach, any additional improvements to the PGA Boulevard Bridge area will have to be carefully coordinated with these other governmental entities.

- Sanitary Sewage Facilities

As presented in the Sanitary Sewer Sub-Element Support Document of this Comprehensive Plan, the existing sewer system is undergoing extensive renovations and is projected to meet the demands of the entire Seacoast Utility Authority service area for at least the next ten years. No particular problems in the coastal planning area are foreseen.

- Potable Water Facilities

The Seacoast Utility Authority potable water system currently has a capacity surplus and is expected to meet all of the needs of the service area beyond the next ten years. The Potable Water Sub-Element Support Document of this Comprehensive Plan addresses all of the primary factors of the system and does not identify any issues particular to the coastal planning area.

- Drainage Facilities

The Drainage Sub-Element Support Document of this Comprehensive Plan does not indicate a need for improvements to the drainage systems of the coastal planning area with the exception of the possible placement of a tidal dam in the ditch south of RCA Boulevard.

- Coastal or Shore Protection Structures

Properties along the ICWW have bulkheads to prevent shoreline erosion. In order to reduce boat wake reflections and subsequent scouring of the bulkhead toe, placement of rip-rap along the face of the bulkheads is recommended. In addition to reducing wave action, the rip-rap will considerably increase the available marine habitat. This is one of the few remaining habitat improvement options left in the coastal planning area of the City. Permits for placing fill will need to be obtained from DEP, and U.S. Army Corps of Engineers.

Special Restrictions on Siting Facilities in the Coastal Planning Area

Federal and state law place restrictions on funding public facilities in the coastal planning area. The United States Congress enacted the Coastal Barrier Resources Act

which, among other things, restricts the use of federal funds to build new infrastructure or expand existing infrastructure in designated parts of barrier islands. The City of Palm Beach Gardens contains none of these designated units. Furthermore, as noted, the Palm Beach County Boating Facility Siting Plan provides restrictions and guidance to facility siting in the coastal planning area.

Special Coastal Planning Efforts

The coastal planning area of the City has not been the subject of special multi-county or special intra-county planning efforts. Palm Beach County commissioned Olsen and Associates to prepare a document entitled, "Shoreline Management Plan for Palm Beach County"; however, this study did not include the coastal planning area of Palm Beach Gardens.

The EAR-based amendments propose the following policy in support of the state's requirement to encourage the location of public infrastructure outside the Coastal High Hazard Area.

Policy 5.2.4.3.: *The City shall encourage the location of public infrastructure away from the coastal high hazard area, and shall limit the amount of public expenditures in this area.*

V. CONCLUSION AND SUMMARY

The coastal planning area identified for the City of Palm Beach Gardens pursuant to F.S. 163.3178(3)(c)(12) is small, somewhat disjointed and mostly developed. Commercial uses dominate the area with one residential development on Little Lake Worth, one residential development located adjacent to the Intracoastal Waterway (ICWW), and two marinas located adjacent to the ICWW. Some mangroves exist in their tidal ditches but the ICWW and Little Lake Worth have been bulkheaded and their shorelines completely developed. The high shoreline banks in the coastal planning area prevent flooding in all but the worst storms.

Although the marine habitat is limited and developed, some species of special concern do transit the area. These include both snook and manatees. Additional postings were placed in the ICWW to control boat speeds and warn of the presence of manatees. Consideration should also be given to the placement of rip-rap along the bulkheads to create additional marine habitat and reduce wave action.

As the City continues to grow, further demands for water-dependent and water-related uses will grow as well. However, the two marinas are built out fully and only one vacant

site adjacent to the ICWW exists for new development. The steep coastal banks on this vacant site, though, are inappropriate for water-dependent/related uses. Therefore, the City will have to rely on the county and neighboring municipalities with larger coastal planning areas to provide the water facilities desired by its residents. The City supports the maintenance and improvement of existing county water-dependent/related facilities and the development of new facilities.

The non-water-related commercial uses located on the ICWW pose only a small pollution threat with run-off and some possible fuel spills by boats that dock at these uses. The marinas, however, pose a greater threat of pollution by fuel and sewage spillage and metal contaminants. The marinas have been required to develop contingency plans for fuel spillage and provide cleanup equipment on-site. Further, the City will work with county and state in controlling non-point pollution sources along the ICWW and Little Lake Worth throughout the county.

Although the City has only a small number of residents who would need to be evacuated in the case of a hurricane, several residents from the neighboring unincorporated area and municipalities would have to use evacuation routes that run through the City. Therefore, the City will work with the county and the TCRPC in developing and implementing an efficient evacuation program.

The small coastal planning area and relative newness and low-intensity of development within the coastal planning area should significantly reduce or eliminate extensive hurricane damage to private and public facilities. Therefore the City will re-examine building regulations in the coastal planning area but the existing public infrastructure appears to be consistent with the storm vulnerability of the area.

The shorelines of the City's coastal planning area consist of Little Lake Worth and the ICWW. Since the City's portion of these two large water bodies is minimal, the City's influence on water quality and marine habitats is correspondingly small. However, the City does have regulatory powers over two marinas and several parcels adjacent to these waterways. Therefore, while the City will revisit some of its regulations to reduce water pollution and environmental degradation, it is critical the City work closely with the county and the state to protect the integrity of these water bodies throughout.

Initiatives and Studies

- Protect or enhance the coastal planning area resources during development. (*Objective 5.1.1., Page 5-1, Existing*)
- Require all development along the tidal ditches to preserve a native vegetation buffer. (*Objective 5.1.2., Page 5-3, Existing*)

- Ensure the marine habitat in and the water quality of Little Lake Worth and the Intracoastal Waterway are protected and enhanced. *(Objective 5.1.3., Page 5-4, Existing)*
- Collect information on all species of special concern in the coastal planning area and adopt regulations to provide for their protection. *(Objective 5.1.4., Page 5-4, Existing)*
- Provide the protection, preservation, and reuse of public and private historic resources *(Objective 5.1.5., Page 5-5, Existing)*
- Implement the Palm Beach County Manatee Protection Plan and the Boat Facility Sitting Plan. *(Objective 5.1.6., Page 5-5, Existing)*
- Ensure that building and development activities are carried out in a manner that minimizes the danger to life and property from hurricanes and floods. *(Objective 5.2.1., Page 5-6, Existing)*
- Provide for public safety during emergency evacuation. *(Objective 5.2.2., Page 5-7, Existing)*
- Establish post-disaster procedures for immediate and long term response. *(Objective 5.2.3., Page 5-8, Existing)*
- Apply level of service standards to the traffic circulation and infrastructure facilities of the coastal zone whenever development orders or permits are requested. *(Objective 5.2.4., Page 5-9, Existing)*

The following studies or actions are recommended by the EAR-based comprehensive plan amendments:

COMPLETION YEAR	STUDY/PLAN/ACTION
2012	Acquire the right to use or purchase property for the dual function of open space and a debris removal site in (Policy 5.2.3.8., Page 5-9)

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