COASTAL MANAGEMENT ELEMENT

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The state of Florida requires all counties and cities along the coast to address special coastal management concerns that do not apply to non-coastal communities. An important reason is the need to protect these resources and human life and property in locations that are subject to large-scale destruction by tropical storms and hurricanes. This element begins with brief inventories of coastal resources in and around the Town of Fort Myers Beach, followed by in-depth treatment of critical coastal planning issues.

COASTAL PLANNING

Coastal Boundaries

The state provides guidelines for local governments in establishing their "coastal planning area," specifying: (1) water and submerged lands oceanic water bodies or estuarine water bodies, (2) shorelines adjacent to oceanic waters or estuaries, (3) coastal barriers, (4) living marine resources, (5) marine wetlands, (6) water-dependent facilities or water-related facilities on oceanic or estuarine waters, (7) public access facilities to oceanic beaches or estuarine shorelines, (8) and all lands adjacent to such occurrences where development activities would impact the integrity or quality of the above resources.

Another important coastal boundary is the coastal high hazard area which is defined by state law as the area below the elevation of the category I storm surge line as established by a Sea, Lake and Overland Surges from Hurricanes (SLOSH) computerized storm surge model.

Based on many of these guidelines, the entire municipal boundary of the town is within the coastal planning area. Figure 1 is an aerial view of the southerly end of Estero Island, taken from the south. Figure 2 illustrates the precise boundary of the town's coastal planning area and coastal high-hazard area (the entire land area of the town plus its 1,000-foot jurisdiction over the waters). Figure 3 depicts the various hurricane vulnerability zones as determined by the Hurricane Evacuation Study, Southwest Florida (SWFRPC, 1995).

***Figure 1**, Aerial view of Estero Island from the south*

Existing Land Use Conditions

The proximity of the Gulf of Mexico and Estero Bay make Fort Myers Beach one of the most desirable places to live and work in southwest Florida. Located within a highly populated county and being located on a bridged barrier island, it is not surprising that the Town of Fort Myers Beach is nearing full build-out of its developable land.

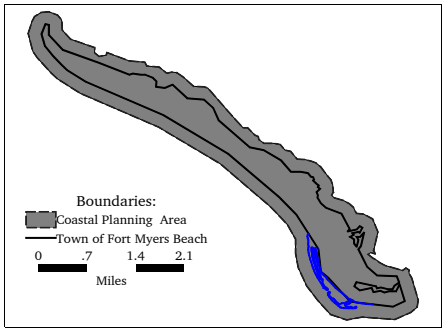

***Figure 2**, Coastal Planning Area, Coastal Floodplain, and Coastal High-Hazard Area (entire town)*

The entire coastal planning area, as shown in Figure 2, is in the floodplain for coastal flooding, and also is in the coastal high-hazard area as defined by the state of Florida (see Figure 17 of the Future Land Use Map series and Policy 5-A-6).

The Town of Fort Myers Beach is approximately 1466 acres in size. The town stretches about 7 miles in length and averages ½ mile wide. The town is surrounded by water: to the southwest is the Gulf of Mexico; to the north is San Carlos Bay; to the east is Matanzas Pass and Estero Bay; and to the south is Big Carlos Pass. The town has approximately 41 miles of streets with Estero Boulevard running the length of the island serving as the main thoroughfare.

Because of its proximity to coastal waters, the town's land uses are intimately tied to tourism and resort living. Although the existing uses are linked primarily to tourism, there are distinct areas within the town's municipal limits.

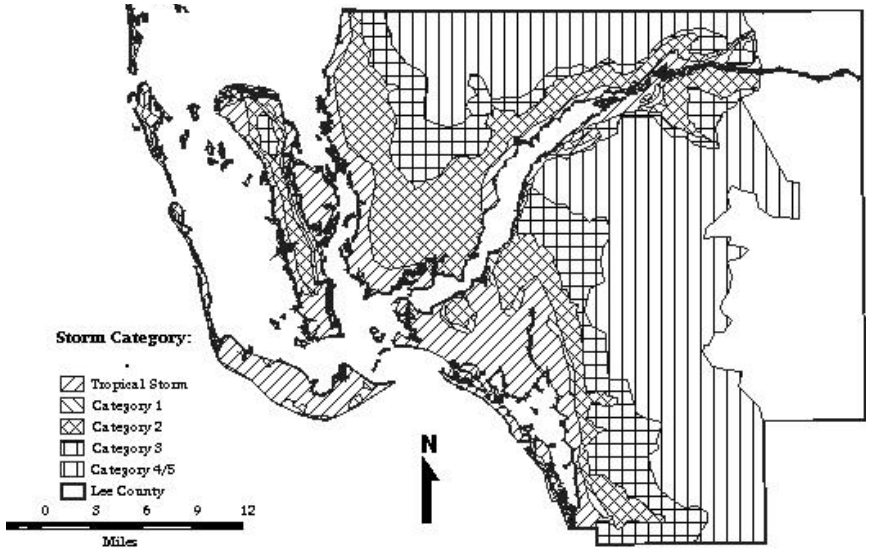

***Figure 3**, Lee County Hurricane Vulnerability Zones*

The North End maintains a residential and resort identity. At the northern tip of the island lies Bowditch Point, a regional park. Close to Bowditch Point are several highrise hotels, resorts, and multi-family developments. Single-family dwellings are interspersed among these uses, especially on the bay side.

The Times Square area is filled with restaurants and stores that cater to tourists and residents alike. The centerpiece is Lynn Hall Memorial Park, a popular destination for beachgoers where they can sunbathe and enjoy the Gulf waters within easy reach of parking, shopping, and food.

Many of Estero Island's original settlers located in what is now referred to as the Near Town district. This district, located on the bay side of Estero Boulevard, has primarily single-family homes with a few multi-family units mixed in. The homes are among the oldest on the island. Many of the homesites have direct water access, with canals having been dredged at the time of original development.

The Civic Complex district has a mixture of single- and multi-family dwellings surrounding the town's library, elementary school, and Town Hall. The Bay Oaks Community Park offers assorted recreational activities, with baseball fields, tennis and basketball courts, a playground, and a gymnasium. The northern end of the Matanzas Pass Preserve is located there.

The center of the island comprises the largest land area on the island, with predominately single-family homes. However, multi-family dwelling units and small resorts can be found among them. The island's fire station is located in this district, as is the Mid Island Marina.

A large resort district further south is distinctly different in character from the remainder of the island. High-rise condominium complexes are the predominant land uses. There are various commercial sites including Villa Santini Plaza, a shopping center. This district includes Little Estero Island, a state-owned wildlife preserve, and the island's only golf course at Bay Beach.

At the southernmost tip of Estero Island is a district of mainly single-family homes plus a few condominium towers at Big Carlos Pass. The Buccaneer Lagoon separates the south end from resort district.

Table 5-1 summarizes the existing land uses by acreage for the Town of Fort Myers Beach.

Land Use Conflicts

Shoreline uses lining both the Gulf and bay sides of the island are a mixture of single- and multi-family dwelling units, and commercial resorts, restaurants, marinas, and stores. The greatest potential for conflict among uses lies with the mix of single- and multi-family dwellings. In some cases, one-story homes can be found sandwiched between tall condominiums, thereby having views and sunlight blocked. The Future Land Use Map should limit intense multi-family units to areas of similar uses or to existing sites.

Table 5-1 — Existing Land Uses Within the Town of Fort Myers Beach

Existing Land Use Type	*Acreage*
Vacant (buildable)	79.1
Residential Single-Family	448.8
Residential Multi-Family	338.0
Mobile Homes / Recreational Vehicles	16.2
Commercial (including motels)	127.0
Industrial	0.0
Recreation (parks, golf course)	62.2
Public (schools, government)	16.4
Churches and civic buildings	23.2
Conservation	148.1
Rights-of-way	202.9
Total	1,461.9

Source: Lee County Property Appraiser's Office.

The majority of free-standing restaurants and retail shops are located in or near the Core Area. This concentration reduces the potential for incompatible uses being intermingled in other areas of the island. This should not preclude the locating of other commercial operations elsewhere, but those uses should be clustered in commercial complexes or nodes to reduce incompatibility.

The town's marinas are located along the bay side of the island which offers greater protection from storms and erosion. In a few cases, marinas are completely surrounded by residential dwellings and the only road access is by a residential street, thus limiting future expansion potential to protect other existing uses.

Redevelopment and Historic Sites

The intensive development of Estero Island began during the 1930s. Prior to that time there were only a few buildings. The Winkler Hotel was built in 1912 and renamed the Beach Hotel in 1930. In 1921, a bridge was built which connected Estero Island to the mainland, which resulted in the further development of many hotels, restaurants, a pier and a bathing casino as people became aware of the Fort Myers area as a popular vacation destination. Many of the earlier structures have been destroyed by storms and development of modern structures, such as high-rises, has resulted in a loss of many of the older buildings on the island.

One of the oldest structures on the island is the house built around 1906 by William Case at the end of what is now Connecticut Street. In a historic resources survey of Fort Myers Beach, Lee County officials found no structures which were eligible for designation on the National Register of Historic Places, but determined that the Case house and others would be suitable for local designation. However, the property on which the Case house sits (also known as the "Mound House") is eligible for National Register designation on the basis of its archaeological remains. A complete inventory of structures that are considered to have historic value is located in the Historic Preservation Element; their locations are shown here on Figure 4. Unregulated development and redevelopment may result in the loss of locally significant historic structures. This issue is discussed further in the Historic Preservation Element.

Economic Base

The economic base of Fort Myers Beach depends primarily upon tourism. The 6-mile-long island has approximately 140 motels, apartments, and resorts that cater to part-time residents and visitors. In 1990, the U.S. Census reported a total of 2,349 full-time jobs located on Estero Island. The town's Gulf beach is its primary economic asset.

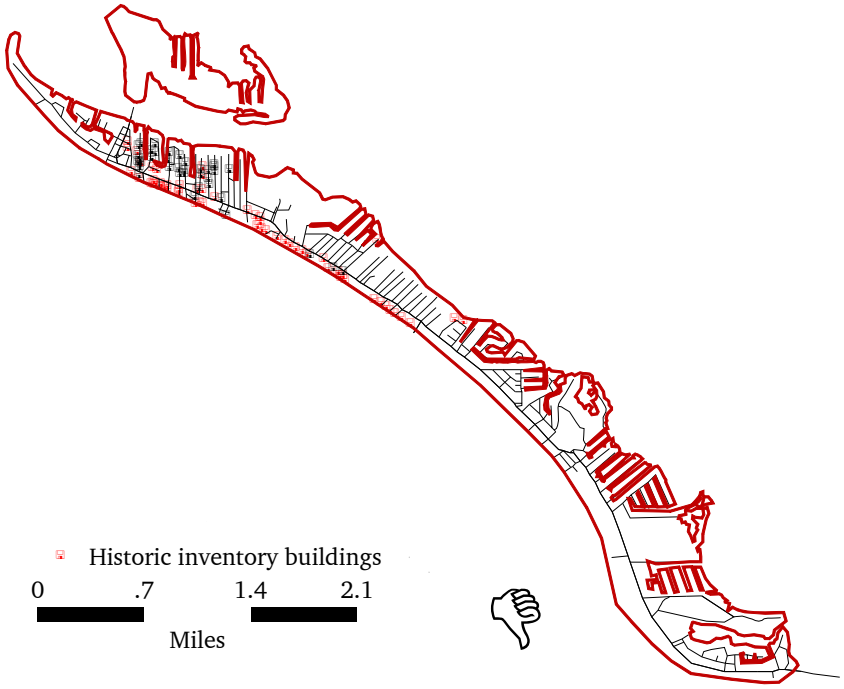

Figure 4*, Historic buildings on Estero Island*

Fort Myers Beach residents held a total of 2,140 full-time jobs in 1990, with 44% of those residents working on Fort Myers Beach, San Carlos Island, or up to Summerlin Road. Of the 2,140 residents with full-time jobs, almost 30% were employed in the retail trade industry. The second largest employment industry was construction, with 12.5% of the jobs. Table 5-2 displays all employment of town residents by industry classifications.

Of the specific occupations which were reported to the Census Bureau (as opposed to specific industries), the most common occupations of town residents were in sales (primarily retail), management, or general services. Table 5-3 shows the occupational breakdown for 1990.

Table 5-2 — Employment by Industry Group, 1990

Agriculture/ Forest/Fishing	*Mining*	*Construction*	*Non-durable Mfg.*	*Durable Mfg.*	*Transportation*
77	0	268	39	69	116
3.6%	0.0%	12.5%	1.8%	3.2%	5.4%
Communic. Public Utilities	*Wholesale Trade*	*Retail Trade*	*Finance/ Insurance/ Real Estate*	*Business/ Repair*	*Personal Services*
30	47	630	143	112	151
1.4%	2.2%	29.4%	6.7%	5.2%	7.1%
Entertainment/ Recreation	*Health Services*	*Education Services*	*Other Prof. Services*	*Public Admin.*	*Total Industry Employees*
77	133	88	94	66	**2,140**
3.6%	6.2%	4.1%	4.4%	3.1%	**100.0%**

Source: 1990 US Census, STF-3A

Table 5-3 — Employment by Occupation, 1990

Exec./Adm./ Management	*Professional Specialty*	*Technicians*	*Sales*	*Administrative Support*
338	215	18	440	257
15.8%	10.1%	0.8%	20.6%	12.0%
Private Household	*Protective Services*	*General Service*	*Farming/ Forestry/ Fishing*	*Prec. Prod./ Repair*
18	32	303	68	237
0.8%	1.5%	14.2%	3.2%	11.1%
Machine	*Transportation*	*Misc. Labor*		*Total Labor Employment*
57	78	78		**2,140**
2.7%	3.6%	3.7%		**100.0%**

Source: 1990 US Census, STF-3A

The median per-person income in 1990 was reported to be $19,270, with a median household income of $30,180. It is evident that the main portion of the town's economy caters to the tourism industry. Commercial fishing is not a large industry for the town itself, although it is certainly is for Lee County. The Department of Environmental Protection estimated that well over 9 and 6 million pounds of fish were harvested in the waters surrounding Lee County during 1995 and 1996. At an average price of $1.56 per pound in 1996, these landings added $9.68 million to the Lee County economy that year. Lee County's fishing docks are located primarily on San Carlos Island (42%, across Estero Bay) and Pine Island (48%).

Boating Ordinances

The town has already adopted several ordinances which directly affect the use of the coastal waters surrounding the town. These are (1) the Vessel Control and Water Safety Ordinance, (2) Personal Watercraft Ordinance, and (3) Parasailing Ordinance.

Vessel Control and Water Safety Ordinance

Vessels are restricted from operating within 500 feet of a town- or county-owned public park beach which is designated for swimming or others areas designated by the town. Vessel speeds within regulated areas must not exceed slow or idle speed and ingress and egress to beaches shall be as nearly perpendicular as possible. Regulated areas are all waters within 500 feet of the shoreline, 100 feet of the pier and bridges, and locations with posted signs.

Personal Watercraft Ordinance

Operators of personal watercraft must use U.S. Coast Guard approved personal flotation devices and use a lanyard type engine cutoff. Personal watercraft may not be operated during the night between ½ hour before sunset and ½ hour after sunrise. The town also regulates the operations and locations of rental businesses. Persons are not permitted to operate unregistered personal watercraft within the town's jurisdiction.

Parasailing Ordinance

Parasailing operations within the town must be fully licensed by Lee County, the location of businesses must be located with direct access to the beach and within certain locations, and be protected by commercial insurance. Operators must be located at least 1,000 feet from shore when they inflate or deflate a parachute, and parachutes are not allowed to be flown within 500 feet of the pier or beach. All operations must cease at sunset.

Infrastructure in the Coastal Planning Area

Since the "coastal planning area" comprises the entire town, detailed inventories of existing infrastructure are found in all other elements of this comprehensive plan. Analysis of infrastructure capacities and minimum level of service standards are established in those elements.

NATURAL DISASTER PLANNING CONCERNS

Hurricanes and Tropical Storms

The Town of Fort Myers Beach has serious evacuation problems, being densely developed and located entirely on a bridged barrier island. Estero Island can be easily overtopped by tropical storm wash and by passing Gulf hurricanes. The last time the town was directly struck by a hurricane was in 1960, by Hurricane Donna, a "Class 3" storm on the Saffir-Simpson scale (see Table 5-4). The hurricane passed directly over the island on September 10, causing major damage.

Table 5-4 —Saffir-Simpson Scale for Classifying Hurricanes, With Maximum Surges from SLOSH

Storm Category	*Sustained Wind Levels*	*Saffir-Simpson Surge (feet)*	*Max.SLOSH Surge (feet)*	*Expected Damage*
Tropical storm	39 to 73 mph	< 4	5.6	
1	74 to 95 mph	4 to 5	7.4	minimal
2	96 to 110 mph	6 to 8	12.4	moderate
3	111 to 130 mph	9 to 12	19.5	extensive
4	131 to 155 mph	13 to 18	28.7	extreme
5	> 155 mph	> 18		catastrophic

Source: Florida Hurricanes and Tropical Storms, 1994; and SWFRPC, 1995.

Southwest Florida has not been struck by a hurricane since 1960. Despite its sheltered location (compared to the east coast of Florida or the southerly shore of the Florida panhandle), southwest Florida is considered to be the second most hurricane vulnerable region in the country (SWFRPC, 1997). This vulnerability results from:

- shallow off-shore waters which will allow extremely high tidal surges to develop under certain conditions;
- a large coastal population, with many living in mobile homes; and
- vast low-lying coastal areas which can easily be inundated.

The level of flooding to be expected cannot be determined based on wind speed alone. The precise direction from which the storm approaches, and the exact location that the storm strikes land, both have a tremendous effect on the level of flooding. Figure 3 shows the areas in Lee County that could be flooded from various levels of storms *if those storms strike from the direction and at the location that would cause the highest storm surge* (specifically, striking from the west and making landfall just north of Lee County). When Lee County is struck by one of these worst-case storms (or a lesser but still-severe storm), the flooding will have devastating effects on life and property. (The flooding levels in Figure 3 were projected by the National Hurricane Center's "Sea, Lake, and Overland Surges from Hurricane" (SLOSH) computer model for Lee County.)

The town is accessible by road only through other islands, which in turn are accessible by road through comparatively low-lying mainland areas. This feature compounds the town's hurricane preparedness problems, since the routes the town will use for an evacuation will also be used by the residents of other islands and of low-lying areas that have no other routing alternatives.

Another evacuation problem is the large Australian pine trees that are seen throughout Fort Myers Beach. Due to their shallow root structure, they are especially vulnerable to high winds and can easily fall, blocking critical evacuation routes even before the really high winds begin. A program of removing or regularly pruning these trees along Estero Boulevard could reduce this risk.

Affected Population

The town has in a sense two populations, a "permanent" population made up of those who consider the island their permanent residence, and a "transient" population that peaks each day as workers come and leave during the work day, that peaks each holiday with the occupation of the many transient lodging facilities, and peaks during the winter months as seasonal residents occupy second homes *and* the transient lodging facilities become fully occupied by vacationers.

During hurricane season, the "transient" population is fortunately at somewhat lower levels than the winter months (except for holidays). Further, a portion of the "permanent" population throughout hurricane season is vacationing elsewhere, especially in the summer months. Regardless of these factors, a large portion of the town's population is threatened by inundation by hurricanes, with no part of the town being at natural heights greater than expected storm surges in major storms.

To evaluate the time it would take to evacuate the town, the number of vehicles that would be evacuating is estimated as follows:

- Existing units are estimated from various sources, including the Census, building permit data, and surveys.
- Occupancy rates are based upon local and regional surveys.
- The number of persons per occupied household are drawn from Census data and applied to all units.

- Forecasts of future population are based upon "build-out" unit estimates.
- The number of vehicles that would be used in an evacuation are drawn from the per-unit estimates provided in the Hurricane Evacuation Study (SWFRPC, 1995).

The 1990 Census shows a total of 7,420 dwelling units for the area now in the Town of Fort Myers Beach. Of these, 2,247 were single-family detached, 133 were single-family attached, 3,925 were in structures with 10 or more units, 256 were mobile homes, and the remainder in duplex to 9-unit structures. Since 1990, there have been an additional 290 units built of all types, making a total for 1996 of 7,710. To this total can be added an additional 1,351 units for hotels and motels (SWFRPC, 1995).

About 2.03 persons occupied the average dwelling unit, according to the 1990 Census. There is no reason to believe that this characteristic has changed markedly since that time.

The 1990 Census indicated that the town's units were largely renter, seasonal, or recreational occupied, constituting 72% of the units. The occupancy rate of owner/occupied units is high, about 95%, but that of other units is 64% outside of the "season." From surveys, occupancy rate of hotels/motels varies throughout the seasons, but is a fairly stable 62-64% during hurricane season, but climbing to nearly 100% during holidays.

The estimate of affected persons is thus calculated: ((28% of 7,710 units x .95) +(72% of 7,710 x .36) +(1,351 x .63)) x 2.03 = 9,948. This number will show moderate variations throughout the season from June to November, and may peak by an additional 1,000 during holidays, not including day visitors.

Build-out forecasts expect an additional 1,028 dwellings and 336 hotel units (see Future Land Use Element). Applying the ratios used above to these additional units provides for a build out population during hurricane season (including overnight—or longer—transients) of 11,474.

Vehicles in Use

Through surveys conducted by the SWFRPC, it has been estimated that there would be one evacuating vehicle for every two people. In beach communities, the estimate is conceded to be higher, approaching nearly all vehicles for which a driver can be found since the vehicle is the second most expensive item a person will own and it is mobile. The beach community can be recognized as having higher vehicle usage than the county as a whole. For the purpose of this assessment, though, the one-vehicle/two-person ratio is being applied. The estimated vehicles in use by town residents will be at least 4,974. This number would grow to 5,737 at build-out.

Evacuation Times (On Island)

Within the town, the factor controlling evacuation times is Estero Boulevard, a two-laned facility (with center turn lane along part of the Island). The roadway capacity varies depending upon the degree of direct management that is provided. Without such management, the capacity at service level D (county/regional calculation standard) is 943 vehicles per hour in the primary direction, or 1,660 per hour for both lanes with two way traffic (830 per lane). The town directs about half of its traffic south to Bonita Beach Road (for evacuees south of the fire station) and the remainder north across San Carlos Island.

Using one-way/one-lane capacity, the time to clear the island at the stated level of service is determined by dividing the number of vehicles by the road capacity. This calculation is 4,974/943, or 5.3 hours. Using the two-way option, the number drops to 3.0. When the "build-out" estimate is used, the calculation is 5,737/943, or 6.1 hours for one lane, and 3.5 for two way. No

system-wide road capacity improvements are planned that could improve these capacities.

Evacuation Time (Off Island)

The town's evacuation route off the island extends through Bonita Beach and Bonita Springs to the south and east, and through San Carlos Island and the unincorporated areas of South Fort Myers to the north and east (see Figure 5). When the routes are used for hurricane evacuation, there will be significant traffic from other low-lying areas added to these routes.

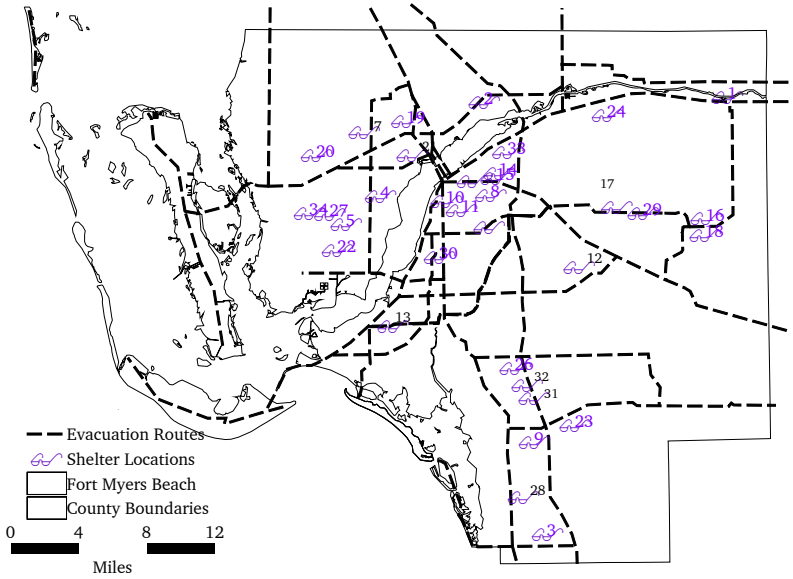

***Figure 5**, Evacuation Routes and Hurricane Shelters*

According to the 1995 assessment by the SWFRPC, the volume of traffic for a category 1 storm will occupy routes used by the town for 7.4 hours in July and 8.4 hours in November. Times for category 2 are the same, but times for a category 3 climb to 12.1 hours in July and 12.6 in November. Short-term forecasts (1998) climb to 7.9 hours for category 1 and 2 storms in July, 9.0 hours for the same storms in November. Category 3 times climb to 12.9 and 13.5. The routes off island and the other communities occupying these routes are shown on Figure 5.

Unfortunately, the "piling on" effect forecasted for Southwest Florida makes these times seem small. Should the worse category storms follow the path of greatest threat, times have been forecasted to climb to 58.4 hours for an out-of-region evacuation, to which the town contributes only a small percentage of the overall traffic. Such times are unachievable, requiring the town and its surrounding region to reexamine their sheltering options.

Sheltering

Public shelter space available to the town is provided through the county school system. There are eight schools along the most likely routes, and a total of 34 schools county-wide. These schools are shown on the evacuation route map (Figure 5) and listed in Table 5-5. The space within all 34 schools is adequate for only 42,740 persons in a minor storm and 52,440 in a major storm, and these same shelters will be used by other evacuating communities. Some also become unusable should the category storm be 3 or greater, reducing the space substantially. Consequently, the overall public shelter space is inadequate for the potential demand.

Town residents also have private sheltering options, including hotels and friends or family that are outside of predicted flood areas. These opportunities also diminish for the more severe storms.

Table 5-5 — Hurricane Shelters in Lee County

Site	School	Capacity Minor/ Major Storm	Site	School	Capacity Minor/ Major Storm
1	Alva Elem./Middle 21290 Park Street	800/1000 1000/1300	18	Lehigh Middle 104 Arthur Avenue	1000/1300
2	Bayshore Elementary 10750 Williams Road	800/1000	19	Littleton Elementary 700 Hutto Road	800/1000
3	Bonita Middle 10140 West Terry St.	1000/1300	20	Mariner High 701 Chiquita Boulevard	2500/3000
4	Caloosa Elem./Middle 610/620 Del Prado Blvd.	800/1000 1000/1300	21	North Fort Myers High 5000 Orange Grove Blvd.	2500/3000
5	Cape Coral High 2300 Santa Barbara Blvd.	2500/3000	22	Pelican Elementary 3525 SW Third Avenue	800/1000
6	Colonial Elementary 3800 Schoolhouse Road	800/1000	23	Pinewoods Elementary 11800 Corkscrew Road	800/1000
7	Diplomat Elementary 1115 Northeast 16th Ter.	800/1000	24	Riverdale High 2815 Buckingham Road	2500/3000
8	Dunbar Middle 3800 East Edison Avenue	800/1000	25	Royal Palm Exceptional 1817 High Street	800/1000
9	Estero High 21900 River Ranch Rd.	2500/3000	26	San Carlos Elementary 17282 Lee Road	800/1000
10	Fort Myers High 2635 Cortez Boulevard	2500/3000	27	Skyline Elementary 620 Southwest 19th St.	800/1000
11	Fort Myers Middle 3050 Central Avenue	800/1000	28	Spring Creek Elementary 25571 US 41 Southeast	800/1000
12	Gateway Elementary 13280 Commerce Lakes	800/1000	29	Sunshine Elementary 600 Sara Avenue	800/1000
13	Heights Elementary 15200 Alexandria Court	800/1000	30	Tanglewood Elementary 1620 Manchester Blvd.	800/1000
14	Lee Middle 1333 Marsh Avenue	1000/1300	31	Three Oaks Elementary 19600 Cypress View Dr.	800/1000
15	Lee County Vocational 3800 Michigan Avenue	1640/1640	32	Three Oaks Middle 18500 Three Oaks Pkwy.	1000/1300
16	Lehigh Elementary 200 Schoolway Court	800/1000	33	Tice Elementary 4524 Tice Street	800/1000
17	Lehigh High 801 Gunnery Road	2500/3000	34	Trafalgar Middle 2120 Trafalgar Parkway	800/1000

Source: SWFRPC, 1995

The problems facing the town also affect the entire region. There is simply not enough shelter space for all evacuees (SWFRPC, 1995). Evacuation times have been reduced in some coastal areas because of aggressive road construction in recent years, but evacuation to areas outside of coastal counties is becoming less feasible each year as roads between counties are not being built at a rate that matches increases in population. For this reason the town will need to work with Lee County and regional agencies to develop feasible in-county alternatives to traditional public sheltering.

Initial work on this concept is detailed in a 1997 study that sought to identify potential private shelters (SWFRPC, 1997). Private shelters wouldn't be staffed and equipped by public agencies or the American Red Cross, but might provide a degree of "lessened threat" for coastal residents than some other alternatives (remaining at home, being caught on the road when high winds make further car travel impossible, or competing for the very limited number of motel rooms).

Potential private shelters include recreation facilities in planned communities; churches; public buildings such as courthouses or airport terminals; and workplaces of major employers. Drawbacks to private shelters can include poor locations, inadequate structural strength, lack of supplies and emergency power, and liability concerns for property owners. The SWFRPC study identified potential space in Lee County for up to 16,500 additional evacuees; unfortunately this number is still far short of the shelter space required.

Town residents and businesses face greater physical risks when a hurricane strikes than do most people in Lee County. The relative infeasibility of providing on-island sheltering options is just one such risk. Another is knowing exactly *when* to evacuate. Emergency management officials are reluctant to suggest evacuation any earlier than is needed because hurricanes can quickly

change direction; they fear that residents who evacuate needlessly will hesitate to heed such an alarm before the next storm.

Island residents are aware of their vulnerability and the increased distance they must evacuate, and would generally be ready to take a greater risk of unnecessary evacuation than other county residents. However, county officials are responsible for a much larger area and cannot be expected to give their full attention to weighing the risks and benefits of an early evacuation for an area as small as Fort Myers Beach.

Compounding the problem is the fact that Lee County officials do not anticipate ordering a mandatory evacuation of Fort Myers Beach under almost any circumstances. Town officials, however, could weigh the local situation and do so, if a system were in place for full communication of relevant information. Or the town could set up such a system in cooperation with the City of Sanibel, which faces the same dilemma. This would be a major undertaking, especially since an early evacuation would have to coupled with arrangements for emergency shelters to open early to accommodate those evacuees seeking refuge there. But given the vulnerability of Fort Myers Beach to even a minor hurricane, the benefits of such a system could be immense.

Community Rating System

The Federal Emergency Management Agency evaluates floodplain management programs of local governments and issues a rating under the Community Rating System (CRS). The Community Rating System encourages and rewards local governments which undertake efforts to reduce flood losses and promote the purchase of flood insurance. The major benefit for citizens of CRS-rated communities is that they will receive flood insurance premium rate credits which lower insurance costs for all property owners. Local governments are rated on a scale of one to ten, with one being the highest rating that could ever be granted. This rating is not a measure of *how safe* a community is from flooding; rather it is a measure of how hard a local government is currently trying to *reduce its vulnerability* to flooding.

Fort Myers Beach is currently rated "7," an improvement from the previous rating of 8. Both ratings now apply to all of Lee County, but Fort Myers Beach has applied for its own rating, which will probably be made in early to mid 1999. All reasonable efforts should be made to receive the best possible rating from FEMA in order to lower flood insurance premiums. Sanibel has been able to obtain a "5" rating; Tulsa Oklahoma has been the only other community in the nation to obtain a rating that high.

Floodplain Management

For Floridians, natural disasters are constant reminders of how fragile barrier islands are. Tropical storms and hurricanes can wreak havoc on citizens lives, homes, and personal property. In hindsight, development should not have been permitted on barrier islands at high densities. The Town of Fort Myers Beach has been developed with fairly high densities, which average 17 units per acre for existing multifamily buildings. Therefore, its disaster planning must center primarily on reducing potential losses of life, improving existing and new structures and infrastructure, and rebuilding more safely after severe damage. Any redevelopment within the town must meet the minimum level-of-service standards established within this comprehensive plan. Some current regulations discourage landowners from making structural improvements to strengthen buildings against the constant threat from hurricanes, contrary to expected public policy. The impacts of floodplain programs, described below, vary depending on the precise location of a parcel of land. Each program has a set of very specific maps or boundaries that delineate their regulatory zones.

Coastal Construction Control Line

The state of Florida began regulating shoreline development in 1971. Along the beachfront, the state imposes stricter construction standards to minimize damage to the natural environment, private property, and human life. The best-known state regulation is the designation of Coastal Construction Control Lines (CCCL), which are precise lines running just inland of barrier island beaches.

In 1978, the state established its first CCCL at Fort Myers Beach. With a few exceptions, new buildings could only be built landward of this line. In 1991, the state established a new and very different CCCL. The new line averages about 200 to 300 feet landward of the 1978 line, often running right along Estero Boulevard. This new line came with quite different rules; it is definitely not a "line of prohibition." Instead the rules are more of a structural building code, administered by the Florida Department of Environmental Protection.

As strict as these rules are, they do not preclude many reasonable uses of land, as was feared by many property owners when the 1991 CCCL was adopted. However, buildings must be elevated, typically even higher than buildings elsewhere on the island, and be extremely well-built. High-rise condominiums and hotels, as well as single-family homes, can be built under these rules.

Several issues regarding the CCCL are discussed further in the Future Land Use Element.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is one of several federal disaster programs which has established minimum construction standards which serve to reduce damages from storm events in coastal high hazard areas. It was begun in 1968 as a nationwide system of flood insurance for designated flood-prone areas. Each area is studied to produce a map that indicates how high flood waters might rise, which is known as the "base flood elevation." Local governments then adopt regulations to reduce the impacts of future flooding. In exchange for these regulations, property owners can obtain flood insurance that is guaranteed by the federal government. The most important regulation is that the lowest floor level of most new and improved buildings must be raised above the "base flood elevation." The base flood elevations are shown on a series of official Flood Insurance Rate Maps.

Since the 1970s, flood-prone communities have been required to adopt these regulations in order for their residents to qualify for federal flood insurance. Federally insured lenders cannot provide mortgages in these communities on property that does not have flood insurance. As a result, almost no flood-prone community can exist without participating in the NFIP, since few private companies offer comparable flood insurance.

Lee County began participating in the NFIP in 1984 immediately after all of its coastal areas were mapped. Fort Myers Beach was covered under the county's program until the end of 1996, at which time it began the process of joining the program on its own.

The concept of hazard mitigation has become a high priority in the field of emergency management in recent years. Essentially, this kind of mitigation means *actions to prevent, avoid, or reduce the impacts of a hurricane*, especially actions that can be taken in advance to reduce the vulnerability of people and property to injury from a hurricane or tropical storm.

Homes built in Lee County before 1984 were not required to be elevated above the base flood elevation. Since then, through the building permit process, elevation requirements have been strictly enforced for new homes and for "substantial improvements" that cost more than 50% of the appraised value of a

building (*not including* the land's value) over any five-year period. This is one example of the infamous "50% rule" that causes so much difficulty for owners of older buildings when they are trying to maintain and upgrade their property.

Instead, the town should encourage property owners to strengthen buildings before a hurricane hits rather than wait to provide disaster aid or expedited permitting to repair damage that could have been avoided. Such policy would allow property owners to strengthen their buildings by installing storm shutters or shatter-proof glass; strengthening roof attachments, floors, and walls; and minor floodproofing. One way the town can encourage strengthening by excluding these costs from the 50% rule, as proposed in the Future Land Use Element. The entire floodplain management program of the town is discussed in more detail there.

Building Back

When a passing hurricane destroys part of a community, difficult rebuilding questions arise immediately. Landowners have spent thousands and sometimes millions of dollars in developing their property. Not allowing landowners to rebuild places a great economic burden upon them. But allowing redevelopment in the same manner exposes it to destruction in the next big storm.

If a disaster occurs within the Town of Fort Myers Beach, structures could of course be rebuilt in accordance with the adopted Future Land Use Map. (In most cases, the permitted use will be the same as before the storm.) Structures that are damaged greater than 50% of their current value are allowed by Lee County to be rebuilt, however they must be rebuilt in accordance with the regulations that apply to new development. This means that the lowest floor level is elevated; land uses are severely limited on the ground level; and break-away walls may be required.

This "build-back" policy was initiated by Lee County in 1989 to allows post-disaster reconstruction at existing density levels but with improved resistance to future storms. This provision has been popular among landowners at Fort Myers Beach because of the greatly reduced density levels that would otherwise apply after a major storm.

This Future Land Use Element of this plan makes one immediate change in the build-back policy. Owners of existing buildings that exceed the current density or height limits will be offered an opportunity to replace the building at up to the existing density and intensity without waiting for a natural disaster (see Policy 4-E-1). Owners would request this option through the planned development rezoning process, which requires a public hearing and notification of adjacent property owners. The Town of Fort Myers Beach would approve, modify, or deny this request based on the conformance of the specific proposal with this comprehensive plan, including its land-use and design policies, pedestrian orientation, and natural resource criteria.

Major investments by government and private industry are made for public infrastructure. In order to rebuild, damaged infrastructure must be repaired or replaced. In a flood-prone area such as Fort Myers Beach, new or replacement infrastructure should be designed and constructed to minimize damage caused by hurricanes and tropical storms. Power lines can be placed underground. Potable water and sanitary sewer systems should eliminate infiltration of flood waters into utility systems, and they should be capable of running on auxiliary power during post-storm periods. Roads should be designed and constructed to manage minimum levels of storm events and be located in areas least susceptible to storm damage.

Structures with Repeated Damage Due to Storms

A number of structures within the town have experienced damage as a result of past floods. Lee County began a program in 1995 to identify individual buildings that have been repeatedly damaged by flooding, as evidenced by claims under the National Flood Insurance Program (NFIP) of $1,000 or more since 1978.

That program identified the properties in Table 5-6, which are mapped in Figure 6. No meaningful pattern appears on the map that would suggest neighborhood-wide flooding remedies. Of particular interest on Table 5-6, however, is that *none* of the floods that caused considerable damage at Fort Myers Beach in the past 15 years were even minimal hurricanes; in fact two weren't even strong enough to be considered tropical storms.

Lee County is conducting a detailed assessment of the costs of improving the buildings in the unincorporated area that have been repeatedly damaged by flooding. The county hopes to obtain 75% federal funding for many of the actual improvements. If the county is successful, the town may be able to qualify for a similar grant.

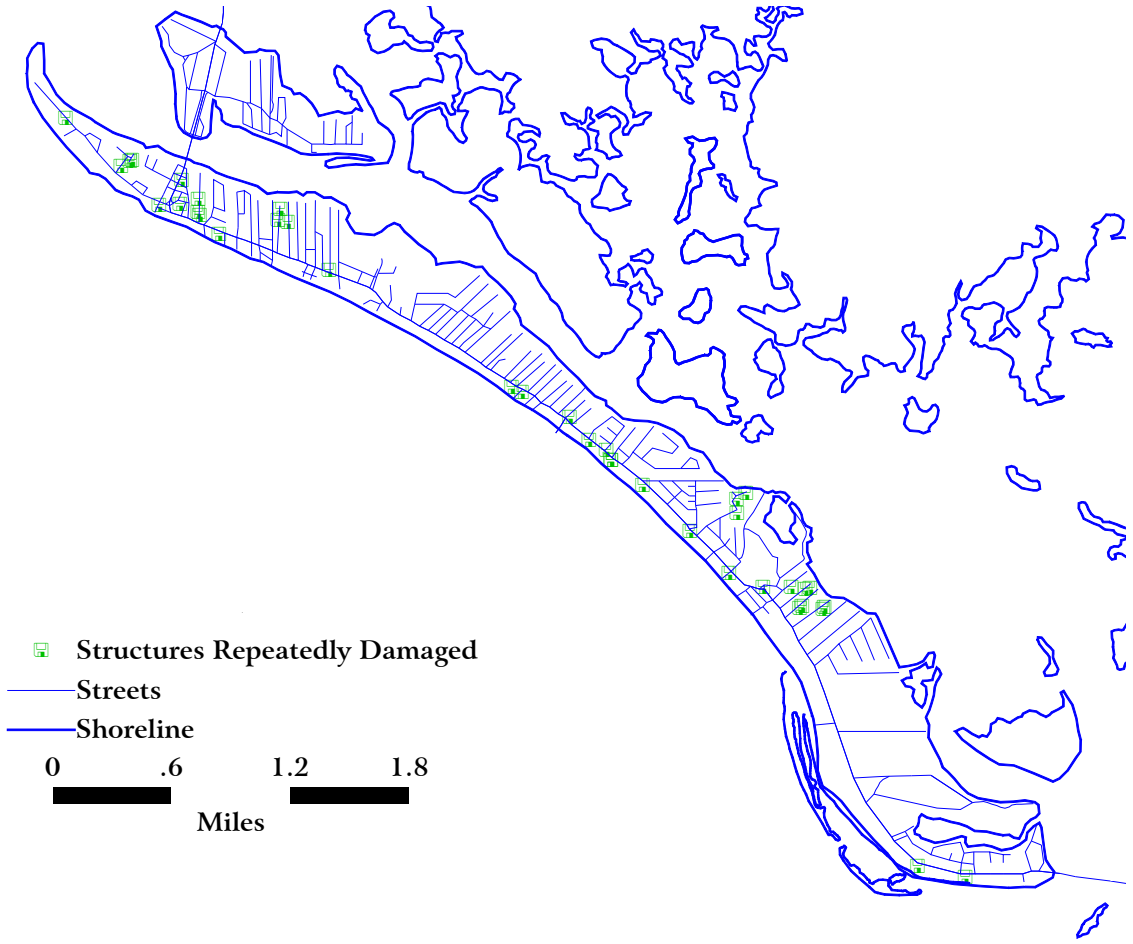

***Figure 6**, Repeated Flood Damage*

Table 5-6 — Structures Reporting Repeated Flood Damage at Fort Myers Beach

STREET ADDRESS	*Mar. 1993* ("Storm of the century")	(other)	*Nov. 1988* (Tropical Storm Keith)	(other)	*July 1985* (Tropical Storm Bob)	*June 1982* ("No-Name Storm")	(other)
417 Estero	3-13-93		11-23-88				
151 Matanzas	3-13-93		11-23-88		7-23-85	6-18-82	
725 Matanzas			11-23-88		7-23-85		
738 Matanzas				10-12-87		6-18-82	
1042 Second			11-23-88		7-23-85		
1051 Fifth					7-23-85	6-18-82	
1000 Estero			11-23-88		7-22-85		
140 Primo			11-23-88		7-23-85		
153 Primo		7-18-91	11-23-88	1-6-89			
207 Primo			11-23-88		7-23-85		
1400 Estero	3-13-93					6-18-82	
223 Pearl			11-23-88		7-23-85		
290 Pearl			11-23-88	12-31-86			10-31-85
273 Delmar		7-22-91	11-23-88	12-31-86			
145 Tropical Sh.	3-13-93	5-26-90	11-23-88				1-1-87
3860 Estero	3-13-93		11-23-88				
3970 Estero	3-13-93		11-23-88				
120 Gulfview			11-23-88		7-23-85		
4701 Estero					7-23-85		9-14-79
315 Bayland		6-25-92	11-23-88				
5000 Estero					7-22-85	6-18-82	
5000 Estero	3-13-93		11-23-88				
5210 Estero	3-13-93		11-22-88				
5607 Estero					7-23-85		9-21-79
292 Sterling			11-23-88		7-23-85		
306 Seminole	3-13-93		11-23-88		7-23-85	6-16-82	
395 Seminole	3-13-93		11-23-88		7-23-85		
5890 Estero	3-13-93		11-23-88				
75 Mound			11-23-88		7-23-85		
260 Flamingo	3-13-93		11-23-88				
269 Driftwood	3-13-93		11-23-88		7-23-85	6-18-82	
290 Driftwood			11-22-88		7-23-85		
230 Bahia Via	3-13-93		11-23-88	11-22-88		6-18-82	
250 Bahia Via	3-13-93		11-23-88				
258 Curlew	3-13-93		11-23-88		7-23-85	6-18-82	
266 Curlew			11-23-88		7-23-85		
7904 Estero	3-13-93		11-23-88				
8102 Estero	3-13-93		11-23-88				

Source: Lee County Department of Public Safety

BEACH EROSION

Beach and dune systems are the zones of interaction between oceanic waters and land located on barrier islands or the mainland. A typical beach can be divided into four distinct zones which are dunes, backshore, foreshore, and nearshore. The dunes and backshore areas are beyond the influence of regular wave activity; however, they are influenced by wind and surges in wave activity. The foreshore zone is where waves generally break and is the area of most activity. The nearshore zone is generally submerged and great amounts of sand are deposited there as sand descends from waves. Sand is deposited along beaches through wave action in a process know as littoral drift. Wave and tidal action move sand in many different ways. Many times, it is pushed parallel to the shore since wave action is not always perpendicular to the beach. It is also pulled away from the beach by the backwash action of waves. This process transports sand in and away from beaches, resulting in gradual changes.

A number of coastal protection structures have been built over time to combat beach erosion. Many of these are concrete seawalls which have been installed in the central and southern locations of the island where erosion has been the greatest. Revetments have also been used (piles of rocks that function like seawalls), as well as groins (which are built perpendicular to the beach to trap sand).

Some of the southern portion of the island is protected by Little Estero Island, which began as an offshore sand bar that is visible in aerial photographs from as early as 1944. It began to support vegetation and wildlife during the 1970s. Little Estero Island and Bowditch Point are the island's major areas of beach *growth* (accretion).

Like most beaches, much of the rest of the Estero Island shoreline has suffered from erosion caused by storms and tidal action. Figure 7 shows the major areas where continued erosion threatens Estero Island, according to a recent comprehensive study for Lee County (Humiston and Moore Engineers, 1997).

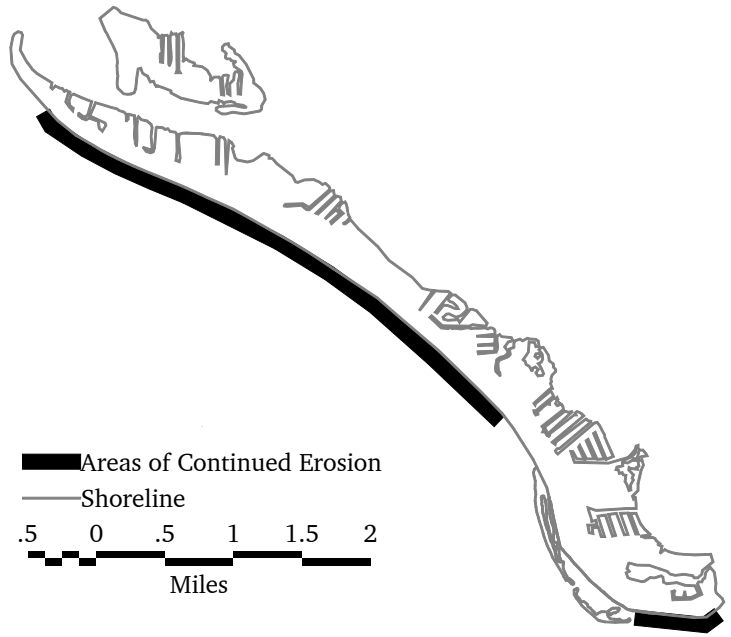

***Figure 7**, Areas of Continued Erosion*

Beach Renourishment

Some "renourishment" of the northern end of the island occurred in 1985/86. Approximately 190,000 cubic yards of sand was restored to the beachfront from Bowditch Point Park to Times Square. Another small beach renourishment project was completed in April 1996 along the beach from the Best Western Hotel to the north of the Estero Island Beach Club. The project involved approximately 4,500 feet of beach and helped to stabilize this section of severely eroding shoreline. Both of these projects were initiated to remove excess material from the main

navigation channel near Bowditch Point; beach renourishment was only a secondary benefit.

Renourishment programs are quite expensive. The recent county study made a through evaluation of historical erosion/accretion rates at Fort Myers Beach and all feasible alternatives for shoreline protection (Humiston and Moore Engineers, 1997). The study recommended a beach renourishment program, at an estimated cost of $9 million for engineering design, permitting, and construction, to renourish the two shoreline sections shown in Figure 7. The report also indicates that maintenance renourishment would be needed every ten years at an annualized cost of $546,000 per year.

The U.S. Army Corps of Engineers had previously estimated a cost at $5.95 million, but the Corps had not included the southern shoreline area and had proposed a smaller volume of sand.

In a recent application to the Department of Environmental Protection, Lee County estimated the cost for the northern segment at $9.57 million of which $4.53 million was requested from the Federal government, $2.51 million from the state government, and $2.53 million would be provided by local government. The requested amount for the southern segment is $3.23 million of which the state and local governments would each provide $1.62 million. Renourishment of the northern segment would involve approximately 25,600 linear feet of beach, while the southern one would involve about 3,155 linear feet. These funding requests include design, permitting, construction, monitoring, and maintenance through the year 2008. This proposal is being supported by the county's Tourist Development Council and its Coastal Advisory Council.

A large renourishment project for Estero Island would be extremely beneficial to the town. The major attractor for tourism and the town's economic base is the Gulf of Mexico and its beaches. For the town and Lee County to continue competing for tourist dollars, investments in beach amenities are necessary and would contribute substantially to the economies of both.

Other Shoreline Protection Measures

Shoreline protection within the Town of Fort Myers Beach should be accomplished by a series of steps:

- The beach renourishment project just described should be a town priority for the critically eroding areas. The long-term recreational and economic benefits derived from this project will offset the initial cost.
- Sand dunes should be protected and re-created where they have been removed. Native dune plants should be protected and non-native exotics removed. Dune walkovers should be constructed where they do not exist and existing walk-overs should be maintained. The use of vehicles on beaches should be limited to law enforcement, public lands management and emergency vehicles, state-licensed turtle monitoring, once-daily delivery and pickup of beach equipment, and minimal use for cleaning litter and excessive accumulations of natural debris.
- Buildings and other structures should be located (or moved) as far away from the shoreline and dune system as possible, since the beach is a constantly changing environment.
- The last resort for shoreline protection is the use of hardened structures.

New hardened structures such as groins, jetties, and seawalls should only be used as a last resort when an entire series of major structures is in imminent danger of collapse, and after methods such as emergency renourishment with trucked-in sand have failed. If it is determined that a new hardened structures is ever acceptable, rip-rap revetment is less damaging than a seawall. Rip-rap consists of one or more layers of natural stone,

boulders, concrete rubble, or sand bags placed on a gentle slope. Rip-rap is very effective on low energy coasts where wave heights are not large (for instance, along Matanzas Pass). It is less effective on beaches, and greatly interferes with sea turtle nesting and public use of the beach.

Groins, jetties, and seawalls along the beach should be the absolute last resort since their use may damage the shoreline in other locations and they impede the public's ability to walk along the beach. The only exception would be for "terminal groins," which extend perpendicular from the shoreline near major inlets. A properly designed terminal groin does not rob adjoining beaches of sand moving along the coast; because of its location, it keeps sand from moving off the beach and into inlets that need to remain open for navigation or tidal circulation.

PUBLIC ACCESS TO THE WATER

Water-Related and Water-Dependent Land Uses

Water-related land uses are plentiful within the Town of Fort Myers Beach. Virtually all of the resorts, retail shops, and restaurants cater to tourists who visit for the Gulf of Mexico and its beaches. In addition, many of the homes are built adjacent to saltwater canals which lead to Estero Bay. In one sense, all of the island's land uses are water-related. In contrast, water-dependent uses absolutely must be on land directly adjoining the water. Examples are marinas, boat ramps, public beaches, or commercial fishing ports.

Marinas

There are four marinas within the Town of Fort Myers Beach. Each offers sales, service, or storage (wet and dry) of boats. Figure 8 and Table 5-7 summarize the location and services offered by the island's commercial marinas.

The Town of Fort Myers Beach does not have a deep water port, nor is one planned for the future. The marinas and docks cater to recreational boaters, tourists, and, occasionally, commercial fishermen.

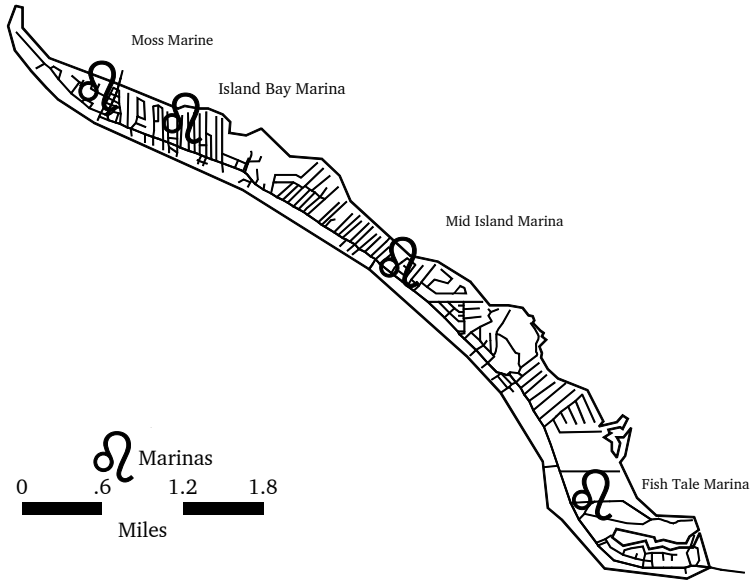

***Figure 8**, Marinas*

Table 5-7 — Marinas

	Storage Type	
Name	*Wet*	*Dry*
Mid Island Marina	68	90
Island Bay Marina	22	0
Fish Tale Marina	40	250
Moss Marine	33	up to 220 depending on size of boats

Boat Ramps and Piers

Lee County has long maintained a magnificent pier which attracts tourists, fisherman, and residents to the Times Square area. The pier, 584 feet in length, is located at the Lynn Hall Memorial Park. Figure 9 shows the present pier, which underwent structural renovations in 1997.

Figure 9*, Fishing Pier*

The town does not operate a public boat ramp. Lee County provides public boat ramps with parking for tow vehicles and trailers to the north at Punta Rassa and Sanibel Island and to the south at the Imperial River. The state of Florida provides a boat ramp at the Lover's Key/Carl Johnson State Recreation Area. The ramp at the Lover's Key is the closest at approximately 1½ miles. Figure 10 shows the locations of publicly owned boat ramps.

Within the town's boundaries are 3 quasi-public ramps, each apparently on public land but without space for parking. These ramps are on Bayview Drive and at the end of Miramar Street and Coconut Drive.

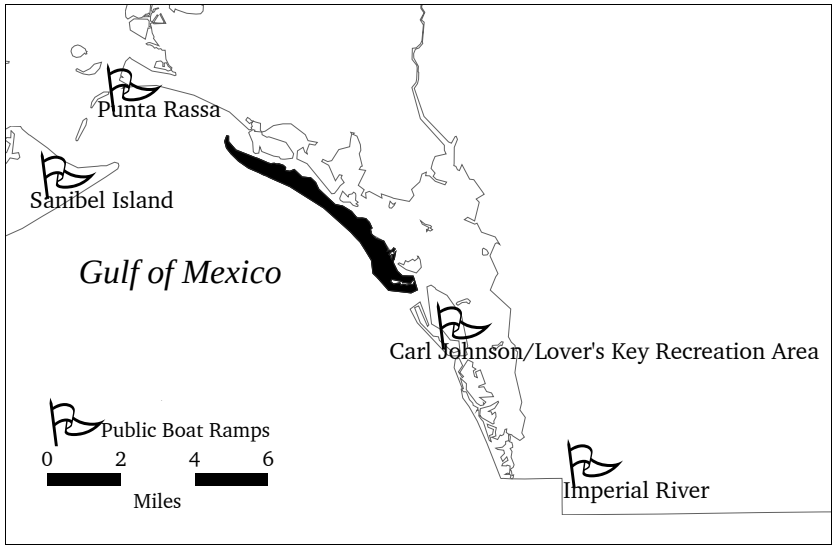

Figure 10*, Public Boat Ramps*

Artificial Reefs and Fishing Areas

Man-made reefs are highly sought destinations for the sport fisherman because the reefs attract numerous varieties of fish. There are several off-shore artificial reefs in the Lee County area, 5 of which are within 13 nautical miles of Fort Myers Beach. They are identified in Table 5-8 and Figure 11.

In addition to artificial reefs, there are other popular fishing areas in the Fort Myers Beach vicinity. The Fort Myers Beach pier provides access to off-shore water for those without boats. Fishermen also fish from fishing piers under both ends of the Sky Bridge, as well as from the gulf and bay shorelines.

Table 5-8 — Artificial Reefs

Artificial Reef	*Material*	*Depth*	*Distance from FMB in miles*
Michael A. Yakubic Reef	Rubble	20 feet	2.9
GH Reef	Culverts	28 feet	5.4
Sanibel Reef	Rubble	20 feet	5.9
Lee-Collier Reef	Buses, truck	35 feet	6.3
Doc Klein Reef	Culverts	32 feet	12.6

Source: A Boater's Guide to Lee County, January 1997.

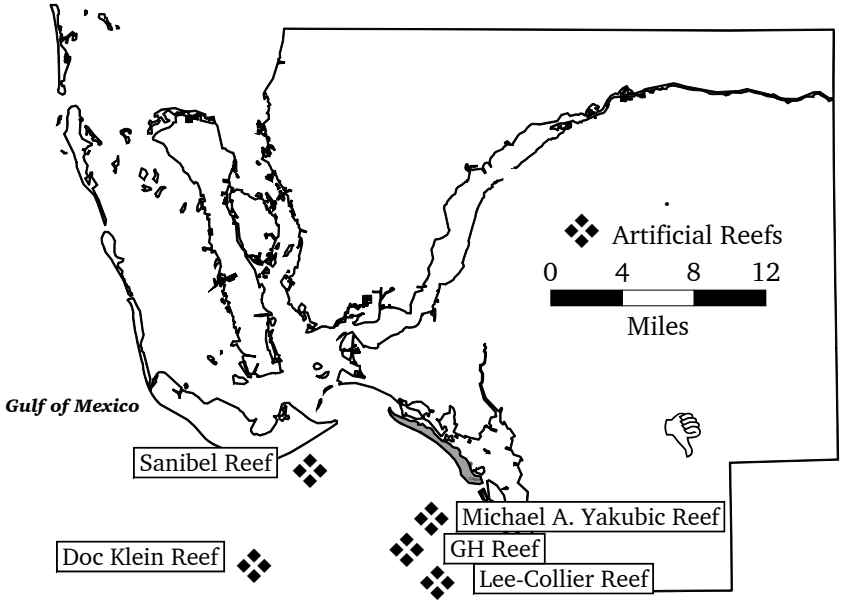

***Figure 11**, artificial reefs*

Beach Access

Access to beaches is very important to residents of any community, not just to visitors. Although many of the town's residents live along the shoreline, not everyone does. Long before incorporation, Lee County has been maintaining and improving the numerous public access points to the beach through the use of easements, rights of way, and purchase of land. There are 46 public access points along the approximately seven-mile island — 36 are located along the Gulf of Mexico and 10 are along Estero Bay (see Table 5-9 and Figure 12). The county has continued to maintain these access points since incorporation, using funding from the Tourist Development Council. The town may wish to take formal responsibility for this maintenance. An opportunity exists to meter the parking spaces and generate revenue to be used for further beach improvements.

Two of the access points are operated by Lee County as public parks. Bowditch Park is approximately 17 acres with 1,850 linear feet of beach along the Gulf of Mexico. Located at the northern tip of Estero Island, the park has playground equipment, fishing areas, picnic tables, nature trails, and restroom facilities. Lynn Hall Memorial Park is about 5 acres in size and has 600 feet of beach. The pier, grills, shelters, playground equipment, and restroom facilities are located at the park.

Most of the town's hotels, motels, and resorts are located along the Gulf of Mexico. They provide access to their guests and, in some cases, to the general public.

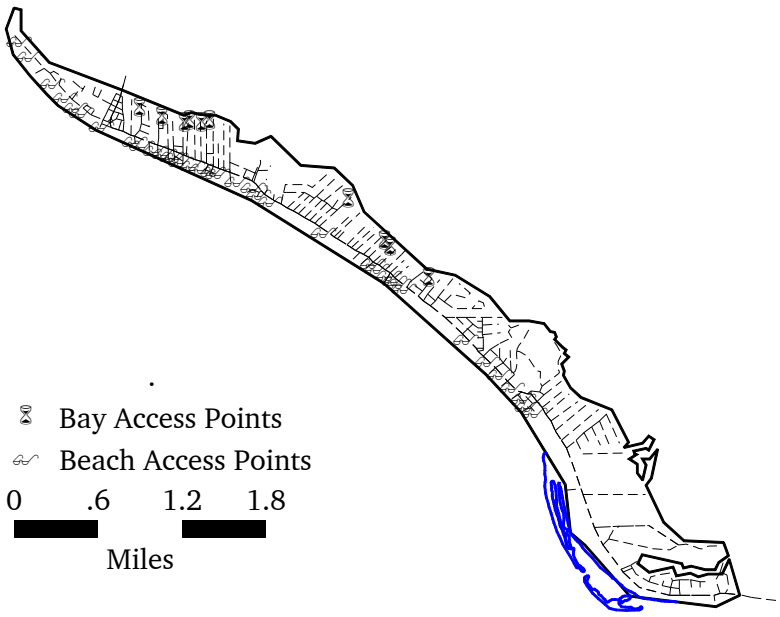

***Figure 12**, Public Access Points*

Need for Additional Access

As demonstrated in the inventory, public access facilities to the beaches and water are quite good. However, given the number of visitors wishing to use these facilities, additional sites should be considered which can provide parking or provide beach access on the southern quarter of the island since no public sites are currently located there. Access acquisition would likely be expensive at the south end, but this is where public access is most lacking at present. An especially critical location would be a southerly access to Little Estero Island, where little Gulf-front land remains available.

Table 5-9 — Public Access Points

Site #	Location	Site #	Location
1	Bowditch Point Regional Park	24	Connecticut Street
2	Island Shores, Lot 42/43	25	Hercules Drive
3	Island Shores, Lot 26	26	Coconut Drive
4	Island Shores, Lot 20	27	Bayview Avenue
5	Island Shores, Lot 15	28	Gulfview Avenue
6	Island Shores, Lot 9	29	Strandview Avenue
7	Island Shores, Lot 4	30	Hyde Park
8	Lynn Hall Memorial Park	31	Dakota Avenue
9	Canal Street	32	Sterling Avenue
10	Avenue “A”	33	Aberdeen Avenue
11	Avenue “C”	34	Lanark Lane
12	Alva Street	35	Gulf Drive
13	Avenue “E”	36	Flamingo Street
14	Miramar Street	37	Palermo Circle
15	Palm Avenue	38	Miramar Street
16	Pearl Street	39	Pearl Street
17	Delmar Avenue	40	Delmar Avenue
18	Mango Street	41	Mango Street
19	Chapel Street	42	Chapel Street
20	Gulf Beach Road	43	Connecticut Street
21	Pompano Street	44	Hercules Drive
22	Seaview Street	45	Coconut Drive
23	Lovers’ Lane	46	Bayland Road

Sites 1 through 36 provide access along the Gulf of Mexico; Sites 37 through 46 provide access along the Bay side.

Source: Lee County Department of Community Development, 1996

Even a single lot here could provide a walking access, a gazebo to provide shade, a small parking area, and educational exhibits about wildlife on Little Estero Island. The parking area would avoid public use of adjoining homesites for this purpose, and would help the town acquire state and federal funding for beach renourishment, funding which is dependent on public access (including parking).

If the town were to construct a public boat ramp, a fairly large site would need to be selected to provide parking for tow vehicles and trailers. Since most of the island is already built up, a public boat ramps would be very expensive. Given the existing traffic congestion during the peak season, off-island residents and visitors would have difficulty using a boat ramp on Estero Island, and would contribute to further congestion whenever they did so. Fortunately, the existing boat ramp situation is sufficient to meet current needs.

Competition for Marina Space

In many coastal locations, available space for public or semi-public access to the water has been drastically reduced through conversions of water-dependent uses (such as marinas) to water-related uses (such as condominiums or restaurants).

To forestall this eventuality, Lee County's comprehensive plan designated "water-dependent overlay zones" that include Fish Tale Marina, Mid-Island Marina, and Moss Marine on Estero Island. That designation began a county-initiated rezoning process to formally zone such sites for marina uses (since in some cases the marinas were not properly zoned, or were zoned for a category that allowed non-marina uses as well). The purpose of rezoning was "to protect their [marina's] rights to rebuild and expand and to prevent their conversion to non-water-dependent uses without a public hearing" (Objective 8.1 and Policy 98.1.1).

Directly across Matanzas Pass, extensive water-dependent overlay zones were also established on San Carlos Island. Those zones were designed to protect "marine industrial" activities such as boat yards, shrimp docks, shrimp packing plants, and certain other compatible uses (these policies are now found under Objective 12.1).

In the intervening years, the shrimping industry has become a potential new competitor for existing marina space. The shrimping industry had been declining for over a decade. Shrimp docks were recently eliminated from Key West, leaving Tampa and San Carlos Island as the only viable shrimping ports on the west coast of Florida. The relocation of the Key West boats is causing serious overcrowding on San Carlos Island, and has led the Community Redevelopment Agency there to evaluate various ideas on expanding the existing docks. A private shrimping firm has also purchased docks at the end of Delmar Avenue and proposes to greatly expand that facility to accommodate overflow parking of shrimp boats.

Although the potential conversion of this marina for overflow shrimp boat docking would not preclude its later re-use as a recreational marina, it does raise other planning issues. Recreational marinas are used in ways that are quite different than quasi-industrial marinas or commercial ports. The potential compatibility issues arise on the waterside of the docks (conflicts between the regular comings-and-goings of small recreational boats and large occasional influxes of large shrimp boats) and on the landside (the potential introduction of industrial activities into a residential neighborhood).

If the San Carlos Island CRA is able to provide alternate overflow docking for shrimp boats or if it is found there is no longer a need, this conflict may never occur. If needed alternate arrangements are unpermittable or otherwise prove to be infeasible, the town may choose to establish its own water-dependent overlay zone for the Island Bay Marina and similar sites to avoid conversion of recreational marinas to industrial uses.

The San Carlos Island CRA recently received a state grant designed to aid waterfront industries. An initial goal is a management plan for the waterfront that balances environmental protection, public recreation, economic development, and hazard

mitigation. The Town of Fort Myers Beach has agreed to participate in this planning process.

The Need for a Balanced Harbor Planning Process

Conflicts between waterfront uses can escalate in the absence of a balanced forum where conflicting uses of Matanzas Pass can be examined and workable solutions devised. With the advent of the Town of Fort Myers Beach, Lee County would have difficulty in establishing such a forum on its own. A forum controlled exclusively by the town, or by San Carlos Island interests, will inevitably be viewed with suspicion by the other side, and ultimately will not have the credibility to resolve many of the difficult issues. It would be in the interests of all parties to create a continuous and more balanced planning process for Matanzas Pass, regardless of which entity initiated this process.

Other harbor issues also need to be addressed and balanced against the needs of the commercial fishing industry and of recreational boaters. These include live-aboard boats; water shuttles; cargo shipping; oil spills; jet skis; boat speed regulations to protect manatees; channel dredging; and estuarine water quality. Currently, each of these issues are considered somewhat in isolation. For instance, a regional harbor board was recently established to address problems faced by (or caused by) anchorages for recreational boaters, including live-aboard vessels. Although this is a positive step, the current anchorage in Matanzas Pass cannot be isolated from other activities there.

Important participants in a balanced planning process might include:

- Lee County;
- The Town of Fort Myers Beach;
- San Carlos Island Local Redevelopment Planning Committee;
- Shrimping industry representatives;
- Recreational marina representatives;
- Estero Bay Aquatic Preserve;
- U.S. Coast Guard
- Lee County Port Authority; and
- West Coast Inland Navigation District.

Ideally this planning process would be an integral part of a new entity established to manage (not just plan for) the future conflicts and activities that can be expected in Matanzas Pass.

A good approach toward establishing such an entity would be for through a formal committee that would advise either the Lee County Commission or the Lee County Port Authority on Matanzas Pass matters. (A similar committee now advises the Port Authority on airport issues; it has been very successful in mediating conflicts and planning a major airport expansion.) The current Lee Plan proposes such an advisory body, with specific responsibility to prepare a "Matanzas Harbor Management Plan" (Policy 94.6.3). However, no ongoing entity has been established to serve this important function.

Since Lee County has not sponsored this process, the Town of Fort Myers Beach has taken the initiative through a newly formed Marine Resources Task Force. In addition to other issues, this task force has focused on Matanzas Pass, and included:

- consideration of all interests in the harbor (not just the anchorage, or just the shrimping industry, or just environmental preservation); and
- an intent to prepare a plan and begin implementing it within a short period of time.

Since formation, this task force has become an active forum for identifying and resolving marine-related conflicts.

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GOALS - OBJECTIVES - POLICIES

Based on the analysis of coastal issues in this element, the following goals, objectives, and policies have been drafted for inclusion in the Fort Myers Beach comprehensive plan.

GOAL 5: To keep the public aware of the potential effects of hurricanes and tropical storms and to plan a more sustainable redevelopment pattern that protects coastal resources, minimizes threats to life and property, and limits public expenditures in areas subject to destruction by storms.

OBJECTIVE 5-A COASTAL PLANNING GENERALLY — Protect and enhance coastal resources through an on-going planning process that recognizes the advantages and limitations of living within a sensitive coastal environment. Enhancement of coastal resources can be measured by increased sea turtle nesting, improvements in estuarine water quality, and restoration of sand dunes. Important limitations on development in this coastal high hazard area include the existing over-concentration of people plus town, state, and federal policies against public expenditures that subsidize further private development.

POLICY 5-A-1 The town shall maintain and enforce building codes at least as stringent as required by Florida law to limit the potential damage of structures from hurricanes and tropical storms. These codes shall include wind-resistance commensurate with the risk of a coastal environment and building elevation requirements that conform with federal laws and Flood Insurance Rate Maps.

POLICY 5-A-2 The maximum density of future residential development is limited to the densities described in the Future Land Use Element in recognition of natural hazards and existing population concentrations. For rebuilding of existing development, refer to the buildback policies under Objective 4-D and 4-E of the Future Land Use Element.

POLICY 5-A-3 When state funding is required for the relocation of replacement of infrastructure currently within the Coastal Building Zone, the capacity of the replacement structure shall be limited to maintaining required service levels, protecting existing residents, and providing for recreation and open space needs.

POLICY 5-A-4 Since the entire Town of Fort Myers Beach is within the coastal planning area and is designated as a coastal high hazard area, specific policies addressing historic buildings, phasing of infrastructure, limitations on development, and environmental resources are contained in other elements of this plan and are not repeated here.

POLICY 5-A-5 Due to the physical constraints of its coastal location, the Town of Fort Myers Beach commits to a future policy of no increase in the net development capacity (island-wide) that would be allowed by the Fort Myers Beach comprehensive plan.

POLICY 5-A-6 The entire town is located within the coastal high-hazard area, as shown on Figure 17 which is part of the adopted Future Land Use Map series (see Policy 4-B-2).

OBJECTIVE 5-B NATURAL DISASTER PLANNING — Reduce the threat of loss of life and property resulting from catastrophic storms by reducing evacuation times and improving shelter capabilities from their current levels.

POLICY 5-B-1 The town shall work to improve the capability of evacuating Fort Myers Beach when a tropical storm or hurricane threatens to strike. Specific problem areas include:

i. County officials may be reluctant to order a county-wide evacuation even though an evacuation may be warranted for low-lying coastal areas such as Fort Myers Beach. town officials should be prepared to order a local evacuation if one is warranted.

ii. Australian pines and other trees along evacuation routes can pose a threat to evacuation routes due to decay or shallow root systems; such trees need to be identified and pruned or removed.

iii. In a cooperative process with Lee County, Sanibel, and the Southwest Florida Regional Planning Council, the town shall seek to improve mainland shelter capacities including private sheltering options.

iv. The town shall work closely with Lee County and Florida DOT to maintain or improve hurricane evacuation times and procedures, including off-island traffic bottlenecks.

POLICY 5-B-2 The town shall participate fully in the federal government's National Flood Insurance Program and seek constant improvements under the Community Rating System.

POLICY 5-B-3 The town shall encourage owners of private buildings to strengthen or otherwise protect them before severe storms strike to reduce avoidable damage to life and property. Town regulations that unnecessarily interfere with this important form of hazard mitigation shall be modified as described in Policy 4-E-3 of the Future Land Use Element.

POLICY 5-B-4 The town shall develop and adopt a storm emergency plan for preparing for, responding to, and recovering from a hurricane or tropical storm. Hazard mitigation recommendations of local peacetime emergency plan or interagency hazard mitigation reports shall be evaluated for inclusion in the town's plans.

POLICY 5-B-5 Capital improvements to infrastructure and facilities under the town's jurisdiction that can maintain or improve evacuation times will be identified and included in the Capital Improvements Element.

POLICY 5-B-6 The town shall maintain substantial reserve funds for emergency work that will be needed immediately following a major storm.

OBJECTIVE 5-C POST-DISASTER REDEVELOPMENT — Plan for post-disaster rebuilding that will reduce the exposure of human life and property to future disasters and improve the community in other ways during the rebuilding process.

POLICY 5-C-1 By 1999, the town in cooperation with Lee County officials shall prepare a post-disaster redevelopment plan. Such plan shall be consistent with this comprehensive plan and use the following priorities:

i. Activities which prevent further loss of life or that minimize public health risks;
ii. Activities which restore the basic public infrastructure and services to support the population;
iii. Activities which prevent further damage to public or private property;
iv. Activities which begin the rebuilding process as promptly as possible.

POLICY 5-C-2 By 1998, the town shall evaluate the elevation and drainage characteristics of evacuation routes to the mainland to identify problem areas that may prematurely block evacuation. Solutions shall be sought in cooperation with agencies having jurisdiction over such facilities.

POLICY 5-C-3 Rebuilding after a natural disaster is allowed in accordance with the "buildback policy" found in Policy 4-C-7 of the Future Land Use Element.

POLICY 5-C-4 To further coordinate the redevelopment activities proposed under this plan with state and federal floodplain management programs, the town shall pursue the following activities:

i. Pursue all potential measures to encourage corrective and preventative measures to existing houses and businesses to increase their resistance to flooding and high winds before a disaster occurs. Examples include storm shutters; shatterproof glass; strengthening roof attachments, floors, and walls; and minor floodproofing.
ii. Allow non-conforming buildings to be modified provided the modifications do not increase the non-conformity.
iii. Investigate the feasibility promoting pedestrian activity in some redeveloping commercial zones by raising the existing grade of roads and sidewalks one to three feet, thus allowing adjoining commercial space to remain at ground level while reducing the required height of dry floodproofing.
iv. Explore with the Department of Environmental Protection an alternative method of controlling building intensity seaward of the Coastal Construction Control Line. The current rule allows 20% of any single building's frontage to be enclosed at ground level. This percentage may be too high for most parts of the town, but is too low where pedestrian zones exist or are being created. An alternative means of computing the 20% rule could better meet the state's coastal management goals and the town's revitalization program.

POLICY 5-C-5 New publicly funded buildings within the town shall be designed to withstand major storms and be able to serve as shelters/operation centers for emergency personnel.

POLICY 5-C-6 Design new and replacement infrastructure to minimize damage caused by flooding and high winds:

i. Power lines shall be relocated underground whenever possible.
ii. Water and sewer systems should eliminate infiltration of flood waters and be designed to function with auxiliary power when needed.

iii. Roads should be designed to manage minimum levels of flooding and be located where least susceptible to storm damage.

POLICY 5-C-7 Continue to inventory buildings that are repeatedly damaged by flood waters to identify those that have recorded one or more National Flood Insurance Program (NFIP) flood losses of $1,000 or more since 1978.

OBJECTIVE 5-D BEACHES AND DUNES — Conserve and enhance the shoreline of Estero Island by increasing the amount of dunes, renourishing beaches to counter natural erosion, and reducing negative man-made impacts on beaches and dunes.

POLICY 5-D-1 The town's policies on shoreline protection measures shall be as follows (see also Objective 5 and related policies in the Conservation Element of this plan):

i. Beach renourishment will be necessary along much of the Gulf beach. The long-term recreational and economic benefits will offset the cost. The town shall work closely with Lee County, which has agreed to take the lead role in carrying out this important activity. All practical measures shall be taken to ensure that beach renourishment improves sea turtle nesting habitat rather than interfering with it. Public access to existing and renourished beaches is an important priority of the town of Fort Myers Beach.

ii. Sand dunes should be protected and recreated wherever they have been removed. Native dune plants should be protected and non-native exotics removed. Dune walkovers should be constructed where they do not exist and existing structures should be maintained.

iii. The use of vehicles on any part of the beach should be severely limited in accordance with Conservation Policy 6-E-4(iv).

iv. Buildings and other structures should be located as far away from the shoreline and dune system as possible since the beach is a constantly changing environment. Beachfront development shall be protected from coastal erosion, wave action, and storms by vegetation, setbacks, and/or beach renourishment rather than by seawalls or other hardened structures which tend to hasten beach erosion, interfere with public access, and block sea turtle nesting.

v. Development (other than minor structures) shall not be allowed seaward of the 1978 Coastal Construction Control Line. Development seaward of the 1991 Coastal Construction Control Line may be permitted provided it complies with this comprehensive plan and all state and local permitting requirements.

vi. Where buildings are threatened by erosion that cannot be reversed by major beach renourishment, the town's priorities are (1) to allow the structure to be

moved away from the beach; (2) to allow emergency renourishment (including the use of trucked-in sand); and (3) to allow rip-rap only when the previous priorities are not possible. Existing seawalls on the beach may be maintained or removed but not rebuilt.

vii. The absolute last resort for shoreline protection is the use of hardened structures (except that terminal groins may be permitted at inlets if acceptable to state and federal permitting agencies). New beachfront buildings requiring seawalls for protection from coastal erosion shall not be permitted.

OBJECTIVE 5-E ACCESS TO THE WATER — Increase the number of well-maintained accesses to beaches, bays, and navigable waters to serve the existing and future population and visitors.

POLICY 5-E-1 Ensure the continued maintenance of existing beach access points, currently provided by Lee County with funds from the Tourist Development Council.

POLICY 5-E-2 Evaluate the need for expanded parking areas and the potential for revenue generation from metered parking as a funding source for additional public access amenities.

POLICY 5-E-3 The town encourages Lee County to continue its program of improving beach access points that are not currently marked.

POLICY 5-E-4 The town shall identify any water access points that are hidden, fenced off, or blocked by encroachments, and then ensure that appropriate public access is restored.

POLICY 5-E-5 The town shall attempt to acquire one or more beach access points at the southern end of the island.

POLICY 5-E-6 The town shall monitor the effectiveness of its ordinances regulating water activities (vessel control, water safety, personal watercraft, and parasailing), and install manatee habitat education signs at waterfront locations. In cooperation with providers and citizens, develop a program of education, interagency cooperation for enforcement, and additional regulation as needed to protect the coastal waters and the safety and welfare of residents and visitors.

POLICY 5-E-7 This plan minimizes the potential for land use conflicts between waterfront uses and other land uses through the following priorities for development/ redevelopment of the shoreline:

i. Intense multi-family uses are limited to areas vested by previous regulations; to the rebuilding of existing sites following a natural disaster (see Policy 4-D-1); and to voluntary rebuilding of existing sites in accordance with the Future Land Use Element.

ii. Future development or redevelopment of shoreline land uses must ensure compatibility with surrounding lands and provide proper buffering where needed.

iii. In determining applicable land uses for a site, priority shall be given to water dependent land uses in the following order:

- Conservation uses

- Water-dependent uses such as marinas which are available for use by the general public;
- Recreational uses; and
- Other uses that are compatible with the surrounding neighborhood.

OBJECTIVE 5-F HARBOR PLANNING — Initiate a cooperative planning process for Matanzas Pass and surrounding waterways by 1998.

POLICY 5-F-1 The town shall take an active role in initiating and participating in the planning process for Matanzas Pass and nearby waters envisioned by Policy 94.6.3 of the Lee County Comprehensive Plan. This process would be conducted by a new entity charged with both planning and implementation. This entity would have the following characteristics:

i. Balanced representation of competing interests such as local governments, recreational and commercial boating interests, and regional/state/federal agencies with jurisdiction over these waters;
ii. A commitment to address and resolve competing interests for use and protection of these water, including commercial fishing and shipping, recreational boating, public anchorage, environmental protection, and protection of other shoreline users; and
iii. The process will be public to seek the active support of all interests so that this planning process can be the first step towards long-term cooperation and protection of these valuable resources.