TOWN OF LONG BEACH, NORTH CAROLINA

1993 LAND USE PLAN

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Wilmington, North Carolina

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A. ESTABLISHMENT OF INFORMATION BASE

1. Statement of Purpose

This Land Use Plan Update for the Town of Long Beach is prepared in accordance with requirements of the North Carolina Coastal Area Management Act (CAMA). Specifically, this document complies with Subchapter 7B, "Land and Use Planning Guidelines," of the North Carolina Administrative Code, as amended, November 1, 1989. The land use plan serves to guide the town's development by addressing issues and adopting policies that pertain to the town. Specifically, the land use plan provides the following:

1) an analysis of existing conditions;
2) a projected land development analysis;
3) a summary of public interests and participation;
4) a land classification system;
5) a detailed section on policy statements;
6) an analysis of the carrying capacity of public facilities with a demand/supply analysis;
7) an analysis of the issues confronting redevelopment of the "circle" area;
8) a summary of 404 wetland areas and issues;
9) an analysis of maritime forest issues;
10) a discussion of the preservation of dune areas; and
11) an explanation of the relationship of the policies to the land classification.

This plan update contains a summary of data collection and analysis, identification of areas of environmental concern, projected land development analysis, a policy discussion, and a land classification map. It is emphasized that the policy section of the plan is the most important part of the document. State and federal agencies will use the local land use policies in making project consistency, funding, and permit decisions. The 7B guidelines require that the following issues be addressed in the plan:

1) Resource Protection
2) Resource Production and Management
3) Economic and Community Development
4) Continuing Public Participation
5) Storm Hazard Mitigation, Post-Disaster Recovery and Evacuation Plans.

2. Review of 1986 Land Use Plan Policies

The 1986 Long Beach plan included policy statements which addressed these five policy areas. It is emphasized that this is only a summary and not the complete 1986 policies section.

RESOURCE PROTECTION

It is the policy of Long Beach to support and enforce, through its CAMA permitting responsibility, state policies as they relate to areas of environmental concern (AEC's).

Water Quality

Protection of the estuarine and beach systems is the policy of Long Beach.

Coastal Management Policy

It is the policy of Long Beach to uphold the guidelines and regulations of the Coastal Area Management Act not only to the letter of the law, but in spirit by consistently dispensing its CAMA permitting responsibilities in a conscientious manner.

The Estuarine System

Long Beach will promote conservation and management of the estuarine system as a whole, which includes individual AEC's: coastal wetlands, estuarine waters, public trust area, and estuarine shorelines.

Coastal Wetlands

Activities in coastal wetland areas shall be restricted to those which do not significantly affect the unique and delicate balance of this resource. Suitable land uses include those giving highest priority to the protection and management of coastal wetlands, so as to safeguard and perpetuate their biological , social, economic, and aesthetic values and to establish a coordinated management system capable of conserving and utilizing coastal wetlands as a natural resource essential to the functioning of the entire estuarine system. These land uses shall achieve little to no non-point source runoff through the minimization of impervious surfaces and the maximization of natural vegetation preservation. Highest priority of use shall be allocated to the conservation of existing coastal wetlands. Second priority shall be given to those uses that require water access and cannot function elsewhere.

Acceptable land uses may include utility easements, fishing piers, and docks. Unacceptable uses may include, but would not be limited to, restaurants, businesses, residences, motels, parking lots, and highways.

Estuarine Waters

In recognition of the importance of this resource for the fisheries and related industries as well as aesthetics, recreation, and education, Long Beach shall promote the conservation and quality of estuarine waters. Activities in these areas shall be restricted to those which do not permanently or significantly affect the function, cleanliness, salinity, and circulation of estuarine waters. Suitable land/water uses include those giving highest priority to conservation and management so as to safeguard and perpetuate biological, social, economic, and aesthetic values and to establish a coordinated management system capable of conserving and utilizing estuarine waters to maximize their benefits to humans and the estuarine system. Highest priority of use shall be allocated to the conservation of estuarine waters and its vital components. Second priority shall be given to uses that require water access and cannot function elsewhere.

Appropriate uses may include simple access channels, structures which prevent erosion, navigation channels, boat docks, and piers.

Long Beach will also support projects in estuarine water areas which aim to increase the productivity of these waters. Such projects include oyster reseeding programs and inlet channeling and dredging operations for the purpose of increasing the flushing action of tidal movement.

Public Trust Areas

In recognition of certain land and water areas in which the public has certain established rights and which support valuable commercial and sports fisheries, have aesthetic value, and are resources for economic development, Long Beach shall protect these rights and promote the conservation and management of public trust areas. Suitable land/water uses include those which protect public rights for navigation and recreation and those which preserve and manage the public trust areas in order to safeguard and perpetuate their biological, economic, social and aesthetic value.

In the absence of overriding public benefit, any use which significantly interferes, as with the public right of navigation or other public trust rights which apply in the area, shall not be allowed. Projects which would directly or indirectly block or impair existing navigation channels, increase shoreline erosion, deposit spoils below mean high tide, cause adverse water circulation patterns, violate water quality standards, or cause degradation of shellfish waters shall not be allowed.

Uses that may be allowed in public trust areas shall not be detrimental to the public trust rights and the biological and physical functions of the estuary. Examples of such uses include the development and navigational channels or drainage ditches, the use of bulkheads to prevent erosion, and the building of piers, docks, or marinas.

Estuarine Shoreline

CAMA defines the estuarine shoreline at Long Beach as the areas 75 feet landward of the estuarine waters. Long Beach recognizes: (1) the close association between estuarine shorelines and adjacent estuarine waters, (2) the influence shoreline development has on the quality of estuarine life, and (3) the damaging processes of shorefront erosion and flooding to which the estuarine shoreline is subject.

Shoreline development has a profound effect on adjacent estuarine waters. Effluent from poorly placed or malfunctioning septic systems can pollute shellfish areas which represent much greater economic benefits to the Town's citizens than do the residential uses of estuarine shoreline areas. In recognition of this fact, Long Beach will use all available means of law to restrict the use of estuarine shoreline areas for residential purposes where there is a substantial chance of pollution occurring.

The natural process of erosion transforms shoreline areas into public trust areas. It shall be the policy of Long Beach to allow this natural process to occur if life or structures are not in jeopardy.

Suitable land uses are those compatible with both the dynamic nature of estuarine shorelines and the values of the estuarine system. Residential, commercial, and recreational land uses are all appropriate types of use along the estuarine shoreline provided that:

- A substantial chance of pollution occurring from the development does not exist, where there is a low percentage of runoff, a high percent of deep and shallow infiltration, and a high degree of evapo-transpiration,

- Natural barriers to erosion are preserved and not substantially weakened or eliminated,

- The disturbance of natural vegetation is minimized,

- The construction of impervious surfaces and area not allowing natural drainage is limited to only that necessary to adequately service the development,

- Standards of the North Carolina Sedimentation Pollution Control Act 1973 are met,

- Development does not create pollution or have any other significant adverse impact on estuarine resources, and

- Development does not significantly interfere with existing public rights of access to, or use of, navigable waters or public resources.

Ocean Hazard Areas

In recognition of the critical nature of ocean hazard areas due to vulnerability to erosion and to the dynamic processes that can be dangerous to life and property, Long Beach supports the State CAMA policies for Ocean Hazard Areas. Ocean hazard forces are the most dynamic in ocean erodible and high hazard flood areas. The 8.3-mile oceanfront is significantly important to economic, aesthetic, and recreational resources of Long Beach. The Town vigorously supports all efforts to protect these areas.

Suitable land uses in ocean hazard areas generally are those which are not vulnerable to unreasonable danger to life and property and which achieve a balance between the financial, safety, and social factors involved in hazard area development. Ocean shoreline erosion control activities, dune establishment/stabilization, and structural accessways are all acceptable types of land uses. Residential, commercial, and recreational land uses are also acceptable types of use in ocean hazard areas provided that:

- Development is landward of the crest of the primary dune; where no primary dune exists, development is set back a minimum of 30 times the average annual erosion rate (60 feet in the area from 58th Street East to Lockwood's Folly Inlet and 90 feet from 58th Street East to 79th Street East) from the first line of stable vegetation.

- Development does not involve the significant removal or relocation of primary or frontal dune sand or vegetation.

- Development implements means and methods to mitigate or minimize adverse impacts of the project.

- Development of growth-inducing public facilities such as sewers, waterlines, roads, and erosion control measures is permitted only in cases where:

  -- national or state interests and public benefits are clearly overriding factors,

  -- facilities would not exacerbate existing hazards or damage natural buffers,

  -- facilities would be reasonably safe from flood and erosion related damage, and

  -- facilities do not promote growth and development in ocean hazard areas.

Prior to the issuance of any permit for development in ocean hazard AEC's, there shall be a written acknowledgement from the applicant stating awareness of the risks associated with development in this hazardous area.

- The Town of Lang Beach believes that the 8.3 miles of ocean shoreline is a valuable natural recreational resource that should be kept clean and safe for public use. Therefore, it is the policy of Long Beach to provide appropriate beach access and parking facilities, trash receptacles, stump removal when deemed to be hazardous to public safety, and any other beach service which would be feasible and appropriate, excepting erosion control activities.

- The natural process of erosion transforms shoreline areas into public trust areas. It shall be the policy of Long Beach to allow this natural process to occur.

- All other regulations adopted by the Coastal Resources Commission will be applicable and shall be complied with.

Natural and Cultural Resource Areas

Long Beach will support the following actions regarding these irreplaceable resources:

- Protection of unique habitat conditions that are necessary to the continued survival of threatened and endangered native plants and animals and to minimize land use impacts that might jeopardize these conditions.

- Protection of the features of a designated coastal complex natural area in order to safeguard its biological relationships, educational and scientific values, and aesthetic qualities. Specific objectives for each of these functions shall be related to the following policy statement either singly or in combination:

  -- To protect the natural conditions or sites that function as key or unique components of coastal systems. The interactions of various life forms are the foremost concern and include sites that are necessary for the completion of life cycles, areas that function as links to other wildlife areas (wildlife corridors), and localities where the links between biological and physical environments are most fragile.

-- To protect the identified scientific and educational values and to ensure that the site will be accessible for related study purposes as has been provided to Big Davis Canal and its related marsh area from 19th Street East via the board deck and gazebo.

- To protect the values of the designated coastal complex natural area as expressed by Long Beach and its citizenry. These values should be related to the educational and aesthetic qualities of the feature.

- Conservation of coastal archaeological resources as they may be identified of more than local significance to history or prehistory that constitute important scientific sites, or are valuable, educational, associative, or aesthetic resources. There are 76 such sites in Long Beach recognized by the N.C. Department of Cultural Resources. Wherever there is question of protection of these, the town will seek assistance and determination from the Division of Archives and History before proceeding to issue permits. Specific objectives for each of these functions shall be related to the following policy statements either singly or in combination:

-- to conserve significant archaeological resources including their spatial and structural context and characteristics through site preservation or scientific study,

-- to ensure that the designated archaeological resource, or the information contained therein, be preserved for and be accessible to the scientific and educational communities for related study purposes, and

-- to protect the values of the designated archaeological resource as might be expressed by Long Beach and its citizens; these values should be related to the educational, associative or aesthetic qualities of the resource.

Development may be permitted in designated fragile coastal natural or cultural resource areas provided that the proposed design and location will cause no major or irreversible damage to the stated values of a particular resource. One or more of the following values must be considered depending upon the stated significance of the resource:

- Development shall preserve the values of the individual resource as its functions as a critical component of a natural system.

- Development shall not adversely affect the values of the resource as a unique scientific, associative, or educational resource.

- Development shall be consistent with the aesthetic values of a resource as identified by Long Beach and its citizens.

- No reasonable alternative sites are available outside the designated AEC.

Reasonable mitigation measures have been considered and incorporated into the project plan. These measures shall include consultation with recognized authorities and with the Coastal Resources Commission.

The project will be of equal or greater public benefit than those benefits lost or damaged through development.

PHYSICAL CONSTRAINTS TO DEVELOPMENT

Public Water Supply

It is the policy of the town to rely on Brunswick County for all of its public water supply.

Solid Waste Disposal

It is the policy of Long Beach to have this service provided in an efficient, safe, and sanitary manner. Long Beach supports the county's participation in regional landfill projects so long as adequate landfill sites are retained, maintained, and guaranteed.

Septic Tank Suitability

In conformance with state and county health regulations, growth and development will not be allowed in areas where septic tanks will not function and sewer services are not available.

Drainage

Long Beach will discourage new development of such areas unless there is adequate assurance by the developer for correcting any such problems of flooding or water storage, and in such manner that there is no adverse condition created on adjoining land areas.

RESOURCE PRODUCTION AND MANAGEMENT

Net Fishing

The use of nets for fishing within 300 yards of the beach between 79th Street East (town limits) and Lockwood's Folly Inlet is prohibited between May 15 and September 15.

Coastal and Estuarine Waters

Any development which will profoundly and adversely affect coastal and estuarine waters will be restricted.

Off Road Vehicles

In May 1978, Long Beach passed an ordinance prohibiting the use of all vehicles on the beach strand and dune areas. The only exceptions to the ordinance are for the use of emergency vehicles and town-authorized vehicles.

Recreational Resources

It is the policy of the town to hire a full-time recreation staff with added summertime help to provide a recreation building for a variety of recreational and other community uses, to operate a town park for children's passive activities primarily at the west end, to provide canoe trail and boating access to Davis Creek/Canal at the Recreation Building, and to render access to the marshlands of Davis Creek for human/environmental interface via boardwalks and a gazebo. It is the policy of the town to promote the usage of these facilities through activities reports and events announcements and through conspicuous signage.

Commercial and Recreational Fisheries

It is the policy of Long Beach to protect AEC's through administration and to provide special access to them at the Tidal-Way Trails Park entrance to Davis Creek at the Recreational Center and at the Nature Walk trail and gazebo which crosses Davis Creek at 19th Place East.

Impervious Surface Runoff

Long Beach's policy is to use all financially feasible and environmentally acceptable means at its disposal to help cut the damage of flooding.

ECONOMIC AND COMMUNITY DEVELOPMENT

Growth and Development

It is the policy of Long Beach to manage and direct its growth to balance development and the provision of municipal services by:

- Basing population and growth guidance on the following criteria: (a) suitability of the land to accommodate use; (b) capacity and protection of the environment; (c) compatibility with the goals and objectives of the town; (d) density; (e) location of use; and (f) availability of facilities and services.

- Preparing for a population growth that will continue at about the current rate with a permanent residency of 4,627 and an average summer weekday population of 35,000 by the year 2000.

- Instituting continuous land use planning and growth direction with effectively enforced zoning, subdivision, and building codes, amended in accordance with that planning, as the key tools for managing population and economic growth in Long Beach.

- Guiding new development away from AEC's, providing protection for unique natural features, sensitive vegetative areas, rookeries, special habitats, and unstable physical forms such as dunes, inlets, and shorelines.

- Guiding new development away from hazardous areas where there is a tendency toward septic tank problems, flooding, washover, and inlet cutting.

- Approving development only when and where adequate facilities and services to support it are available.

- Amending the Long Beach Hurricane Mitigation Plan and its respective policies for guiding redevelopment and new growth as conditions in the town change.

Town Character

It is the policy of Long Beach to promote and preserve the "family" oriented, retirement-resort atmosphere and reputation of the community by limiting the amount of activities that would detract from the town's present character and distinction through effective land use plan implementation, and conscientious building permit, CAMA permit and zoning ordinance administration, and by advertising the town as quiet, family beach, upholding that tradition.

Housing and Residential Development

It is the policy of Long Beach to continue to encourage the development of a variety of housing types to meet the needs and desires of the citizenry and future permanent and seasonal residents by:

- Maintaining an area exclusively for single-family dwellings primarily for the growing permanent and seasonal population.

- Providing an area for mobile homes to accommodate both permanent and seasonal occupancy.

- Establishing an area for condominiums and apartments, maintained to accommodate vacationing, resort, retired and other permanent populations.

- Providing in the beach section of town for motels and hotels and their attendant facilities.

- Retaining the thirty-five (35)-foot height limitation for residential, commercial, and institutional structures.

Appearance and Cleanliness

It is the policy of Long Beach to improve and enhance its visual quality and attractiveness, both of which are directly related to liveability and economic viability by:

- Celebrating Long Beach Spruce-up Week in the spring of every year.

- Strengthening and enforcing town ordinance relating to residential and commercial property cleanup with provisions for the town to do the job at the owner's expense, if not carried out after proper notification.

- Requiring developers and construction companies to clean up during building activities and after jobs are complete.

- Continuing to pick up domestic garbage once per week in the winter and twice per week in the summer.

- Establishing a continuous cleanliness campaign with posters, signs, and additional trash (pitch-in) receptacles.

- Creating a community appearance commission with the charge to conduct clean-up campaigns, to receive referrals from the Town Council and Planning Board for recommendations, and to institute

community activities, within the context of its charter, relating to beautification, environmental protection and preservation, advocacy for quality development, and education.

Commercial Development

It is the policy of Long Beach to enhance and promote quality commercial development by:

- Encouraging community oriented business to cluster in the existing commercial district on Oak Island Drive and limiting the strip development configuration now in existence with office and institutional uses on both ends.

- Locating recreation and tourist businesses generally in designated sections of the beach area, discouraging strip development.

- Exploring the feasibility of a zoning change for a convenience shopping facility in the west end as suggested in the Growth Management Plan of June, 1984.

- Encouraging the formation of a business association for Long beach.

- Requiring the construction materials, gravel and sand piles, and equipment storage not be allowed in commercial districts in accordance with the zoning ordinance.

- Instituting a major paint-up/clean-up campaign in commercial areas to improve the image of the town.

Public Works and Services

It is the policy of Long Beach to increase its capacity proportionately to provide public works facilities and services to growing permanent and seasonal populations and to existing and developing, residential, commercial and recreational areas by:

- Increasing the town's capabilities to keep the beach and town proper free of litter and trash, particularly during the summer months to improve the cleanliness and image of the community.

- Supplying more signs and receptacles in problem areas to encourage cleanliness.

- Continuing its sewer system studies to determine where and when sewerage might be installed incrementally with accompanying treatment facilities provide either by the public or private sectors.

- Exploring privatization of public works equipment, facilities, and services as a means of providing an improved quality of service more economically.

- Developing a plan and program for alleviating drainage problems on a year-by year incremental basis.

- Instituting a means to pave streets through year-by-year planning and priority programming based on traffic demand, citizen requests, and ability to pay.

- Preparing a plan for providing street lighting where population concentrations require.

- Improving its ability to maintain streets in good condition.

Traffic Circulation and Transportation

It is the policy of Long Beach to meet the increasing need to move people and goods from place to place conveniently, safely, quickly, and efficiently, particularly during the summer months, when traffic congestion is highest by:

- Planning for the installation of curb, gutter, and sidewalks along Oak Island Drive, first in commercial areas, to control access to businesses, to separate on-site parking from traffic, to facilitate smoother traffic flow, and to improve the appearance of Long Beach.

- Facilitating off-street parking areas in close proximity to commercial establishment.

- Modifying traffic circulation patters to enhance flow by incorporating one-way loop streets into the system.

- Maintaining public beach access and parking.

- Paving residential streets in accordance with annual planning and priority programming.

- Planning for modification of the grid system of streets in residential sections for the purposes of curtailing thru traffic, discouraging high speed driving, promoting safety for children, stemming tidal and flooding washover, increasing neighborhood atmosphere, improving property values, and decreasing street maintenance costs.

- Mounting a concerted campaign with Caswell and Yaupon Beaches to acquire a second bridge for Oak Island either at Middleton Avenue or at the west end.

- Joining with Yaupon Beach in seeking to modify the intersection NC 133 and Yaupon Drive (Oak Island Drive), moving the stop sign to NC 133 coming from Caswell Beach.

- Developing a plan for bikeways/sidewalks in strategic locations.

- Encouraging the expansion of the county-sponsored transportation system for the elderly and handicapped.

Public Safety and Security

It is the policy of Long Beach to provide the highest level of safety possible in response to growth and development within financial constraints for humans and property by:

- Establishing a beach patrol during the peak summer months.

- Exploring alternative means of patrolling the town and beach during daylight hours, including mounted and walking police possibilities.

- Encouraging the establishment of additional Community Crime Watch programs.

- Seeking ways to enlarge or decrease the numbers of police officers during seasonal fluctuations.

- Expanding the police force as population growth occurs in accordance with state and national public safety standards.

- Supporting the Long Beach Rescue Squad so that it can continue to provide services to meet the needs of the growing population.

Fire Protection

It is the policy of Long Beach to support the town's Volunteer Fire Department. The town has cooperative fire protection arrangements with Yaupon Beach and Caswell Beach and other communities and volunteer departments in the county.

New Development and Growth Activities

It is the policy of Long Beach to encourage new development in areas which have full town service and infrastructure, no major flooding problems, septic tank suitability, and where there is no encroachment upon AEC's and other fragile areas.

It is the policy of Long Beach to monitor growth and its impacts to the best of its ability to assure that the environmentally sensitive areas within and abutting its borders will be protected and enhanced.

Vulnerability and Hazard Mitigation

Through its Hurricane Safety Committee as appointed by the Town Council, it is the policy of Long Beach to maintain its 1984 Hurricane/Storm Plan up to date to meet the changing needs of the community. The town will, on an annual basis, prior to storm season, during the month of July: (a) review emergency activities and roles of respective groups; (b) identify high risk individuals who need assistance in evacuation; and (c) seek ways to improve existing codes and assure that they are, in fact, being enforced.

1. The town will update brochures as found to be necessary which give safety advice and town policy for residents in the event of hurricanes, other storms, and flooding regarding medical care, evacuation, and temporary shelter.

2. The town will adhere strictly to the administration of a zoning ordinance, the building code, and CAMA regulations for the future safety of its citizens and their property.

3. Long Beach will seek to take the lead in seeking to have a second bridge to the island built at mid-town.

4. The town will seek out a "sistertown" on the mainland, so that additional staff and equipment can be made available during emergencies. The "sistertown" will be inland far enough to be less vulnerable to the same storms as Long Beach.

5. It is the policy of Long Beach to curtail to the greatest extent possible development and additions in areas susceptible to high winds, flooding, wave action, and erosion.

6. It is the policy of Long Beach to allow no building construction in AEC's including the salt marsh, low-lying wet areas, and ocean hazard areas.

7. It is the policy of the town to limit development in the V Flood Zone as shown on the Composite Hazards Map in accordance with CAMA and Federal Flood Insurance regulations and the zoning ordinance to alleviate as much as possible damage from wave action and erosion.

8. The town will not allow further construction and additions not conforming to these hazard mitigation policies, which would

increase vulnerability and nonconformity to the flood ordinance, zoning ordinance, building codes and CAMA regulations.

Zoning

It is the policy of Long Beach to modify the zoning ordinance from time-to-time to improve its effectiveness as a growth guidance tool to carry out the land use plan.

Culture and Recreation

It is the policy of Long Beach to maintain an environment where cultural and recreational activities can flourish for the benefit of permanent residents, the seasonal population, and vacationing visitors by:

- Completing the Recreation Center.
- Establishing a senior services center.
- Encouraging art shows, antique sales, fish fries, barbecues, clam bakes, festivals, and concerts during the spring, summer, and fall months.
- Holding an annual town arts and crafts festival based on a local theme, e.g., conch, Scotch Bonnet, dogwood, shad, azalea, etc.

Town Administration

It is the policy of Long Beach to manage growth by:

- Monitoring staff and professional service needs in planning, engineering, and inspections so that quality of development can be maintained and improved as growth increases in speed and quantity.
- Seeking ways to acquire better and more spacious accommodations for the town staff so that they can continue to supply high quality services and maintain efficiency in government.

Marina and Public Boat Accesses

It is the policy of Long Beach to provide public boating access. Floating homes are not permitted within the confines of the town limits.

Energy Facilities

It is the policy of Long Beach to evaluate the need for all community service facilities on demand in accordance with the land use plan.

Channel Maintenance

It is the policy of Long Beach to be able to maintain channels.

3. Data Sources

Listed below are some of the sources and documents utilized during preparation of this land use plan:

- Brunswick County 1992 Land Use Plan Update
- Town of Long Beach 1986 Land Use Plan Update
- USDA, Soil Conservation Service, Brunswick County
- NCDOT, Planning and Policies Section
- Town of Long Beach Staff
- Brunswick County Schools
- North Carolina Division of Archives and History
- Flood Insurance Study, Town of Long Beach
- Town of Long Beach Code of Ordinances
- N.C. State Data Center, Office of State Planning
- An Assessment of Maritime Forest Resources on the North Carolina Coast, November, 1988
- North Carolina Division of Community Assistance
- North Carolina Division of Coastal Management
- North Carolina Department of Commerce
- Town of Long Beach Storm Hazard Mitigation Plan and Post Disaster Reconstruction Plan, 1986
- Brunswick County Thoroughfare Plan

These sources were supplemented by "windshield" surveys conducted in January, 1993, to obtain data on existing land use patterns and housing conditions.

B. POPULATION AND HOUSING

1. Population

The Town of Long Beach has more than doubled its population since 1980. The 1980 Census figures indicated a total population of 1,844 persons. The 1990 total population was 3,816 persons, almost a 107% increase. This growth rate is much higher than the 1980-1990 population growth rates of Brunswick County and North Carolina, 43% and 10%, respectively. Table 1 provides detailed population trends for Long Beach, Brunswick County, and North Carolina.

Table 1
Total Population - 1980, 1990
Town of Long Beach, Brunswick County, North Carolina

	1980	1990	Numeric Change	% Change
Long Beach	1,844	3,816	1,972	+106.9%
Brunswick County	35,777	50,985	15,208	+42.5%
North Carolina	6,040,592	6,628,637	588,045	+9.7%

Source: N.C. State Data Center, Office of State Planning

The two age groups with the highest increases in population growth were the 45-54 and the 65 and over (retirement) age groups, with 174% and 168% rates of growth respectively. The 65 and over age group comprised the largest percentage (17%) of the total 1990 population for Long Beach, whereas, in 1980, the largest age group was the 25-34 age group, comprising 15.5% of the total. This indicates that Long Beach may be becoming more of a retirement-oriented community. Table 2 provides detailed population characteristics by age for 1980 and 1990.

Table 2
Population Characteristics by Age Group
Town of Long Beach - 1980, 1990

Age	1980	1990	# Change	% Change
Under 5 years	94	179	85	+90%
5-14 years	243	411	168	+69%
15-24 years	251	318	67	+26%
25-34 years	286	552	266	+93%
35-44 years	230	491	261	+113%
45-54 years	217	596	379	+174%
55-64 years	281	620	339	+120%
65 & over	242	649	407	+168%
TOTAL	1,844	3,816	1,972	+106%

Source: N.C. State Data Center, Office of State Planning.

Long Beach's population composition by sex has remained relatively constant from 1980 to 1990. During this period, the town's female population decreased by 2%, while the male population increased by 2%. There is currently a 51%/49% male/female ratio. The male/female ratio is consistent with that of Brunswick County in 1990. Table 3 provides detailed information on population composition by sex.

The Town of Long Beach has a very small non-white population, which has actually declined since the 1980 Census. The 1980 Census data indicated that non-white residents comprised 0.87% of the population, compared to 23% for Brunswick County. In 1990, the non-white population had decreased to 0.21% of the total population, compared to 18% for Brunswick County. The non-white population can be expected to remain low in proportion to the total population in the future. Table 4 provides detailed information on racial composition in Long Beach.

Table 3
Change in Population by Sex
Long Beach, Brunswick County - 1980, 1990

	Long Beach				Brunswick County			
	1980		1990		1980		1990	
	Number	% of Total	Number	% of Total	Number	% of Total	Number	% of Total
Male	908	49%	1935	51%	17,619	49%	24,934	49%
Female	936	51%	1881	49%	18,158	51%	26,051	51%
Total	1844	100%	3816	100%	35,777	100%	50,985	100%

Source: N.C. State Data Center, Office of State Planning.
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Table 4
Population Change by Race
Town of Long Beach - 1980, 1990

	1980	1990	Numeric Change	% Change
White	1,828	3,808	1,980	108%
Other Race	16	8	(8)	-50%

Source: N.C. State Data Center, Office of State Planning.

2. Housing Characteristics

Since 1980, substantial residential construction growth has occurred in Long Beach, with the number of units more than doubling the 1980 figure. The 1980 Census reported a total of 2,172 dwelling units. The 1990 Census indicated an increase of 113%, or 2,446 additional units since 1980. For comparison purposes, Brunswick County experienced a 72% increase in residential construction over the same period. See Table 5.

Table 5
Housing Tenure and Vacancy
Town of Long Beach - 1980, 1990

	1980	1990	Numeric Change	% Change
TOTAL UNITS	2,172	4,618	2,446	112.6%
Total Year Round Units				
Occupied	754	1,683	929	123.2%
Renter Occupied	162	360	198	122.2%
Owner Occupied	592	1,323	731	123.4%
Vacant Units	1,418	2,935	1,517	106.9%
For Sale	40	149	109	272.5%
For Rent	108	165	57	52.7%
Other	74	228	154	208.1%
Seasonal Units	1,196	2,393	1,197	100.1%

Source: N.C. State Data Center, Office of State Planning;
Holland Consulting Planners, Inc.

From 1987 through 1993, Long Beach has issued 670 building permits for residential homes. See Table 6.

Table 6
Residential Building Permits
Town of Long Beach - 1987-1993

Year	# of Permits Issued
1987	130
1988	132
1989	81
1990	79
1991	74
1992	89
1993	85

Source: Town of Long Beach Building Report Summaries.

Almost half (49%) of the housing units in Long Beach are less than 10 years old. Only twenty-three homes were built 40 or more years ago. It should be noted that in 1954, Hurricane Hazel destroyed the majority of the homes in Long Beach. Mobile homes comprised approximately 13% of the total dwelling units 1990. Single-family detached dwelling units comprised 82% of the town's total housing stock in 1990. Table 7 provides detailed information on housing conditions in Long Beach.

Table 7
Housing Conditions
Town of Long Beach - 1990

Condition and Age	Number	% of Total
Total Year-Round Units	4,618	100%
Age		
0 - 9 years	2,264	49.0%
10-19 years	1,412	30.6%
20-29 years	681	14.7%
30-39 years	238	5.2%
40 or more years	23	0.5%
Condition		
Lacking complete plumbing facilities	28	0.6%
Lacking complete kitchen facilities	0	0%
Lacking complete heating equipment	14	0.3%
Type		
Single Family	3,794	82.2%
Detached	3,763	81.5%
Attached	31	0.7%
Multi-family	230	5.0%
2 units	121	2.6%
3 or more units	109	2.4%
Mobile home or trailer [1]	594	12.9%

Source: NC State Data Center, Office of State Planning

[1] Mobile Home or Trailer: Both occupied and vacant mobile homes to which no permanent rooms have been added. If only a porch or shed has been added, the unit is counted in this category. Mobile homes or trailers used only for business purposes or for extra sleeping space, and mobile homes or trailers for sale on a dealer's lot at the factory, or in storage, are not counted in the housing inventory. In the printed reports, this category includes occupied housing units indicated as "boat, tent, van, etc.," i.e., any occupied units which do not fit the other listed categories. Houseboats, railroad cars, campers, and caves used as usual place of residence provide additional examples. (Source: 1990 Census)

3. Summary

The following provides a summary of significant demographic and housing findings:

-- Long Beach experienced a major population increase from 1980 to 1990 -- 107%. Brunswick County's and North Carolina's percentage increases in population were 43% and 10%, respectively, over the same period.

-- The 45 to 54 year age group in Long Beach experienced a 174% increase from 1980 to 1990.

-- The retiree (65 year and older) population had a 168% increase between 1980 and 1990.

-- Substantial residential construction growth has occurred in Long Beach from 1980 to 1990.

-- Only 23 homes in Long Beach were built before 1950.

-- Approximately 13% of Long Beach's housing units are mobile homes. (This includes double-wide mobile homes but excludes prefabricated homes).

C. ECONOMY

Using mean or average household income as an indicator of local economy, Long Beach has a relatively strong economy. The mean household income for Long Beach, as recorded in the 1990 Census, was approximately 16% higher than that of Brunswick County, and 4% higher than that of the state. See Table 8.

Table 8
Mean Household Income, 1989
Long Beach, Brunswick County, North Carolina

	1989
Long Beach	$34,458
Brunswick County	$29,668
North Carolina	$33,242

Source: N.C. State Data Center, Office of State Planning.

In 1990, Long Beach's percentage of unemployed persons was slightly lower than that of Brunswick County at 2.6% and 4.2% respectively. Long Beach's percentage of persons not in the labor force was 4% higher than that of Brunswick County. Individuals not in the labor force are either disabled, unemployed by choice, or retired. Brunswick County has a higher percentage of employed persons in the civilian labor force than Long Beach. Table 9 provides detailed information on labor force status.

Table 9
Labor Force Status
Persons 16 Years Old and Over
Town of Long Beach, Brunswick County - 1990

	Male	Female	Total	% of Total
Long Beach Labor Force				
Civilian Labor Force				
Employed	886	792	1,678	53.1%
Unemployed	69	46	82	2.6%
Not in Labor Force	638	764	1,402	44.3%
TOTAL	1,593	1,602	3,162	100.0%
Brunswick County Labor Force				
Armed Forces	81	8	89	0.2%
Civilian Labor Force				
Employed	12,522	9,788	22,310	55.2%
Unemployed	750	952	1,702	4.2%
Not in Labor Force	6,100	10,211	16,311	40.4%
TOTAL	19,451	20,959	40,412	100.0%

Source: N.C. State Data Center, Office of State Planning.

Long Beach and Brunswick County have the same percentage of employed persons working at governmental jobs, at 13%. Seventy-four (74) percent of employed persons in Long Beach are private wage and salary workers. See Table 10.

Table 10
1990 Employment by Class of Worker
Town of Long Beach, Brunswick County

	Long Beach		Brunswick Co.	
Class	#	% of Total	#	% of Total
Private wage & salary worker	1,249	74.4%	16,974	76.1%
Local government worker	110	6.6%	425	1.9%
State government worker	58	3.5%	1,076	4.8%
Federal government worker	53	3.1%	1,405	6.3%
Self-employed	189	11.3%	2,283	10.2%
Unpaid family worker *	19	1.1%	147	0.7%
TOTAL	1,678	100.0%	22,310	100.0%

Source: N.C. State Data Center, Office of State Planning.

* Unpaid family workers are persons who worked without pay on a farm or in a business operated by a person to whom they are related by blood or marriage. These are usually the children or the spouse of the owner of a business or farm. About one-quarter of the unpaid family workers are farm workers.

The majority of employed persons in Long Beach work in the retail trade industry, approximately 23% (see Table 11). This appears to be largely tourist dependent. The communications or other public utilities, construction, and public administration industries provide occupations for many Long Beach residents as well. There are no industrial sites in Long Beach; however, the town functions as a bedroom community for workers employed in other parts of Brunswick County, so the lack of industrial facilities does not have an adverse impact on local employment. See Table 11 for detailed information on employment by industry.

Table 11
Employed Persons 16 Years and Older by Industry
Town of Long Beach - 1990

Occupation	Number Employed	% of Total
Agriculture, forestry, fisheries & mining	7	0.4%
Construction	201	11.9%
Manufacturing:		
Nondurable goods	112	6.6%
Durable goods	64	3.8%
Transportation	8	0.5%
Communications & other public utilities	239	14.2%
Wholesale trade	54	3.2%
Retail trade	392	23.4%
Finance, insurance & real estate	95	5.7%
Services:		
Business & repair services	21	1.3%
Personal services	75	4.5%
Entertainment & Recreation	33	2.0%
Professional & related services:		
Health services	82	4.9%
Educational services	85	5.1%
Other professional & related services	89	5.3%
Public Administration	121	7.2%
TOTAL EMPLOYED	1,678	100.0%

Source: N.C. State Data Center, Office of State Planning.

Table 12 indicates that the town of Long Beach has a very small portion of individuals that are considered to be below the poverty level. Based on the number of persons enumerated for poverty status in 1990, less than 3% of the population were considered to be below 75% of the poverty level. A relatively high percentage (80%) of the population is reported as having income 200% of the poverty level and above.

Table 12
Poverty Status
Town of Long Beach - 1990

Income Level	Individuals	% of Total
Income below 75% of poverty level	98	2.6%
Income between 75% & 124% of poverty level	340	9.0%
Income between 125% & 149% of poverty level	52	1.4%
Income between 150% & 199% of poverty level	287	7.5%
Income 200% of poverty level & above	3,015	79.5%
TOTAL	3,792	100.0%

Source: N.C. State Data Center, Office of State Planning.

The following provides a summary of significant economic data for Long Beach.

-- The mean household income for Long Beach is higher than that of both Brunswick County and North Carolina.

-- Unemployment in Long Beach is low as compared to Brunswick County, North Carolina, and the nation as a whole.

-- In 1990, 79.5% of the population have incomes which are 200% of the poverty level and above; 2.6% are considered to be below the poverty level.

D. EXISTING LAND USE

1. Introduction

The 1986 Long Beach Land Use Plan provided a general analysis of existing land use issues. Those issues are summarized as follows:

- The eastern section of town (generally east of 65th Street East) was overcrowded. Septic tanks failures were a problem. On many mobile home lots, trees and bushes were thick, presenting obstacles to effective fire protection.

- The town's commercial area along East Oak Island Drive had developed as a strip commercial development. This type of development was not conducive to pedestrian traffic and created vehicular congestion. In general, parking was inadequate and unorganized.

- In the beach areas, many homes had been built for speculative purposes. Many potential buyers were unaware of the dangers of purchasing homes adjacent to fragile areas, especially on the western end of the island.

- The town did not have central sewer service. Most lots were small (55' x 120') and almost all of the town had been subdivided. The long-range effect was the potential for widespread septic tank failures as development and density increased.

- Most of the town was subdivided in a grid street system which was conducive to thru traffic in residential areas. This system resulted in the uneconomical provision of municipal services. In addition, long residential blocks severely restricted east-west traffic mobility.

- During the summer months, traffic congestion was a serious problem throughout Long Beach.

During the planning period, 1987 to 1992, these problems continued to exist. These are all extremely complicated issues. Many of the problems are the direct result of the almost total subdivision of Long Beach into small single-family residential lots. While the emphasis on some land use issues may have shifted from 1986 to 1992, most of the critical land use issues remain unchanged.

2. Residential Land Use

The town's residential use is clearly divided amongst three areas:

- Eastern Long Beach--the area bounded by the eastern town limits, East Oak Island Drive on the south, a line lying between 64th Street East and 65th Street East on the west, and the Intracoastal Waterway on the north.

- Mid and West Town--the area bounded on the east by a line lying between 64th Street East and 65th Street East on the east, East Oak Island Drive and Davis Creek/Davis Canal on the south, and the Intracoastal Waterway on the west and north.

- The Beach area--the areas south of East Pelican Drive and Davis Creek/Davis Canal.

a) Eastern Long Beach

Long Beach's 1993 zoning districts are delineated on Map 1. This map has been included to aid in defining the distribution of land uses.

Eastern Long Beach is the oldest and most densely developed section of the town. The area is zoned R-2 (Residential) which allows the placement of mobile homes on individual lots. Specifically, the R-2 zone has a minimum 6,600 square foot lot size and allows the following:

Permitted Uses.

(1) Single-family dwellings;
(2) Mobile homes, provided that they have at least five hundred and fifty (550) square feet of habitable living space and are serviced by an approved septic tank system or sewage disposal facility;
(3) Customary accessory buildings and uses incidental to the uses permitted in the district;
(4) Churches;
(5) Public parks, playgrounds, community centers;
(6) Signs;
(7) Private marinas and piers;
(8) Home occupations;
(9) Family care homes.

Conditional Uses.

(1) Day care centers;
(2) Public utility uses or structures.

Less than 200 out of a total of approximately 1100 lots remain undeveloped. Mobile homes account for approximately 50% of the existing development. Many of the mobile homes are over 15 years old and are not constructed to current State and HUD Standards. This is particularly significant because minimum wind resistant standards are not met. Extensive damage or complete destruction should be expected in the event of a major storm.

FEBRUARY 1993 ZONING MAP

TOWN OF LONG BEACH

NORTH CAROLINA

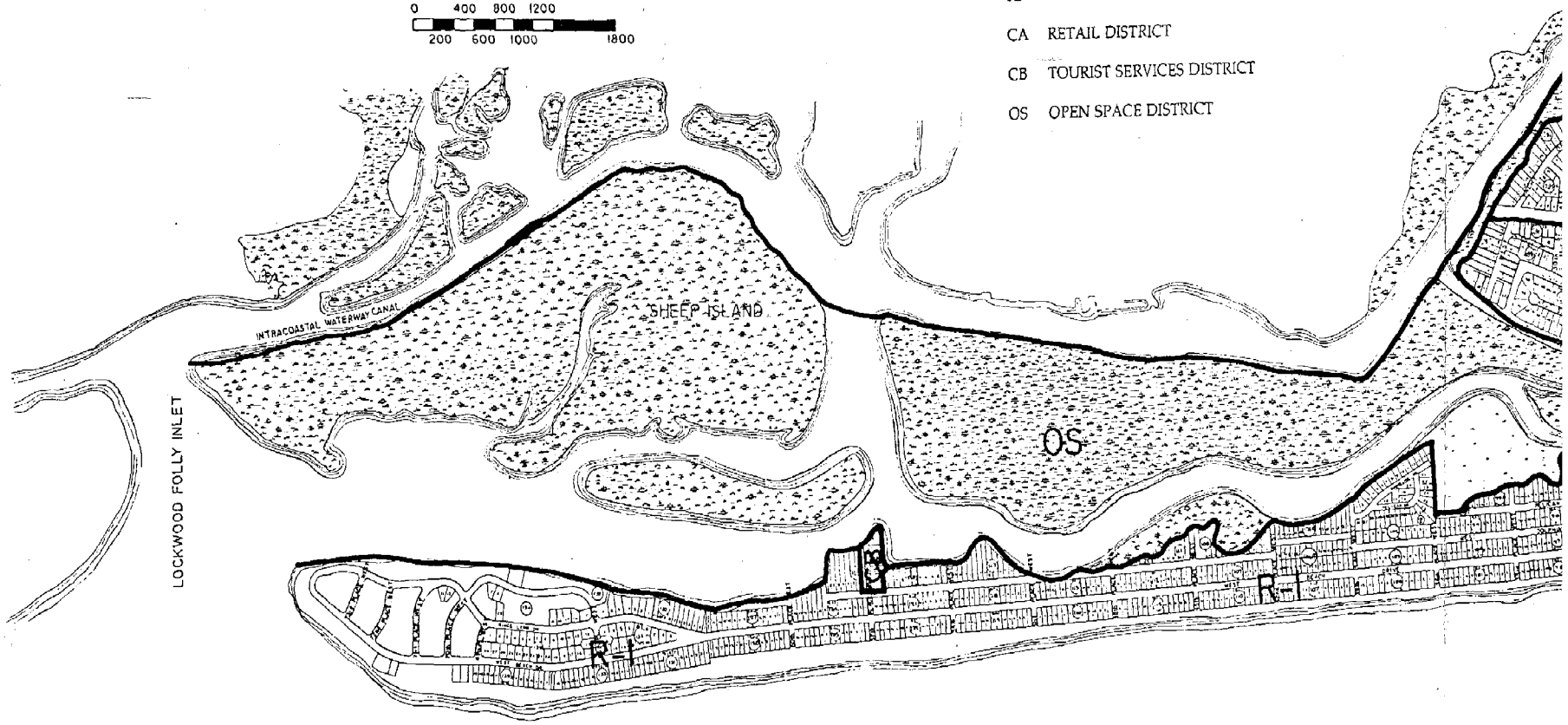
SCALE IN FEET

0 400 800 1200

200 600 1000 1800

LEGEND

R1	ONE- AND TWO-FAMILY DWELLING DISTRICT
R2	SINGLE-FAMILY AND MOBILE HOME DISTRICT
R3A	SINGLE-FAMILY DWELLING DISTRICT
R3B	SINGLE-FAMILY DWELLING DISTRICT
R3C	SINGLE-FAMILY DWELLING DISTRICT
R4A	SINGLE-FAMILY DWELLING DISTRICT
R4B	SINGLE-FAMILY DWELLING DISTRICT
R5	MULTI-FAMILY, SINGLE-FAMILY DWELLING DISTRICT
CA	RETAIL DISTRICT
CB	TOURIST SERVICES DISTRICT
OS	OPEN SPACE DISTRICT



MAP WAS FINANCED IN PART
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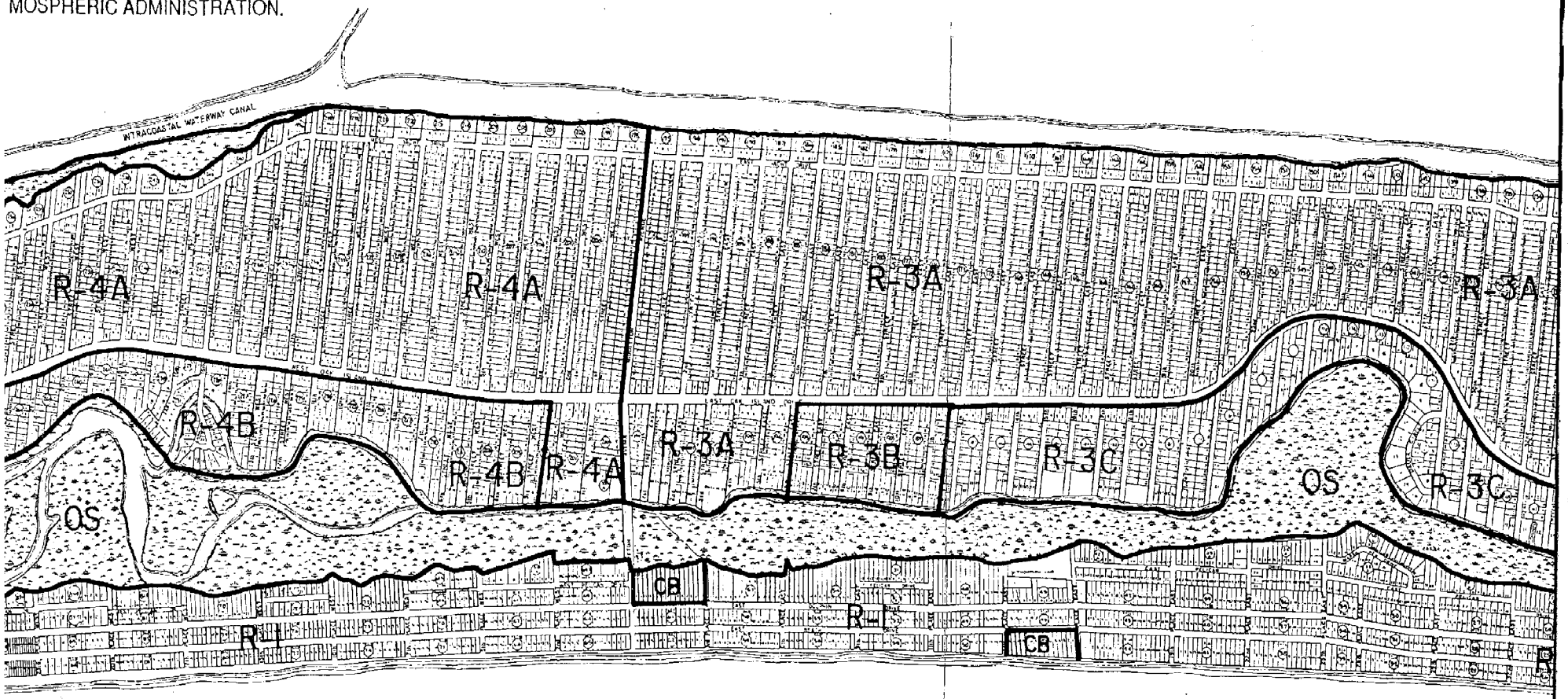


ATLANTIC OCEAN

MAP 1
FEBRUARY 1993 ZONING MAP

Eastern Long Beach has the lowest elevation of the town's developed areas. Problems resulting from the high water table are particularly pronounced following periods of heavy rainfall. Extensive problems with septic tank operation are experienced in this area as the result of the low elevation and high water table.

As cited in the 1986 Land Use Plan, thick vegetation exists around many of the mobile homes. This presents an obstacle to effective fire fighting. In addition, tree roots frequently clog septic drain lines and disrupt sewage treatment.

b) Mid and West Town

The Mid and West town sections of Long Beach contain conventional, predominantly single-family dwellings. There are approximately 11,250 residential lots of which 7,260 remain vacant. The vacant lots are evenly distributed, not being concentrated in one particular area of the town.

The long rectangle grid system street pattern is most pronounced in this section of the town. This street pattern restricts east-west mobility and complicates utility construction, including drainage facilities. However, little can be done to remedy the situation because almost all of the town has many subdivided lots and the great majority of the lots have been sold to individual owners.

Except for some areas scattered along the Intracoastal Waterway, this section of town contains some of the best soils found within Long Beach. Generally, the water table is greater than 4 feet below ground surface and septic tanks are permissible. However, lot sizes are consistently small averaging 8,250 square feet per lot which provides limited area for drainage fields.

The following defines the 1993 zoning uses allowed within the Mid and West town sections.

- R-3A, minimum lot size 6,600 square feet; minimum living space 850 square feet.

  Purpose. The R-3A residential district is intended to be a quiet neighborhood consisting of single-family dwellings along with limited home occupations and various public and private community support facilities or services that may be compatible with residential development.

  Permitted Uses.

  (1) Single-family dwellings;
  (2) Customary accessory buildings and uses incidental to the uses permitted in the district;
  (3) Churches;
  (4) Public parks, playgrounds, golf courses, community centers;
  (5) Schools, public and private;

(6) Signs;
(7) Private marinas and piers;
(8) Home occupations;
(9) Family care homes.

Conditional Uses.

(1) Day care centers;
(2) Fraternal organizations;
(3) Group homes;
(4) Hospitals;
(5) Nursing homes and convalescent centers;
(6) Public utility uses and structures.

- R-3B, minimum lot size 6,600 square feet; minimum living space 1,000 square feet.

Purpose. The R-3B residential district is intended to be a quiet neighborhood consisting of single-family dwellings along with limited home occupations and various public and private community support facilities or services that may be compatible with residential development.

Permitted Uses.

(1) Single-family dwellings;
(2) Customary accessory buildings and uses incidental to the uses permitted in the district;
(3) Churches;
(4) Public parks, playgrounds, golf courses, community centers;
(5) Schools, public and private;
(6) Signs;
(7) Private marinas and piers;
(8) Home occupations.
(9) Family care homes.

Conditional Uses.

(1) Day care centers;
(2) Fraternal organizations;
(3) Group homes;
(4) Hospitals;
(5 Nursing homes and convalescent centers;
(6) Public utility uses and structures.

- R-3C, minimum lot size 6,600 square feet; minimum living space 1,200 square feet.

  Purpose. The R-3C residential district is intended to be a quiet neighborhood consisting of single-family dwellings along with limited home occupations and various public and private community support facilities or services that may be compatible with residential development.

  Permitted Uses.

  (1) Single-family dwellings;
  (2) Customary accessory buildings and uses incidental to the uses permitted in the district;
  (3) Churches;
  (4) Public parks, playgrounds, golf courses. community centers;
  (5) Schools, public and private;
  (6) Signs;
  (7) Private marinas and piers;
  (8) Home occupations;
  (9) Family care homes.

  Conditional Uses.

  (1) Day care centers;
  (2) Fraternal organizations;
  (3) Group homes;
  (4) Hospitals;
  (5) Nursing homes and convalescent centers;
  (6) Public utility uses and structures.

- R-4A, minimum lot size 6,600 square feet; minimum living space 850 square feet.

  Purpose. The R-4A residential district is intended to be a quiet neighborhood consisting of single-family dwellings along with limited home occupation and customary accessory buildings and uses.

  Permitted Uses.

  (1) Single-family dwellings;
  (2) Customary accessory buildings and uses incidental to the uses permitted in the district;
  (3) Churches;
  (4) Public parks, playgrounds, golf courses;
  (5) Private marinas and piers;
  (6) Home occupations;
  (7) Signs;

(8) Family care homes.

Conditional Uses.

(1) Public utility uses and structures.

- R-4B, minimum lot size 6,600 square feet; minimum living space 1,000 square feet.

Purpose. The R-4B residential district is intended to be a quiet neighborhood consisting of single-family dwellings along with limited home occupations and customary buildings and uses.

Permitted Uses.

(1) Single-family dwellings;
(2) Customary accessory buildings and uses incidental to the uses permitted in the district;
(3) Churches;
(4) Public parks, playgrounds, golf courses;
(5) Private marinas and piers;
(6) Home occupations;
(7) Signs;
(8) Family care homes.

Conditional Uses.

(1) Public utility uses and structures.

c) Beach Area

During the last five years, the Beach area has experienced extensive development. The 1986 plan identified 720 subdivided oceanfront lots, of which 479, or 67% are developed. By 1992 only 150 unimproved lots remained. Thus, 79% of the oceanfront property had been developed. Some of the remaining unimproved oceanfront lots have been rendered unusable by oceanfront erosion. However, lot by lot in-field inspections would be required to determine the exact number. The erosion is particularly great west of 60th Place West where approximately 30 vacant lots remain.

In addition to the oceanfront erosion, substantial erosion has occurred on the western end of the town along Lockwood Folly Inlet. In fact, some of the land area and roads (33rd Place West and 72nd Place West) have been lost to erosion. Significant erosion in this area is expected to continue.

The non-oceanfront Beach area is approximately 50% developed. Many of those lots, both developed and undeveloped, lie along the Big Davis Canal and coastal wetlands system. Extensive areas with poor soil conditions are found along the canal. As in the eastern section of the town, septic failures are numerous.

Some commercial development is scattered throughout the Beach area. Most is associated with oceanfront or marina activity. However, some commercial development and extensive commercial zoning exists along the East Dolphin Drive area from 40th Street East to 49th Street East and on the block lying between the end of East Dolphin Drive and 52nd Street East.

The majority of the Beach area west of 58th Street East is zoned R-1 (residential). This zone is intended to accommodate both permanent and seasonal residency. Single-family and two-family (where water service is available) are allowed. The minimum single-family lot size is 10,000 square feet. The majority of the Beach area east of 59th Street East is zoned R-5 (residential). Both single-family and multi-family development are allowed in the R-5 district. In 1992 most of the R-5 zoned Beach area was undeveloped. The minimum lot area is 6,600 square feet. The following provides the specific uses allowed in both the R-1 and R-5 districts:

- R-1

  Purpose. The R-1 residential district is intended to accommodate both seasonal and permanent residency providing for: single-family dwellings as principal uses permitted as a right; two-family dwellings as principal uses where municipal water services are provided; and customary accessory buildings and uses.

  Permitted Uses.

  (1) Single-family dwellings;
  (2) Two-family dwellings;
  (3) Customary accessory buildings and uses incidental to the uses permitted in the district;
  (4) Churches;
  (5) Public parks, playgrounds, community centers;
  (6) Signs;
  (7) Private marinas and piers;
  (8) Home occupations.

  Conditional Uses.

  (1) Public Utility uses and structures.

- R-5

  Purpose. The R-5 district is intended to protect single-family residential areas now developed or developing while at the same time allowing a limited increase in population density. The maintenance of a desirable living environment is provided through lot area, yard and open space standards which adjust in response to the intensity of residential development.

  Permitted Uses.

  (1) Single-family dwellings;
  (2) Customary accessory buildings and uses incidental to the uses permitted in the district;
  (3) Churches;

  (4) Public parks, playgrounds, golf courses, community centers;
  (5) Schools, public and private;
  (6) Signs;
  (7) Private marinas and piers;
  (8) Home occupations;
  (9) Family care homes.

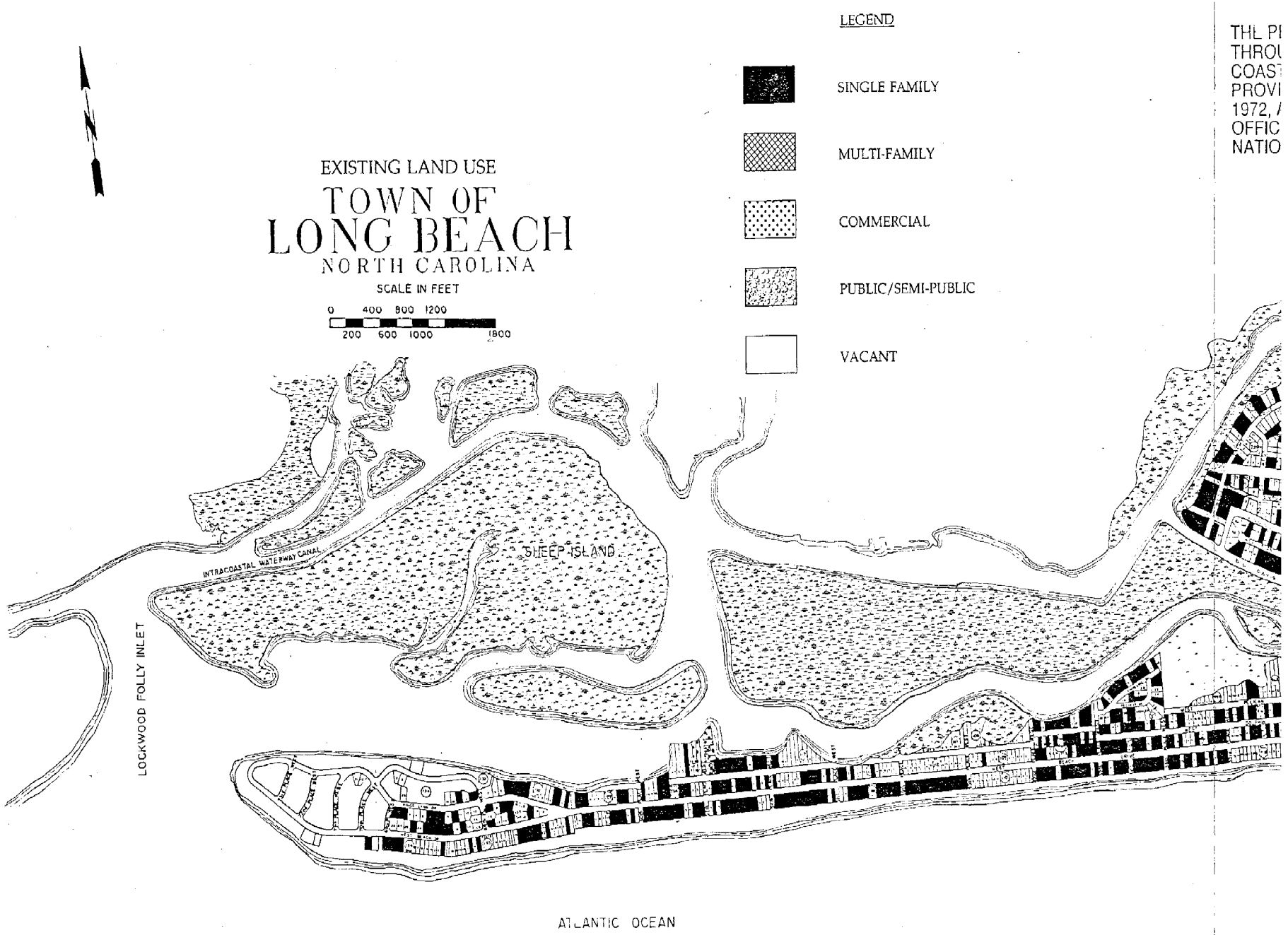
  Conditional Uses.

  (1) Duplexes (two-family dwellings);
  (2) Apartments;
  (3) Townhouses;
  (4) Condominiums;
  (5) Unified tract developments;
  (6) Public utility uses and structures.

3. Commercial Land Use

Long Beach's commercial development is concentrated along East Oak Island Drive between 64th Street East and 47th Street East. This strip of development is generally one lot deep. In addition, a commercial area extends from the East Oak Island Drive commercial area south to East Beach Drive between 52nd Street and 48th Street East. The commercial areas are delineated on both Map 1 - February 1993 Town of Long Beach Zoning Districts and Map 2 - Existing Land Use .

Along East Oak Island Drive, very little vacant land remains. Less than twenty vacant parcels or unsubdivided tracts are available. In the area lying between East Oak Island Drive and East Beach Drive, approximately 60% of the parcels are developed with 60 to 70 vacant parcels remaining. The majority of the vacant parcels are small, 8,250 square feet or less, and must be consolidated to accommodate significant commercial development.



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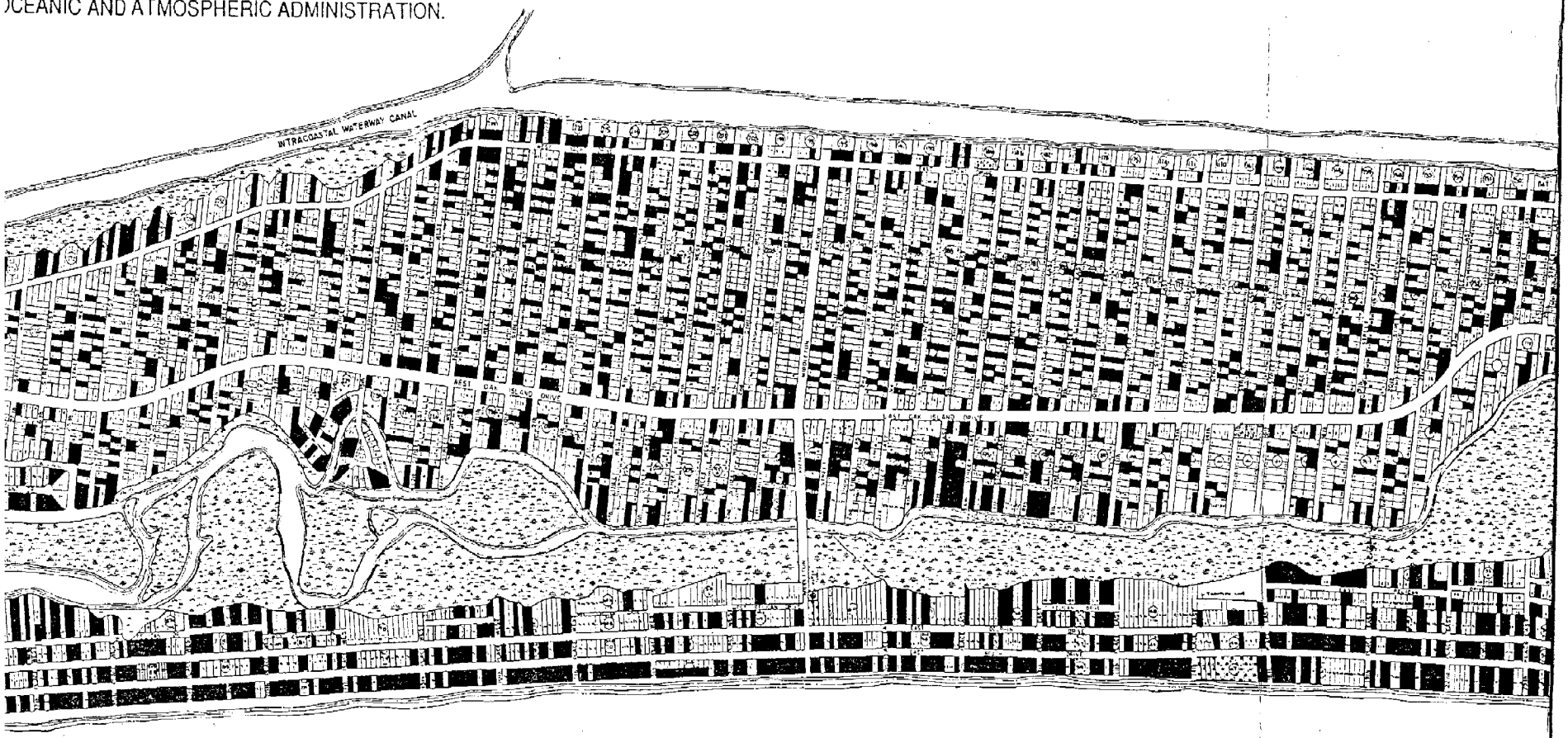
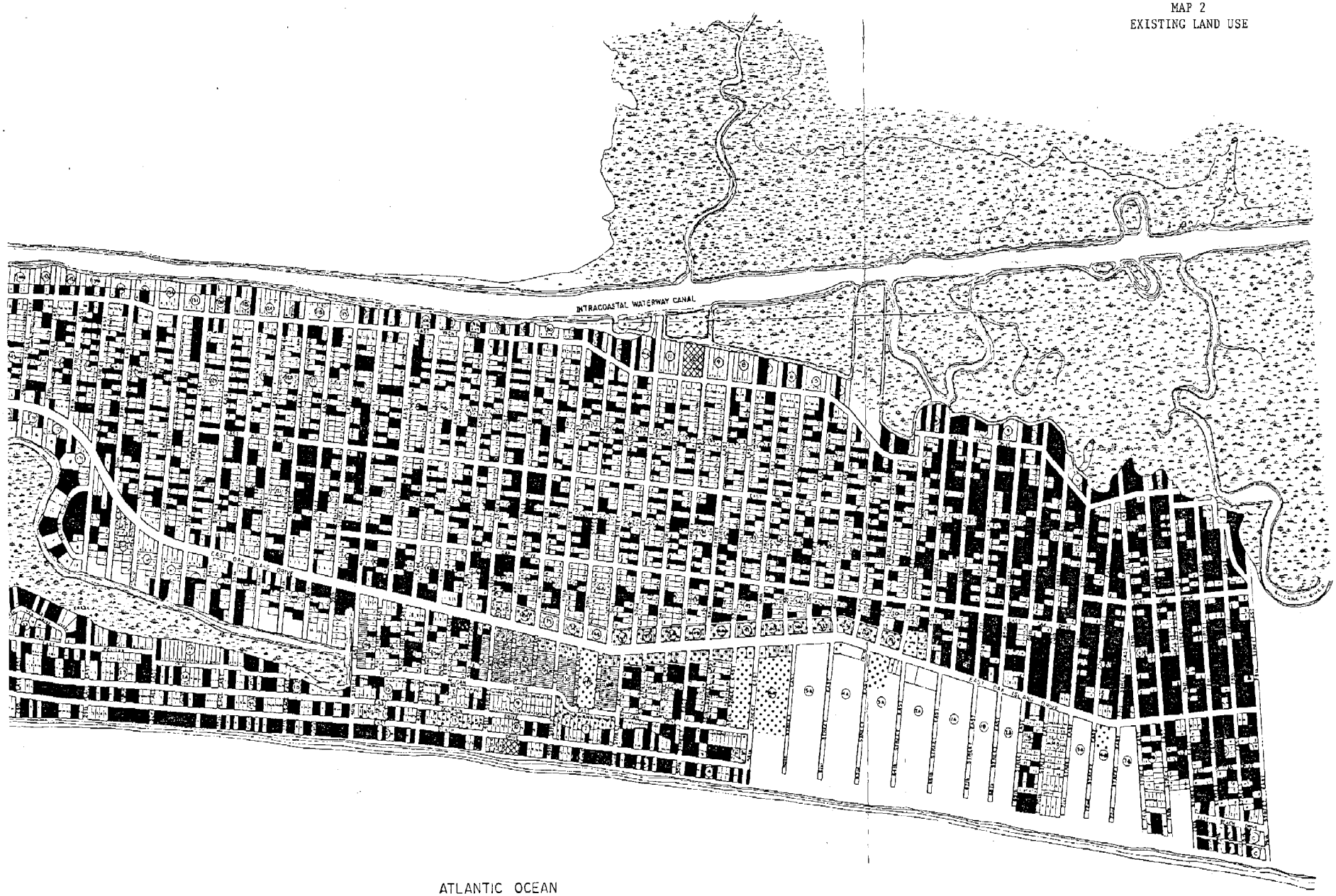


ATLANTIC OCEAN

MAP 2
EXISTING LAND USE



As stated in the 1986 plan, the town's commercial areas are not well designed. Parking is inadequate and often poorly designed. Almost continuous curb cuts along East Oak Island Drive contribute to traffic congestion. The strip commercialization is not conducive to pedestrian shopping. The existing commercial areas should be contained to prevent infringement on adjacent residentially zoned properties.

There are two commercial zoning districts. The minimum lot size in both districts is 6,000 square feet. The purpose and uses allowed in each are defined as follows:

- CA (prime retail trade and services).

  Purpose. The CA commercial district is intended primarily to provide for basic retail trade and for professional and personal services required for the year-round sustenance of the residents of the town.

  Permitted Uses.

  (1) Retail sales enterprises that operate in fully enclosed premises;
  (2) Business offices and shops rendering professional and personal services;
  (3) Banking facilities;
  (4) Customary accessory buildings and uses incidental to the uses permitted in the district;
  (5) Lodges, clubs, fraternal societies;
  (6) Public office buildings, libraries;
  (7) Off-street parking facilities;
  (8) Signs;
  (9) Restaurants;
  (10) Retail automobile, boat and motorized vehicle sales and rentals and indoor service and repair;
  (11) Convenience stores;
  (12) Service stations;
  (13) Single-family residences (subject to single-family yard setback requirements.

  Conditional Uses.

  (1) Animal clinics;
  (2) Day care centers;
  (3) Mortuaries;
  (4) Unified tract developments (commercial);
  (5) Public utility uses and structures;
  (6) Commercial uses of towers or poles with antennas.

- CB (tourist facilities and services)

  Purpose. The CB commercial district is intended to provide for tourist and recreational retail trade and services.

  Permitted Uses.

  (1) Retail sales enterprises;
  (2) Personal and professional services offices and shops;
  (3) Banking facilities;
  (4) Laundries;
  (5) Convenience stores;
  (6) Equipment rentals;
  (7) Off-street parking facilities;
  (8) Signs;
  (9) Public utility uses and structures;
  (10) Restaurants;
  (11) Commercial piers and marinas;
  (12) Service stations;
  (13) Single-family residence (subject to single-family yard setback requirements).

  Conditional Uses.

  (1) Hotels and motels;
  (2) Auction halls;
  (3) Commercial recreational attractions;
  (4) Recreational campgrounds and recreational vehicle parks;
  (5) Cocktail lounges and taverns;
  (6) Unified tract developments (commercial);
  (7) Arcade.

4. Public and Semi-Public.

Except for churches and semi-public shoreline access sites, the public and semi-public land uses within Long Beach are municipally-owned. The Town Hall Complex, the maintenance garage, two fire stations, police department, two elevated water storage tanks, the community recreation center, and an electric substation account for all of the public land uses, except for outdoor recreational and shoreline access facilities.

In July 1991, the Town of Long Beach adopted an Ocean and Estuarine Access Plan. That plan identifies 55 oceanside access sites, 10 Estuarine access sites, and two comprehensive recreational facilities. Map 3 delineates those facilities. Tables 13 and Table 14 provide a description of the shoreline access sites.

The town maintains a bike route which includes approximately 8 miles of signed roadway extending from the eastern town limit westward to a terminus at 42nd Place West. The route connects both ocean and soundside areas and extends past 34 of the town's shoreline access sites.

The following provides a summary of the Middleton Park and Long Beach Recreation Center comprehensive recreational facilities.

Middleton Park

- Two lighted paved tennis courts.
- Wooden benches.
- Trash receptacles.
- One little league field.
- One softball field lighted with dugouts and bleachers.
- One paved lighted basketball court.
- Unpaved parking.
- Lighted covered shelter.
- Two small wooden buildings with concession area.
- Restroom facilities.
- Eight metal swings.
- One fireman's pole.
- Picnic tables.
- One water fountain.
- Three outdoor electric outlets.
- One covered recreational bulletin board.
- Wooden jungle gym

Long Beach Recreation Center

- 37 parking spaces.
- Seven swings.
- One metal "jungle gym".
- One circular slide.
- Two barbecue pits.
- Two picnic tables.
- One water fountain.
- Two area lights.
- Bicycle parking racks.
- Shuffle board court.
- Recreation center building.

5. Industrial Land Use.

There are not any industrial land uses located within Long Beach. In addition, the Long Beach zoning ordinance does not provide for any industrial zoning.

SHORELINE ACCESS SITES
AND RECREATION FACILITIES

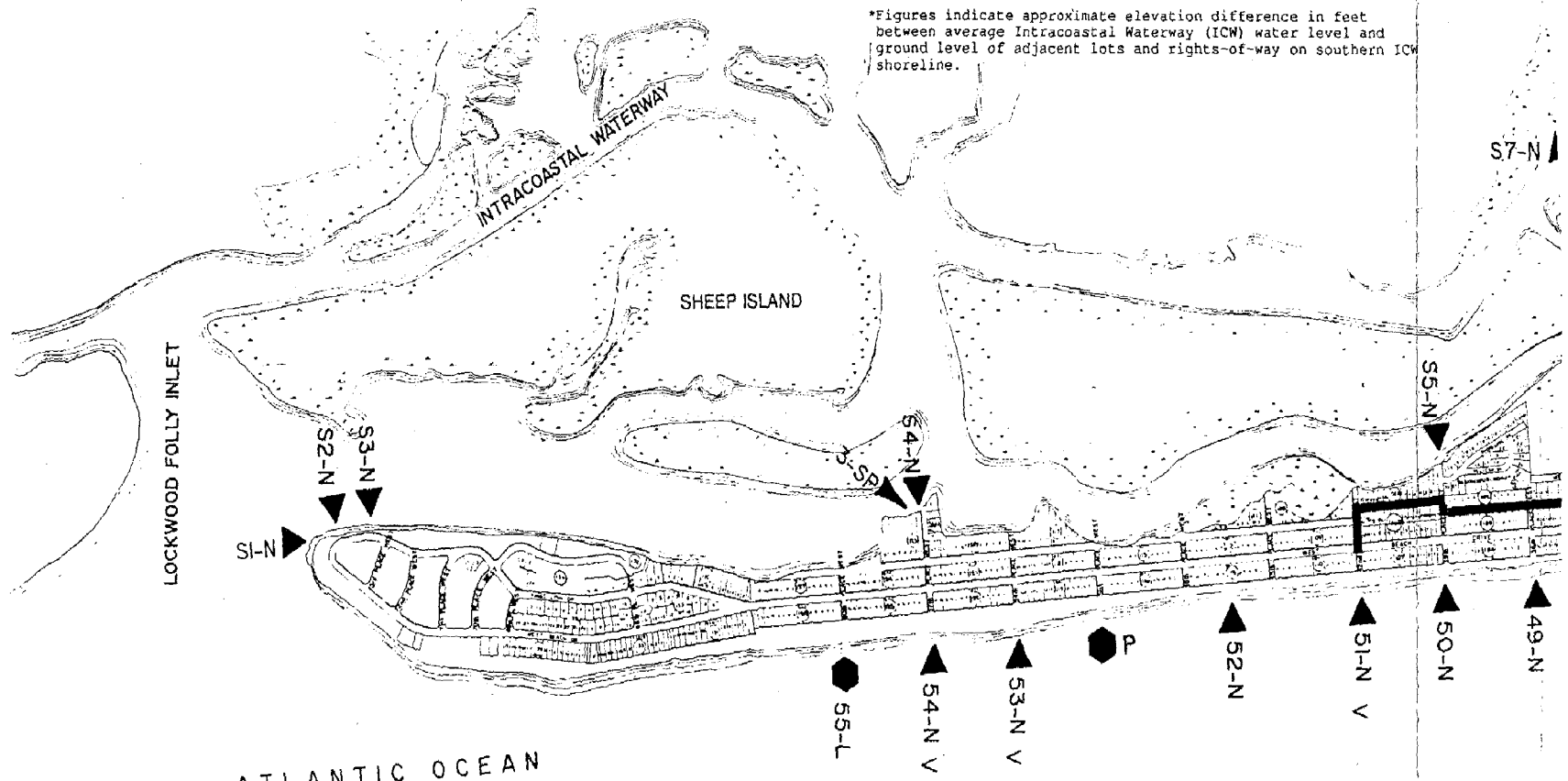
TOWN OF
LONG BEACH
NORTH CAROLINA

0 400 800 1600
SCALE OF FEET

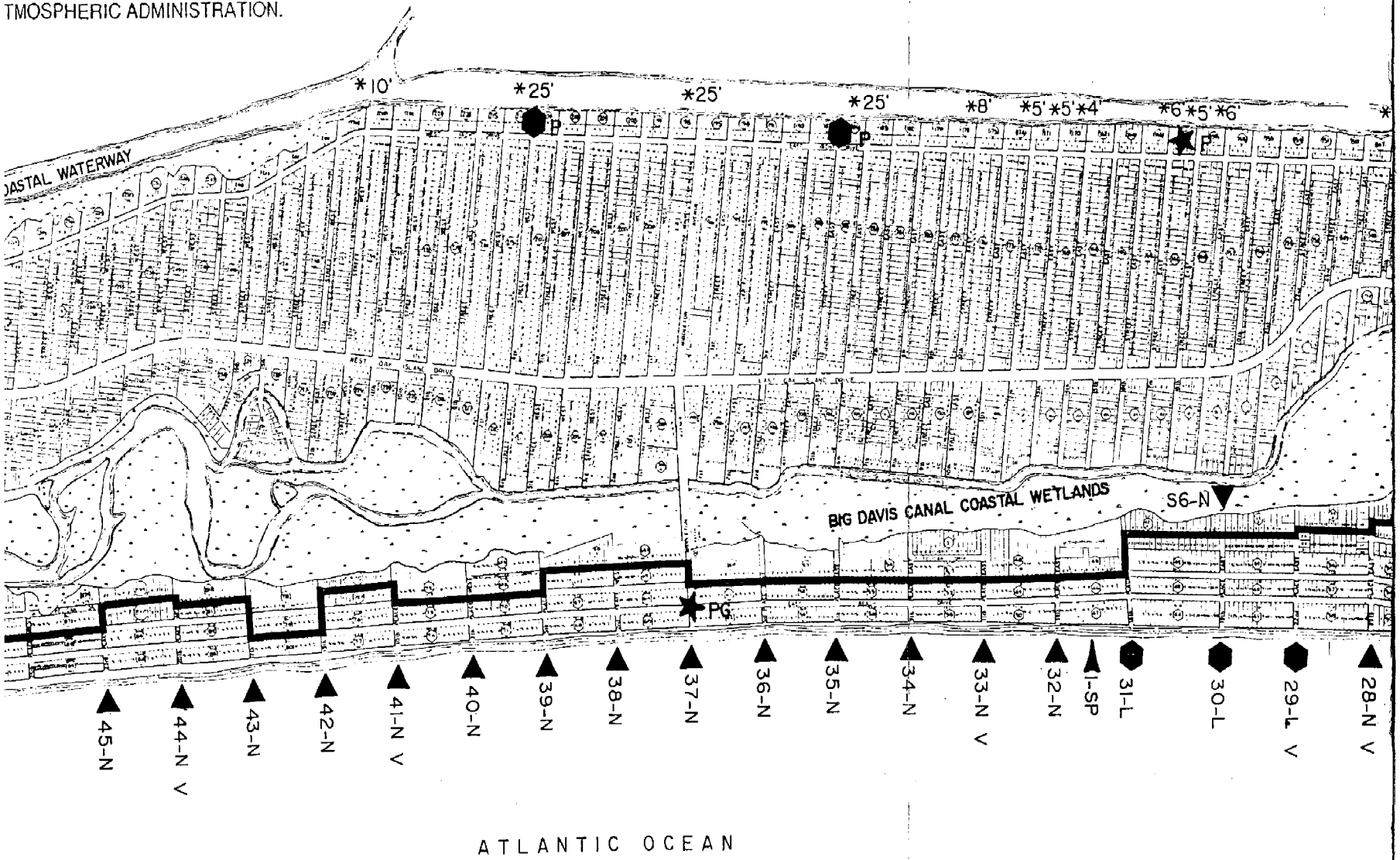
LEGEND

- SP Semi-Public Access Site
- L Local Public Access Site
- N Neighborhood Public Access Site
- R Regional Public Access Site (See Table 1 for Site Descriptions)
- P Proposed
- G General Location
- Bike Route
- G1 Middleton Park
- G2 Long Beach Recreation Center
- V Adjacent Lot(s) Vacant

*Figures indicate approximate elevation difference in feet between average Intracoastal Waterway (ICW) water level and ground level of adjacent lots and rights-of-way on southern ICW shoreline.



S MAP WAS FINANCED IN PART
DED BY THE NORTH CAROLINA
ROGRAM, THROUGH FUNDS
AL ZONE MANAGEMENT ACT OF
IS ADMINISTERED BY THE
ASTAL RESOURCE MANAGEMENT
TMOSPHERIC ADMINISTRATION.



MAP 3
SHORELINE ACCESS SITES AND
RECREATION FACILITIES

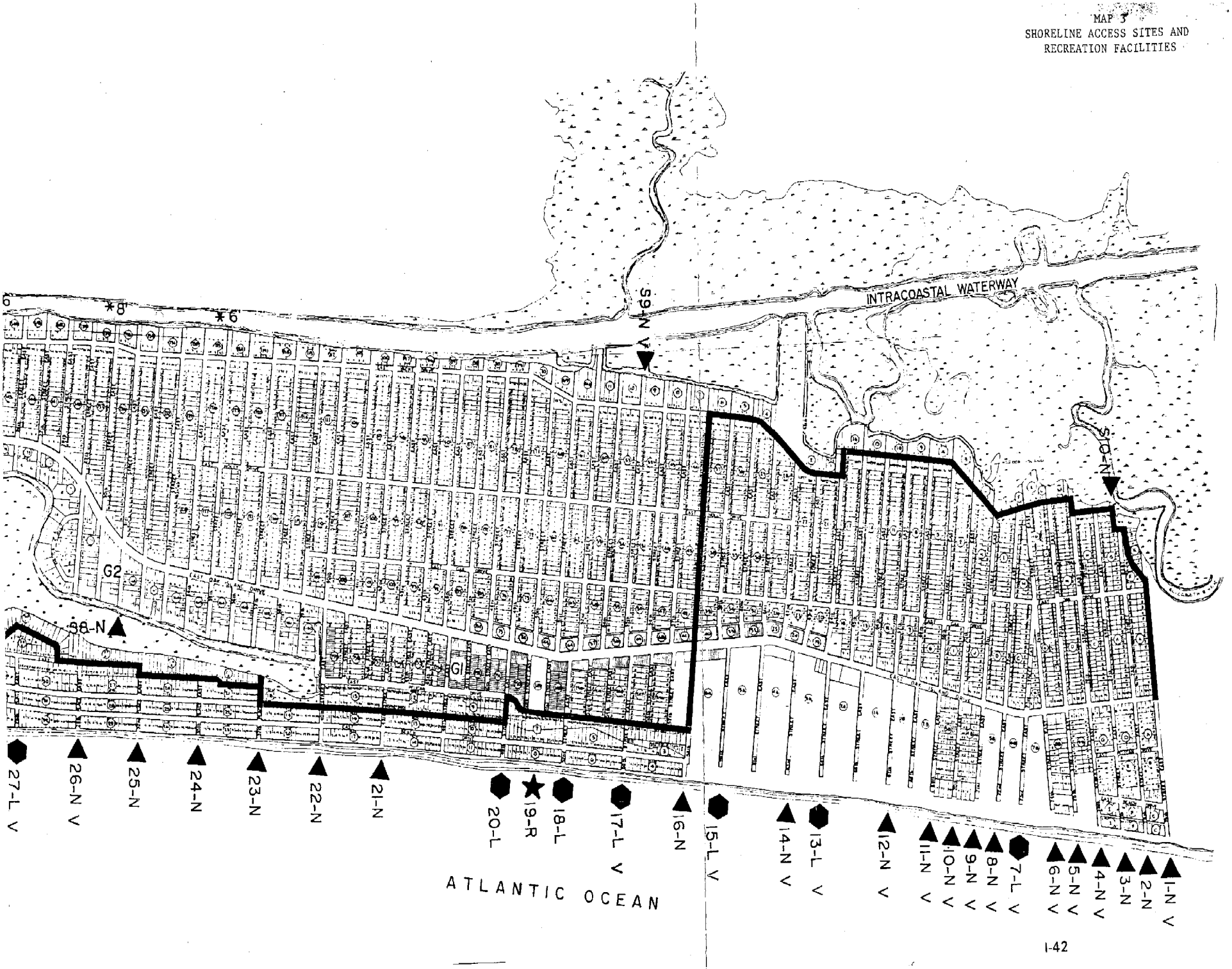


TABLE 13

OCEANSIDE ACCESS SITES

										Facilities								
Site No	Name	Access	Parking Spaces	Category	Parking Surface	Light(s)	Trash Can(s)	Boardwalk Crossover	Sandpath	Buildings	Vehicular Beach Access	Water Fountain	Restrooms	Showers	Bike Rack	Handicapped Ramp	Benches	Access Signage
1	79th St.	Paved Rd.	UM	N	Permeable		1	1										X
2	78th St.	Paved Rd.	UM	N	Permeable		2	1										X
3	77th St.	Paved Rd.	UM	N	Permeable		1	1										X
4	76th St.	Paved Rd.	UM	N	Permeable		1	1										X
5	75th St.	Soil Rd.	UM	N	Permeable		1	1										X
6	74th St.	Soil Rd.	UM	N	Permeable		1	1										X
7	73rd St.	Soil Rd.		L					X									
8	72th St.	Soil Rd.	UM	N	Permeable		1	1										X
9	71th St.	Soil Rd.	UM	N	Permeable		1	1										X
10	70th St.	Paved Rd.	UM	N	Permeable		2	1								X		X
11	69th St.	Soil Rd.	UM	N	Permeable		1	1										X
12	67th St.	Soil Rd.	UM	N	Permeable		2				X							X
13	64th St.	Soil Rd.		L			1	1										X
14	63rd St.	Soil Rd.	UM	N	Permeable		1	1										X
15	59th St.	Soil Rd.		L			1		X									X
16	58th St.	Paved Rd.	UM	N	Permeable		1	1										X
17	55th St.	Paved Rd.	UM	L			1	1										X
18	52th St.	Paved Rd.		L			1	1										X

UM - Unmarked; L - Local; N - Neighborhood; R - Regional

*Wooden ramp not in use.
**Signed to exclude motorized vehicles.
***Wooden dune walkover.

TABLE 13 (Continued)

OCEANSIDE ACCESS SITES																		
										Facilities								
Site No	Name	Access	Parking Spaces	Category	Parking Surface	Light(s)	Trash Can(s)	Boardwalk Crossover	Sandpath	Buildings	Vehicular Beach Access	Water Fountain	Restrooms	Showers	Bike Rack	Handicapped Ramp	Benches	Access Signage
19	Long Beach Cabana	Paved Rd.	47 (3) Handicapped	R	Permeable	X	3	1		2		X	X	X		X	X	X
20	49th St.	Paved Rd.		L	Permeable		1	1										X
21	43rd Pl. East	Paved Rd.	UM	N	Permeable		1	1										X
22	Southeast 40th St.	Paved Rd.	UM	N	Permeable		1	1										X
23	37th Pl. East	Paved Rd.	UM	N	Permeable		1	1										X
24	35th Pl. East	Paved Rd.	UM	N	Permeable		1	1										X
25	32th Pl. East	Paved Rd.	UM	N	Permeable		1	1										X
26	29th Pl. East	Paved Rd.	UM	N	Permeable		1	1										X
27	26th Pl. East	Paved Rd.		L			1	1										X
28	25th Pl. East	Paved Rd.	UM	N	Permeable		1		X		1*							X
29	22th Pl. East	Paved Rd.		L			1	1	X									X
30	19th Pl. East	Paved Rd.		L			1	1	X									X
31	16th Pl. East	Paved Rd.		L			1	1										
32	14th Pl. East	Paved Rd.	UM	N	Permeable		1	1										X
33	11th Pl. East	Paved Rd.	UM	N	Permeable		1	1										X
34	9th Pl. East	Paved Rd.	UM	N	Permeable		1	1										X
35	6th Pl. East	Paved Rd.	UM	N	Permeable		1	1										X
36	3rd Pl. East	Paved Rd.	UM	N	Permeable		1	1										X

UM - Unmarked; L - Local; N - Neighborhood; R - Regional

*Wooden ramp not in use.
**Signed to exclude motorized vehicles.
***Wooden dune walkover.

TABLE 13 (Continued)

OCEANSIDE ACCESS SITES																		
										Facilities								
Site No	Name	Access	Parking Spaces	Category	Parking Surface	Light(s)	Trash Can(s)	Boardwalk Crossover	Sandpath	Buildings	Vehicular Beach Access	Water Fountain	Restrooms	Showers	Bike Rack	Handicapped Ramp	Benches	Access Signage
37	S Middleton Ave.	Paved Rd.	UM	N	Permeable		2	1										X
38	2nd Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
39	5th Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
40	7th Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
41	10th Pl. West	Paved Rd.	UM	N	Permeable		1				1**							X
42	13th Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
43	17th Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
44	20th Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
45	23rd Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
46	27th Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
47	30th Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
48	33rd Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
49	36th Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
50	39th Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
51	42nd Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
52	Between 45th Pl. West & 48th Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
53	54th Pl. West	Paved Rd.	UM	N	Permeable		1	1										X
54	57th Pl. West	Paved Rd.	UM	N	Permeable		2	1										X
55	60th Pl. West	Paved Rd.		L					1***									

UM - Unmarked; L - Local; N - Neighborhood; R - Regional

*Wooden ramp not in use.
**Signed to exclude motorized vehicles.
***Wooden dune walkover.

TABLE 14

ESTUARINE ACCESS SITES

Site No.	Name	Access	Parking Spaces	Category	Parking Surface	Light(s)	Trash Can(s)	Pier	Boardwalk Crossover	Steps	Playground Equipment	Shelter	Water Fountain	Restrooms	Showers	Boat Ramp(s)	Handicapped Ramp	Benches	Access Signage
S1	West Beach Drive	Paved Road		N			2												
S2	Kings Lynn Drive	Paved Road		N			1												
S3	Kings Lynn Drive Turnaround	Paved Road	UM	N	Permeable	1	2												
S4	57th Place West	Paved Road		N												2			
S5	39th Place West	Paved Road		N												1**			
S6	19th Place East	Paved Road		N	Permeable	1	3		1			1						1	1
S7	Robin Schuster Park	Paved Road	9	N	Permeable		1			1	*	1	1					2	
S8	Tidalway Trails Park	Paved Road	UM	N		1	1	1				1	1						1
S9	Northeast 55th Street	Paved Road		N												1***			
S10	Northeast 78th Street	Paved Road	UM	N	Permeable			1											

UM - Unmarked; N - Neighborhood

*Wooden swing set and wooden gym set.
**Water depth is extremely shallow, use of any motorized boat is impossible.
***Ramp access is extremely narrow. Maneuverability is limited and backing movements are very difficult.

6. Open Space.

The Long Beach zoning ordinance includes an open space zoning district. (See Map 1). The district is intended to give particular attention to the nature of protection and appropriate development of areas of environmental concern as defined in the state administrative code (DEHNR--Coastal Management Act), 15A NCAC 7H--"State Guidelines for Areas of Environmental Concern" and as defined by the town.

The district allows water access ramps, docks and piers, or permitted uses. The following are allowed as conditional uses: (1) passive recreational parks and greenery, and (2) nature walks and study facilities.

7. Land Use Changes 1986-1993.

Except for single-family residential development, there have not been any significant land use changes from 1986 to 1992. Table 15 provides a summary of construction activity from 1987 through 1993. Only eight permits were issued for commercial building construction. Residences accounted for 670 or 84.9% of the structures built for occupancy. All other permits were for driveways, repairs, additions, or nonhuman habitat buildings such as garages or carports. From 1987 to 1993, the number of permits issued for repairs, additions, and alterations increased significantly. This increase was the result of the town more vigorously requiring residential property owners to secure permits for repairs. The increase was not the result of expansion of existing structures.

The construction activity is in the town's land use acreages. These acreages are summarized in Table 16. From 1986 to 1992 the town's total residential land use increased by a total of 128 acres or 17%. In addition, the percentage of the town's total land area committed to residential land use increased from 15% in 1986 to 18% in 1992. The majority of the 1992 residential land use, 755 acres, was committed to single-family land use.

Table 17 provides a comparative analysis of lot usage for 1986 and 1992. From 1986 to 1992, a total of 136 lots were developed. Almost all (128 lots) were developed for single-family residential purposes. There has been very little duplex development within Long Beach because the minimum lot size for duplexes, 10,000 square feet, exceeds almost all existing lots. Therefore, at least two lots must be utilized to accommodate duplex construction.

Table No. 15
Long Beach Construction Activity
Corporate Limit Area
1987-1993

Activity	1987	1988	1989	1990	1991	1992	1993	TOTAL
Residences	130	132	81	79	74	89	85	670
Driveways	134	125	111	115	114	122	124	845
Mobile homes	24	17	17	15	18	18	10	119
Repairs, additions, alterations	161	123	357	490	304	334	876	2,645
Docks, piers, bulkheads	24	33	26	42	55	44	38	262
Storage buildings	36	46	54	52	57	54	66	365
Garages, carports	11	14	15	11	12	12	13	88
Commercial building	1	2	2	0	2	1	0	8
Total	521	492	663	804	636	674	1,212	5,002

Source: Town of Long Beach Building Inspections Department

Table No. 16
TOWN OF LONG BEACH CORPORATE LIMIT AREA

LAND USE ANALYSIS
1986/1992

	1986*			1992**		
Use	Acres	Percent of Urban	Percent of Total	Acres	Percent of Urban	Percent of Total
RESIDENTIAL	752	32%	15%	880	37%	18%
-Single-Family	647	27%	13%	755	32%	15%
-Multi-Family	14	<1%	<1%	14	<1%	<1%
-Mobile-Homes	91	4%	2%	111	5%	2%
COMMERCIAL	37	2%	<1%	41	2%	<1%
PUBLIC/SEMI-PUBLIC	17	<1%	<1%	17	<1%	<1%
STREETS	249	11%	5%	249	10%	5%
VACANT	1,298	55%	26%	1,166	50%	23%
TOTAL URBAN LAND	2,353	100%	48%	2,353	100%	48%
TOTAL INCLUDING BEACHES AND WETLANDS***	4,900		100%	4,900		100%

*Source: 1986 Town of Long Beach Land Use Update.
**Source: Estimates by Holland Consulting Planners, Inc.
***Source: This acreage varies constantly--4,900 acres is an estimate.

Table No. 17
TOWN OF LONG BEACH CORPORATE LIMIT AREA
LOT USE ANALYSIS
BY USE TYPE
1986/1993

	1986*			1993**		
	Total	Occupied	Vacant	Total	Occupied	Vacant
PLATTED LOTS	12,754	4,841/38%	7,913/62%	12,882	5,497/43%	7,385/57%
RESIDENTIAL	12,225	4,436/36%	7,789/64%	12,353	5,092/41%	7,261/59%
- Single-Family		3,785			4,332	
- Multi-Family		62			62	
- Mobile Home		589			698	
COMMERCIAL	467	349/75%	118/25%	475	357/75%	110/25%
- Oak Island Drive Area		225			232	
- Beach Area		121			121	
- Other		3			3	
PUBLIC/ SEMI-PUBLIC	56	56		57	57	

*Source: Town of Long Beach 1986 Land Use Plan.
**Source: Estimates by Holland Consulting Planners, Inc.

8. Extraterritorial Jurisdiction.

The Town of Long Beach has established an extraterritorial jurisdiction area. That area is delineated on Map 4. In 1993, the area was vacant. However, 100 parcels had been subdivided, and an additional 31 parcels of preliminary plats had been approved for Saint James Plantation. Extensive areas of environmental concern are located within the area along the intracoastal waterway. Regulation of development during the planning period will be a continuing concern.

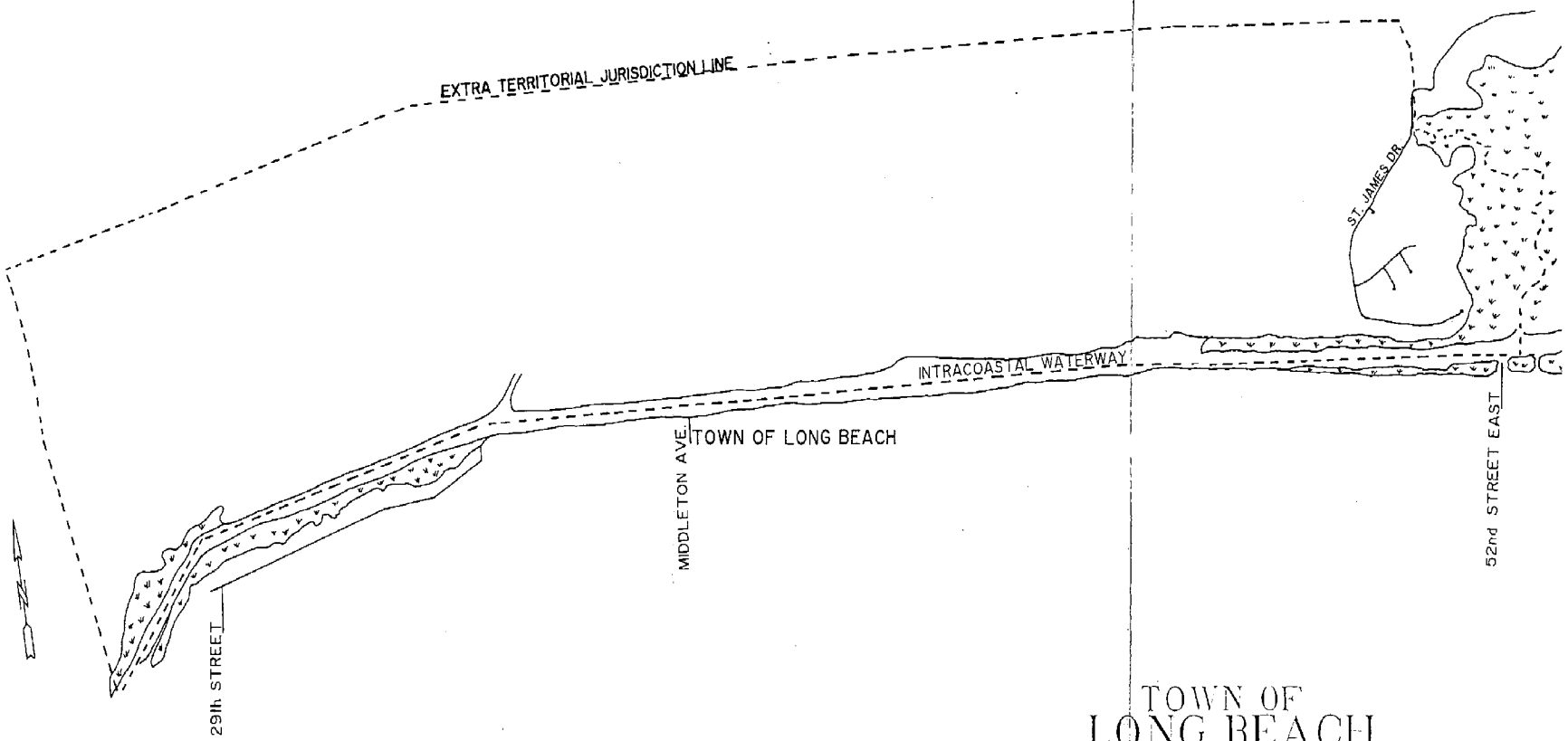
9. Existing Land Use Summary.

Long Beach has maintained an active land use planning program. Both commercial and multi-family development have been limited. However, it is anticipated that the construction of a central sewer system would stimulate multi-family development. High density single-family development will continue because of the small size of the town's residential lots.

The following provides a summary of the key land use issues. These are expected to continue to be issues during the planning period.

- Construction of a second Oak Island bridge will continue to be a need as it will serve to reduce traffic congestion and aid in evacuation.
- The decision on whether or not to construct a central sewer system will continue to be an issue. Construction of a central sewer system will stimulate growth.
- The small residential lot sizes encourage high density development.
- Protection of the areas of environmental concern located within the town's planning jurisdiction is an issue. As development continues, protection of these areas will become more complicated.
- Because of the grid street system and strip commercialization, effective thoroughfare planning is a significant need.
- Regulation of development within the extraterritorial jurisdiction area will be an issue during the planning period.

THE PREPARATION OF THIS MAP WAS FINANCED IN PART THROUGH A GRANT PROVIDED BY THE NORTH CAROLINA COASTAL MANAGEMENT PROGRAM, THROUGH FUNDS PROVIDED BY THE COASTAL ZONE MANAGEMENT ACT OF 1972, AS AMENDED, WHICH IS ADMINISTERED BY THE OFFICE OF OCEAN AND COASTAL RESOURCE MANAGEMENT NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.



TOWN OF LONG BEACH

EXTRATERRITORIAL JURISDICTION

MAP 4

- Effective evacuation, an issue in 1993, will continue to be an issue during the planning period.

- As erosion continues, beach nourishment will continue to be a need/issue.

- The town's land use regulatory controls, including the zoning ordinance, should be reviewed and updated as needed.

10. Development Potential.

The biggest single issue confronting development potential within Long Beach will be whether or not to construct a central sewer system. In 1993, there were approximately 7,620 vacant residentially zoned lots. If a central sewer system is not constructed, at some point the continued installation of septic systems will result in ground saturation. The result may be a cessation in the issuance of septic tank permits. Construction of a central sewer system would remove the sewage treatment obstacle and serve as a major stimulant to development. In particular, in the absence of a strong local regulation, construction of a central sewer system would serve as a catalyst for multi-family development. The sewer system question is both an environmental and growth issue.

From 1986 to 1993, other than continued single-family residential developments, very little development occurred. During the planning period, continued single-family residential development is expected to continue. No significant changes in land use are expected to occur.

The construction of a second Oak Island bridge will be a long-term stimulant to development. A second bridge will increase the town's accessibility to both overnight and day visitor traffic. Such increases may place pressure on the town to increase the commercially zoned areas.

Ocean and inlet area erosion clearly has a negative impact on waterfront development potential. In the absence of jetties or bulkheads, there is little which can be done to deter inlet area erosion. However, beach nourishment will be vitally important to the town for preservation of its ocean shoreline areas.

E. DEVELOPMENT CONSTRAINTS: PUBLIC FACILITIES

1. Water Supply

The Town of Long Beach operates its own water distribution system. All areas of the town are provided water service. There are no known residences remaining on individual wells for potable water supply. The system includes two elevated 300,000 gallon water storage tanks. The majority of the water service lines are 6" or larger.

In October 1980, the Town of Long Beach executed a forty-year contract with the Brunswick County Water System for the purchase of treated water. That contract remains in effect. The county's water system is a county-wide system which serves both municipalities and unincorporated areas. Brunswick County initially constructed the system in 1974-1975 utilizing 37 million dollars of general obligation bond funds.

Tremendous growth in water consumption has occurred since 1979 when the annual water consumption was 103 million gallons. During the nine years from 1979-1988, consumption increased by 84 million gallons, an increase of 81.5%. The growth in water consumption slowed during the five-year period, 1988 to 1992, when only a 15.6% increase occurred. Table 18 provides a summary of water consumption by month from 1988 to 1992. Total annual consumption rose to 216,015,304 gallons in 1992. As growth continues, additional storage tanks will be required for both storage and water pressure.

Several problems/concerns are associated with the water system. Stagnant water is a problem in many of the water lines located on dead end streets. The town implemented a program in 1993 to ensure regular flushing of the lines. Some citizens have expressed concern that some of the water lines have been constructed with asbestos material. However, the town has had studies conducted which indicate that the asbestos lines are not a hazard. Finally, the town is concerned with the long-range protection of both the Cape Fear River and groundwater as water supplies for the Brunswick County Water System.

Table No. 18
TOWN OF LONG BEACH
WATER CONSUMPTION

Period	1988	1989	1990	1991	1992	1993
January	7,822,836	8,292,700	11,217,600	10,643,000	11,158,000	9,047,000
February	8,852,518	8,129,300	9,469,400	9,861,900	9,058,000	14,587,000
March	13,487,842	11,921,900	13,009,100	12,157,300	12,030,800	34,309,000
April	13,853,826	11,815,800	14,252,300	16,758,800	18,716,600	7,819,000
May	16,135,300	18,933,500	22,166,600	22,726,500	19,340,000	23,918,300
June	27,212,300	26,666,200	34,570,900	26,344,200	21,651,200	44,178,000
July	27,790,600	30,571,900	32,430,900	33,966,704	**35,466,704	28,821,000
August	26,331,000	27,625,100	30,538,400	28,080,600	**28,955,400	33,155,000
September	13,030,500	*37,738,100	19,959,800	14,887,000	15,267,600	20,019,000
October	11,757,700	4,360,900	12,162,700	18,143,304	20,318,000	20,393,000
November	10,876,900	12,038,200	15,636,700	11,769,400	10,322,000	17,880,000
December	9,559,300	14,015,200	10,644,600	10,020,100	13,731,000	20,315,000
TOTAL	186,710,622	212,108,800	226,059,000	215,358,808	216,015,304	274,441,300

*Hurricane Hugo
**Estimated (Meter Malfunction)

Source: Town of Long Beach

In 1990 there was a surge in total annual water consumption to 226,059,000. There is not an identified reason for this increase. Except for one year, July has the highest monthly water consumption. This is the result of peak demand resulting from overnight and day seasonal tourist population. The one exception to the July high occurred in September 1989 when Hurricane Hugo struck the southeastern North Carolina coast during that month. Oceanfront properties along the entire Oak Island ocean shoreline suffered damage. Numerous 3/4" water lines were broken leaving water flowing continuously. In fact, so much water was lost that the water pressure dropped throughout the county's water system.

The highest months consistently are June, July, and August. Approximately 40% to 45% of the town's total annual consumption occurs during those months.

2. Sewage Disposal

All residences and businesses rely on septic systems for sewage disposal. While the majority of the septic tanks appeared to function properly in 1993, some serious problems with septic tank failure were occurring. The most serious problems occurred on Pelican and Dolphin Drives and in the areas with dryer soils where oak tree roots grow into drain lines in search of water. As many as 100 septic repairs per

year may occur. During 1986 the Brunswick County Health Department kept a six-month list of septic tank repair inspections. In that six-month period, 50 septic tank repair inspections were made.

Most lots within Long Beach could be permitted for septic tank usage in 1993. Normally one of the following problems would have prohibited issuance of a septic tank permit:

(1) water table within three feet or less of ground surface,
(2) hard pan three inches or more in thickness within the first 18 inches below ground surface,
(3) presence of organic soils, or
(4) small lot size with inadequate space for septic tank drain field and repair area.

Table 20 provides a summary of the soils susceptibility to flooding and an identification of depth to seasonal high water table. The various soil types are delineated on Map 5. The Kureb, Newhan, Wando, and some Yaupon soils are the most desirable for septic tank placement.

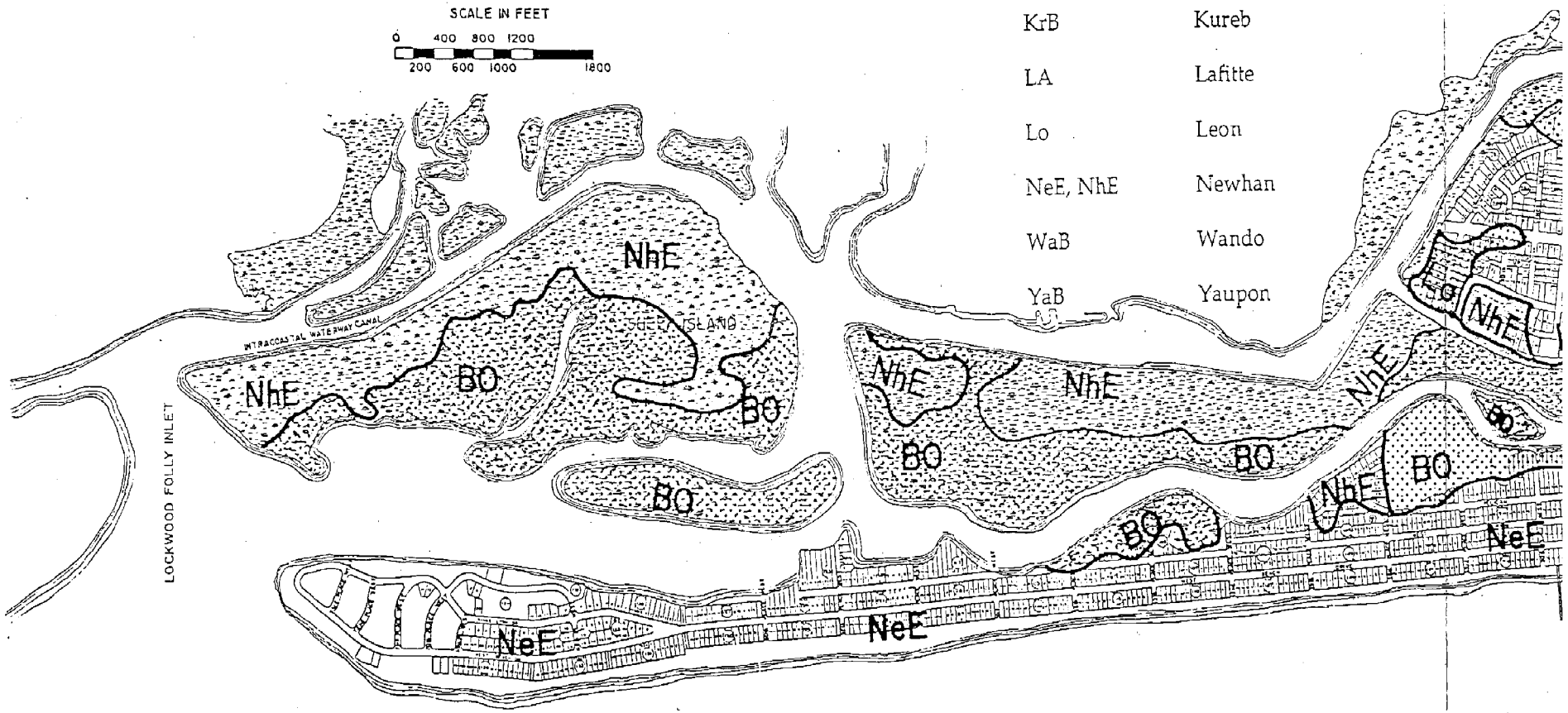
In accessing a lot's suitability for septic tank usage, the Brunswick County Health Department utilizes the following standards for water table depth:

Limitation	Depth to Water Table
Severe	< 12"
Unsuitable	< 36"
Provisionally suitable	36" to 48"
Suitable	> 48"

The majority of Long Beach's land area is occupied by soils falling into the provisionally suitable and suitable categories.

Lot size has been a problem. However, any lots platted before January 1, 1983 are required to maintain a five-foot instead of a ten-foot setback from the property lines for the septic tank drain field. This"grandfather" clause has permitted the utilization of many small lots for septic tank construction which might otherwise not have been usable.

The issue of continued septic tank usage versus construction of a central sewer system has been debated throughout the last five years. On March 31, 1992, a non-binding referendum was conducted on the issue. The vote was 460 for and 1,035 against issuance of bonds for construction of a central sewer system. In 1993, a total of approximately 7,385 vacant lots remained in Long Beach. Almost all of these lots were 6,600 square feet or less in size. Continued development and associated septic tank construction will, at some point, lead to ground saturation. The soils may ultimately become saturated and lose their ability to accommodate additional septic



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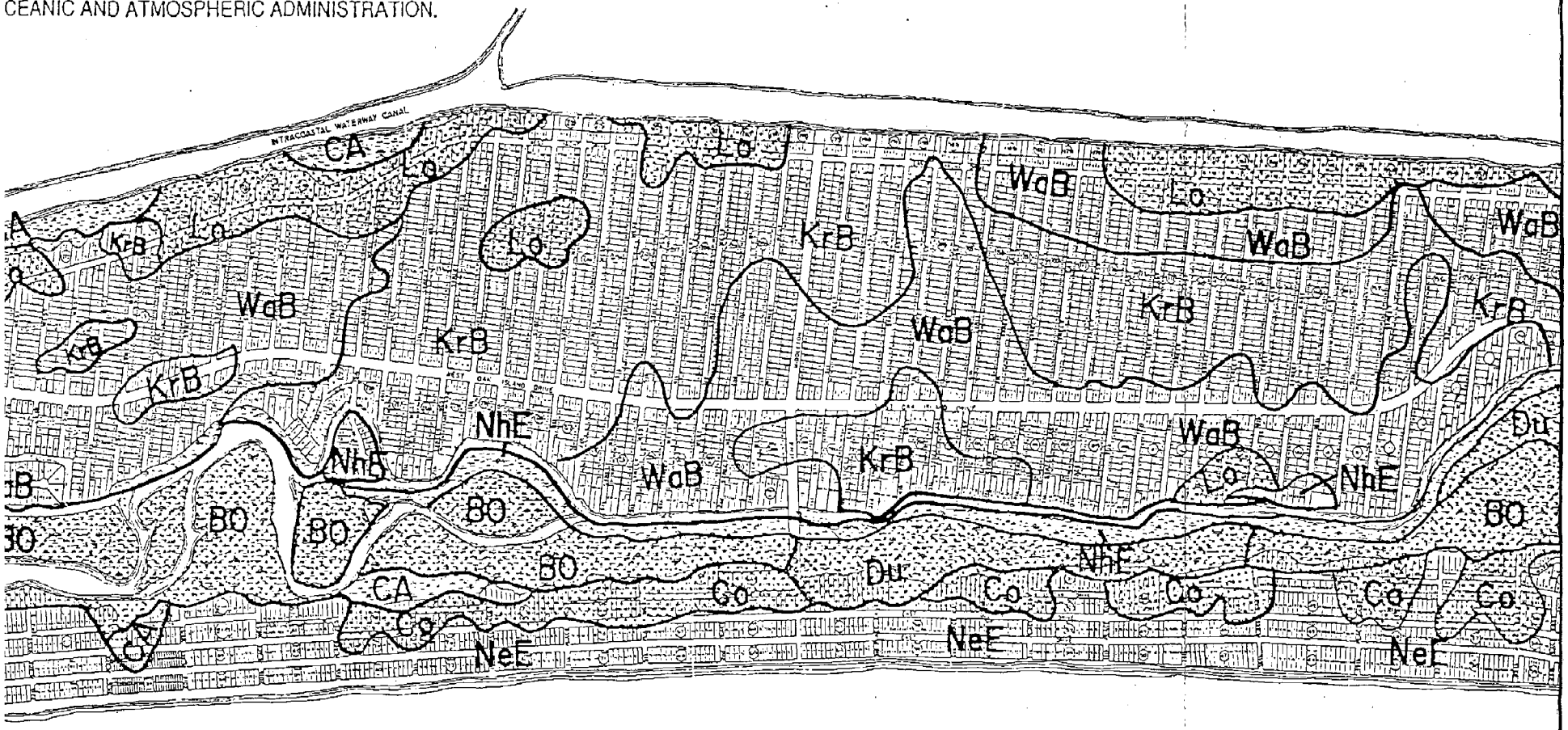
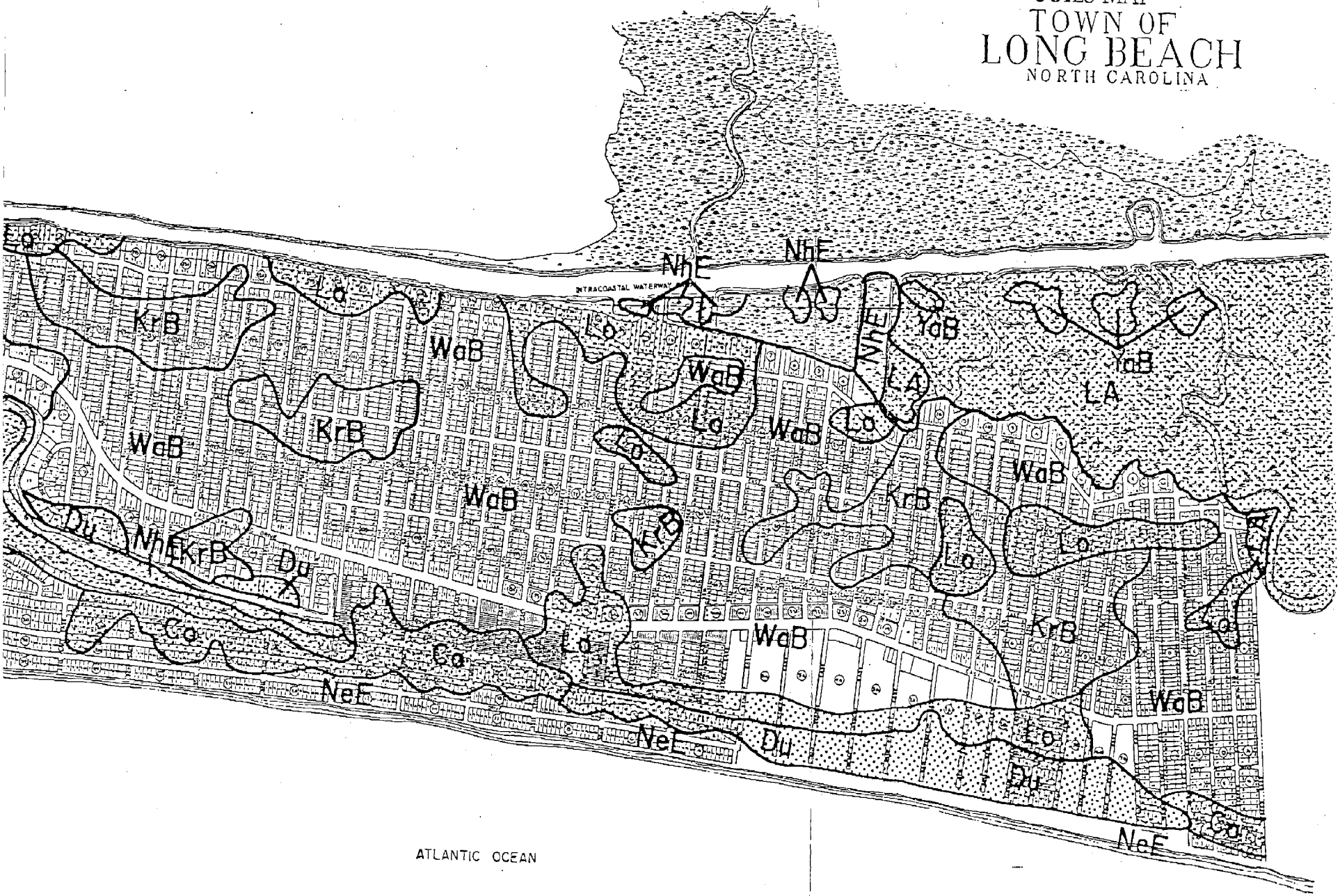
GRANT PROVIDED BY THE NORTH CAROLINA
ANAGEMENT PROGRAM, THROUGH FUNDS
Y THE COASTAL ZONE MANAGEMENT ACT OF
ENDED, WHICH IS ADMINISTERED BY THE
OCEAN AND COASTAL RESOURCE MANAGEMENT
CEANIC AND ATMOSPHERIC ADMINISTRATION.



SOILS MAP
TOWN OF
LONG BEACH
NORTH CAROLINA



tanks. If this occurs, Long Beach may be forced to adopt stringent no growth policies. Regardless of the direction the town elects to follow on this issue, the policies section of this plan should clearly reflect the town's position on the construction of a central sewer system and septic tank usage.

3. Drainage

Serious storm drainage problems exist within Long Beach. Normally the problems are the most severe in areas having water table depths within two feet of ground surface. That would include the Bohicket, Corolla, Duckston, LaFitte, and Leon soil types. Those are delineated on Map 5. Specifically, the following areas have serious recurring drainage problems:

- All of the area delineated on the zoning map (Map 1) as having R-2 zoning.
- The first three rows of lots along the oceanfront areas.
- All areas where the water table is two feet or less below ground.
- All streets from 69th Street to 79th Street.

Street drainage is the poorest on Beach Drive and all streets from 69th Street East to 79th Street East. The greatest obstacle to adequate drainage in the 69th to 79th Street area is that there is no east-west right-of-way to accommodate construction of drainage improvements.

The town does not have a comprehensive town-wide drainage plan. Consideration should be given to applying for a CAMA technical assistance grant to aid in the preparation of such a plan.

4. Solid Waste Disposal

The Town of Long Beach contracts with Waste Industries of Wilmington for private refuse collection. From late April to mid-September, collection for residential customers is provided twice a week. During the remainder of the year, residential collection is provided once per week. Commercial collection is provided twice per week year-round. In 1993 there were 5,800 residential customers and approximately 30 commercial customers. The waste is transported to the Brunswick County Landfill which is located on U.S. 17 between Supply and Bolivia. The life expectancy of the landfill is estimated at 1996-1998. In 1993 Brunswick County was undergoing a site selection study for a new landfill. Long Beach has not participated in the site selection process. The town does not expect to operate its own solid waste collection program. However, the town does operate a voluntary recycling center which accepts glass, pasteboard, aluminum cans, waste oil, and plastic.

5. Police

Long Beach operates a full-time police department. The department includes the following personnel:

- Chief of Police
- Assistant Chief of Police
- 10 Police officers
- 1 Part-time Animal Control officer
- 4 Full-time dispatchers
- 1 Part-time dispatcher
- 2 Reserve officers

Department equipment includes one van, nine automobiles, one four-wheel drive vehicle, and one four-wheel drive all terrain vehicle.

Members of the Long Beach police department continuously participate in training programs and seminars. All police officers are State certified. The departmental total of 13 officers provides 3.42 police officers per 1,000 of year-round population. This is well above the state average of 1.5 officers per 1,000 population. This average will drop significantly when compared to peak seasonal population. However, the average number of officers per 1,000 peak population is only .37. For all Brunswick County towns, there is an average of 7.8 officers per 1,000 year-round population. The police department is adequately staffed and equipped to serve the town's needs.

6. Fire/Rescue

Long Beach is provided effective fire protection by a 28-member volunteer fire department. There are two fire stations: Fire Station One located at the Municipal Building Complex, and Fire Station Two located on Oak Island Drive between 1st and 2nd Street Southeast. Equipment includes the following:

Station One

— 2 Ambulances
— 1 4 x 4 utility/rescue vehicle
— 1 Pumper, 1250 gpm with a 50' aerial
— 1 Equipment truck

Station Two

— 1 Pumper 750 gpm
— 1 Pumper/Tanker 1,000 gpm
— 1 Ambulance
— 1 Heavy rescue truck

The Fire Department has had an Insurance Safety Organization (ISO) rating of 5 since 1982. In addition, the department participates in mutual aid fire protection

agreements with both Brunswick County and the Military Ocean Terminal, Sunny Point. The town also has an automatic aid agreement with Yaupon Beach for structural fires. The fire department has adequately serviced the town's need. However, Fire Station Number Two, the most centrally located fire station, needs to be replaced in order to accommodate the largest fire department equipment including the 1250 gpm pumper truck.

The Long Beach Volunteer Rescue Squad consists of 23 volunteers. The squad includes 17 certified Emergency Medical Technicians, two ambulance attendants, and four trainees. The rescue squad is fully funded by the Town of Long Beach. A mutual aid agreement exists between the rescue squad and Brunswick County. The rescue squad has adequately served Long Beach's emergency response needs.

7. Administration

The Town of Long Beach has a Town Council/Manager form of government. In 1993, excluding the police department, the town had 30 full-time and one part-time employees. The following provides a summary by department:

— Administration	7 full-time
— Street Department	6 full-time
— Public Works Administration	2 full-time
— Building and Grounds	2 full-time
— Inspections	3 full-time
— Central Maintenance	1 full-time
— Recreation	4 full-time/1 part-time
— Water Administration	1 full-time
— Water Maintenance	4 full-time

In the spring of 1993, the town was adequately staffed. Establishing an effective water line flushing program necessitated the addition of one full-time employee.

8. Transportation

Long Beach has 14 miles of state maintained right-of-way; 69 miles of paved, town maintained right-of-way; and 16 miles of unpaved town-maintained roads.

As stated in the Existing Land Use section, Long Beach's grid street pattern contributes to traffic congestion and stimulates through on transient traffic in single-family residential areas. Oak Island Drive is the only major east-west route.

The North Carolina Department of Transportation has no historical traffic count data in Long Beach. In 1993, only the following traffic counts were available for the Long Beach area:

Year	Location	Average Daily Traffic
1992	N.C. 133 at Yaupon Drive in Yaupon Beach	12,900
1991	58th Street East/S. R. 1104	1,800
1991	Middleton/East Beach Drive	1,500
1991	End State Maintenance West Long Beach	250

These traffic counts are not indicative of the traffic congestion which exists in Long Beach, particularly during the peak summer season.

A major transportation related concern is effective evacuation in the event of a man-made hazard or major storm. In 1980 CP&L, in concert with the Nuclear Regulatory Commission, conducted an evacuation study for Oak Island and portions of the mainland from the area of the N.C. 133/N.C. 211 intersection to the old Sunset Harbor Road. That study assumed a total year round population of 1,800 and a peak population of 14,000 for the area. Obviously, both permanent and peak season population in 1993 greatly exceeds these figures. The 1980 study determined an evacuation time of from 2.6 to 6.5 hours depending upon weather and day/night conditions. In 1993, safe, effective evacuation would require a much greater time. A detailed evacuation study which can be embraced by CP&L, Brunswick County, and the Oak Island municipalities is needed. In addition, a second Oak Island-Mainland bridge is crucial to providing for safe, effective evacuation.

9. Electrical Distribution

Long Beach is provided electrical service by the Brunswick County Electric Membership Corporation. Electrical distribution is adequate to serve the town's needs. In FY92-93, the town implemented a program to put all utilities underground. The goal is to put all utilities underground during the next 10 to 15 years. The Electric Membership Corporation puts lines underground as replacement is required. The town pays 8% of the cost and recoups approximately 70% of this cost through front foot assessments.

10. Telephone Service

Telephone service is provided by Southern Bell. In 1993, there were approximately 5600 lines in Long Beach. There are no service deficiencies.

11. Cable Television

Cable television service is provided by Vision Cable, Inc. of Wilmington. In 1993 there were 2,661 customers in Long Beach.

12. Schools

Long Beach students in grades kindergarten through 5 attend Southport Elementary School. Grades 6 through 8 attend South Brunswick Middle School which is located in Boiling Spring Lakes. Grades 9 through 12 attend South Brunswick High School which shares the same location as the Middle School. The South Brunswick Middle School has long-range plans to expand its facilities. Additionally, in 1993 both Southport Primary was undergoing expansion. A summary of the status of schools serving Long Beach is provided in Table 19. In 1993, there were approximately 600 students enrolled from Long Beach.

Table 19
1993 School System Status
Schools Serving Long Beach

School	Enrollment	Capacity	% Over/Under Capacity
Southport Elementary	794	744	6.7% over
South Brunswick Middle School	683	525	30.1% over
South Brunswick High School	811	900	9.9% under

13. Health Services

For minor surgery or emergencies, Long Beach's residents travel to nearby J. Arthur Dosher Memorial Hospital in Southport, or to Brunswick County Hospital located in Supply.

Dosher Memorial Hospital is a modern, well equipped 40-bed facility with 100 employees in over 20 different departments and service areas.

For major medical care, residents travel to New Hanover Regional Medical Center or Cape Fear Memorial Hospital in Wilmington, approximately 40 miles away. Private physicians and medical specialists are located in Southport, Supply, Wilmington, and Shallotte.

14. Recreation

Long Beach has significant recreational facilities which accommodate both indoor and outdoor organized recreational activities. The facilities are discussed in detail in the Existing Land Use section of this plan and recreational personnel are discussed in the Public Facilities section. It is unusual for a North Carolina beach community to have full-time year-round recreational personnel. With the exception of the need for a water access site with boat ramp on the Intracoastal Waterway, and additional land for park space, the town's general recreation and shoreline access facilities adequately serve the town's needs.

F. DEVELOPMENT CONSTRAINTS: LAND SUITABILITY

1. Topography/Geology

Long Beach is primarily flat, slopes less than 2%, with the highest elevations being in the range of 20 to 25 feet above sea level. These highest elevations are located in the frontal dune areas and in areas containing dredge spoil. These areas are indicated on the soils map, Map 5, as Newhan soils.

The town's many low-lying areas are extremely susceptible to sea level rise. Flooding resulting from sea level rise may be a long-term problem. Over the last 100 years, the sea level has risen approximately one foot. Most experts agree that the rate of sea level rise will increase over the next one hundred years. The maximum increase has been forecast to be as much as four to seven feet. An increase of that magnitude would be disastrous to the town. Approximately 70% of the town could be inundated. The impact of sea level rise has serious adverse implications for Long Beach. The rate of rise should be carefully monitored.

Long Beach is situated in a geologically complex area. A post-Miocene aquifer exists between the land surface and a depth of 40 feet below surface. The aquifer consists of sand and contains potable water. Below the post-Miocene is the tertiary system aquifer. The aquifer contains porous and permeable limestone, providing conditions in which excellent quality groundwater is stored under artesian conditions. The tertiary system aquifer is approximately 140 feet thick and extends down from approximately a 40-foot depth to 200 feet deep. The Miocene and tertiary aquifers appear to be connected. Thus, rainfall in the Long Beach area aids in aquifer recharge.

2. Flood Hazard Areas

While large areas of Long Beach lie within the 100-year flood plain, the greatest threat is flooding resulting from storm surge and local ponding of water. Map 6 provides a delineation of the flood hazard areas. Approximately 70% of the town's land area lies at ten feet above mean sea level or less and is potentially subject to flooding.

The greatest storm surge impact will occur from hurricanes. Map 7 shows the general areas of Long Beach that may be affected by hurricane-generated storm surge. A Category 1 to 2 storm could result in the flooding of approximately 70% of Long Beach. The various categories of storm surge areas are defined as follows:

Category 1. Winds of 74 to 95 miles per hour. Damage primarily to shrubbery, trees, foliage, and unanchored mobile homes. No appreciable wind damage to other structures. Some damage to poorly constructed signs. Storm surge possibly 4 to 5 feet above normal. Low-lying roads inundated, minor pier damage, some small craft in exposed anchorage torn from moorings.

FLOOD HAZARD MAP

TOWN OF LONG BEACH
NORTH CAROLINA

SCALE IN FEET

0 400 800 1200

200 600 1000 1800

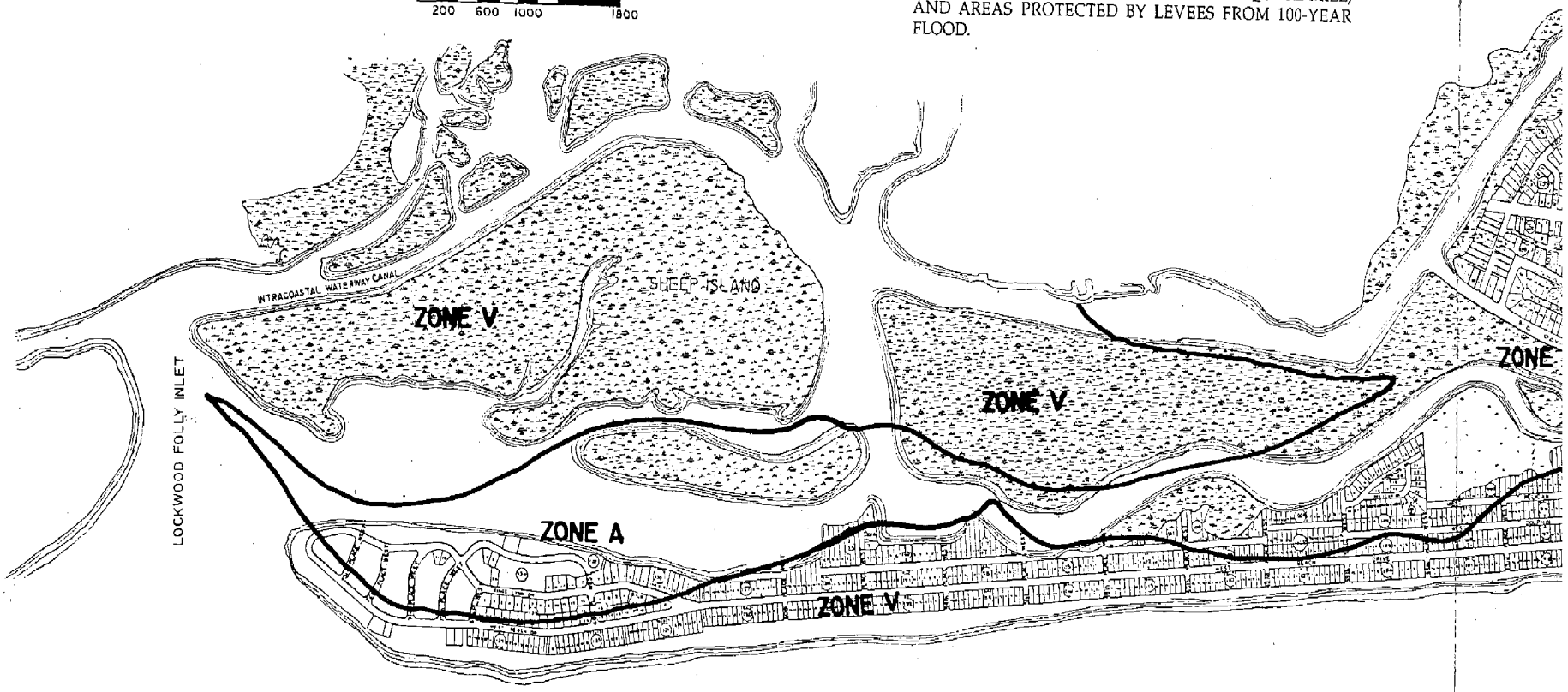
LEGEND

ZONE

A AREA OF 100-YEAR FLOOD; BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS NOT DETERMINED.

V AREAS OF 100-YEAR COASTAL FLOOD WITH VELOCITY (WAVE ACTION); BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS NOT DETERMINED.

X AREAS OF 500-YEAR FLOOD; AREAS OF 100-YEAR FLOOD WITH AVERAGE DEPTHS OF LESS THAN ONE FOOT OR WITH DRAINAGE AREAS LESS THAN ONE SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 100-YEAR FLOOD.



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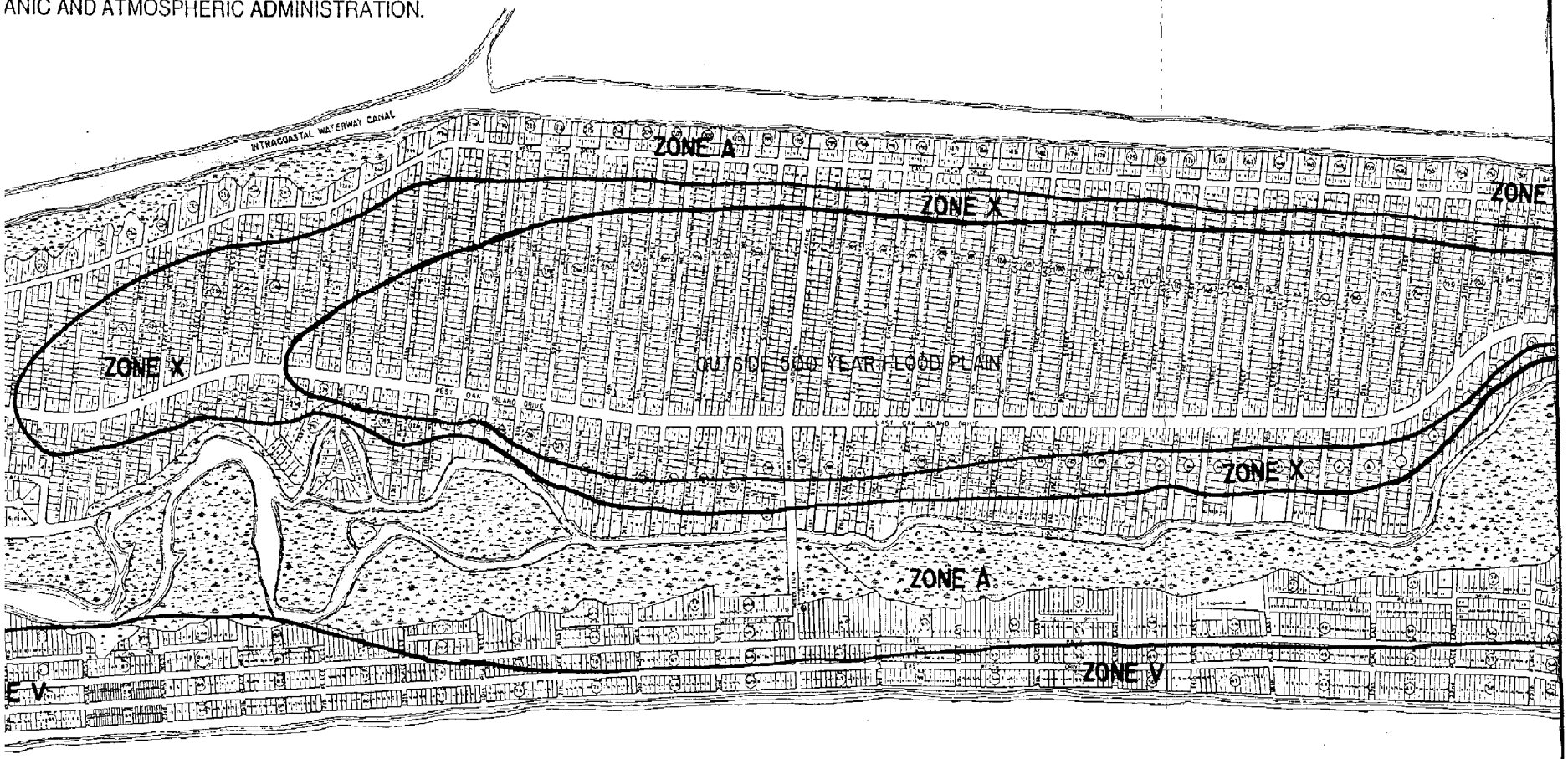
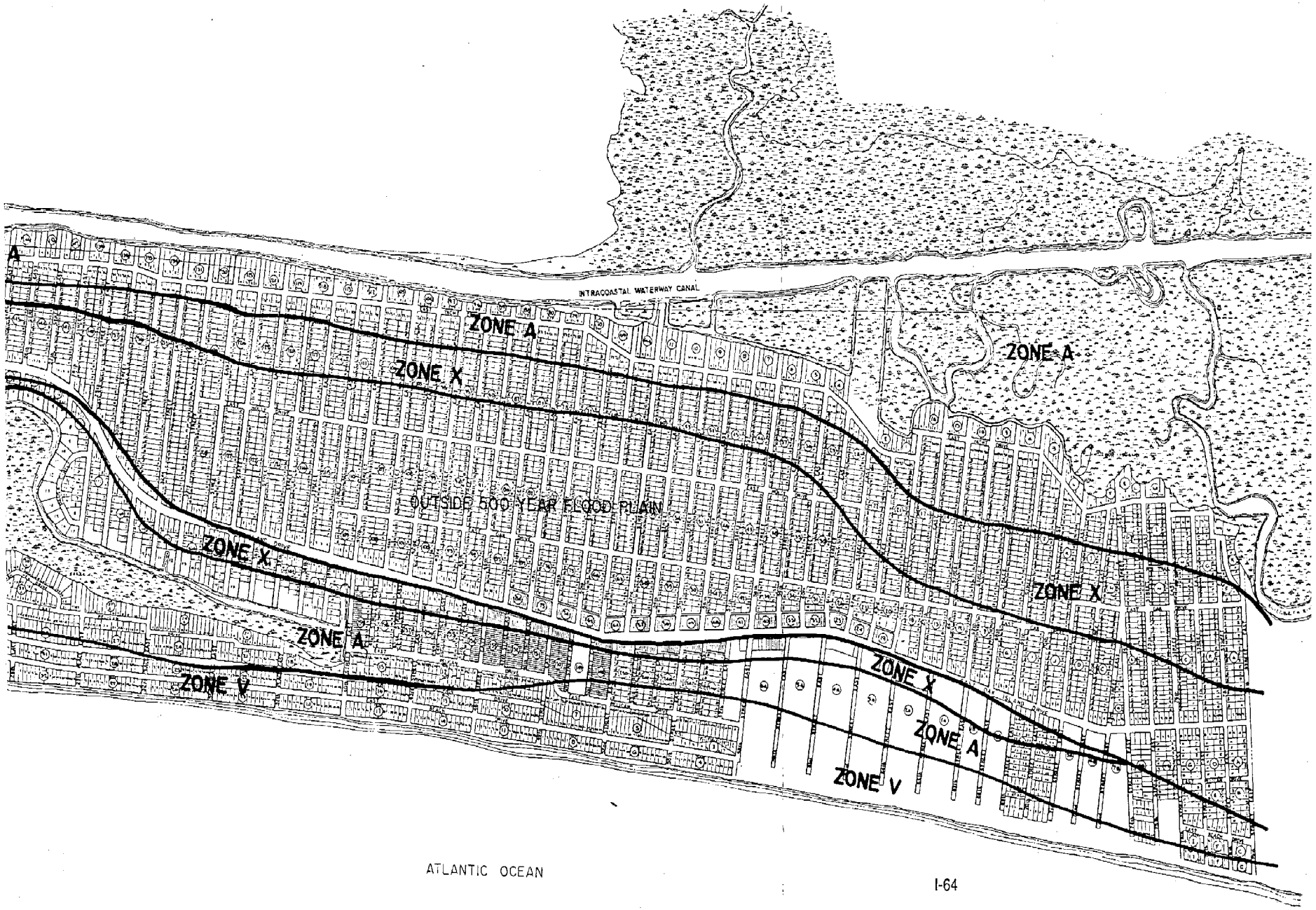


ATLANTIC OCEAN

MAP 6
FLOOD HAZARD



NOTE: This map may not be used for exact locations. In-field verifications of flood hazard areas are required.

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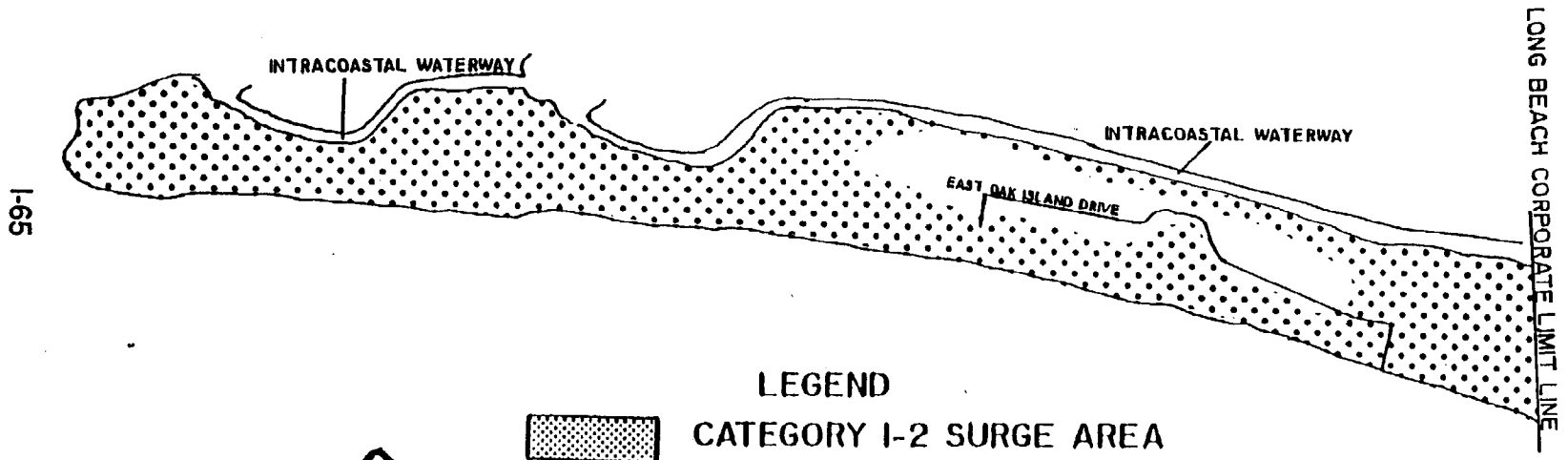

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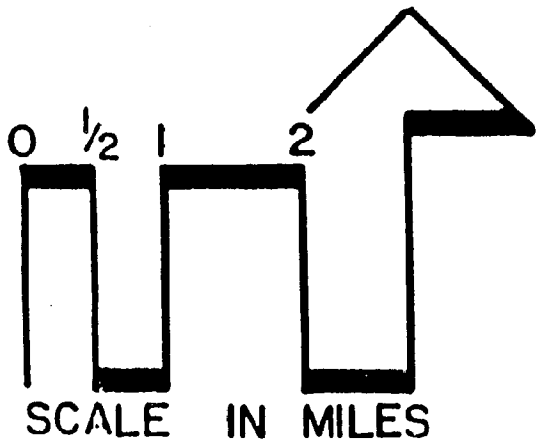
CATEGORY I-2 SURGE AREA



TOWN OF LONG BEACH, N.C.

GENERAL DELINEATION

FLOOD HAZARD AREAS

MAP 7

Category 2. Winds of 96 to 110 miles per hour. Considerable damage to shrubbery and tree foliage; some trees blown down. Major damage to exposed mobile homes. Extensive damage to poorly constructed signs. Some damage to roofing materials of buildings; some window and door damage. No major wind damage to buildings. Storm surge possibly 6 to 8 feet above normal. Coastal roads and low-lying escape routes inland cut by rising water 2 to 4 hours before arrival of hurricane center. Considerable damage to piers. Marinas flooded. Small craft in unprotected anchorages torn from moorings. Evacuation of some shoreline residences and low-lying island areas required.

Category 3. Winds of 111 to 130 miles per hour. Foliage torn from trees; large trees blown down. Practically all poorly constructed signs blown down. Some damage to roofing materials of buildings; some window and door damage. Some structural damage to small buildings. Mobile homes destroyed. Storm surge possibly 9 to 12 feet above normal. Serious flooding at coast and many smaller structures near coast destroyed; larger structures near coast damaged by battering waves and floating debris. Low-lying escape routes inland cut by rising water 3 to 5 hours before hurricane center arrives.

Category 4. Winds of 131 to 155 miles per hour. Shrubs and trees blown down; all signs down. Extensive damage to roofing materials, windows, and doors. Complete failure of roofs on many small residences. Complete destruction of mobile homes. Storm surge possibly 13 to 18 feet above normal. Major damage to lower floors of structures near shore due to flooding and battering by waves and floating debris. Low-lying escape routes inland cut by rising water 3 to 5 hours before hurricane center arrives. Major erosion of beaches.

Category 5. Winds greater than 155 miles per hour. Shrubs and trees blown down; considerable damage to roofs of buildings; all signs down. Very severe and extensive damage to windows and doors. Complete failure of roofs on many residences and industrial buildings. Extensive shattering of glass in windows and doors. Some complete building failures. Small buildings overturned or blown away. Complete destruction of mobile homes. Storm surge possibly greater than 18 feet above normal. Major damage to lower floors of all structures less than 15 feet above sea level. Low-lying escape routes inland cut by rising water 3 to 5 hours before hurricane center arrives.

The town also suffers from intermittent flooding from rainfall and storm water runoff. The soil associations shown on Map 5 provide an indication of the locations of

high water table areas. The water table depths, flooding frequency, and permeability rates are provided in Table 20.

3. Soils

A detailed soils survey of Brunswick County has been completed by the Soil Conservation Service. Based on that survey, there are nine different soil associations located within Long Beach. These associations are delineated on Map 5 and their conditions for site development are provided in Tables 20 and 21. Most soils within Long Beach have some limitations to development.

Table 20
Long Beach
Soil Susceptibility to Flooding

Map Symbol	Soil Types	Depth to Seasonal High Water Table/Ft.	Flooding	Permeability Inch/Hr.	Slope %
BO	Bohicket	+3-0	Frequent	.06-0.2	----
Co	Corolla	1.5-3.0	Rare	> 20	----
Du	Duckston	1.0-2.0	Occasional	> 20	----
KrB	Kureb	> 6.0	None	6.0-20	1 to 8
LA	Lafitte	0-0.5	Frequent	2.0-6.0	----
Lo	Leon	0-1.0	None	6.0-20	0-2
NeE, NhE	Newhan	> 6.0	None	> 20	2-30
WaB	Wando	4.0-6.0	None	6.0-20	0-6
YaB	Yaupon	2.0-4.0	None	0.06-0.2	0-3

Source: Soil Survey of Brunswick County, North Carolina, United States Department of Agriculture, Soil Conservation Service.

FRAGILE AREAS MAP

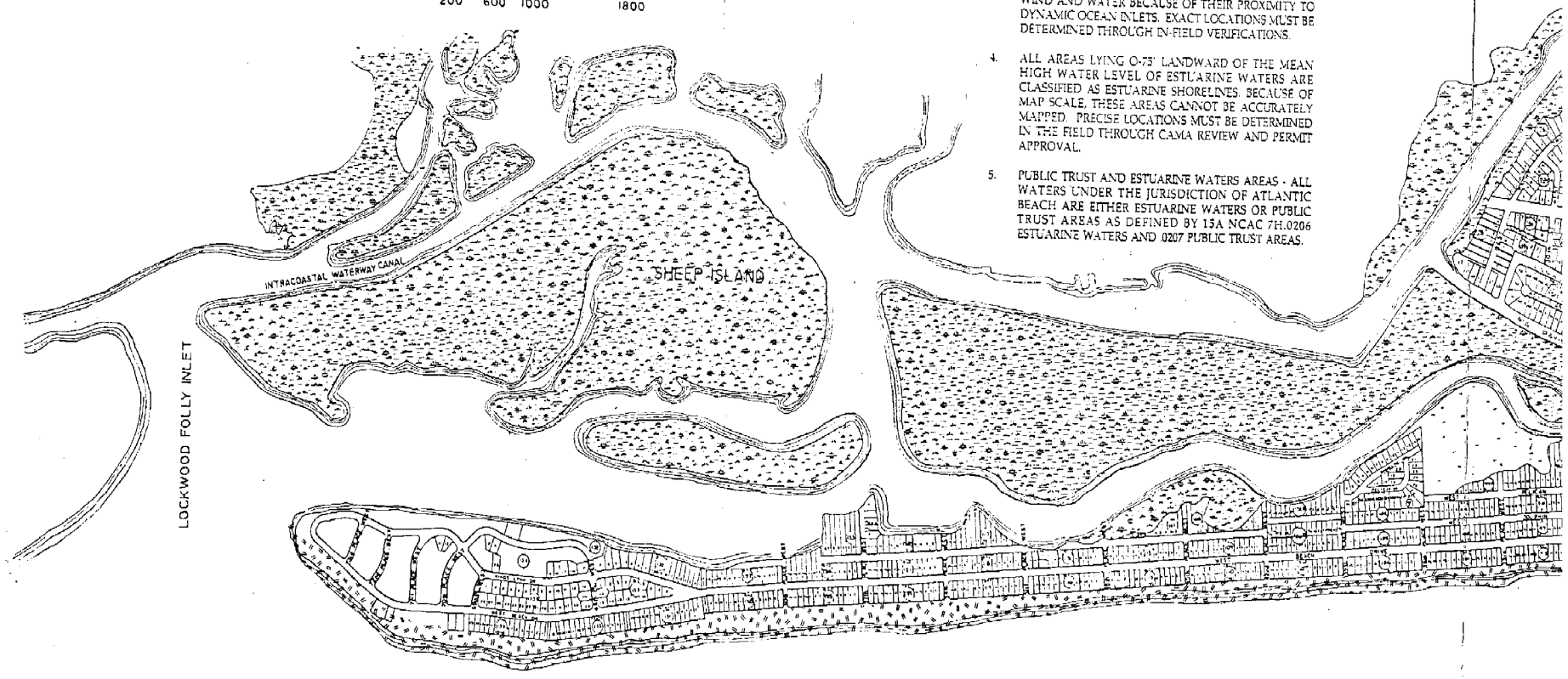
TOWN OF LONG BEACH

NORTH CAROLINA

SCALE IN FEET

0 400 800 1200

200 600 1000 1800



LEGEND

1. COASTAL WETLANDS (APPROXIMATE LOCATIONS). EXACT LOCATIONS MUST BE DETERMINED THROUGH IN-FIELD VERIFICATIONS.

2. OCEAN HAZARD AREAS - OCEAN HAZARD AREAS ARE THOSE AREAS DEFINED BY 15A NCAC 7H SECTION .0300. THESE AREAS INCLUDE ALL BEACHES, PRIMARY DUNES, AND FRONTAL DUNES AND OTHER AREAS IN WHICH GEOLOGIC, VEGETATIVE AND SOIL CONDITIONS INDICATE A SUBSTANTIAL POSSIBILITY OF EXCESSIVE EROSION OR FLOOD DAMAGE.

3. INLET HAZARD AREAS - INLET HAZARD AREAS ARE THOSE DEFINED BY 15A NCAC 7H.0304. THESE AREAS INCLUDE LANDS THAT ARE NATURAL HAZARD AREAS THAT ARE ESPECIALLY VULNERABLE TO EROSION, FLOODING, AND OTHER ADVERSE EFFECTS OF SAND, WIND AND WATER BECAUSE OF THEIR PROXIMITY TO DYNAMIC OCEAN INLETS. EXACT LOCATIONS MUST BE DETERMINED THROUGH IN-FIELD VERIFICATIONS.

4. ALL AREAS LYING 0-75' LANDWARD OF THE MEAN HIGH WATER LEVEL OF ESTUARINE WATERS ARE CLASSIFIED AS ESTUARINE SHORELINES. BECAUSE OF MAP SCALE, THESE AREAS CANNOT BE ACCURATELY MAPPED. PRECISE LOCATIONS MUST BE DETERMINED IN THE FIELD THROUGH CAMA REVIEW AND PERMIT APPROVAL.

5. PUBLIC TRUST AND ESTUARINE WATERS AREAS - ALL WATERS UNDER THE JURISDICTION OF ATLANTIC BEACH ARE EITHER ESTUARINE WATERS OR PUBLIC TRUST AREAS AS DEFINED BY 15A NCAC 7H.0206 ESTUARINE WATERS AND .0207 PUBLIC TRUST AREAS.

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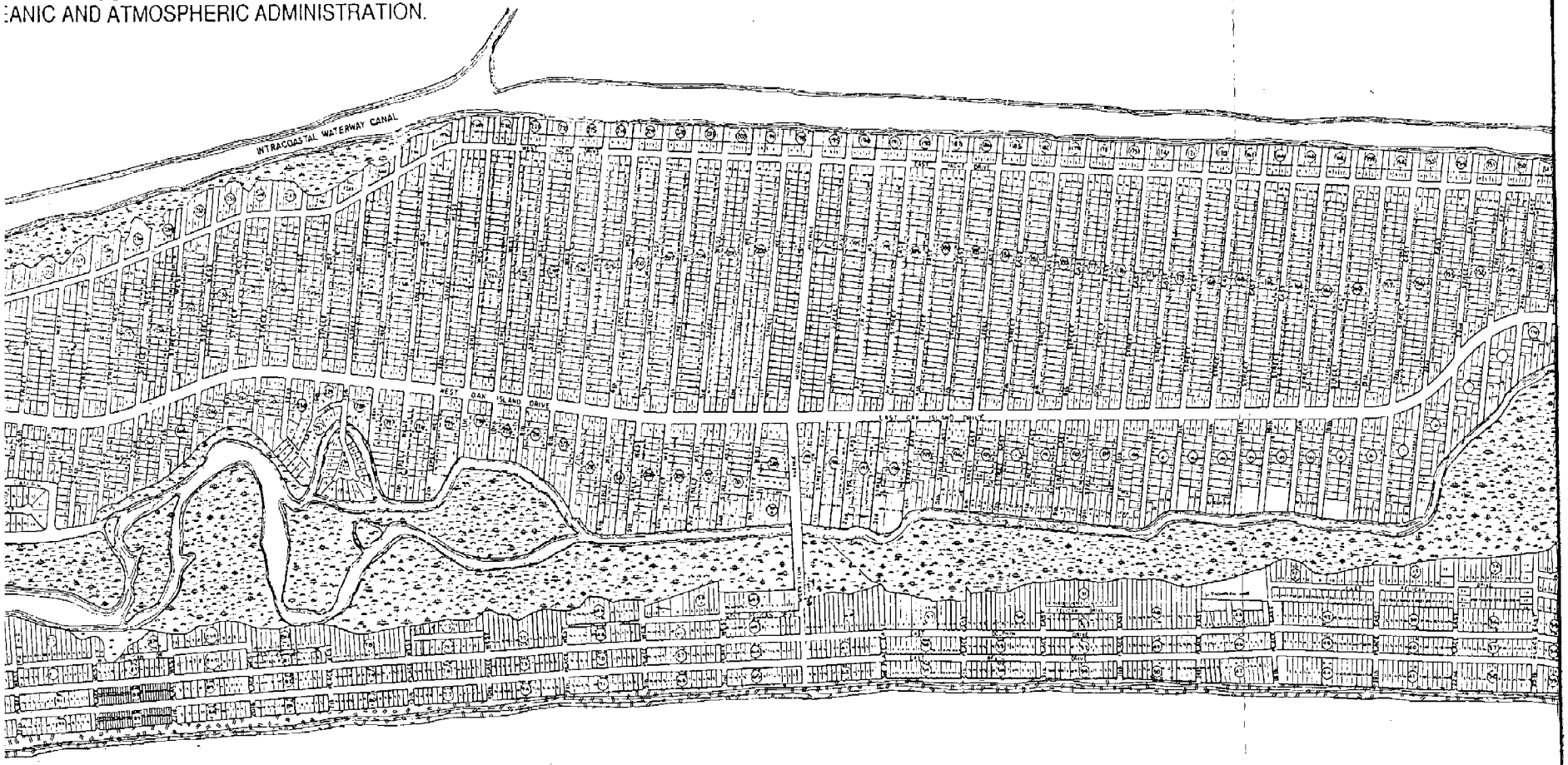


MAP 8
FRAGILE AREAS

Grass, Cat-tail, Salt Meadow Grass, and Salt Reed Grass. The coastal wetlands are vital to the complex food chain found in estuaries. They provide marine nursery areas and are essential to a sound commercial fishing industry. Coastal wetlands also serve as barriers against flood damage and control erosion between the estuary and uplands.

b) **Estuarine Waters**

Estuarine waters are generally those waters found in estuaries, sounds, bays, and salt water shorelines. They are the dominant component and bonding element of the entire estuarine system, integrating aquatic influences from both the land and the sea. The estuarine waters are among the most productive natural environments within Long Beach. The waters support the valuable commercial and sports fisheries of the coastal area which are comprised of estuarine dependent species such as menhaden, flounder, shrimp, crabs, and oysters.

c) **Estuarine Shorelines**

Estuarine shorelines are those non-ocean shorelines which are especially vulnerable to erosion, flooding, or other adverse effects of wind and water. They are intimately connected to the estuary. The area extends from the mean high water level or normal water level along the estuaries, sounds, bays, and brackish waters for a distance of 75 feet landward. Development within the estuarine shorelines influences the quality of estuarine life and is subject to the damaging processes of shorefront erosion and flooding.

d) **Public Trust Areas**

Public trust areas are all waters of the Atlantic Ocean and the lands thereunder from the mean high water mark to the seaward limit of state jurisdiction; all natural bodies of water subject to measurable lunar tides and lands thereunder to the mean high water mark; all navigable natural bodies of water and lands thereunder to the mean high water level or mean water level as the case may be, except privately-owned lakes to which the public has no right of access; all water in artificially created bodies of water containing significant public fishing resources or other public resources which are accessible to the public by navigation from bodies of water in which the public has rights of navigation; and all waters in artificially created bodies of water in which the public has acquired rights by prescription, custom, usage, dedication, or any other means. In determining whether the public has acquired rights in artificially created bodies of water, the following factors shall be considered:

(1) the use of the body of water by the public,
(2) the length of time the public has used the area,
(3) the value of public resources in the body of water,
(4) whether the public resources in the body of water are mobile to the extent that they can move into natural bodies of water,
(5) whether the creation of the artificial body of water required permission from the state, and

(6) the value of the body of water to the public for navigation from one public area to another public area.

These areas are significant because the public has rights in these areas, including navigation and recreation. The public trust areas also support valuable commercial and sports fisheries, have aesthetic value, and are important resources for economic development.

It is impossible to map the public trust area. The areas must be determined through in-field analysis and definition.

e) **Ocean Hazard Areas**

Ocean hazard areas consist of ocean erodible areas, high hazard flood areas, inlet hazard area, and unvegetated beach area. Ocean hazard landforms include ocean dunes, beaches, and shorelines. Ocean dunes include both primary dunes and frontal dunes. Primary dunes are the first mounds of sand located landward of the ocean beaches having an elevation equal to the mean flood level (in a storm having a one percent chance of being equaled or exceeded in any given year) for the area plus six feet. The primary dune extends landward to the lowest elevation in the depression behind that same mound of sand. The frontal dune is deemed to be the first mound of sand located landward of the ocean beach having sufficient vegetation, height, continuity and configuration to offer protective value. The dunes are essential to the protection of oceanfront areas.

Ocean beaches and shorelines are lands consisting of unconsolidated soil materials that extend from the mean low water line landward to a point where either (1) the growth of vegetation occurs, or (2) a distinct change in slope or elevation alters the configuration of the land form, whichever is farther landward. The entire southern length of Long Beach is an ocean beach. Long Beach contains ocean erodible areas and high hazard flood areas, an inlet hazard area, but no unvegetated beach area (a dynamic area that is subject to rapid unpredictable landform change from wind and wave action). Unvegetated beach areas are only designated following detailed studies by the Coastal Resources Commission.

f) **404 Wetlands**

404 wetlands are areas covered by water or that have waterlogged soils for long periods during the growing season. Plants growing in wetlands are capable of living in soils lacking oxygen for at least part of the growing season. 404 wetlands include, but are not limited to, bottomlands, forests, swamps, pocosins, pine savannahs, bogs, marshes, and wet meadows.

Section 404 of the Clean Water Act requires that anyone interested in depositing dredged or fill material into "waters of the United States," including wetlands, must apply for and receive a permit for such activities. The Wilmington office of the U. S. Army Corps of Engineers has regulatory authority in Long Beach. While there may be

scattered wetland areas located within Long Beach, the specific locations of wetlands areas must be determined through on-site analysis. It should be noted that in some Areas of Environmental Concern, both the U. S. Army Corps of Engineers and the regulatory requirements of the Coastal Area Management Act may have overlapping jurisdiction.

g) Slopes in Excess of 12%

In Long Beach, slopes of 12% or greater are normally found only in the ocean dune areas. These areas are delineated as Newhan soils on Map 5 . Excessive slope has not been a deterrent to development in Long Beach.

h) Excessive Erosion Areas

Long Beach has experienced both oceanfront and inlet erosion problems. The 1986 Land Use Plan stated that since the enactment of CAMA's setback regulation in June 1979, Long Beach has up to 100 lots which were classified as unbuildable at any given time. In 1993, there were approximately 150 oceanfront lots which were considered unbuildable. However, it is emphasized that lot by lot analysis must be performed to determine if a lot is unbuildable.

The town is particularly vulnerable during major storms. In 1954, 365 homes were lost during Hurricane Hazel. Oceanfront erosion will continue to increase the number of unbuildable lots. Southwest winds are the most damaging. In 1993, the area from Middleton Street to 79th Street was experiencing the worst erosion. Beach nourishment projects will be vital to the preservation of the town's oceanfront areas.

The western area of the town adjacent to Lockwood Folly Inlet is particularly unstable. Development has continued in the western sections of town despite the high rate of erosion. In 1993, the westernmost dwelling unit was located on 67th Place West. A number of new homes had been moved to avoid loss or damage. The winter storm of 1993 increased the erosion eastward. While most of the western areas have been subdivided, development should be discouraged.

i) Historic and Archaeological Sites

There do not appear to be any nationally significant historic or archaeological sites within Long Beach. However, at least 76 archaeological sites have been recorded by the North Carolina Department of Cultural Resources. Such sites are easily disturbed by contemporary land use activities and natural shoreline erosion. No structures of historical or architectural importance are located within the town's planning jurisdiction. All archeological site locations are restricted information and locations may not be included in any public document or made available to any individual without the permission of the state archeologist. Any development projects should be implemented under appropriate historic preservation legislation and in coordination with the Division of Archives and History to avoid damage to valuable archaeological resources.

SECTION II:

PROJECTED LAND DEVELOPMENT ANALYSIS

SECTION II: LAND DEVELOPMENT ANALYSIS

A. PROJECTED DEMAND FOR DEVELOPMENT

1. Demographic Trends

Table 22 provides the estimated population for Long Beach and other Brunswick County municipalities through 2003. A population growth rate of 35.6% through 2003 is forecast for Brunswick County. However, the municipal growth rate of 50.0% from 1980 to 1990 in Brunswick County was 18% higher than the county growth rate of 42.5%. Therefore, a municipal growth rate of 42.0%, or 1.18 times the 1990-2003 county-wide growth rate of 36.5%, has been used to project municipal growth from 1990-2003. It is assumed in Table 22 that all municipalities will grow at the same 42.0% rate from 1990-2003.

However, based on the fact that Long Beach's 1980-1990 growth rate was twice the overall municipal growth rate from 1980-1990, it is likely that the Long Beach population growth from 1990-2003 indicated in Table 22 is conservative.

Table 22: Total Year Round Population Projections
Brunswick County, 1990-2003

	Year Round Population		
Municipality or Area	1990	1998	2003
Bald Head Island	78	99	111
Belville	66	84	93
Boiling Spring Lakes	1,650	2,098	2,343
Bolivia	228	290	323
Calabash	1,210	1,538	1,718
Caswell	175	222	248
Holden Beach	626	796	889
Leland	1,801	2,290	2,557
Long Beach	**3,816**	**4,851**	**5,419**
Navassa	445	566	632
Ocean Isle Beach	523	665	743
Sandy Creek	243	309	345
Shallotte	1,073	1,364	1,524
Southport	2,369	3,012	3,364
Sunset Beach	311	395	442
Varnamtown	404	514	574
Yaupon Beach	734	933	1,042
Total Municipalities	15,752	20,026	22,367
Unincorporated Areas	35,233	42,683	46,791
Total Brunswick County	50,985	62,709	69,158

Source: Holland Consulting Planners, Inc.; N.C. State Data Center, Office of State Planning.

Seasonal population will have a significant impact on population growth within Long Beach. Both day visitor and overnight seasonal population will affect the town. From 1980 to 1990 the town's seasonal housing units increased from 1,196 to 2,393, a 100.1% increase. This rate of growth is not expected to continue through the planning period. Based on residential construction which occurred during the period 1987 to 1991 and the percentage of the housing inventory which is occupied by seasonal housing units, it is expected that the construction of seasonal housing units will drop to an average of 50 per year during the planning period for a total of 500 additional seasonal dwelling units by 2003.

In addition to seasonal dwelling units, the peak overnight population is impacted by the availability of campgrounds, transient marina slips, and motel rooms. In 1993 Long Beach contained 165 motel rooms, approximately 150 campground sites, and approximately 20 marina slips available for transient boat traffic. In 1987, a detailed analysis of seasonal housing in Coastal North Carolina was conducted by East Carolina University. Based on that analysis, the following occupancy figures for seasonal units may be applied to Long Beach:

Seasonal housing units	—	4.5 occupants
Motel rooms	—	3.5 occupants
Campground sites	—	3.0 occupants
Transient marina slips	—	3.25 occupants

Long Beach's seasonal units are primarily detached single-family units, many having more than two bedrooms. In fact, in 1990, 65% of the town's dwelling units had three or more bedrooms. Therefore, the seasonal housing unit average occupancy rate for Long Beach was increased to 6.5.

Based on these occupancy rates, at 100% occupancy of seasonal units, in 1993 the peak overnight seasonal population was 17,600.

The 1993 day visitor peak seasonal population was estimated by the town of Long Beach to be 13,600. When added to the permanent, year-round population, and overnight seasonal population, the total peak seasonal population is 35,016 .

It is extremely difficult to forecast growth of overnight and day visitor seasonal population. Seasonal population growth is strongly influenced by the economy and availability of housing.

As previously mentioned in this plan, it is anticipated that continued dependence on septic tanks will slow growth in general, and the construction of permanent and seasonal dwelling units in particular. It is estimated that motel rooms, campground sites, and transient boat slips will have an overall ten-year growth of 25%. The day visitor population is expected to grow by 29.7% which is consistent with the overall population increase for Brunswick County.

Table 23 provides a forecast of Long Beach's total population growth through 2003. It is emphasized that construction of a second Oak Island Bridge could increase the peak seasonal population, especially day visitor traffic.

Table 23
Town of Long Beach
Peak Seasonal Population Growth
1993 - 2003

	1993	1998	2003
Year Round Population	3,984	4,851	5,419
Overnight Seasonal Population	17,600	19,415	21,200
Day Visitor Seasonal Population	13,600	15,620	17,640
Total	35,184	39,886	44,259

Source: Holland Consulting Planners, Inc.

2. Commercial and Industrial Land Use

Major changes in commercial land use are not expected during the planning period. No significant increases in or changes to the 1993 commercial zoning patterns are expected. In 1993, approximately 110 vacant commercially zoned lots remained. Well planned commercial development will require consolidation of some of these lots because of their small size. From 1987 to 1993, only eight commercial building permits were issued. This slow rate of commercial growth should continue.

The major issues confronting commercial land use during the planning period should be:

- Increasing traffic congestion on East Oak Island Drive.
- Inadequate off-street parking.
- Increasing sewage disposal problems.
- Development of an effective thoroughfare plan to facilitate traffic flow.

Commercial zoning should not be allowed to infringe on adjacent residential areas. Limiting commercial zoning to primarily the East Oak Island Drive area will continue to contribute to peak seasonal traffic congestion on that road. However, this approach will aid in limiting the amount of commercially generated traffic utilizing residential streets.

There is not expected to be any industrial zoning established in Long Beach.

3. Residential

Residential land use will continue to be predominantly single-family residential. Multi-family development is allowed in the R-5 zoning district only as a conditional use. This district is limited to the beach area between the eastern corporate limit line and a line lying between 59th Street East and 61st Street East. This area includes approximately 60 acres of vacant, unsubdivided property. Without central sewer service, it is not anticipated that this property will be developed for multi-family residential purposes. However, in 1993, the Turtle Creek and Saint James By The Sea subdivisions were granted permission by the Town Council to connect to the Yaupon Beach sewer system. In addition, duplex construction should be limited by lot size and septic tank requirements. Because of the small lot sizes and the zoning ordinance requirement of 10,000 square feet for duplex construction, two lots are normally required. Septic tank permitting requirements for duplex structures are more demanding than for single-family structures.

Because of the lot sizes, single-family residential development will continue to be high density. In fully developed areas, the densities will be four to five dwelling units per acre. As indicated in the Existing Land Use section, in 1993 approximately 7,260 vacant residentially zoned lots remained in Long Beach. If the average rate of single-family residential construction which occurred in the mid-1980's to early 1990's (96 average single-family dwelling units per year) continues, buildout of the single-family areas would require approximately 75 years.

However, in the absence of central sewer service, it is anticipated that increasing sewage treatment problems and ground saturation by septic tank drain fields will result in suspension or prohibition of continued residential construction well before buildout occurs. On the beachfront, all lots platted before January 1, 1993, are allowed reduced setback requirements (5' from lot line) for septic tank construction. This increases the density of septic tank construction.

The major issues which will confront residential construction during the planning period will include:

- Construction of a central sewer system versus continued reliance on septic tanks.
- Continued beach nourishment to aid in protection of oceanfront residential properties.
- Adequate thoroughfare planning to reduce traffic volume in residential areas.
- Construction of a second Oak Island Bridge to reduce traffic congestion in residential areas, improve island access, and improve Long Beach's evacuation capabilities.

- Small residential lot sizes will continue to result in high residential densities and sewage treatment problems.

4. Public/Semi-Public

The most significant changes in public/semi-public land use will be the result of improvement undertaken by the town. Long Beach will continue to develop shoreline access sites. Emphasis will be placed on developing an access site on the Intracoastal Waterway with a boat ramp. The town will pursue shoreline access funds through the North Carolina Division of Coastal Management.

If funding is available, the town will pursue improvement or replacement of Fire Station Two. This will be done to allow the station to accommodate the fire department's largest equipment at the most centrally located fire station.

No other significant public/semi public land use changes are anticipated.

5. Transportation

Long Beach will be confronted with serious transportation/traffic problems as both year-round and peak seasonal population increases. The town supports the construction of a second Oak Island Bridge, located to tie into Middleton Avenue. This improvement is essential to reducing congestion and improving evacuation capabilities. In addition, the town supports replacement of the bridge over Big Davis Creek. This improvement is included in the 1993-1994 North Carolina Department of Transportation Improvement program.

Long Beach should undertake detailed long-range transportation planning and develop a thoroughfare plan. This should be done to facilitate traffic flow on the main traffic arteries, and to deter transient traffic from residential areas.

6. Area Likely to Experience Major Land Use Changes

No significant changes in land use patterns of zoning are anticipated. The town's zoning ordinance and an active planning program should limit the intrusion of commercial land use into residential areas. Because of small lot sizes, high density single-family residential development will continue.

7. Summary

As high density residential development continues, both ground and surface water pollution could become a problem. The town's estuarine waters, coastal wetlands and public trust waters could suffer from such pollution.

The development issues which will confront the town during the planning period are summarized as follows:

- Development of a central sewer system.
- Continuing congestion and strip commercialization along East Oak Island Drive.
- Elimination of storm drainage problem areas.
- Improving mainland access.
- Maintaining municipal services at levels sufficient to accommodate peak seasonal population.
- Protection of areas of environmental concern.
- Continuing high density residential development.
- Continuing beach nourishment projects.
- Maintaining adequate planning for storm hazard mitigation, evacuation and post-disaster recovery planning.

B. PROJECTED PUBLIC FACILITIES NEEDS/AVAILABILITY

Long Beach's population growth will place increasing demands on town facilities and services during the planning period. In 2003, the peak seasonal population will be 8.2 times the permanent year-round population. It is this peak population for which the town must be prepared to provide services.

Long Beach's storm drainage problems will increase as high density residential development continues. A comprehensive storm water drainage plan should be prepared. In addition, the town should consider adoption of a storm water control ordinance which would impose drainage design standards for both residential and commercial development.

Long Beach will have to expand administrative, police, fire and rescue services as growth occurs. Personnel needs should be monitored annually and appropriate adjustments made. A capital facilities plan for town services should be developed. The town should carefully consider services and facility needs for the elderly portion of its population. By 2000, a large portion of the town's population should be 55 years old or older. Elderly population needs should be accommodated in planning services such as garbage collection . Also, the town does not have any elderly health care facilities. Year-round recreational facilities should be adequate to meet the needs of the year-round residents through 2003.

The development of a central sewer system will continue to be an issue. If Long Beach declines to pursue development of a central sewer system, a policy of low-density development will become necessary. Such a policy will be extremely difficult to enforce because of the town's small lot sizes. However, it will be virtually impossible to control the demands placed on sewage disposal facilities by day visitors. A specific sewer policy coordinated with the town's overall growth policies will be necessary.

C. REDEVELOPMENT ISSUES

The greatest redevelopment concern in Long Beach will be reconstruction following a major storm. A particular concern should be damage to mobile homes. In 1990, mobile homes comprised approximately 13 percent of the town's housing stock. Any Category 3 or greater storm would cause substantial damage to the mobile home stock. Not only would there be a major loss of housing stock and real estate values, but the cleanup costs will be substantial. Policies governing how and where mobile homes will be allowed to be replaced should be carefully constructed.

There are no major infrastructure maintenance problems. The Brunswick County water system is in good repair. The town is supplied electric service by the Brunswick County Electric Membership Corporation. This system is also in good repair. However, the town should consider policies to require the placement of utilities underground following a major natural disaster.

D. INTERGOVERNMENTAL COORDINATION AND IMPLEMENTATION

This plan was reviewed by the Brunswick County Planning Department prior to certification by the Coastal Resources Commission. This review was provided to help ensure consistency of this plan with Brunswick County's planning efforts. Intergovernmental coordination and cooperation will continue through the ten-year planning period. This will be essential to accomplish effective planning for public utilities, thoroughfare projects, community facilities, housing needs, and environmental protection. The Long Beach Town Council and Planning Board will be responsible for ensuring adequate coordination with Brunswick County, Yaupon Beach, Caswell Beach, and other government entities as may be required.

SECTION III:

LAND CLASSIFICATION SYSTEM

SECTION III: LONG BEACH LAND CLASSIFICATION SYSTEM

The CAMA regulations require the establishment of a specific land classification system to support the local government's policy statements. This system should reflect developing land use patterns within the town and provide a framework to be utilized by Long Beach to identify future land uses.

The 15A NCAC 7B requirements provide for the following land classifications: developed, urban transition, limited transition, community, rural, rural with services, and conservation. In applying these classifications, Long Beach should carefully consider where and when various types of development should be encouraged. Additionally, the areas of environmental concern requiring protection should be recognized by the land classification system. Each applicable land classification must be represented on a land classification map (see Maps 9 and 9A).

The following land classifications will apply in Long Beach's jurisdiction:

Developed areas included in the developed land classification are currently urban in character, with no or minimal undeveloped land remaining. Municipal types of services, with the exception of central sewer service, are in place or are expected to be provided within the next five to ten years. Land uses include residential, commercial, public/semi-public, and other urban land uses at the following densities which are prescribed by 15A NCAC 7B:

- 500 dwelling units per square mile, or
- three or more dwelling units per acre, or
- where a majority of lots are 15,000 square feet or less.

In its developed areas, Long Beach was above these urban densities in 1993, having an average residential density of approximately 5 dwelling units per acre.

Within Long Beach, the developed classification is subdivided into the following sub-classifications:

- Developed Residential (DR) - These are areas where water, electrical, police, fire, sanitation, recreation and other municipal services are provided. The major land use is residential development. The maximum height for residential structures is 41 feet in the flood zone and 35 feet in other areas. This restriction should aid in limiting residential density above five to six dwelling units per acre. Substantial vacant land remains to be developed. These areas have small lot sizes averaging 8,250 square feet or less. Specific densities and land uses in the various areas of the town shall be dictated by the Long Beach Zoning Ordinance. The residential zoning districts include R1, R2, R3A, R3B, R3C, R4A, R4B, R5 and R6, as specified in the January, 1994, Town of Long Beach Zoning Ordinance.

However, single family development normally requires 7,500 square feet and duplex construction requires 10,000 square feet.

The following provides a summary of the uses allowed within the developed residential category:

Permitted Uses.

(1) Single-family dwellings;
(2) Customary accessory buildings and uses incidental to the uses permitted in the district;
(3) Churches;
(4) Public parks, playgrounds, golf courses, community centers;
(5) Schools, public and private;
(6) Signs;
(7) Private marinas and piers;
(8) Home occupations;
(9) Family care homes.

Conditional Uses.

(1) Day care centers;
(2) Fraternal organizations;
(3) Group homes;
(4) Hospitals;
(5) Nursing homes and convalescent centers;
(6) Public utility uses and structures.

- Developed Commercial (DC) - These are areas where water, police, fire, sanitation, recreation and other municipal services are provided. The developed commercial category is concentrated along East Oak Island Drive between 64th Street East and 47th Street East, and an area extending from the East Oak Island Drive commercial area south to East Beach Drive between 52nd Street and 48th Street East.

In 1993, a total of approximately 110 vacant commercially zoned lots remained to be developed. Most are small in size averaging 6,000 square feet. This classification includes the CA-retail and CB-tourist services zoning districts. The minimum allowable lot size is 6,000 square feet. Specific allowable uses will be determined by the Long Beach Zoning Ordinance. However, the following provides a general definition of the uses included within this classification:

Permitted Uses.

(1) Retail sales enterprises;
(2) Personal and professional services offices and shops;

(3) Banking facilities;
(4) Laundries;
(5) Convenience stores;
(6) Equipment rentals;
(7) Off-street parking facilities;
(8) Signs;
(9) Public utility uses and structures;
(10) Restaurants;
(11) Commercial piers and marinas;
(12) Service stations;
(13) Single-family residence (subject to single-family yard setback requirements.

Conditional Uses.

(1) Hotels and motels;
(2) Auction halls;
(3) Commercial recreational attractions;
(4) Recreational campgrounds and recreational vehicle parks;
(5) Cocktail lounges and taverns;
(6) Unified tract developments (commercial);
(7) Arcade.

- Urban Transition (UT) - Areas included in the urban transition classification are presently being developed for urban purposes, or will be developed in the next five to ten years. These areas will eventually require complete urban services. The urban transition areas include mixed land uses such as residential (single and multi-family), commercial, institutional, industrial, industrial parks, transportation, and other uses approaching high to moderate densities. Residential densities are allowed in excess of an average of three dwelling units per acre, with a minimum single-family residential lot size of 10,000 square feet. The town's entire extraterritorial area, except for the AECs, is classified urban transition.

- Conservation (CON) - The following areas of environmental concern and "404" wetlands (not an area of environmental concern) are included in the conservation classification:

Coastal Wetlands: This classification includes all areas of salt marsh or other marsh subject to regular or occasional flooding by tides, including wind tides. However, tidal flooding is understood not to include hurricane or tropical storm tides. Development which meets the minimum use standards of 15A NCAC 7H, Long Beach zoning, and the policies contained in this plan shall be allowed in areas classified as coastal wetlands.

Estuarine Shoreline: All areas lying 0-75 feet landward of the mean high water level of estuarine waters are classified as estuarine shorelines. Because of map size and scale, these areas cannot be accurately mapped. Precise locations must be determined in the field. Except for maritime forest areas, uses consistent with Long Beach zoning, the policies contained in this plan, and the 15A NCAC 7H minimum use standards shall be allowed in estuarine shoreline areas. Within maritime forest areas, minimum design standards may apply which exceed 15A NCAC 7H; see maritime forest policy, page IV-7.

Estuarine and Public Trust Waters: All public trust areas and estuarine waters are included in this classification. All waters in Long Beach's planning jurisdiction are classified as estuarine waters as described by 15A NCAC 7H.0206 or public trust areas as described by 15A NCAC 7H.0207. Uses permitted by the policies contained in this plan and 15A NCAC 7H minimum use standards shall be allowed. The policies dealing with floating structures and signs are more restrictive than the 15A NCAC 7H; see floating home policies, page IV-5, and marine resource area policies, page IV-9.

Ocean Hazard Areas: This classification includes all ocean hazard areas. These areas include lands along the Atlantic shoreline where, because of their special vulnerability to erosion or other adverse effects of sand, wind and water, uncontrolled or incompatible development could unreasonably endanger life or property. These areas include beaches, frontal dunes, inlet lands, and other lands with excessive erosion or flood damage. Development shall be permitted which is allowed by the policies contained in this plan, the Long Beach Zoning Ordinance, and 15A NCAC 7H.0306.

404 Wetlands: This classification includes areas of 404 wetlands which meet the wetlands definition contained in Section 404 of the Clean Water Act. Only uses consistent with the policy statements section of this plan and the Long Beach Zoning Ordinance will be allowed. These areas are not delineated on the Land Classification Map. Specific locations must be determined in the field by representatives of the Wilmington office of the U.S. Army Corps of Engineers. The town concurs with the U.S. Army Corps of Engineers' standards and does not intend to develop more restrictive standards.

Within Long Beach, the areas of environmental concern as defined by 15A NCAC 7H minimum use standards are zoned Open Space. This zoning district allows water access ramps, docks and piers, or permitted uses. The following are allowed as conditional uses: (1) passive recreational parks and greenery, and (2) nature walks and study facilities.

LAND CLASSIFICATION MAP

TOWN OF LONG BEACH

NORTH CAROLINA

SCALE IN FEET

0 400 800 1200

200 600 1000 1800

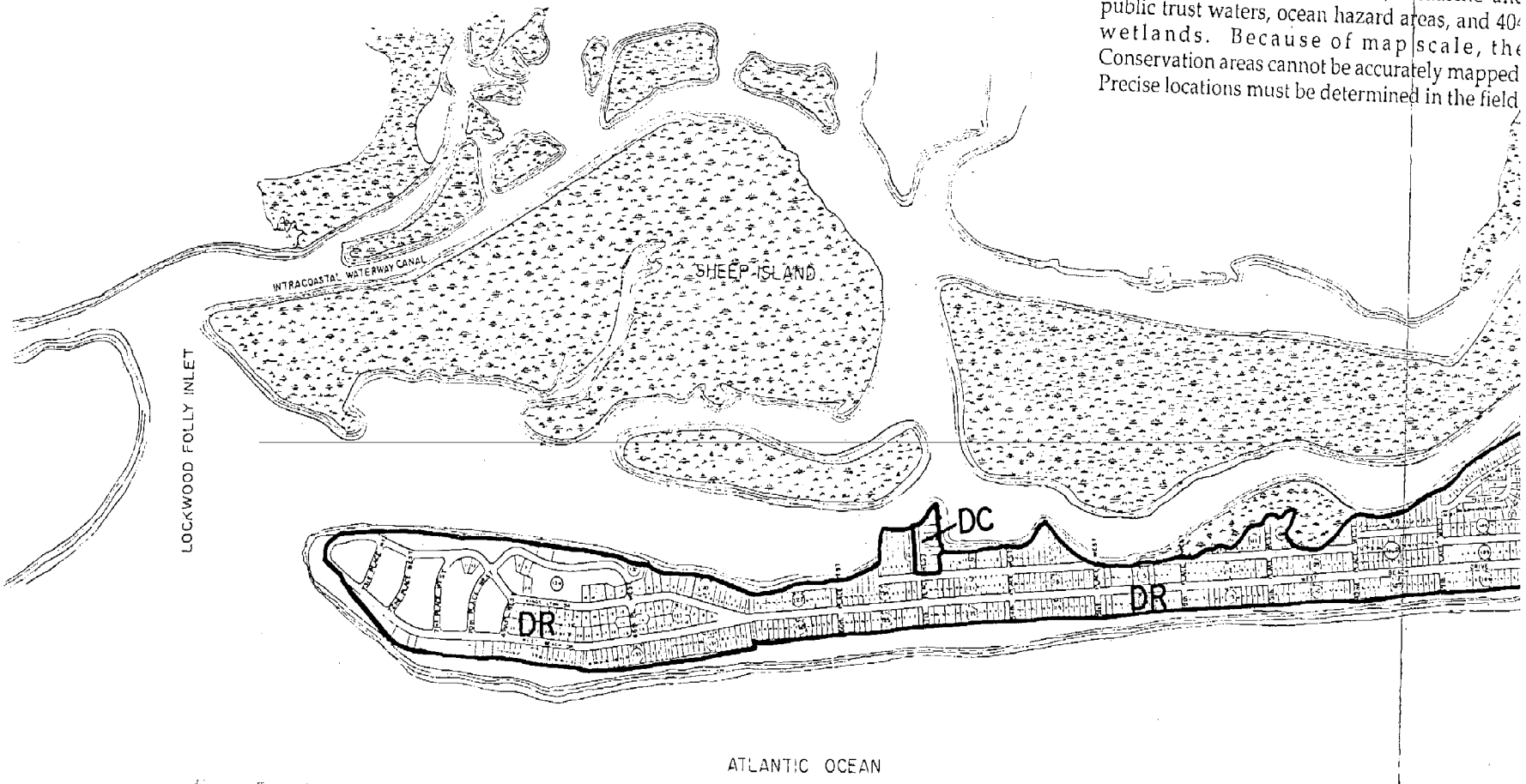
LEGEND

DR DEVELOPED RESIDENTIAL

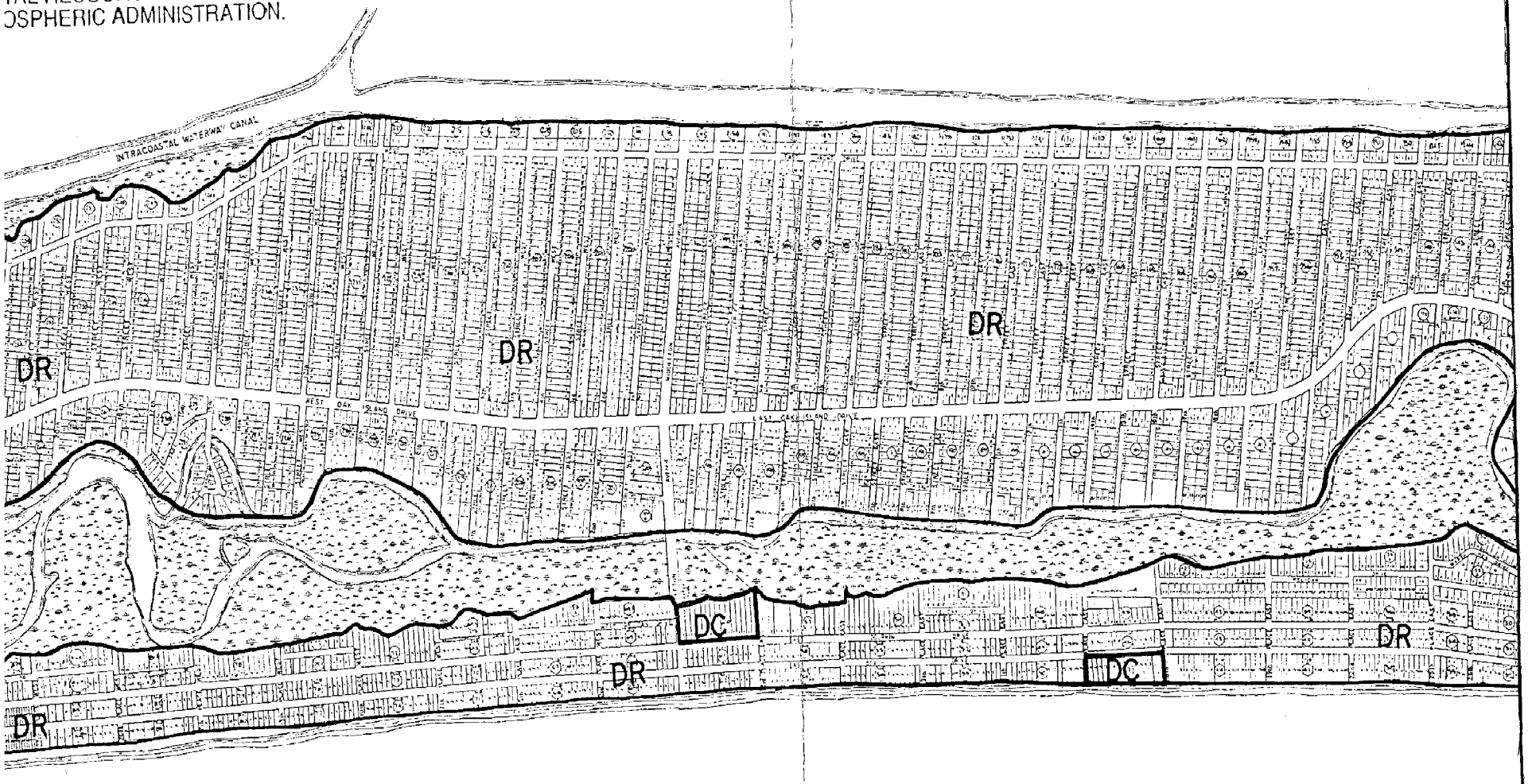
DC DEVELOPED COMMERCIAL

CONSERVATION

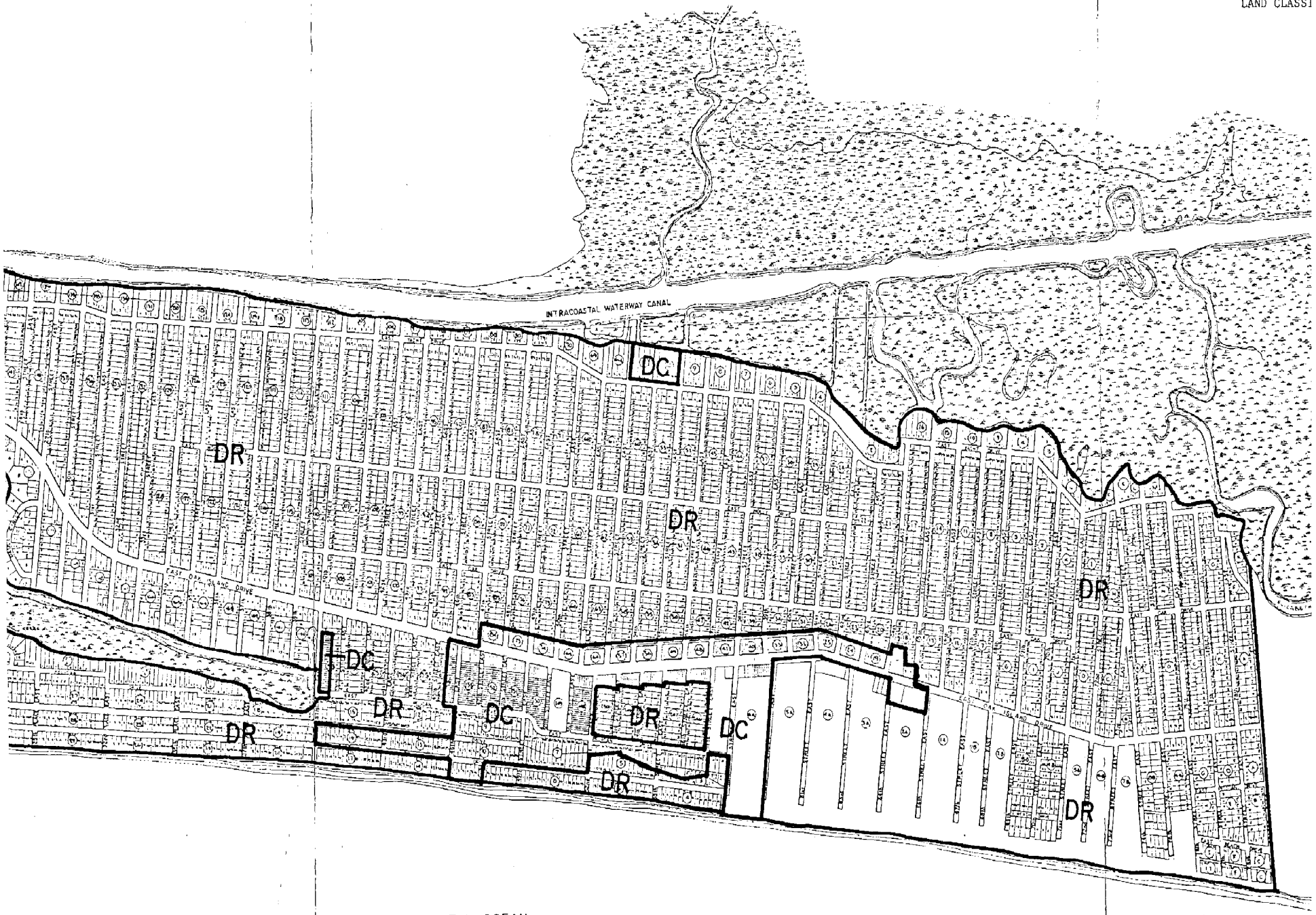
The Conservation classification includes coasta
wetlands, estuarine shorelines, estuarine anc
public trust waters, ocean hazard areas, and 40
wetlands. Because of map scale, the
Conservation areas cannot be accurately mapped
Precise locations must be determined in the field



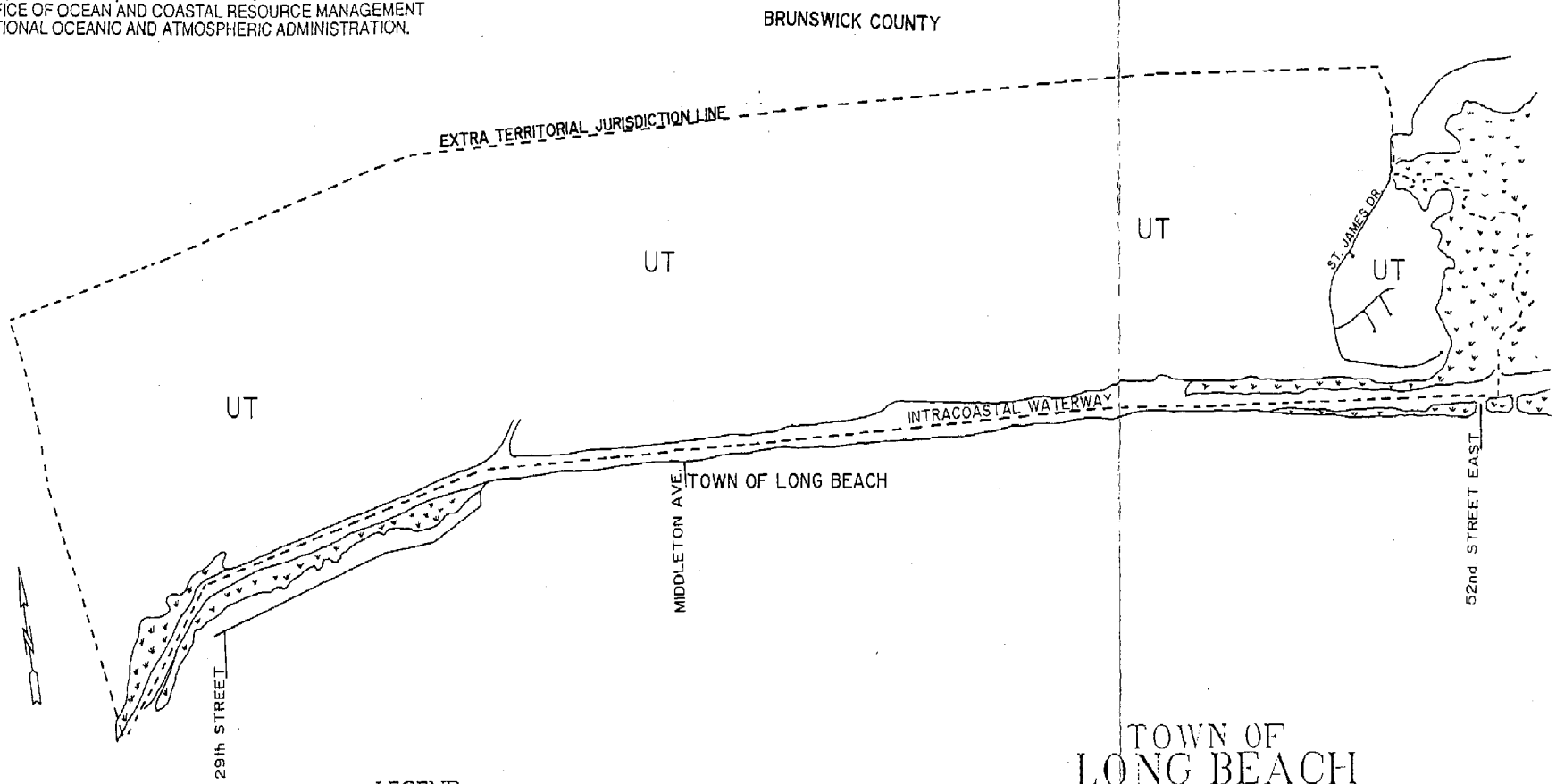
AP WAS FINANCED IN PART
) BY THE NORTH CAROLINA
GRAM, THROUGH FUNDS
ONE MANAGEMENT ACT OF
ADMINISTERED BY THE
TAL RESOURCE MANAGEMENT
OSPHERIC ADMINISTRATION.



MAP
LAND CLASSI



THE PREPARATION OF THIS MAP WAS FINANCED IN PART THROUGH A GRANT PROVIDED BY THE NORTH CAROLINA COASTAL MANAGEMENT PROGRAM, THROUGH FUNDS PROVIDED BY THE COASTAL ZONE MANAGEMENT ACT OF 1972, AS AMENDED, WHICH IS ADMINISTERED BY THE OFFICE OF OCEAN AND COASTAL RESOURCE MANAGEMENT NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.



LEGEND

UT URBAN TRANSITION

CONSERVATION

The Conservation classification includes coastal wetlands, estuarine shorelines, estuarine and public trust waters, ocean hazard areas, and 404 wetlands. Because of map scale, the Conservation areas cannot be accurately mapped. Precise locations must be determined in the field.

TOWN OF LONG BEACH

EXTRATERRITORIAL JURISDICTION

LAND CLASSIFICATION MAP

MAP 9A

SECTION IV:

POLICY STATEMENTS

STORM HAZARD MITIGATION, POST-DISASTER RECOVERY, AND EVACUATION POLICIES AND PLANS

SECTION IV: LONG BEACH POLICY STATEMENTS

This section of the plan provides policies which will address growth management and protection of Long Beach's environment. The policies are based on the objectives of the citizens of Long Beach and satisfy the objectives of the Coastal Resources Commission.

It is emphasized that the policy statements are extremely important and have a day-to-day impact on individual citizens within Long Beach's planning jurisdiction. Areas in which the statements have an impact include:

-- CAMA minor and major permitting as required by N.C.G.S. 113A-118 prior to undertaking any development in any area of environmental concern.

-- Establishment of local planning policy.

-- Review of proposed projects requiring state or federal assistance or approval to determine consistency with local policies.

Based on the analysis of existing conditions and trends, and discussion with the town's Planning Board and Town Council, the policies outlined in the following section have been formulated to provide a guide for advising and regulating development of available land resources in Long Beach throughout the current planning period, i.e., 2000. Policies which were considered, but not adopted, are provided in Appendix I.

A. RESOURCE PROTECTION POLICY STATEMENTS

1. Physical Limitations

Soils: To mitigate existing septic tank problems and other restrictions on development posed by soil limitations, Long Beach will:

(a) Enforce all current regulations of the N.C. State Building Code and support the Brunswick County Health Department for all matters relating to septic tank installation/replacement in areas with soils restrictions.

(b) Coordinate all development activity with appropriate county and state regulatory personnel.

(c) Cooperate with the U.S. Army Corps of Engineers in the regulation/ enforcement of the 404 wetlands permit process.

(d) In conformance with state and county health regulations, growth and development will not be allowed in areas where septic tanks will not function and sewer services are not available.

(e) The Town of Long Beach opposes the discharge of sewage from septic tanks or package treatment plants in any areas classified as coastal wetlands or 404 wetlands.

(f) The Town of Long Beach will support the use standards for ocean hazard areas as specified in 15A NCAC 7H. However, land located within ocean hazard areas has been previously platted for residential development. The existing zoning allows only single-family residential development.

Flood Hazard Areas:

(a) Long Beach will coordinate any development within the special flood hazard area with the North Carolina Division of Coastal Management, FEMA, and the U.S. Corps of Engineers.

(b) Long Beach will continue to enforce its flood damage prevention ordinance (Chapter 9, Article V, Town of Long Beach Municipal Code) and follow the storm hazard mitigation plan. (See Subsection B, Storm Hazard Mitigation, Post-Disaster Recovery, and Evacuation Plans).

(c) Long Beach's policy is to use all financially feasible and environmentally acceptable means at its disposal to help reduce the damage of flooding.

(d) Long Beach will consider revising its subdivision ordinance to require the submittal of drainage plans as part of the subdivision review and approval process.

Groundwater/Protection of Potable Water Supplies:

(a) It shall be the policy of Long Beach to conserve its surficial* groundwater resources by supporting CAMA and N.C. Division of Environmental Management stormwater runoff regulations, and by coordinating local development activities involving chemical storage or underground storage tank installation/abandonment with Brunswick County Emergency Management personnel and the Groundwater Section of the North Carolina Division of Environmental Management. During the planning period, the town shall review the local zoning ordinance with regard to underground chemical and gasoline storage regulations to ensure a minimum of risk to local groundwater resources.

*Groundwaters which are at or just below the surface.

Manmade Hazards:

(a) Long Beach will support the technical requirements and state program approval for underground storage tanks (Chapter 40 of the Code of Federal Regulations, parts 280 and 281), and any subsequent state regulations concerning underground storage tanks adopted during the planning period.

(b) The town opposes the temporary or permanent storage or disposal of any toxic wastes within its planning jurisdiction.

(c) The town will coordinate and maintain contact with the Brunswick County Emergency Management Office to ensure safe preparation and evacuation in the event of a disaster at the CP&L nuclear power plant.

(d) The town will cooperate with management at both the Sunny Point Military Terminal and the CP&L nuclear power plant to support safe operation at both facilities.

(e) Long Beach is opposed to the establishment of toxic waste dump sites within Brunswick County or operation of incineration facilities for hazardous wastes.

Stormwater Runoff:

(a) Long Beach recognizes the value of water quality maintenance to the protection of fragile areas and to the provision of clean water for recreational purposes. The town will support state regulations relating to stormwater runoff resulting from development (Stormwater Disposal Policy 15A NCAC2H.001-.1003).

(b) Long Beach will seek funding through the Coastal Area Management program to conduct a comprehensive town-wide drainage study. If sufficient funds are not available for a town-wide study, the town will seek funding within the planning period for a study of the most serious problem areas.

(c) The town will apply for grant funds improve stormwater drainage systems associated with existing rights-of-way.

Solid Waste:

(a) Long Beach supports efforts by Brunswick County to undertake a site selection study for the location of a new landfill site.

(b) The town will continue to support the operation of a voluntary recycling center for the acceptance of recyclable materials.

(c) The town will support local and expanded county efforts to educate people and businesses on waste reduction and recycling.

(d) The town will support actions to increase the town's capabilities to keep the beach and town proper free of litter and trash to improve the cleanliness and image of the community.

(e) The town will supply more signs and receptacles in problem areas to encourage cleanliness.

Cultural/Historical Resources: Conservation of coastal archaeological resources which have been identified as having more than local significance to history or prehistory should be protected. These sites constitute important scientific sites, or provide valuable educational, associative, or aesthetic resources. There are 76 such sites in Long Beach recognized by the N.C. Department of Cultural Resources. Wherever there is question of protection of these, the town will seek assistance and determination from the Division of Archives and History before proceeding to issue permits. Specific objectives for each of these functions shall be related to the following policy statements either singly or in combination:

(a) Advise the N.C. Division of Archives and History of all housing code enforcement/redevelopment projects, to ensure that any significant architectural details or buildings are identified and preserved.

(b) Advise the N.C. Division of Archives and History of all county and town major land disturbing public works projects, to ensure the identification and preservation of significant archaeological sites.

Industrial Impacts on Fragile Areas: No industrial development of any type shall be located within Long Beach's areas of environmental concern.

2. Miscellaneous Resource Protection

Package Treatment Plant Use: Long Beach will support the construction of package treatment plants which are approved and permitted by the State Division of Environmental Management and by the Brunswick County Health Department/Division of Health Services, and which do not discharge into coastal wetlands, estuarine waters, and public trust waters. If any package plants are approved, Long Beach will require a specific contingency plan specifying how ongoing private operation and maintenance of the plant will be provided, and detailing provisions for assumption of the plant into a public system should the private operation fail or a public system becomes available.

It is understood that the construction of package treatment plants in an ocean hazard AEC may not be consistent with 15A NCAC 7H.0306.

Marina and Floating Home Development: Long Beach will enforce the following policies to govern floating homes and both open water and upland marina development. Marinas are considered to be any publicly or privately owned dock constructed to accommodate more than ten boats, as defined by 15A NCAC 7H.208 (b) (5).

(a) Long Beach will permit the construction and expansion of both open water and upland marinas (for both general public and private use) which meet local zoning ordinance requirements, and the requirements of the 15A NCAC 7H minimum use standards. However, marina construction and associated dredging shall not result in the loss of or damage to coastal wetlands or subaquatic vegetation.

(b) Long Beach will allow the construction of dry stack storage facilities for boats associated with or independent of marinas, which are consistent with the Town of Long Beach Zoning Ordinance.

(c) Long Beach supports the restriction of floating structures in all public trust areas and estuarine waters. Floating structures are defined as any structure or vessel used, designed, and occupied as a permanent dwelling unit, business, office, or source of any occupation or any private or social club, which floating structure or vessel is primarily immobile and out of navigation or which functions substantially as a land structure while moored or docked on waters within town jurisdiction. Floating structures shall not be used commercially or inhabited. The town will develop and adopt an ordinance designed to enforce this policy. The ordinance should set a specific time limit for the location of those structures.

Development of Sound and Estuarine Islands: Long Beach will restrict any development on sound or estuarine islands. The town will review its zoning ordinance to incorporate controls to regulate development on sound and estuarine islands.

Ocean Hazard Areas:

(a) Long Beach will support only uses within the ocean hazard areas which are allowed by 15A NCAC 7H and are consistent with the town's zoning and dune protection ordinances.

(b) Long Beach supports beach nourishment and relocation as the preferred erosion control measures for ocean hazard areas.

(c) Long Beach objects to the construction of permanent shoreline stabilization structures in ocean hazard areas and any changes in state standards which would allow such structures.

Inlet Hazard Areas: With the exception of shoreline stabilization structures, the Town of Long Beach will allow uses within the inlet hazard areas which are consistent with the town's zoning ordinance, and the 15A NCAC 7H minimum use standards.

In all cases, development shall only be permitted if it meets other applicable 15A NCAC 7H minimum use standards; is landward of the vegetation line; involves no significant alteration or removal of primary or frontal dunes or the dune vegetation has overwalks to protect any existing dunes; is not essential to the continued existence and/or use of an associated principal development; is not required to satisfy minimum requirements of local zoning, subdivision or health regulations; and meets all 15A NCAC 7H non-setback requirements.

Coastal Wetlands: The Town of Long Beach supports the construction of those water-dependent structures within coastal wetlands which meet the 15A NCAC 7H minimum use standards.

Estuarine Shoreline:

(a) The Town of Long Beach will support construction within the estuarine shoreline areas which meets the 15A NCAC 7H minimum use standards and the Town of Long Beach Zoning Ordinance.

(b) Long Beach will use all available means of law to restrict the use of estuarine shoreline areas for purposes where there is a substantial chance of pollution occurring.

Bulkhead Construction: Long Beach does not oppose the construction of bulkheads along estuarine shorelines which meet 15A NCAC 7H minimum use standards. The town opposes the construction of bulkheads in ocean hazard and inlet hazard areas.

Sea Level Rise:

(a) Long Beach will continuously monitor sea level rise and revise as necessary all local building and land use related ordinances to establish setback standards, long-term land use plans, density controls, buffer vegetation protection requirements, and building designs which will facilitate the movement of structures.

(b) Long Beach will allow the construction of bulkheads along estuarine shorelines which satisfy 15A NCAC 7H minimum use standards to protect

structures and property from rising sea level. The town opposes the construction of bulkheads in ocean hazard and inlet hazard areas.

Natural and Cultural Resource Areas: Long Beach will support the following actions regarding these irreplaceable resources:

- Protection of unique habitat conditions that are necessary to the survival of threatened and endangered native plants and animals including control of negative land use impacts that might jeopardize their environment.

- Permit development in Areas of Environmental Concern (AECs) provided that the proposed design and location will cause no major or irreversible damage to the AECs and the development meets 15A NCAC 7H minimum use standards. One or more of the following values must be considered depending upon the stated significance of the resource:

  - Development shall preserve the values of the AEC as its functions as a critical component of a natural system.

  - Development shall not adversely affect the values of the AEC as a unique scientific, associative, or educational resource.

  - No reasonable alternative sites are available outside the designated AEC.

  - Reasonable mitigation measures have been considered and incorporated into the project plan. These measures shall include consultation with recognized authorities and with the Division of Coastal Management staff.

  - The project will be of equal or greater public benefit than those benefits lost or damaged through development.

Maritime Forests: The town will review its local codes and ordinances to consider amendments designed to protect any remaining maritime forest areas.

B. RESOURCE PRODUCTION AND MANAGEMENT POLICIES

Recreation Resources:

(a) All lands classified as conservation areas are considered valuable passive recreation areas. Except as otherwise provided for in these policy statements, these areas should be protected in their natural state, and development in ocean and inlet hazard areas should not be allowed

except for public shoreline access including dune crossover structures and boardwalks.

(b) Long Beach supports the preservation and development of environmentally acceptable estuarine and ocean shoreline access areas to ensure adequate shoreline access within all areas of the town.

(c) Long Beach supports the development of off-street parking facilities in both commercial and residential areas to serve shoreline access facilities. The town will review the impact of off-street parking on adjacent areas on a case-by-case basis.

(d) Long Beach will implement the shoreline access site improvements as recommended by the 1991 Ocean and Estuarine Access Plan.

(e) It is the policy of the town to hire a full-time recreation staff with added summertime help to provide a recreation building for a variety of recreational and other community uses, to operate a town park for children's passive activities, to provide canoe trail and boating access to Davis Creek/Canal at the Recreation Building, to render access to the marshlands of Davis Creek for human/environmental interface via boardwalks and a gazebo, and to maintain Middleton Park adjacent to the Town Municipal Building. It is the policy of the town to promote the usage of these facilities through activities reports and events announcements and through conspicuous signage.

(f) The Town of Long Beach will seek funding for the development of shoreline access sites through the state shoreline access grant program.

(g) During the ten-year planning period, the town will improve the following recreational facilities with funding support from local tax dollars: parking for shoreline access, jogging and walking paths, bikeways, public boat access, and picnic facilities.

(h) Long Beach will maintain an environment where cultural and recreational activities can flourish for the benefit of permanent residents, the seasonal population, and vacationing visitors by:

- Continuing operation of the Recreation Center with added emphasis on youth activities.

- Encouraging the establishment of a senior services center.

- Encouraging art shows, antique sales, fish fries, barbecues, clam bakes, festivals, and concerts during the spring, summer, and fall months.

Productive Agricultural Lands: There are no productive agricultural lands found in Long Beach's planning jurisdiction; therefore, no policy statement is necessary.

Productive Forest Lands: There are no significant productive forest lands found in Long Beach's planning jurisdiction. However, if commercial production occurs, Long Beach supports utilization of the Forest Best Management Practices Manual, 1989, North Carolina Division of Forest Resources, for all forestry operations.

Aquaculture Activities: Aquaculture is considered the cultivation of aquatic plants and animals under controlled conditions. The following policy shall apply:

(a) Long Beach opposes aquaculture activities in the Town of Long Beach. The town will not oppose aquaculture in its extraterritorial jurisdiction when the activity will not result in discharge of water which will degrade receiving waters in any way.

Residential, Commercial, and Industrial Development Impacts on Resources:

(a) In recognition of the importance of estuarine and public trust waters for the fisheries and related industries as well as aesthetics, recreation, and education, Long Beach shall promote the conservation and quality of estuarine and public trust waters. Residential and commercial development which meets 15A NCAC 7H minimum use standards, Long Beach zoning requirements, and the policies contained in this plan will be allowed in estuarine shoreline, estuarine water, and public trust areas. Industrial development will be prohibited within Long Beach. Marinas and bulkheads shall be allowed when consistent with other policies contained in this plan.

(b) Long Beach opposes the construction of any signs, except for regulatory signs, in the coastal wetlands, estuarine waters, and public trust areas.

Marine Resource Areas:

(a) With the exception of the construction of signs (excluding regulatory signs), Long Beach supports the use standards for estuarine waters and public trust areas as specified in 15A NCAC 7H.0206 and .0207.

(b) Long Beach reserves the right to review and comment on policies and requirements of the North Carolina Division of Marine Fisheries which govern commercial and recreational fisheries and activities, including

trawling activities. However, it is understood that such review and comment may not have any effect on establishment of policies and regulations by the North Carolina Division of Marine Fisheries.

(c) The Town of Long Beach supports the designation of its beach area as a sea turtle sanctuary by the State of North Carolina.

(d) The use of gill nets for fishing within 300 yards of the beach between 79th Street East (town limits) and Lockwood's Folly Inlet is prohibited between May 15 and September 15.

Peat or Phosphate Mining: There are no peat or phosphate deposits located within Long Beach's planning jurisdiction. However, if any mining activity is proposed within the area of Long Beach, the town would oppose any project which would result in aquifer drawdown or damage to the manmade hazard facilities identified in Section I, page I-70.

Off-Road Vehicles: In May 1978, Long Beach passed an ordinance prohibiting the use of all vehicles on the beach strand and dune areas. The only exceptions to the ordinance are for the use of emergency vehicles, handicapped vehicles, and town-authorized vehicles.

C. ECONOMIC AND COMMUNITY DEVELOPMENT POLICY STATEMENTS

General: It is the policy of Long Beach to manage its growth to ensure the adequate provision of municipal services. To accomplish this, the town will:

- Prepare for a population growth that will continue at about the current rate with a permanent residency of 5,419 and peak summer weekday population of 44,259 by the year 2003.
- Maintain a continuous land use program which will be effectively enforced through zoning, subdivision, and building codes.
- Approve development only when and where adequate facilities and services to support it are available.
- Promote and preserve the town's "family" oriented, retirement-resort atmosphere.

Water Supply: There are no significant constraints to development or land development issues relating to the town's potable water supply. The Brunswick County water system should continue to provide adequate water supply throughout the planning period. However, the town does support the following water supply issues:

- Actions by both state and local governments to protect water quality within the Cape Fear River Basin. Of particular concern are the construction of both point and non-point discharge sources of industrial, agricultural, and domestic waste along the Cape Fear River.

- Construction of additional water storage tanks within Long Beach to insure adequate water storage and pressure.

- Establishment of a water line flushing program to eliminate stagnant water in lines located on dead end streets.

- The Town of Long Beach supports actions by Brunswick County to regulate development which may adversely affect groundwater supplies.

- Long Beach supports actions by Brunswick County to protect all water supply wells from groundwater pollution.

- It is the policy of Long Beach to conserve its surficial groundwater resources by supporting CAMA and N. C. Division of Environmental Management stormwater runoff regulations, and by coordinating local development activities involving chemical storage or underground storage tank installation/abandonment with the Groundwater Section of the North Carolina Division of Environmental Management. The town encourages planning for an adequate long-range water supply. In the planning process, Long Beach will cooperate with the county and area municipalities to protect water resources. Public and private water conservation efforts will be encouraged.

Sewer Systems:

(a) The Town of Long Beach recognizes that there is no perfect solution to its waste treatment problems. All waste treatment systems (centralized and decentralized) for populated areas can negatively impact the environment. As required by North Carolina's Environmental Policy Act, analysis of waste treatment systems should provide a full and fair discussion of all significant environmental impacts of proposed systems and the reasonable alternatives which would avoid or minimize such impacts and enhance the quality of the environment.

The Town of Long Beach supports the construction of a sewage collection and wastewater treatment system. The system may be constructed independently by the Town of Long Beach or in concert with other Oak Island and mainland municipalities.

To advance the town's planning process for waste treatment, the strategy adopted by the U. S. EPA for North Carolina's barrier islands (see Appendix II) should be employed. The EPA strategy provides a step-by-step decision-making framework for devising appropriate wastewater treatment strategies. The town recognizes that many aspects of this strategy have recently been endorsed by the National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and the National Research Council in a report entitled Managing Wastewater in Coastal Urban Areas (see Appendix III).

(b) In the absence of a waste treatment plant and collection system, Long Beach will support the issuance of permits for the construction of septic tanks for residential, commercial, and public/semi-public land uses.

Stormwater:

(a) Long Beach will cooperate with the NCDOT, the North Carolina Division of Environmental Management, and other state agencies in mitigating the impact of stormwater runoff on all conservation classified areas. The town will support the Division of Environmental Management stormwater runoff retention permitting process through its zoning permit system.

(b) Within five years, the town will adopt a stormwater control ordinance. Funding assistance through a CAMA technical assistance grant will be sought. Specific attention shall be devoted to direct discharges of stormwater runoff into any coastal waters that are classified for shellfishing.

Energy Facility Siting and Development:

(a) There are no electric generating or other power generating plants located in or proposed for location within Long Beach's planning jurisdiction. The town will not support the location of permanent, public/commercial energy generating facilities within its jurisdiction.

(b) Long Beach will review proposals for development or expansion of electric generating plants within its vicinity on a case-by-case basis, judging the need for the facility against all identified possible adverse impacts. The town reserves the right to comment on the impacts of any energy facility, construction or expansion within southeast Brunswick County.

(c) Long Beach requests and expects that CP&L will take all possible actions to ensure the safe operation of the CP&L Brunswick Nuclear Power Plant.

(d) Long Beach opposes any offshore drilling for either exploration for or production of oil or gas. However, in the event that offshore drilling for oil or gas is approved, Long Beach supports and requests full disclosure of development plans, with mitigative measures that will be undertaken to prevent adverse impacts on the environment, the infrastructure, and the social systems of Brunswick County. The town also requests full disclosure of any adopted plans. Offshore drilling and development of onshore support facilities in Brunswick County may have severe costs for the city and county as well as advantages. The costs must be borne by the company (or companies) engaged in offshore drilling and onshore support facilities.

Redevelopment of Developed Areas: The only significant redevelopment issue facing Long Beach through 2003 will be reconstruction following a hurricane or natural disaster. The town will allow the reconstruction of any structures demolished by natural disaster which will comply with all applicable local and state regulations and the policies contained in this plan. The town will consider on a case-by-case basis the expenditure of local funds in order to acquire unbuildable lots but will accept donations of such unbuildable lots. Long Beach will work with any owners who may have to move any threatened structures to safer locations. The town will support reconstruction only at densities specified by current zoning regulations. Long Beach will investigate the development of regulations to govern how and where mobile homes will be allowed to be replaced after a major storm event.

Types and Locations of Desired Industry: Long Beach opposes industrial development of any type within the town limits. This policy is supported by the Long Beach Zoning Ordinance. Industrial development which is not located within Areas of Environmental Concern and which is permitted by the town's zoning ordinance will be allowed within the extraterritorial jurisdiction.

Community Facilities:

(a) During the planning period, the Town of Long Beach will expand its community facilities through development of the following:

- Implementation of the recommendations contained in the 1991 Ocean and Estuarine Access Plan with emphasis on the development of an access site on the Intracoastal Waterway with a boat ramp.
- Expansion/improvement of Fire Station Number 2.
- Improvement/expansion of the town's bike route and sidewalks.
- Development of an effective stormwater drainage program.

- Implement street lighting plan with emphasis on residential areas when feasible.

Residential Development: Long Beach will continue to encourage the development of a variety of housing types to meet the needs and desires of the citizenry and future permanent and seasonal residents by:

- Maintaining area(s) exclusively for single-family dwellings primarily for the growing permanent and seasonal population.

- Retaining the forty-one foot (41') height limitation for residential, commercial, and institutional structures located in the V zone (velocity zone) and thirty-five feet (35') in all other areas of the town's planning jurisdiction.

- Continuing beach nourishment to aid in protection of oceanfront residential properties.

- Supporting actions to reduce traffic volume in residential areas.

- Construction of a second Oak Island Bridge to reduce traffic congestion in residential areas.

- Investigate alternatives which may be available to require larger lot sizes for the construction of single-family residential development.

Commercial Development: Long Beach will enhance quality commercial development by:

- Encouraging community oriented business to cluster in the existing commercial district on Oak Island Drive and limiting the strip development configuration now in existence with office and institutional uses on both ends.

- Locating recreation and tourist businesses generally in designated sections of the beach area, discouraging strip development.

- Implementing effective thoroughfare planning to aid in controlling increases in traffic congestion on East Oak Island Drive and facilitating overall traffic flow within the commercial areas.

Appearance and Cleanliness: Long Beach will improve and enhance its visual quality and attractiveness, both of which are directly related to liveability and economic viability by:

- Strengthening and enforcing the town ordinance relating to residential and commercial property cleanup with provisions for the town to do the job at the owner's expense, if not carried out after proper notification.

- Requiring developers and construction companies to clean up during building activities and after jobs are complete.

- Instituting a major paint-up/clean-up campaign.

Public Safety and Security: Long Beach will provide the highest level of safety possible in response to growth and development within financial constraints for humans and property by:

- Expanding the police force as permanent and seasonal population growth occurs in accordance with state and national public safety standards. Emphasis will be placed on establishing adequate beach area patrols during peak summer months.

- Supporting the Long Beach Rescue Squad and its mutual aid agreement so that it can continue to provide services to meet the needs of the growing population.

- Supporting the town's Volunteer Fire Department. The town has a mutual aid agreement with Yaupon Beach, Caswell Beach, and other communities and volunteer departments in the county.

Commitment to State and Federal Programs: Long Beach is receptive to state and federal programs, particularly those which provide improvements to the town. The town will continue to support fully such programs, especially the following: North Carolina Department of Transportation road and bridge improvement programs, the CAMA planning process and permitting programs, the U.S. Army Corps of Engineers regulatory and permitting efforts, the North Carolina Shoreline Access Grant program, dredging and channel maintenance by the U.S. Army Corps of Engineers, federal and state projects which provide efficient and safe boat access for commercial and sport fishing, beach nourishment projects, and the federal flood insurance program.

Assistance in Channel Maintenance: Long Beach will support efforts of the U.S. Army Corps of Engineers and state officials to provide proper channel maintenance. However, the town opposes the establishment of any dredge spoil sites within its jurisdiction, with the exception of usable spoil material for beach nourishment.

Town Administration: Long Beach will manage growth by:

- Maximizing utilization of staff and professional service needs in planning, engineering, and inspections so that quality of development can be maintained and improved as growth increases in speed and quantity.

- Seeking ways to acquire better and more spacious accommodations for the town staff so that they can continue to supply high quality services and maintain efficiency in government.

- Maintaining and enforcing a comprehensive zoning ordinance which addresses existing and anticipated growth and development pressures.

Transportation:

(a) Long Beach will meet the increasing need to move people and goods from place to place conveniently, safely, quickly, and efficiently, particularly during the summer months, when traffic congestion is highest by:

- Planning for the installation of curb, gutter, and sidewalks along Oak Island Drive and Beach Drive, to control access to businesses, to separate on-site parking from traffic, to facilitate smoother traffic flow, and to improve the appearance of Long Beach.

- Facilitating off-street parking areas in close proximity to commercial establishment.

- Modifying traffic circulation patterns to enhance flow by incorporating one-way loop streets into the system.

- Maintaining public beach access and parking.

- Paving residential streets in accordance with annual planning and priority programming.

- Planning for modification of the grid system of streets in residential sections for the purposes of curtailing thru traffic, discouraging high speed driving, promoting safety for children, stemming tidal and flooding washover, increasing neighborhood atmosphere, improving property values, and decreasing street maintenance costs.

- Mounting a concerted campaign with Caswell and Yaupon Beaches to acquire a second bridge for Oak Island at Middleton Avenue.

- Developing a plan for bikeways/sidewalks in strategic locations.
- Encouraging the expansion of the county-sponsored transportation system for the elderly and handicapped.
- Improving its ability to maintain streets in good condition.
- In concert with Yaupon and Caswell Beaches, developing a detailed comprehensive thoroughfare plan.
- Supporting the provision of off-street parking for day visitors and permanent residents in both commercial and residential areas.
- Supporting the widening of Oak Island Drive westward to Middleton Avenue.

(b) Long Beach supports the objectives of the Brunswick County Thoroughfare Plan, specifically:

(1) construction of an east-west connector between NC 133 in the vicinity of the Brunswick County Airport and Southport;

(2) improvements to NC 87 between US 17 and the Dosher cutoff (juncture of NC 133 and NC 211);

(3) replacement of the bridge over Big Davis Canal.

Tourism: Tourism is extremely important to Long Beach and will be supported by the town. Long Beach will implement the following policies to further the development of tourism:

(a) Long Beach will support North Carolina Department of Transportation projects to improve access to and within Brunswick County.

(b) Long Beach will support projects that will increase public access shoreline areas.

(c) Long Beach will continue to support the activities of the North Carolina Division of Travel and Tourism; specifically, the monitoring of tourism-related industry, efforts to promote tourism-related commercial activity, and efforts to enhance and provide shoreline resources.

(d) Long Beach will support the efforts of the Oak Island Chamber of Commerce to publicize the recreational and tourist-related assets and activities which exist in Long Beach.

Land Use Trends: No major changes in land uses or trends will occur during the planning period. Long Beach is expected to continue to be predominantly a high density residential community. Commercial development should be limited to those commercially zoned areas existing in 1993.

Intergovernmental Cooperation and Coordination: Long Beach will coordinate its planning and decision making process with Yaupon and Caswell Beaches on all issues which affect all three municipalities. As a minimum, this will include the following areas of concern:

- Water and sewer utilities development.
- Evacuation planning.
- Thoroughfare planning.
- Police, fire, and rescue services.

D. CONTINUING PUBLIC PARTICIPATION POLICIES

As the initial step in the preparation of this document, Long Beach prepared and adopted a "Public Participation Plan." The plan outlined the methodology for citizen involvement (see Appendix IV). Public involvement was to be generated through public information meetings, advertising in local newspapers, and advertised meetings by the Town Council and Land Use Planning Committee to work on development of the plan.

A public information meeting was conducted at the outset of the project on January 19, 1993, at 7:30 p.m., in the Long Beach Town Hall. Also, a description of the land use plan preparation process and schedule was published in the State Port Pilot. Subsequently, meetings of the Land Use Planning Committee were held on March 4, 1993; March 29, 1993; May 5, 1993; May 19, 1993; June 7, 1993; June 29, 1993; July 12, 1993; July 28, 1993; August 11, 1993; and September 9, 1993. All meetings of the Land Use Planning Committee were open to the public and advertised in the State Port Pilot. The Town Council conducted a public information meeting for review of and comment on the plan on September 16, 1993. The meeting was advertised in the State Port Pilot.

The preliminary plan was submitted to the Coastal Resources Commission for comment on September 23, 1993. Following receipt of CRC comments, the plan was amended, and a formal public hearing on the final document was conducted on March 15, 1994. The public hearing was advertised in the State Port Pilot on February 9, 1994. The plan was approved by the Town Council on March 16, 1994, and submitted to the Coastal Resources Commission for certification. The plan was certified on March 25, 1994.

Citizen input will continue to be solicited, primarily through the Planning Board and Town Council, with advertised and adequately publicized public meetings held to discuss special land use issues and to keep citizens informed of the impacts of the decisions which are made by the town.

E. STORM HAZARD MITIGATION, POST-DISASTER RECOVERY, AND EVACUATION POLICIES AND PLANS

1. Hazard Mitigation Policies

Recognizing the potential impact that a major hurricane could have on the town, Long Beach will implement the following damage mitigation policies designed to reduce the potential for hurricane related damage:

(a) Enforce adequate building codes.

(b) Develop adequate land use regulations: dunes protection, floodplain protection, etc.

(c) Develop survey teams. Town staff should include engineering, public works, county assessor, health inspector. When necessary, recruit members of the private sector such as people from the fields of engineering, building trades, property appraiser, insurance adjustors, Red Cross, Salvation Army, etc.

(d) Designate a Damage Assessment Coordinator.

(e) Develop a damage assessment training program.

(f) Develop an information program to warn citizens about possible damages.

(g) Establish a damage assessment reporting system (see appendix). Develop agreement forms for use if non-governmental personnel complete any damage assessments.

(h) Make a list of critical facilities (streets, roads and bridges, etc.) requiring priority repairs if damaged.

(i) Estimate where washouts are likely to occur as the storm surge recedes across the island. Consider what measures for repair may be required.

(j) Discuss with CAMA how emergency repairs will be made, since CAMA permits may be too time consuming in a disaster situation.

(k) Obtain maps with information about the locations of power lines and telephone lines.

While post-disaster planning is important, Long Beach recognizes that proper preventive action is the best way to reduce flood and storm related damage. The town has a detailed Flood Hazard Reduction Ordinance which was adopted in 1991. That ordinance has the following general standards for all areas of special flood hazard:

(a) All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure;

(b) All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

(c) All new construction or substantial improvements shall be constructed by methods and practices that minimize flood damages;

(d) Electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding;

(e) All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system;

(f) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into floodwaters;

(g) On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding; and

(h) Any alteration, repair, reconstruction, or improvements to a structure which is in compliance with the provisions of this article, shall meet the requirements of "new construction" as contained in this article.

(i) Nonconforming buildings or uses may not be enlarged, replaced, or rebuilt unless such enlargement or reconstruction is accomplished in conformance with the provisions of this article. Provided, however, nothing in this article shall prevent the repair, reconstruction, or replacement of a building or structure existing on the effective date of this article and located totally or partially within the floodway zone, provided that the bulk of the building or structure below base flood elevation in the floodway zone is not increased, and provided that such repair, reconstruction, or replacement meets all of the other requirements of this article;

(j) All structures built in a floodprone area must be built a minimum of one (1) foot above base flood elevation, including mobile homes in the floodprone area.

2. Storm Mitigation, Evacuation, and Post-Disaster Recovery Plans

Long Beach is acutely aware of the hazards associated with coastal storms. The destructive forces of serious storms are particularly acute for communities which are located on barrier islands. Since the incorporation of the town, there has been no major hurricane in the area comparable to the Class 5 Hazel and Donna hurricanes which unleashed their destructive forces on the North Carolina coast in the fifties and early sixties. Very few of the current town residents have experienced storms of this magnitude and may be unaware of the extent of destruction associated with such storms. However, substantial damage resulted from Hurricane Diana, a Category 2 storm, in 1985, and the winter storm of 1993. While Hurricane Hugo, a Category 5 storm, struck the South Carolina coast in Charleston in 1989, significant damage still occurred at Long Beach.

This section of the land use plan provides management policies for major storms so that they may be better prepared for a major hurricane which may eventually impact Long Beach. In 1991, the town adopted a Civil Preparedness Program which established the procedures designed to reduce the risks associated with future hurricanes. This post-disaster recovery plan is intended to be consistent with the town's Civil Preparedness Program.

a. Storm Hazard Mitigation

Hurricanes bring with them forces which cause damage and potential loss of life through high winds, flooding, wave action, and erosion. Storm hazard mitigation policies and procedures, properly conceived and implemented, can be critical in the reduction of the dangers and potential impact on Long Beach and its citizens. Mitigation is not only important to minimizing loss of property and life, but also for avoiding potential damages in the long run which might result from improper land planning and land management practices.

i. Hazard Mapping

The vulnerability of Long Beach to the effects of high winds, flooding and storm surge, wave action and erosion can be summarized best by identifying the land areas within the town which are naturally most susceptible to these forces. The Federal Insurance Administration's Flood Hazard Boundary Map and the Long Beach Land Use Plan identify these areas which include flood hazard zones and Areas of Environmental Concern. These potential hazard areas are delineated on the hazard map and can be more specifically defined by reviewing the Flood Emergency Management Agency (FEMA) maps and the Long Beach storm surge map (see Maps 6 and 7). Table 24 summarizes the hazards which can be expected to be associated with the four general zones found within the town.

Table 24:
Hurricane Forces Associated with Town Environments

	High Winds	Flooding	Wave Action	Erosion
Ocean Hazard, AEC	x	x	x	x
Estuarine Shoreline AEC	x	x	x	x
V-Zone Flood	x	x	x	x
A-Zone Flood	x	x		
Outside Identified Hazard Areas	x			

The areas listed above with their associated hazards effect will require land use policies which control the type and distribution of land uses designed to minimize the potential damage from future hurricanes. At this time, Long Beach has implemented provisions in its local zoning and subdivision ordinances, and the flood hazard reduction ordinance, which are consistent with a policy of minimizing hurricane damage by controlling land use and assigning restrictive development standards to these high-risks environments.

ii. Ocean Hazard AEC

The ocean hazard areas consist of ocean erodible areas, high hazard flood areas, inlet hazard areas, and unvegetated beach areas. Ocean hazard landforms include ocean dunes, beaches, and shorelines. Ocean dunes include both primary dunes and frontal dunes. Primary dunes are the first mounds of sand located landward of the ocean beaches having an elevation equal to the mean flood level (in a storm having a one percent chance of being equaled or exceeded in any given year) for the areas plus six feet. The primary dune extends landward to the lowest elevation in the depression behind that same mound of sand. The frontal dune is deemed to be the first mound of sand located landward of the ocean beach having sufficient vegetation, height, continuity and configuration to offer protective value. The dunes are essential to the protection of oceanfront areas. The town recognizes the inherent danger in the oceanfront area and supports the 15A NCAC 7H.0308-.0309 use standards for ocean hazard areas.

iii. Estuarine Shoreline AEC

This hazard area extends only 75 feet landward of the mean high water line as defined by the Division of Coastal Management. However, the entire estuarine shoreline environment is subject to an extended hazard zone depending on low-lying topography which is subject to varying degrees of flooding and wave

action. The flood prone areas are delineated on the hazard maps. The town's zoning and subdivision ordinances and flood hazard reduction ordinance are consistent with development standards required for this area by DCM and the Federal Emergency Management Agency. However, a 25-foot building setback from the shoreline is required.

iv. Non-AEC Areas

All areas within the town are subject to some destructive aspect of hurricane damage through high winds, flooding, wave action or erosion. If even a limited portion or percentage of Long Beach were impacted from the effects of a major hurricane, the potential for damages in dollars can be significant. Implementation of mitigation of hurricane damage through proper land development policies and conformance with state building codes can be expected to result in a significant reduction in the extent and cost of loss of property and lives in Long Beach when a major hurricane strikes.

b. Hurricane Planning and Evacuation

Long Beach has an active civil preparedness program in operation, which includes specific procedures to be followed during pre-hurricane conditions. This section outlines these procedures as stated in the program.

The following pre-disaster or hurricane preparation activities will be implemented. These actions or action plans are either ongoing or to be permanently put in place by the department head responsible. The Town Manager will periodically confirm preparation has been undertaken.

(a) Both Emergency Operations Center (EOC) back-up generators must be checked periodically to prevent operational problems. Public Works (PW) Please refer to page IV-25 for an explanation of the EOC.

(b) Routinely check hand radios and chargers. Police Department Rescue (PD), Fire Department (FD)

(c) Major routes are to be designated that will be cleared first in the event of widespread debris. (PW)

(d) Several locations for use as temporary debris disposal areas are to be identified. (PW)

(e) Provide public information/education to help the citizens become more aware of what to do during a disaster. Town Manager (TM)

(f) Know procedures for declaring a state of emergency. (TM and Mayor)

(g) Public works will make detailed plans for (on-island) basic vehicle maintenance equipment and be prepared to make minor repairs to town vehicles. (PW)

(h) The Town Manager will make plans for emergency communications maintenance. (TM)

(i) The Long Beach Volunteer Rescue Squad will have contingency plans for evacuation assistance for disabled needing transportation to shelter, nursing home or hospital. (EMS)

(j) Every department head will have in place plans for immediate removal of key operational files and records should island evacuations be ordered. (All department's) Plans must be approved by the Town Manager each year. (TM)

(k) The Town Manager will, with assistance of the Police Department, plan and publicize evacuation routes. (TM)

(l) The Mayor will identify and make known which elected officials have the authority to order evacuations, should the Mayor be unavailable. Mayor (M)

(m) Every department will design chain of command (organizational chart) and line of succession. Department Heads (DH)

(n) The Mayor will insure that the town has an emergency operation center chief at all times. (M)

(o) The EOC will determine the lead agencies and departments during a disaster. (EOC)

(p) The town will make a video record of all beachfront properties (from the beach) and all 2nd row properties (from E & W Beach Drives) once every year. Inspections (I)

(q) In advance of a disaster, the Town Manager will insure that all employees are aware of appropriate actions which should be taken, when initially responding to an emergency situation to effectively protect citizens. (TM)

(r) The Town Manager will promote volunteer or nonprofit assistance in emergency planning. (TM)

(s) The Town Manager will test and train to keep employees prepared for emergencies by conducting field exercise, drills, maneuvers, etc. (TM)

(t) The Mayor and Town Manager will develop a list of possible evacuation shelter sites to be used for the public, for town "last to leave" employees, town equipment, and for other support personnel. The public is to be informed of evacuation sites, routes and methods of alert as early as possible each year and again at the start of the hurricane season. (TM, M)

The Long Beach Civil Preparedness Program provides for the establishment of an EOC. The ultimate responsibility for providing decisions and response in time of emergency rests with local government. The center for this responsibility for control rests with the Mayor and Town Council of Long Beach. The Town Manager will determine the need to establish an Emergency Operation Center after evaluating the level of emergency either current or imminent. He shall ensure essential staff from Public Works, Fire and Police, and other support staff designated by the Mayor are trained and present during EOC activation.

The Long Beach EOC will work in cooperation with the Brunswick County Emergency Operations Center (county EOC). If Long Beach EOC is ordered to be evacuated during an extreme emergency, the county EOC will become the center for local government control.

The Mayor will assign an interim government representative to the county EOC to serve there at the time Long Beach EOC is activated. During local EOC operation, the representative will serve as Long Beach link to the media. At the time our local EOC is abandoned and prior to the Mayor and other local government officials arrival at the county EOC, the representative will be the principal line to all other entities.

If the EOC is activated, the following response duties will be assigned:

ELECTED OFFICIALS

- Respond to the town EOC if it is activated.
- Keep informed about situation.
- Provide information to citizens (Mayor's direction).
- Make emergency policy decisions concerning disaster operations.
- Request state and federal aid (direction to Town Manager).
- Establish necessary contacts with surrounding jurisdictions.
- Review state of emergency status.
- Establish curfews, order evacuation (Mayor's executive order) after receipt of county order to evacuate.

TOWN MANAGER

- Evaluate incident and determine if the EOC should be activated, and if so, notify Mayor and Town Council.

-- Direct town department heads.
-- Serve as liaison between elected officials and operating departments.
-- Coordinate response and information with other town managers and county manager (Mayor's direction).
-- Control rumors by keeping public informed.
-- Ensure that emergency operations comply with local ordinances and North Carolina General Statutes and federal regulations.
-- When necessary, recommend to elected officials that they declare a state of emergency.
-- If disaster extends beyond city's boundaries, solicit a representative from the county to assist with response action.
-- Procure resources quickly.

ATTORNEY

-- Ensure proper legal procedures are followed.
-- Provide legal guidance.

The EOC will be organized, function and provide evacuation assistance as follows:

ORGANIZATION

(a) The Emergency Operation Center will be at the Town of Long Beach main building. It is where the Mayor, Town Council, Town Manager, and other key personnel will collect and assess information and respond accordingly.

(b) The Town Manager will establish and command the EOC until the arrival of the Mayor or Mayor Pro Tem.

(c) The Mayor is responsible for the direction of all EOC operations. The Mayor, Town Council members, Town Manager, and other key support personnel will respond to the EOC at the onset of any Level III emergency.

(d) The alternative EOC location will be at the Recreation Center. It will exist there only at the Mayor's directions after having assessed town building safety and operational capability.

(e) Emergency power at both locations is provided with on-site generators.

(f) Communications capabilities:
1. Primary (telephone, radio, 911 link, etc.) as exists on-site.
2. Secondary (cellular telephone, communications van, ham radio, etc.)

(g) Life support (meals, cots, etc.) will be provided at EOC as necessary with the Mayor's direction.

(g) Maps, files and disaster plans will be made readily available by the Town Manager in his office.

(h) Necessary items, batteries, TV, clipboards, flip chart or erasable display board, flashlights, paper, pens, tape recorder, toiletries, typewriter, etc., will be available for EOC personnel at all times.

FUNCTIONAL ROLES

(a) Establish communications with primary department head (see commander and county EOC if required).

(b) Determine scope/size and maintain a detailed status of the emergency.
1. Understand and establish perimeters of the immediate disaster area.
2. Estimate the percentage of the town affected.
3. Establish routes of entrances and exist to and from the scene.
4. Activate emergency back-up radio communication program.

(c) Determine if additional imminent danger exists (downed power lines, gas leaks, etc.)

(d) Determine emergency areas to be blocked off and establish perimeter control (barricades, yellow taping, ditching, etc.) by using PD, PW, FD.

(e) Assess damage:
1. Injuries
2. Deaths
3. Property damage
4. Blocked roadways and bridges
5. Number of people without power or area affected

(f) Determine what critical facilities have been affected.
1. Communications (radio, 911, telephone)
2. Fire/police/rescue stations
3. Water facilities
4. EOC
5. Other

(g) Determine if a state of emergency should be requested.

(h) Evaluate what resources have already been committed and what municipal resources are still available.

(i) Determine what additional resources are currently required and project future need from other municipalities, county or state (specify exact quantities if possible).

(j) The Town Manager or, if appropriate, the Scene Commander, will be responsible for collecting and distributing information to the EOC.

(k) Mobilize the Finance Officer, who will document all financial data.

(l) Feed and relieve crews as needed.

(m) Order Public Works to clear debris blocking access to major sites/ routes in accordance with established plans.

(n) Outside support assistance will be secured and coordinated by the Town Manager. He may delegate responsibility to the Public Works Director.

(o) The local jurisdiction will direct emergency operations. Any help from outside organizations or individuals will be directed and coordinated by the Town Manager.

EVACUATION ASSISTANCE

(a) At the direction of the Mayor, the PD will coordinate all aspects of evacuation notification and control. (PD)

(b) The Rescue Squad will monitor effects on disaster on high-risk populations. (EMS)

(c) The Town Manager will monitor emotional effects of disaster, and arrange for counseling services if required.

(d) The Mayor will decide whether liquor stores should be temporarily closed.

(e) The EOC will be a joint public information center, coordinated with the county, where citizens can get information about the disaster, relief, victims, and other essential information with the Mayor's concurrence.

(f) Only the Mayor or Mayor Pro Tem will channel information to the media.

(g) The Public Works Director will organize and coordinate all volunteers except Fire Department and Rescue Squad.

(h) The Town Manager will act as a family liaison officer and attempt to let employees know how their families are, should they become separated.

Once a hurricane is forecast, the following hurricane preparation and alert responsibilities will be implemented:

HURRICANE PREPARATION PLAN

(a) Hurricanes are considered to be Level III emergencies. Level III emergencies are defined as follows:

> Level III is a major emergency. Examples are hurricanes, tornadoes and earthquakes. It is likely to be considered a catastrophic event or to pose a risk of being so. In most instances, it will (or may) affect large areas, if not all of the town, and will require extensive planning for mitigation and considerable manpower and equipment for response action. The EOC will be activated by the Town Manager. Early activation is desired if time permits."

(b) All preparation activities and general emergency responsibilities previously described apply to this plan.

(c) The Town of Long Beach will operate on a system of the alert stages WATCH, WARNING & RED for hurricanes and, if possible, for tornadoes.

(d) Weather fronts capable of spawning tornadoes or tornado touchdown reports may be developing so rapidly that alert stages green and yellow are impossible to call. Catastrophic conditions may occur within minutes.

Hurricane Alert Stages:

WATCH - Information is received that a hurricane has formed and is moving toward our area and landfall could occur within the next 24 to 36 hours.

WARNING- Information is received that a hurricane has formed and is moving toward our area and landfall could occur within the next 12-24 hours.

RED - Information is received that a hurricane has formed and is moving toward our area and landfall could occur within the next 12 hours. Used also for tornado alert or touchdown reports.

(e) All town employees are expected to have a general understanding of their emergency service roles during the various types, levels and stages of disasters, especially hurricanes.

(f) The Town Manager will make sure that all department heads have a detailed operational plan in place for the three stages of hurricane alert defined in this plan.

1. Each department head will identify those files and documents to be evacuated should a Category 4 or 5 hurricane be predicted.

2. Each department will have a detailed plan for evacuation, retention and return of the files and documents identified. Plan shall be reviewed and approved by the Town Manager each year.

(g) The Mayor, with the assistance of the Town Manager, will have previously identified the evacuation shelters to be used for the general public.

(h) The Mayor will identify shelters to be used for town personnel evacuated at "last possible opportunity."

(i) The Town Manager will develop a "standing use" plan for dispersal of personnel and equipment in the event of a warning of weather system capable of spawning tornadoes.

WATCH ALERT STAGE - Department Responsibilities

(A hurricane is moving toward our area and landfall could occur within the next 24 to 36 hours.)

TOWN MANAGER

-- May choose to begin activation of EOC.
-- Notify all department heads to place WATCH alert plans into action.
-- Collect operational equipment inventory and provide status to County EMS.
-- Remain alert to changing conditions by using all available means of weather information.

POLICE DEPARTMENT

-- Notify all department members that the Town is on a WATCH ALERT.
-- Ready all equipment and give inventory to Town Manager.
-- Identify key files and documents to be removed if evacuation becomes necessary.
-- Fuel all vehicles; check all fluid levels.
-- Designate a law enforcement coordinator to serve at EOC if activated.
-- Review evacuation plans for the public, the department, and for equipment.

PUBLIC WORKS

-- Ready all equipment, give inventory to Town Manager.
-- Stage on-island motor vehicle repair capability.
-- Fuel all vehicles and equipment, and check all fluid levels.
-- Test run generators at town building, the Recreation Center, and all trailer-mounted generators.
-- Identify key files and documents to be removed if evacuation becomes necessary.
-- Identify Public Works Coordinator to serve at EOC if activated.
-- Identify construction activities (roads, buildings, bridges, etc.) that may increase hazards.
-- Identify support contractors' operating equipment.
-- Review plans for equipment and personnel evacuation.
-- Identify to Town Manager any service exposure or shortfalls in equipment.
-- Prepare off-island facility for receipt of equipment if evacuation is ordered.

FIRE DEPARTMENT

-- Bring Command Center vehicle 179 to on-line status and test communications link.
-- Fuel all vehicles and equipment, and check all fluid levels.
-- Review plans for equipment and fire personnel evacuation.
-- Identify key files and documents to be removed if evacuation becomes necessary.
-- Designate fire department coordinator to serve at EOC.
-- Test all vehicles and equipment.
-- Inventory operational equipment and report status to Town Manager.

RESCUE SQUAD

-- Fuel all vehicles and equipment, and check all fluid levels.
-- Test all vehicles and equipment.
-- Prepare assignments for necessary medical patient evacuation.
-- Review plans for rescue personnel evacuation.
-- Identify key files and documents to be removed if evacuation becomes necessary.

DAMAGE ASSESSMENT (INSPECTIONS)

-- Alert Damage Assessment Team members.
-- Review staging areas for post-disaster effort.
-- Identify key files and documents to be removed if evacuation becomes necessary.
-- Video the beachfront.

TAX DEPARTMENT

-- Identify key files and documents to be removed if evacuation becomes necessary.

FINANCE

-- Identify key files and documents to be removed if evacuation becomes necessary.

WATER

-- Identify key files and documents to be removed if evacuation becomes necessary.
-- Review emergency shut-down plans.

RECREATION

-- Cancel all scheduled activities.
-- Secure all outside loose recreation equipment.
-- Prepare Recreation Center for alternate EOC operation.

WARNING ALERT - Department Responsibilities

(A hurricane is moving toward our area and landfall could occur within the next 12-24 hours.)

TOWN MANAGER

- Notify all department heads to place WARNING alert plans into action.
- Review action taken by all departments during WATCH ALERT.
- Remain alert to changing conditions.
- Direct all department heads to pack files and documents and ready for evacuation (Category 3, 4 or 5 predicted).
- Review evacuation warning plans with Police Department.
- Review town status and plans with other communities and county EOC.
- Move backup EOC (if activated) to the County EMS building or activate if required at the County EMS building.
- Give brief preparedness status to Mayor and Town Council.
- Coordinate planned evacuation routes with county EMC.
- Activate back-up communication team.

POLICE DEPARTMENT

- Notify all department members that the town is on WARNING ALERT and they are restricted to the island and required to notify the Long Beach Communications Center if they will be away from their residence.
- Review all actions taken during WATCH ALERT.
- Review preparation status with other Oak Island police departments.
- Prepare to implement evacuation plan.
- Remove all equipment not required to respond to a RED ALERT to a safe location and report inventory to Town Manager.
- Pack key files and documents when directed by Town Manager.
- Staff EOC if activated.
- Report readiness status to Town Manager.

PUBLIC WORKS

- Notify all department members that the town is on WARNING ALERT.
- Move all equipment destined for off-island location, or to on-island distribution point, to that location.
- Pack files and documents when directed by Town Manager.
- Staff EOC if activated.
- Assemble portable generators at Station #1. Hold trailer generator at off-island garage.

-- Provide 12V car/truck battery and battery charger at main EOC and also at Recreation Center (HAM radio back-up comm.)
-- Assemble roadblock and barrier materials.
-- Place equipment in operational readiness.
-- Report status of preparation to Town Manager.
-- Start fill of water towers and maintain at full capacity.

FIRE DEPARTMENT

-- Notify all department members that the town is on WARNING ALERT.
-- Staff EOC if activated.
-- Inform Yaupon Beach Fire Department of status of preparation plans and review plan for RED ALERT.
-- Remove designated equipment to pre-selected location (on island) to ensure limited response capability in "WORST CASE" scenario (bridge out).
-- Place all equipment in operational readiness.
-- Pack files and documents when directed by Town Manager.
-- Report status if preparation to Town Manager.

RESCUE SQUAD

-- Notify all department members that the town is on WARNING ALERT.
-- Place all equipment in operational readiness.
-- Evacuate all medical high-risk patients requiring evacuation assistance.
-- Remove designated equipment to pre-selected location (on island) to ensure limited response capability in "WORST CASE" scenario (bridge out).
-- Pack files and documents when directed by Town Manager.
-- Report status of preparation to Town Manager.

TAX DEPARTMENT, FINANCE DEPARTMENT, INSPECTIONS DEPARTMENT (DA), WATER DEPARTMENT, RECREATION DEPARTMENT

-- Notify all department members that the town is on WARNING ALERT.
-- Pack key files and documents when directed by Town Manager.
-- Prepare equipment for "POWER DOWN" (all data processing, terminals, copiers). Run current history tapes and pack with key documents.
-- Report status of preparation to Town Manager.

RED ALERT STAGE - Department Responsibilities

EOC

- See EOC organization and function.
- The Mayor will order evacuation only with authorization of the county Emergency Management Coordinator (EMC) at the county EOC.
- Move town representative to county EOC.

TOWN MANAGER

- Notify all department heads the town is on RED ALERT.
- Activate the EOC and provide early status.
- Implement plan for dispersal during tornado.
- At the Mayor's direction, order all departments to activate evacuation program plan.
- Remain alert to remaining weather conditions.

POLICE DEPARTMENT

- Review all actions taken in WARNING ALERT.
- Notify all department members to report to the Police Department and that the town is on RED ALERT.
- At the Town Manager's or Mayor's direction, coordinate all the town's evacuation program plans regarding public notification, traffic control, etc.
- Periodically report evacuation status (%) to EOC and Town Manager.
- If evacuation is ordered, place files and documents in vehicle ready for transport off island and report status and destination to Town Manager.
- The Chief of Police shall have in place a plan for public evacuation notice for the entire town. Loudspeaker coverage shall be made a minimum of twice in four hours. "Door to door" method is not possible. The public address announcement shall be identical for all vehicles participating. Evacuation announcement will include this warning: "If you choose to ignore this warning, you are placing yourself in great danger. Emergency help will not be available for some time."
- 911 POWER DOWN procedures and protection of equipment is to be defined in department evacuation plan.

PUBLIC WORKS

- Notify all department members the town is on RED ALERT.
- Place RED ALERT department plans into action.

-- Support Police Department in evacuation effort as required. Evacuation will start only at Mayor's or Town Manager's order.
-- Restart all emergency generators to verify functional operation.
-- If evacuation is ordered, place key files and documents in vehicle ready for transport off island and report status and destination to Town Manager.
-- Periodically report preparation status to EOC and/or Town Manager.
-- Equipment, furniture, files, etc., are to be covered with plastic or tarps if evacuation is ordered.
-- On evacuation order, shut down water to beach area and shut down both water towers.
-- Report final status of personnel and equipment to Town Manager at time of department evacuation.

FIRE DEPARTMENT

-- Notify all department members the town is on RED ALERT.
-- Place RED ALERT department plans into action.
-- Verify all equipment to be functionally ready.
-- Support Police Department in evacuation effort as required. Evacuation will start only at Mayor's or Town Manager's order.
-- Place key files and documents in designated vehicle ready for transport off island and report status and destination to Town Manager.
-- Periodically report preparation status to EOC and/or Town Manager.
-- Report final status of personnel and equipment to Town Manager at time of department evacuation.

RESCUE

-- Notify all department members the town is on RED ALERT.
-- Place RED ALERT department plans into action.
-- Verify all equipment to be functionally ready.
-- Support Police Department in evacuation effort as required. Evacuation will start only at Mayor's or Town Manager's order.
-- Place key files and documents in designated vehicle ready for transport off island and report status and destination to Town Manager.
-- Periodically report preparation status to EOC and/or Town Manager.
-- Report final status of personnel and equipment to Town Manager at time of department evacuation.

INSPECTIONS, TAX DEPARTMENT, FINANCE,
WATER, RECREATION DEPARTMENTS

- -- Notify all department members the town is on RED ALERT.
- -- Place RED ALERT department plans into action.
- -- Verify all equipment to be functionally ready.
- -- Place key files and documents in designated vehicle ready for transport off island and report status and destination to Town Manager.
- -- Periodically report preparation status to EOC and/or Town Manager.
- -- "Power Down" all equipment when directed to do so.
- -- Equipment, furniture, files, etc., are to be covered with plastic or tarps if evacuation is ordered.
- -- Report final status of personnel and equipment to Town Manager at time offices are evacuated.

c. Post-Disaster Recovery Plan

A post-disaster plan provides a program that will permit a local government to deal with the aftermaths of a storm in an organized and efficient manner. The plan provides the mechanisms, procedures, and policies that will enable a local community to learn from its storm experiences and to rebuild the community in a wise and practical manner.

A post-disaster reconstruction plan encompasses three distinct reconstruction periods:

(i) The emergency period is the reconstruction phase immediately after a storm. The emphasis is on restoring public health and safety, assessing the nature and extent of storm damage, and qualifying for and obtaining whatever federal and state assistance might be available.

(ii) The restoration period covers the weeks and months following a storm disaster. The emphasis during this period is on restoring community facilities, utilities, essential businesses, etc., so that the community can once again function in a normal manner.

(iii) The replacement reconstruction period is the period during which the community is rebuilt. The period could last from months to years depending on the nature and extent of the damaged incurred.

It is important that local officials clearly understand the joint federal-state-local procedures for providing assistance to rebuild after a storm so that local damage assessment and reconstruction efforts are carried out in an efficient manner that qualifies the community for the different types of assistance that are available. The

requirements are generally delineated in the Disaster Relief Act of 1974 (P.L. 93-288) which authorizes a wide range of financial and direct assistance to both local communities and individuals. The sequence of procedures to be followed after a major storm event is as follows:

(i) Local damage assessment teams survey storm damage within the community and report this damage to the County Emergency Services Coordinator.

(ii) Damage information is compiled and summarized by Brunswick County, and the nature and extent of damage is reported to the North Carolina Division of Emergency Management.

(iii) DEM compiles local data and makes recommendations to the Governor concerning state action.

(iv) The Governor may request a Presidential declaration of "emergency" or "major disaster." A Presidential declaration makes a variety of federal resources available to local communities and individuals.

(v) Federal Relief assistance provided to a community after an "emergency" has been declared typically ends one month after the initial Presidential declaration. Where a "major disaster" has been declared, federal assistance for "emergency" work typically ends six months after the declaration and federal assistance for "permanent" work ends after 18 months.

3. Organization of Local Damage Assessment Team

Damage assessment teams will be activated by the EOC by direction to the Damage Assessment Coordinator.

Damage assessment focuses on the town's responsibility to determine the impact of Level III emergency (hurricane, tornado), and then to rank needs in order of importance to return the community to a livable condition. It also functions as a means to support damage claims and to seek federal assistance. Extensive damage assessment is a necessary part of most state and federal recovery programs. Damage assessment will require staff from the Long Beach Engineering/Public Works office, Building Inspection, County Tax Office, County Health Department, and if possible, the Governor's Office. Personnel from operating departments will remain under the control of their own departments but will function under the immediate direction of the Damage Assessment Coordinator in disaster conditions. The Damage Assessment Coordinator will be appointed by the Town Manager. Provisions should be made for a line of succession so that damage assessment can continue should some personnel not be readily available. Agreements and understandings should be developed in writing between

Long Beach and private organizations to assure that damage assessment takes place. Assignments should be made well in advance because in the event of a hurricane, confusion about specific assignments could have serious consequences. Insurance agents and realtors may be called in from the private sector if the workload exceeds available staff.

The following damage assessment preparation activities will be undertaken annually:

a. Train personnel in damage assessment techniques.

b. Maintain pre-disaster maps, photos, surveys and other documents for damage assessment purposes.

c. Photo inventory structures in hazardous areas.

d. List critical facilities requiring priority repairs if damaged.

e. Conduct a damage assessment exercise.

f. Determine available assistance and alert people that they may be asked to assist.

g. Maintain accurate listings of all property owners.

4. Damage Assessment Procedures and Requirements

Damage assessment is defined as rapid means of determining a realistic estimate of the amount of damage caused by a natural or man-made disaster. For a storm disaster, it is expressed in terms of 1) number of structures damaged; 2) magnitude of damage by structure type; 3) estimated total dollar loss; and 4) estimated total dollar loss covered by insurance.

After a major storm event, members of the Damage Assessment Team should report to the EOC for a briefing prior to deployment. The extent of damage will depend on the magnitude of the storm and where landfall occurs along the Atlantic coast. Because of the potentially large job at hand, the limited personnel resources available to conduct the assessments, and the limited time within which the initial assessment must be made, the first phase of the assessment should consist of only an external visual survey of damaged structures. A more detailed second phase assessment can be made after the initial damage reports are filed.

The initial damage assessment should make an estimate of the extent of damage incurred by each structure and identify the cause (wind, flooding, wave action, combination, etc.) of the damage to each structure.

Damaged structures should be classified in accordance with the suggested state guidelines as follows:

a. Destroyed (repairs would cost more than 50 percent of value).

b. Major (repairs would cost more than 30 percent of the value).

c. Minor (repairs would cost less than 30 percent of the value, but the structure is currently uninhabitable).

d. Habitable (some minor damage, with repairs less than 15 percent of the value).

It will be necessary to thoroughly document each assessment. In many cases, mail boxes and other information typically used to identify specific structures will not be found. Consequently, the Damage Assessment Team must be provided with tax maps, other maps, and photographic equipment in order to record and document its field observations. Enough information to complete the Damage Assessment Worksheet must be obtained on each damaged structure.

The second phase of the Damage Assessment Operation will be to estimate the value of the damages sustained. This operation should be carried out in the EOC under the direction and supervision of the Damage Assessment Coordinator. The Long Beach Civil Preparedness Program appoints specific damage assessment teams.

In order to estimate total damage values, it will be necessary to have the following information available for use at the EOC:

a. A set of property tax maps identical to those utilized by the damage assessment field team.

b. Copies of all town property tax records. This information should indicate the estimated value of all commercial and residential structures within the town. Because time will be of the essence, it is recommended that the town immediately commence a project listing the property values of existing structures in Brunswick County on the appropriate lots of the property tax maps that will be kept at the EOC. While somewhat of a tedious job, it should be manageable if it is initiated now and completed over a 2 to 3 month period. The information will prove invaluable if a storm disaster does occur. This set of tax maps should be updated annually prior to the hurricane season.

The town should update property tax information annually before the hurricane season. This information should then be kept available in the EOC for estimating the value of sustained damages covered by hazard insurance.

In order to produce the damage value information required, the following methodology is recommended:

a. The number of businesses and residential structures that have been damaged within the town should be summarized by damage classification category.

b. The value of each damaged structure should be obtained from the marked set of town tax maps and multiplied by the following percentages for appropriate damage classification category:

- Destroyed - 100%
- Major Damage - 50%
- Minor Damage (uninhabitable) - 25%
- Habitable - 10%

c. The total value of damages for the town should then be summarized and reported, as required, to the County EOC.

d. The estimated value loss covered by hazard insurance should then be determined by: 1) estimating full coverage for all damaged structures for situations where the average value of such coverage exceeds the amount of damage to the structure; and 2) multiplying the number of structures where damage exceeds the average value of insurance coverage by the average value of such coverage.

The Damage Assessment Plan is intended to be the mechanism for estimating overall property damage in the event of a civil disaster. The procedure recommended above represents an approach for making a relatively quick, realistic "order of magnitude" damage estimate after a disaster.

5. Organization of Recovery Operation

Damage assessment operations are oriented to take place during the emergency period. After the emergency operations to restore public health and safety and the initial damage assessments are completed, the state guidelines suggest that a Recovery Task Force to guide restoration and reconstruction activities be created. In Long Beach, the Mayor, Town Council, and Town Manager will assume the responsibilities of such Task Force. This Task Force direct day-to-day operations. The following must be accomplished:

a. Establishing re-entry procedures.

b. Establishing an overall restoration schedule.

c. Setting restoration priorities.

d. Determining requirements for outside assistance and requesting such assistance when beyond local capabilities.

e. Keeping the appropriate county and state officials informed using Situation and Damage Report.

f. Keeping the public informed.

g. Assembling and maintaining records of actions taken and expenditures and obligations incurred.

h. Proclaiming a local "state of emergency" if warranted.

i. Commencing cleanup, debris removal and utility restoration activities which would include coordination of restoration activities undertaken by private utility companies.

j. Undertaking repair and restoration of essential public facilities and services in accordance with priorities developed through the situation evaluations.

k. Assisting private businesses and individual property owners in obtaining information on the various types of assistance that might be available to them from federal and state agencies.

In Before the Storm: Managing Development to Reduce Hurricane Damages (McElyea, Brower & Godschalk, 1982), a sequence and schedule for undertaking local reconstruction and restoration activities is presented. The schedule was deliberately left vague because specific reconstruction needs will not be known until after a storm hits and the magnitude of the damage can be assessed. The following sequence of activities and schedule is submitted as a guide which should be considered by the Recovery Task Force and Damage Assessment Teams, and revised as necessary after the damage assessment activities are completed.

Activity		Time Frame
1)	Complete initial damage assessment.	Immediately after storm passes.
2)	Complete second phase damage assessment.	Completed by second week after the storm.
3)	Prepare summary of reconstruction priorities.	Completed one week after second phase damage assessment is completed.
4)	Decision with regard to imposition of temporary development moratorium.	One week after second phase damage assessment is completed.

Activity		Time Frame
5)	Set reconstruction priorities and prepare master reconstruction schedule.	Completed one week after summary of reconstruction needs is completed.
6)	Begin repairs to critical utilities and facilities.	As soon as possible after disaster.
7)	Permitting of reconstruction activities for all structures receiving minor damage not included in development moratorium areas.	One week after second phase damage assessment is completed.
8)	Permitting of reconstruction activities for all structures receiving major damage not included in development moratorium areas.	Two weeks after second phase damage assessment is completed.
9)	Initiate assessment of existing mitigation policies.	Two weeks after second phase damage assessment is completed.

TOWN MANAGER

-- Set up offices in town to use as a base for federal assistance program applications.
-- Find accommodations for insurance adjustors.
-- Summarize damage assessment reports.
-- Monitor restoration activities.
-- Advise on establishing priorities for emergency repairs.
-- Prepare documents for submission to state and federal government.

INSPECTIONS

-- Use damage information to revise property records and tax records.
-- Review building codes and land use regulations for possible improvements.

PUBLIC WORKS

-- Assess damage to roadways and bridges.
-- Clean up and remove debris.
-- Restore bridges and major roads.
-- Barricade necessary areas.
-- Help deploy heavy equipment.
-- Contract for electrical, mechanical, plumbing, or other services at direction of Town Manager.
-- Demolish or condemn unsafe structures.
-- Open roadways for emergency service units.

-- Evaluate fuel characteristics at town tanks.
-- Drain flooded areas if possible.
-- Maintain vehicles and equipment.
-- Provide emergency lighting.
-- Assess damage to water, electrical, and gas (fuel) systems.
-- Monitor water pressure.
-- Arrange for emergency water supply and/or rationing.
-- Provide emergency potable water and announce points of distribution.
-- Get help from utilities in neighboring towns.
-- Coordinate restoration of public utilities in the disaster area.

POLICE

-- Mobilize key personnel.
-- Secure key installations.
-- Dispatch police and other departments.
-- Locate perimeters of disaster scene.
-- Identify entrance and exit routes at scene.
-- Provide traffic control.
-- Assist in managing disaster scene.
-- Deploy department resources as required.
-- Assist spokesperson in informing the public.
-- Provide communications center for town.
-- Alert personnel of possible emergency duty (stand-by).
-- Protect property during crisis relocation.
-- Control access to risk area.
-- Provide transportation to key personnel.
-- Assist with search and rescue operations.
-- Evacuate designated area(s).
-- Request further law enforcement resources.
-- Compile list of reported missing persons.
-- Enforce curfew (if declared).
-- Create detour routes and post traffic directional signals.

FIRE

-- Mobilize fire personnel.
-- Establish fire suppression and control capability.
-- Hazardous material control and containment.
-- Reconnaissance of disaster scene.
-- Assist rescue and extrication.
-- Identify hazardous materials.
-- Investigation of fire causes.
-- Search area for casualties and assist EMC in caring for injured.
-- Survey for potential fire hazards and notify EOC or Town Manager.

- Assume field command in fire-related disasters.
- Provide safety for EOC.
- Support law enforcement and emergency medical operations.
- Assist with dissemination of warnings/information as directed by Town Manager.
- Dispense water.
- Designate staging areas for aid.

EMS

- Mobilize EMS personnel.
- Coordinate medical monitoring station (if activated) at incident site.
- Provide medical attention to victims.
- Extricate and evacuate victims.
- Assist in surveying the disaster area.
- Carry out search and rescue efforts.
- Maintain casualty tracking system.
- Transport victims to area facilities.
- Coordinate activities with Emergency Operations Center.
- Evaluate health hazards and advise Town Manager.
- Arrange for help from area rescue and ambulance.
- Act as liaison with emergency personnel at hospital.
- Help Police Department disseminate information as directed by Town Manager.
- Transport deceased through coordination with coroner.

FINANCE

- Maintain accurate records of all pertinent financial data.
- Expedite necessary emergency purchases.
- Supply EOC as required.
- Prepare requisite financial reports (Damage Survey Report, etc.)
- If state and federal funding are not sufficient, recommend alternative forms of funding (fund transfers, bonds, tax anticipation notes, etc.).
- Record overtime hours.
- Institute logs to improve accuracy.
- Provide information on insurance coverage.
- Inform supporting agencies and contractors of reporting and recordkeeping requirements.

PARKS AND RECREATION

- Establish community reception centers.
- Coordinate personal care and other evacuee needs.

-- Coordinate with American Red Cross extended mass feedings and other personal care if required.
-- Provide manned vehicles to help move personnel and materials.
-- Provide manpower to help clean up and remove debris.
-- Provide shelter for evacuees.
-- Provide manpower as needed.
-- Provide bus transportation for evacuees.

6. Recommended Reconstruction Policies

All the following policies have been designed to be 1) considered and adopted by the Mayor and Commissioners of Long Beach as a part of this land use plan, and 2) implemented, as appropriate, after a storm occurs:

a. Re-Entry Permits

Re-entry permits are not issued by the Town of Long Beach. Following evacuation, the town will remain closed at the discretion of the Mayor. Roadblocks will be established at all roads entering the east end of Long Beach.

b. Permitting

(i) Building permits to restore structures located outside of designated AEC areas that were previously built in conformance with local codes, standards, and the provisions of the North Carolina Building Code shall be issued automatically.

(ii) All structures suffering major damage as defined in the town's Damage Assessment Plan shall be repaired or rebuilt to conform with the provisions of the CAMA regulations (including setbacks), North Carolina Building Code, the Long Beach zoning ordinance, and the Long Beach floodplain management regulations.

(iii) All conforming structures suffering minor damage as defined in the Long Beach Damage Assessment Plan shall be permitted to be rebuilt to their original state before the storm condition.

(iv) For all structures in designated AECs, a determination shall be made for each AEC as to whether the provisions of the CAMA regulations (including setbacks), N. C. Building Code, the state regulations for Areas of Environmental Concern, the Long Beach floodplain management regulations appeared adequate in minimizing storm damages. For areas where the construction and use requirements appear adequate, permits shall be issued in according with permitting policies (a), (b) and (c). For

AECs where the construction and use requirements do not appear to have been adequate in mitigating damages, a Temporary Development Moratorium for all structures located within that specific AEC shall be imposed.

(v) Permits shall not be issued in areas subject to a temporary development moratorium until such a moratorium is lifted by the Long Beach Town Council.

c. Utility and Facility Reconstruction

(i) The town will encourage the Brunswick County Water System to repair all damaged water systems components so as to be elevated above the 100-year floodplain or shall be floodproofed, with the methods employed and the construction being certified by a registered professional engineer.

(ii) Overhead power lines and utility poles present the greatest obstacle to the safe evacuation of residents in the event of a major storm disaster. Relocating these lines underground or moving them away from rights-of-way would be very costly at this time. However, if major damage occurs as a result of a storm, the cost effectiveness would improve and public safety considerations might override economic considerations. Long Beach encourages the relocation of overhead power lines underground or away from evacuation routes if substantial damage to the existing system is sustained during a major storm.

d. Temporary Development Moratorium

Under certain circumstances, interim development moratoriums can be used in order to give a local government time to assess damages, to make sound decisions and to learn from its storm experiences. Such a moratorium must be temporary and it must be reasonably related to the public health, safety and welfare.

Long Beach will suffer heavy and serious damages should a major storm make its landfall in its vicinity. Consequently, the town should be prepared to issue temporary development moratoriums as appropriate.

It is not possible to determine prior to a storm whether a temporary development moratorium will be needed. Such a measure should only be used if damage in a particular area is very serious and if redevelopment of the area in the same manner as previously existed would submit the residents of the area to similar public health and safety problems. In Long Beach, such a situation is most likely to occur in one or more of the AECs.

Long Beach's policy regarding the proclamation of temporary development moratoriums shall be:

(i) To determine for each AEC whether the provisions of N. C. Building Code, the state guidelines for AECs, and the Long Beach flood damage prevention ordinance appeared adequate in minimizing storm damages. For AECs where the construction and use requirements do not appear adequate, a temporary development moratorium for all structures located within that specific AEC shall be imposed.

(ii) After imposing a temporary development moratorium for an AEC, the Town of Long Beach shall request that the Coastal Resources Commission conduct a special analysis for the town and all other similar communities in order to determine how local regulations for those hazard areas, which are based on state and/or federal guidelines or requirements, should be improved or modified. A response from the state within a reasonable time period as determined through negotiations should be requested.

(iii) The temporary building moratorium in all AECs shall be lifted after local ordinances and regulations have been revised based on state recommendations or decisions of the Mayor and Town Council. Reconstruction shall be permitted in accordance with existing regulations and requirements.

SECTION V:

RELATIONSHIP OF POLICIES AND LAND CLASSIFICATIONS

SECTION V: RELATIONSHIP OF POLICIES AND LAND CLASSIFICATIONS

The 15A NCAC 7B planning guidelines require that this land use plan relate the policies section to the land classification map and provide an indication as to which land uses are appropriate in each land classification. The Long Beach Zoning Ordinance is consistent with the land classification map and supports the distribution of land uses shown on that map.

A. DEVELOPED CLASS

The developed land classification is divided into the categories of developed residential and developed commercial. The classifications are delineated on the land classification map. Within the developed classification, the policies contained in this plan are supported by local codes and ordinances, including the town's zoning, subdivision, flood damage prevention, protection of sand dunes, and manufactured and modular homes ordinances. In addition, policies addressing the following areas apply which may affect consistency reviews at the state and general government levels: energy siting and offshore drilling, sewage treatment, erosion and sedimentation control, transportation planning and facilities construction, groundwater protection, community facilities construction, and development of AEC's. The majority of the developed residential classification remains unimproved while the developed commercial classification is predominantly developed.

B. URBAN TRANSITION CLASS

The urban transition classification includes lands which may be developed during the planning period. All of the town's remaining maritime forest areas are located within this classification. Regulation of the town's maritime forest areas is provided by the Long Beach Zoning Ordinance. The policies contained in the plan allow residential usage ranging from single-family to multi-family development. The policies which are applicable to the urban transition classification are supported by local codes and ordinances, including the town's zoning, subdivision, erosion and sedimentation control, and group housing ordinances. In addition, policies addressing the following areas apply which may affect consistency reviews at the state and federal government levels: energy siting and offshore drilling, sewage treatment, erosion and sediment control, and groundwater protection. The policies contained in this plan support single- and multi-family development and regulation of maritime forest development.

C. CONSERVATION CLASS

The conservation classification includes all 15A NCAC 7H designated areas of environmental concern and 404 wetlands. Maritime forest areas are not included. The conservation classification includes the town's open space zoning district. The policies contained in this plan exceed the 15A NCAC 7H minimum use standards in the following areas:

- The town opposes all construction on sound and estuarine islands.

- The town opposes bulkhead construction in inlet hazard areas.

- The town opposes aquaculture activities within the Town of Long Beach. The town will not oppose aquaculture in its extraterritorial jurisdiction when the activity will not result in the discharge of water which will degrade the receiving waters in any way.

- Long Beach opposes industrial development of any type within the town limits. This policy is supported by the Long Beach Zoning Ordinance. Industrial development which is not located within Areas of Environmental Concern and which is permitted by the town's zoning ordinance will be allowed within the extraterritorial jurisdiction.

APPENDIX I:

POLICIES CONSIDERED BUT NOT ADOPTED

APPENDIX I

POLICIES CONSIDERED BUT NOT ADOPTED
BY THE LONG BEACH LAND USE PLAN COMMITTEE

A. RESOURCE PROTECTION POLICY STATEMENTS

1. Physical Limitations

Soils:

-- The Town of Long Beach will support the installation of septic tanks in any location which is approved by the Brunswick County Sanitarian.

-- The Town of Long Beach does not oppose the discharge of sewage from septic tanks or package treatment plants in any areas classified as coastal wetlands or 404 wetlands.

Flood Hazard Areas:

-- Through its Hurricane Safety Committee as appointed by the Town Commissioners, it is the policy of Long Beach to maintain its 1984 Hurricane/Storm Plan up to date to meet the changing needs of the community. The town will on an annual basis, prior to storm season, during the month of July: (a) review emergency activities and roles of respective groups; (b) identify high risk individuals who need assistance in evacuation; and (c) seek ways to improve existing codes and assure that they are, in fact, being enforced.

1. The town will update brochures as found to be necessary which give safety advice and town policy for residents in the event of hurricanes, other storms, and flooding regarding medical care, evacuation, and temporary shelter.

2. The town will adhere strictly to the administration of a zoning ordinance, the building code, and CAMA regulations for the future safety of its citizens and their property.

3. Long Beach will seek to take the lead in seeking to have a second bridge to the island built at mid-town.

4. The town will seek out a "sistertown" on the mainland, so that additional staff and equipment can be made available during emergencies. The "sistertown" will be inland far enough to be less vulnerable to the same storms as Long Beach.

5. It is the policy of Long Beach to curtail to the greatest extent possible development and additions in areas susceptible to high winds, flooding, wave action, and erosion.

6. It is the policy of Long Beach to allow no building construction in AEC's including the salt marsh, low-lying wet areas, and ocean hazard areas.

7. It is the policy of the town to limit development in the V Flood Zone as shown on the Composite Hazards Map in accordance with CAMA and Federal Flood Insurance regulations and the zoning ordinance to alleviate as much as possible damage from wave action and erosion.

8. The town will not allow further construction and additions not conforming to these hazard mitigation policies, which would increase vulnerability and nonconformity to the flood ordinance, zoning ordinance, building codes and CAMA regulations.

-- Long Beach will discourage new development of such areas (flood hazard areas) unless there is adequate assurance by the developer for correcting any such problems of flooding or water storage, and in such manner that there is no adverse condition created on adjoining land areas.

Groundwater/Protection of Potable Water Supplies:

-- Long Beach will strive to conserve its surficial* groundwater resources by supporting CAMA and N.C. Division of Environmental Management stormwater run-off regulations.

-- It is the policy of the town to rely on Brunswick County for all of its public water supply.

Stormwater Runoff:

-- The town shall develop a plan and program for alleviating drainage problems on a year-by-year incremental basis.

-- The town will investigate options which may be available to encourage the replatting of parcels to create larger lots.

Solid Waste:

-- It is the policy of Long Beach to have this service provided in an efficient, safe, and sanitary manner. Long Beach supports the county's participation in regional landfill projects so long as adequate landfill sites are retained, maintained, and guaranteed.

Cultural/Historical Resources: There do not appear to be any nationally significant historic or archaeological sites within Long Beach. However, at least 76 historic and

prehistoric period archaeological sites have been recorded within Long Beach. In order to protect these areas, Long Beach will:

-- conserve significant archaeological resources including their spatial and structural context and characteristics through site preservation or scientific study.

-- ensure that the designated archaeological resource, or the information contained therein, be preserved for and be accessible to the scientific and educational communities for related study purposes, and

-- protect the values of the designated archaeological resource as might be expressed by Long Beach and its citizens; these values should be related to the educational, associative or aesthetic qualities of the resource.

2. Miscellaneous Resource Protection

Package Treatment Plant Use: Long Beach opposes the permitting and construction of any package treatment plants within its jurisdiction.

Marina and Floating Home Development:

-- Long Beach will permit the construction of marinas containing up to 20 slips (may establish slip size/length or change maximum number of slips) which otherwise meet local zoning ordinance requirements, the requirements of the 15A NCAC 7H use standards.

-- It is the policy of Long Beach to provide public boating access. Floating homes are not permitted within the confines of the town limits.

-- Long Beach will allow the construction of dry stack storage facilities which meet 15A NCAC 7H use standards, and all local applicable code requirements.

Development of Sound and Estuarine Islands: Long Beach supports any development of sound and estuarine islands which meets the 15A NCAC 7H minimum use standards.

Ocean Hazard Areas:

-- In recognition of the critical nature of ocean hazard areas due to vulnerability to erosion and to the dynamic processes that can be dangerous to life and property, Long Beach supports the State CAMA policies for Ocean Hazard Areas. Ocean hazard forces are the most dynamic in ocean erodible and high hazard flood areas. The 8.3-mile oceanfront is significantly important to economic, aesthetic, and recreational resources of Long Beach. The Town vigorously supports all efforts to protect these areas.

Suitable land uses in ocean hazard areas generally are those which are not

vulnerable to unreasonable danger to life and property and which achieve a balance between the financial, safety, and social factors involved in hazard area development. Ocean shoreline erosion control activities, dune establishment/stabilization, and structural accessways are all acceptable types of land uses. Residential, commercial, and recreational land uses are also acceptable types of use in ocean hazard areas provided that:

- Development is landward of the crest of the primary dune; where no primary dune exists, development is set back a minimum of 30 times the average annual erosion rate (60 feet in the area from 58th Street East to Lockwood's Folly Inlet and 90 feet from 58th Street East to 79th Street East) from the first line of stable vegetation.

- Development does not involve the significant removal or relocation of primary or frontal dune sand or vegetation.

- Development implements means and methods to mitigate or minimize adverse impacts of the project.

- Development of growth-inducing public facilities such as sewers, waterlines, roads, and erosion control measures is permitted only in cases where:

- national or state interests and public benefits are clearly overriding factors,

- facilities would not exacerbate existing hazards or damage natural buffers,

- facilities would be reasonably safe from flood and erosion related damage, and

- facilities do not promote growth and development in ocean hazard areas.

Prior to the issuance of any permit for development in ocean hazard AEC's, there shall be a written acknowledgement from the applicant stating awareness of the risks associated with development in this hazardous area.

- The Town of Long Beach believes that the 8.3 miles of ocean shoreline is a valuable natural recreational resource that should be kept clean and safe for public use. Therefore, it is the policy of Long Beach to provide appropriate beach access and parking facilities, trash receptacles, stump removal when deemed to be hazardous to public safety, and any other beach service which would be feasible and appropriate, excepting erosion control activities.

- The natural process of erosion transforms shoreline areas into public

trust areas. It shall be the policy of Long Beach to allow this natural process to occur.

- All other regulations adopted by the Coastal Resources Commission will be applicable and shall be complied with.

Inlet Hazard Areas: The Town of Long Beach objects to any construction/ development within inlet hazard areas.

Coastal Wetlands:

-- The Town of Long Beach opposes any construction/development within coastal wetlands except for water, sewer, and electric utility construction.

-- Activities in coastal wetland areas shall be restricted to those which do not significantly affect the unique and delicate balance of this resource. Suitable land uses include those giving highest priority to the protection and management of coastal wetlands, so as to safeguard and perpetuate their biological, social, economic, and aesthetic values and to establish a coordinated management system capable of conserving and utilizing coastal wetlands as a natural resource essential to the functioning of the entire estuarine system. These land uses shall achieve little to no non-point source runoff through the minimization of impervious surfaces and the maximization of natural vegetation preservation. Highest priority of use shall be allocated to the conservation of existing coastal wetlands. Second priority shall be given to those uses that require water access and cannot function elsewhere.

Acceptable land uses may include utility easements, fishing piers, and docks. Unacceptable uses may include, but would not be limited to, restaurants, businesses, residences, motels, parking lots, and highways.

Estuarine Shoreline:

-- CAMA defines the estuarine shoreline at Long Beach as the areas 75 feet landward of the estuarine waters. Long Beach recognizes: (1) the close association between estuarine shorelines and adjacent estuarine waters, (2) the influence shoreline development has on the quality of estuarine life, and (3) the damaging processes of shorefront erosion and flooding to which the estuarine shoreline is subject.

Shoreline development has a profound effect on adjacent estuarine waters. Effluent from poorly placed or malfunctioning septic systems can pollute shellfish areas which represent much greater economic benefits to the town's citizens than do the residential uses of estuarine shoreline areas.

Suitable land uses are those compatible with both the dynamic nature of estuarine shorelines and the values of the estuarine system. Residential,

commercial, and recreational land uses are all appropriate types of use along the estuarine shoreline provided that:

- A substantial chance of pollution occurring from the development does not exist, where there is a low percentage of runoff, a high percent of deep and shallow infiltration, and a high degree of evapo-transpiration,

- Natural barriers to erosion are preserved and not substantially weakened or eliminated,

- The disturbance of natural vegetation is minimized,

- The construction of impervious surfaces and area not allowing natural drainage is limited to only that necessary to adequately service the development,

- Standards of the North Carolina Sedimentation Pollution Control Act 1973 are met,

- Development does not create pollution or have any other significant adverse impact on estuarine resources, and

- Development does not significantly interfere with existing public rights of access to, or use of, navigable waters or public resources.

Bulkhead Construction:

-- Long Beach will support the construction of bulkheads in estuarine shoreline areas which satisfy the use standards as specified in 15A NCAC 7H.0206(b)(7) and 7H.1100, Bulkheads and Stabilization Measures.

-- Long Beach opposes the construction of bulkheads which would prohibit migrating shorelines, including bulkhead construction behind coastal wetlands. Other bulkhead construction which meets the 15A NCAC 7H minimum use standards will be allowed.

-- The natural process of erosion transforms shoreline areas into public trust areas. It shall be the policy of Long Beach to allow this natural process to occur if life or structures are not in jeopardy.

Sea Level Rise:

-- Long Beach will oppose the construction of bulkheads which prohibit migrating shorelines, including bulkhead construction behind coastal wetlands.

Natural and Cultural Resource Areas: Long Beach will support the following actions regarding these irreplaceable resources:

-- Protection of the features of a designated coastal complex natural area in order to safeguard its biological relationships, educational and scientific values, and aesthetic qualities. Specific objectives for each of these functions shall be related to the following policy statement either singly or in combination:

- To protect the natural conditions or sites that function as key or unique components of coastal systems. The interactions of various life forms are the foremost concern and include sites that are necessary for the completion of life cycles, areas that function as links to other wildlife areas (wildlife corridors), and localities where the links between biological and physical environments are most fragile.

- To protect the identified scientific and educational values and to ensure that the site will be accessible for related study purposes as has been provided to Big Davis Canal and its related marsh area from 20th Street via the board deck and gazebo.

- To protect the values of the designated coastal complex natural areas as expressed by Long Beach and its citizenry. These values should be related to the educational and aesthetic qualities of the feature.

Maritime Forests: There are no significant maritime forest areas located within Long Beach. The town will support the development of any remaining maritime forest areas which complies with the town codes and 15A NCAC 7H minimum use standards.

B. RESOURCE PRODUCTION AND MANAGEMENT POLICIES

Aquaculture Activities: Aquaculture is considered the cultivation of aquatic plants and animals under controlled conditions. The following policies shall apply:

-- Long Beach encourages all aquaculture activities which meet applicable federal, state and local policies and permit requirements. The Town of Long Beach reserves the right to comment on all aquaculture activities which require Division of Environmental Management permitting.

-- Long Beach objects to any discharge of water from aquaculture activities that will degrade the receiving waters in any way.

Recreation Resources: Holding annual town arts and crafts festival based on a local theme, e.g., conch, Scotch Bonnet, dogwood, shad, azalea, etc.

Residential, Commercial, and Industrial Development Impacts on Resources:

-- Activities in these areas shall be restricted to those which do not permanently or significantly affect the function, cleanliness, salinity, and circulation of estuarine waters. Suitable land/water uses include those giving highest priority to conservation and management so as to safeguard and perpetuate biological,

social, economic, and aesthetic values and to establish a coordinated management system capable of conserving and utilizing estuarine waters to maximize their benefits to humans and the estuarine system. Highest priority of use shall be allocated to the conservation of estuarine waters and its vital components. Second priority shall be given to uses that require water access and cannot function elsewhere.

Appropriate uses may include simple access channels, structures which prevent erosion, navigation channels, boat docks, and piers.

Long Beach will also support projects in estuarine water areas which aim to increase the productivity of these waters. Such projects include oyster reseeding programs and inlet channeling and dredging operations for the purpose of increasing the flushing action of tidal movement.

In recognition of public trust water areas in which the public has certain established rights and which support valuable commercial sports fisheries, have aesthetic value, and are resources for economic development, Long Beach shall protect these rights and promote the conservation and management of public trust areas. Suitable land/water uses include those which protect public rights for navigation and recreation and those which preserve and manage the public trust areas in order to safeguard and perpetuate their biological, economic, social and aesthetic value.

In the absence of overriding public benefit, any use which significantly interferes, as with the public right of navigation or other public trust rights which apply in the area, shall not be allowed. Projects which would directly or indirectly block or impair existing navigation channels, increase shoreline erosion, deposit spoils below mean high tide, cause adverse water circulation patterns, violate water quality standards, or cause degradation of shellfish waters shall not be allowed.

Uses that may be allowed in public trust areas shall not be detrimental to the public trust rights and the biological and physical functions of the estuary. Examples of such uses include the development and navigational channels or drainage ditches, the use of bulkheads to prevent erosion, and the building of piers, docks, marinas.

-- Any development which will profoundly and adversely affect coastal and estuarine waters will be restricted.

C. ECONOMIC AND COMMUNITY DEVELOPMENT POLICY STATEMENTS

General:

-- Basing population and growth guidance on the following criteria: (a) suitability of the land to accommodate use; (b) capacity and protection of the environ-

ment; (c) compatibility with the goals and objectives of the town; (d) density; (e) location of use; and (f) availability of facilities and services.

-- Guiding new development away from AEC's, providing protection for unique natural features, sensitive vegetative areas, rookeries, special habitats, and unstable physical forms such as dunes, inlets, and shorelines.

-- Guiding new development away from hazardous areas where there is a tendency toward septic tank problems, flooding, washover, and inlet cutting.

-- Amending the Long Beach Hurricane Mitigation Plan and its respective policies for guiding redevelopment and new growth as conditions in the town change.

-- It is the policy of Long Beach to promote and preserve the "family" oriented, retirement-resort atmosphere and reputation of the community by limiting the amount of activities that would detract from the town's present character and distinction through effective land use plan implementation, and conscientious building permit, CAMA permit and zoning ordinance administration, and by advertising the town as quiet, family beach, upholding that tradition.

Sewer Systems:

-- Any waste treatment strategy for the town, at a minimum, shall be consistent with the following principles:

1. The adopted waste treatment strategy must deal openly with the issue of growth and development. This shall include, but is not limited to: (a) revising this Land Use Plan to make it an effective plan for protecting coastal water quality; (b) development, adoption and implementation of local ordinances to implement the CAMA Land Use Plan; (c) a waste treatment allocation plan that assures that all existing structures receive priority for service prior to new development; (d) elimination of automatic lot size reductions found in most zoning ordinances; (e) building height restrictions; (f) capital improvement plans and zoning densities designed to protect coastal water quality and critical natural habitats; (g) mandatory connection of all existing and newly constructed structures to any centralized system; and (h) development and implementation of an effective stormwater runoff ordinance to prevent any increase in runoff into adjacent coastal waters. Implementation and enforcement of these provisions should be explicit conditions on any permits issued by the state for a centralized waste treatment system in the Town of Long Beach.

2. At a minimum, the adopted waste treatment strategy should be consistent with the long-term protection of assigned state water quality standards and designated uses. No further degradation of shellfish waters is acceptable to the Town of Long Beach.

3. The volume of waste to be treated and disposed of must be minimized. A waste treatment strategy shall include a water conservation program that will be fully implemented by the Town of Long Beach.

4. The preferred strategy must be equitable for all affected communities. If the town cannot handle waste generated within its boundaries, it must participate in a regional plan that addresses the needs of all affected groups.

5. Pursuant to state law, the practicable waste treatment and disposal alternative with the least adverse impact on the environment must be selected. Because of their tremendous expense, potential for direct environmental impact, and ability to promote runaway development, central treatment systems should be proposed only after other feasible waste treatment options have been demonstrated not to be environmentally sound.

6. The waste treatment strategy must be conservatively designed to be extremely reliable. Technical approaches to waste treatment in the Town of Long Beach must incorporate the highest engineering and safety standards, consistent with the extreme sensitivity and economic value of coastal waters.

-- The Town of Long Beach opposes construction of a central sewage collection and waste treatment system.

-- Continuing its sewer system studies to determine where and when sewerage might be installed incrementally with accompanying treatment facilities provided either by the public or private sectors.

Stormwater:

-- No direct discharges of stormwater runoff will be allowed to any coastal waters that are classified for shellfishing.

Energy Facility Siting and Development:

-- It is the policy of Long Beach to evaluate the need for all community service facilities on demand in accordance with the land use plan.

Community Facilities:

-- It is the policy of Long Beach to increase its capacity proportionately to provide public work facilities and services to growing permanent and seasonal populations and to existing and developing, residential, commercial and recreational areas by:

- Exploring privatization of public works equipment, facilities, and services as a means of providing an improved quality of service more economically.

- Preparing a plan for providing street lighting where population concentrations require.

Residential Development:

-- Providing an area for mobile homes to accommodate both permanent and seasonal occupancy.

-- Establishing an area for condominiums and apartments, maintained to accommodate vacationing, resort, retired and other permanent populations.

-- Providing in the beach section of town for motels and hotels and their attendant facilities.

-- Retaining the thirty-five-foot (35') height limitation for residential, commercial, and institutional structures.

-- Constructing a central sewer system to eliminate continued reliance on septic tanks.

Commercial Development: Long Beach will enhance quality commercial development by:

-- Exploring the feasibility of a zoning change for a convenience shopping facility in the west end as suggested in the Growth Management Plan of June, 1984.

-- Encouraging the formation of a business association for Long Beach.

- Requiring that construction materials, gravel and sand piles, and equipment storage not be allowed in commercial districts in accordance with the zoning ordinance.

Appearance and Cleanliness:

-- Celebrating Long Beach Spruce-up Week in the spring of every year.

-- Continuing to pick up domestic garbage once per week in the winter and twice per week in the summer.

-- Establishing a continuous cleanliness campaign with posters, signs, and additional trash (pitch-in) receptacles.

- Creating a community appearance commission with the charge to conduct clean-up campaigns, and to institute community activities relating to beautification.

Public Safety and Security:

-- Establishing a beach patrol during the peak summer months.

-- Exploring alternative means of patrolling the town and beach during daylight hours, including mounted and walking police possibilities.

-- Encouraging the establishment of additional Community Crime Watch programs.

-- Seeking ways to enlarge or decrease the numbers of police officers during seasonal fluctuations.

Assistance in Channel Maintenance:

-- It is the policy of Long Beach to be able to maintain channels.

Transportation:

-- Instituting a means to pave streets through year-by-year planning and priority programming based on traffic demand, citizen requests, and ability to pay.

-- the widening of Yaupon Drive to include a center turn lane;

-- improvements to increase access and improve traffic flow at NC 133 and the Dosher cutoff (juncture of NC 133 and NC 211).

APPENDIX II:

ENVIRONMENTAL IMPACT STATEMENT:
North Carolina Barrier Islands
Wastewater Management

APPENDIX II

United States
Environmental Protection
Agency

Region 4
345 Courtland Street, N.E.
Atlanta, GA 30365

EPA 904/9-84-117
January 1984

EPA

Environmental Impact Statement

Final

North Carolina Barrier Islands Wastewater Management

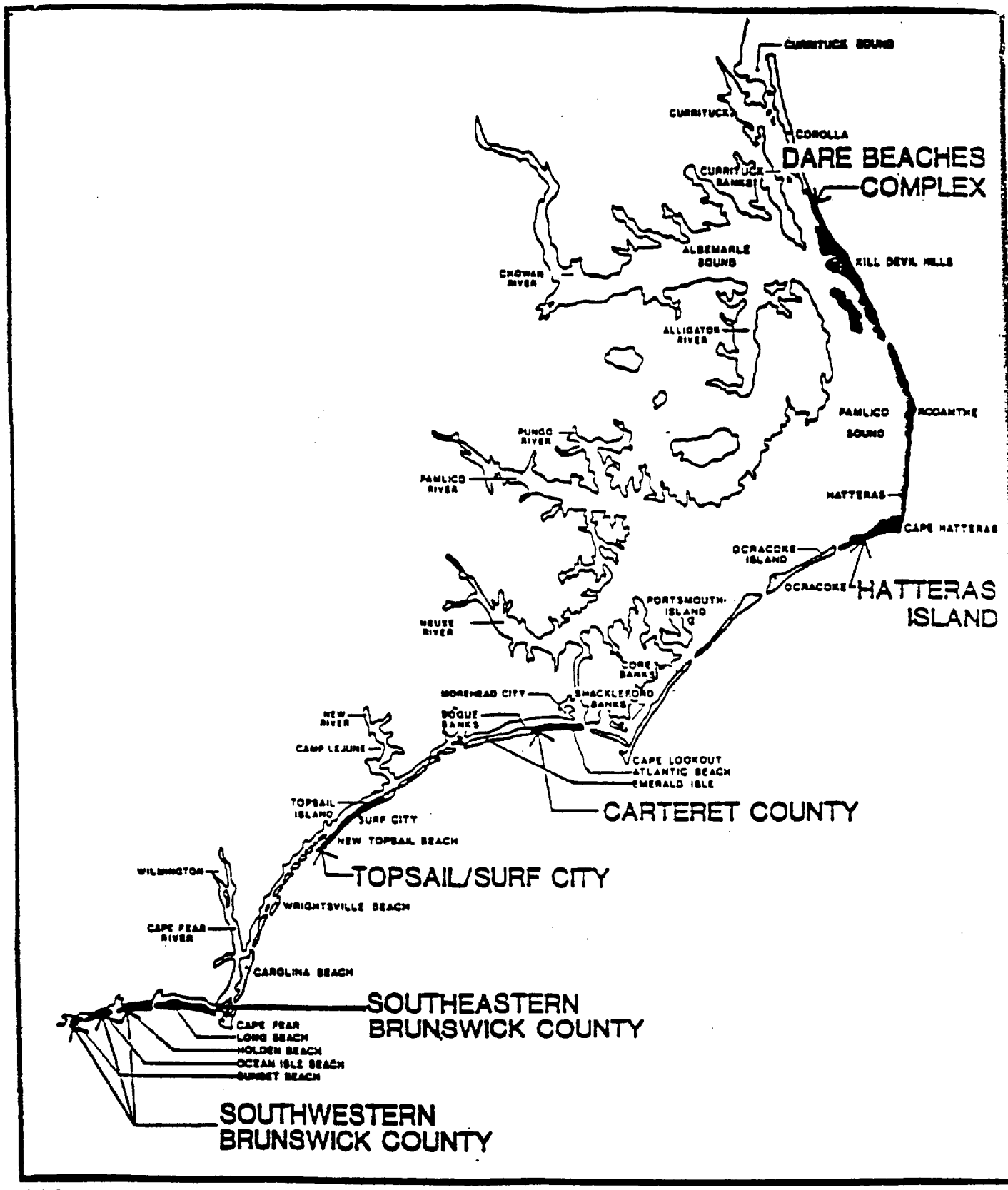


Figure I.1 Barrier Islands Within 201 Facilities Plan Study Areas

BARRIER ISLANDS E.I.S.
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV

Prepared by:
CLAUDE TERRY & ASSOCIATES, INC. ATLANTA, GA.
GANNETT FLEMING CORDRY AND CARPENTER, INC.

SCALE IN MILES

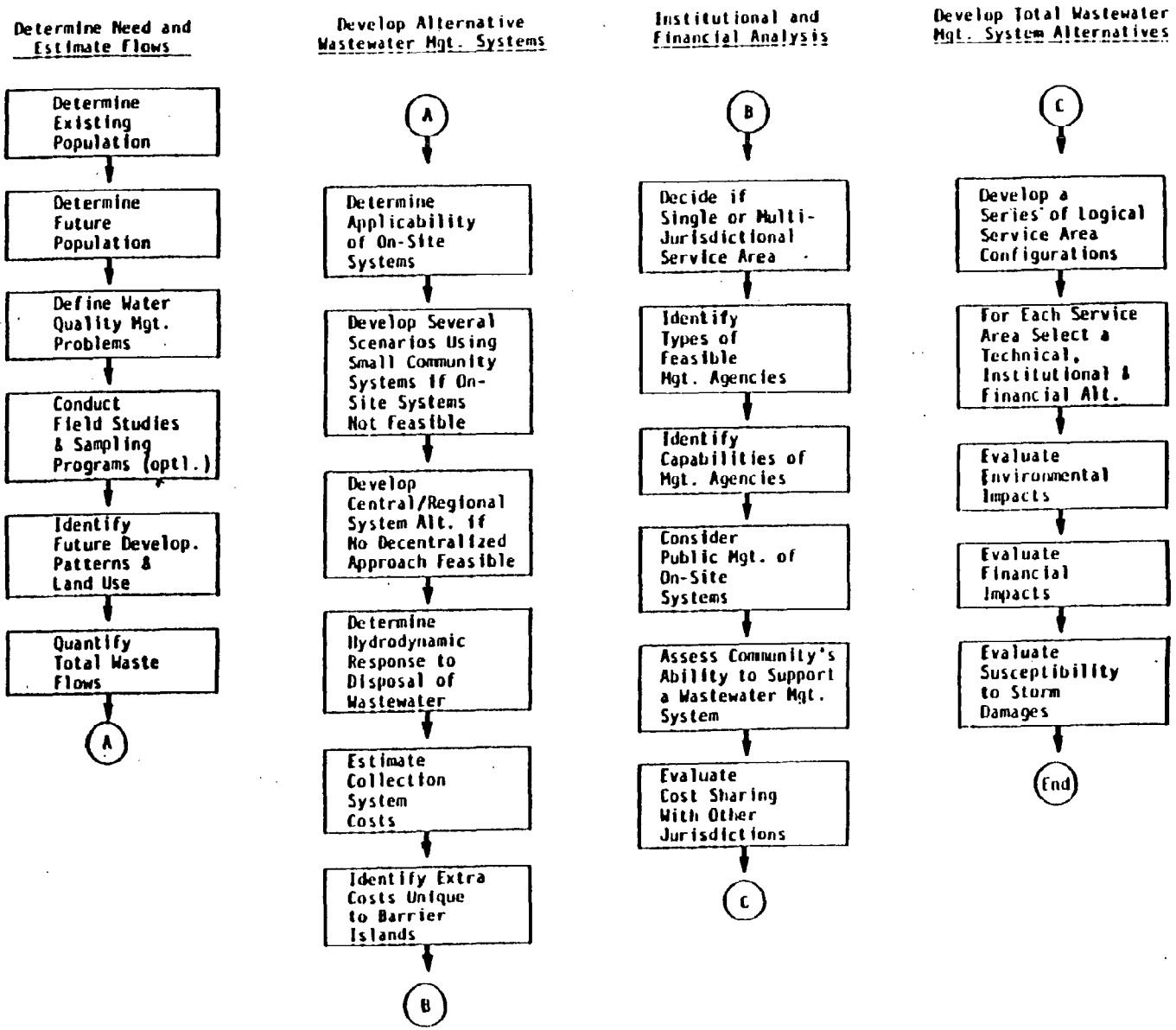


Figure II.1 Overview of FIS Strategy

Table II.1 Sumary of Wastewater Treatment/Disposal System Alternatives

System Type	Collection Options	Wastewater Treatment/Disposal Options	Sludge/Septage Treatment Options
Individual		1. Septic Tank/Conventional Soil Absorption Field 2. Septic Tank/Modified Conventional Soil Absorption Field 3. Septic Tank/Low Pressure Piping System 4. Septic Tank/Mound System 5. Septic Tank/Artificially Drained System (High Water table is lowered) 6. Septic Tank/Evapotranspiration (ET) Bed 7. Septic Tank/Evaporation Lagoon (E) 8. Septic Tank Polishing/Surface Discharge 9. Aerobic Treatment Units/Non-Surface Disposal (soil absorption field, mound system, ET bed, E lagoon) 10. Aerobic Treatment Units/Surface Discharge 11. Holding Tank for Temporary Storage of Wastewater and Later Transport (Usually via Tank Truck) to Central Disposal Site. 12. In-House Wastewater Treatment and Recycle (incl. Composting Toilets) 13. Wastewater Segregation and Reuse	1. Land Application of Sludge/Septage 2. Sludge Landfilling-Area Fill 3. Sludge Storage 4. Sludge Landfilling-Trenching 5. Sludge/Septage Lagoon 6. Co-Incineration 7. Composting Sludge/Septage 8. Septage Treatment/Disposal 9. Conventional Landfill
Community	1. Small Diameter Gravity Sewers 2. Vacuum Sewers 3. Pressure Sewer, STEP (Septic Tank Effluent Pump) 4. Pressure Sewer, GP (Grinder Pump) 5. Conventional Gravity Sewers	1. Community Soil Absorption Field 2. Community Septic Tank & Mound System 3. Community Evaporation and Evaporation/Infiltration Lagoons 4. Multiple-Compartment Septic Tank/Soil Absorption Field 5. Lagoon/Spray Irrigation (Slow Rate) System 6. Package Plant/Surface Water Discharge 7. Package Plant/Percolation Ponds 8. Package Plant/Rotary Distributor 9. Marsh-Pond/Surface Water Discharge 10. Oxidation Ditch/Surface Water Discharge	1. Land Application of Sludge/Septage 2. Sludge Landfilling-Area Fill 3. Sludge Storage 4. Sludge Landfilling-Trenching 5. Sludge/Septage Lagoon 6. Co-Incineration 7. Composting Sludge/Septage 8. Septage Treatment/Disposal 9. Conventional Landfill
Central/Regional*	1. Gravity Sewers 2. Force Mains	1. Lagoon/Spray Irrigation (Slow Rate) System 2. Physical/Biological Treatment Plant/Inland Surface Water Discharge 3. Physical/Biological Treatment Plant/Ocean Outfall	1. Land Application Sludge/Septage 2. Sludge Landfilling-Area Fill 3. Sludge Landfilling-Trenching 4. Sludge/Septage Lagoon 5. Co-Incineration 6. Composting 7. Conventional Sanitary Landfill

*Central/Regional Systems can also incorporate the collection alternatives proposed for the Community Systems for their collection/transport systems, when feasible.

Note: For direct discharge alternatives obtain effluent limits from the N.C. Department of Natural Resources and Community Development, Div. of Environmental Management.

Source: Gannett Fleming Corddry and Carpenter, Inc. 1981.

APPENDIX III:

MANAGING WASTEWATER IN COASTAL URBAN AREAS

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PREPUBLICATION COPY

Committee on Wastewater Management for Coastal Urban Areas
Water Science and Technology Board
Commission on Engineering and Technical Systems
National Research Council

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NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the committee responsible for the report were chosen for their special competencies and with regard for appropriate balance.

This report has been reviewed by a group other than the authors according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

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Contents

Executive Summary

Although significant progress has been made in improving the nation's water quality over the past 20 years, many coastal areas continue to suffer from persistent environmental problems and can expect to encounter new problems in the future. Today's coastal water-quality management practices do not provide adequate protection from some types of problems and in some cases are overprotective of other types of problems. Much of the debate over how to protect and improve coastal water-quality has focused on urban wastewater and stormwater management.

This report, as requested of the National Research Council by the U.S. Environmental Protection Agency (EPA) at the direction of Congress, examines issues relevant to wastewater management in coastal urban areas. These issues include environmental objectives, policies, and regulations; technology; management techniques; systems analysis and design; and environmental modeling. The National Research Council was not asked to review past policies or decisions. Instead, it was directed to identify opportunities for improving the current system through which coastal urban wastewater and stormwater are managed. The report identifies several key areas in which specific progress could be made, and recommends a new framework for coastal management toward which current management practices should evolve. It addresses the management of marine and estuarine areas in particular and does not consider the Great Lakes.

The scope of activities involved in the management of wastewater and stormwater in coastal cities is large and complex. In the broadest terms, the purpose of managing these wastes is to protect the environment while using it for waste disposal. At least 37 percent of the United States' population resides along the coast, mostly in urban areas. More than 1,400 municipal wastewater treatment plants provide service to the coastal population, discharging 10 billion gallons of treated effluent per day. During the period from 1972 to 1992, about $76 billion were spent in constructing or expanding publicly owned treatment works; $50 billion of this total came from federal grants. At an estimated operating cost ranging from $300 to $500 per million gallons of treated effluent, the national expenditure for operating these plants is between $1.1 billion and $1.8 billion per year.

The management of wastewater and stormwater in coastal urban areas takes place in the context of a multitude of other human activities and natural processes within the coastal zone. Some major factors that cause perturbations in the coastal zone include, in no special order, municipal wastewater and stormwater discharges; combined sewer overflows; other urban runoff; direct industrial wastewater discharges; agricultural runoff; atmospheric deposition; ground water flow; boating traffic; shipping; dredging and filling; leaching of

Hawaii, and the trust territories, to large municipal systems such as the County Sanitation Districts of Orange County, California.

Progress and Emerging Concerns

As improvements have been made in the quality of point source discharges, the impacts of other sources of pollution, diffuse or nonpoint sources, have become more apparent. In some areas, even if pollution from all point sources were controlled, nonpoint contributions would still cause significant environmental problems. Thus, any solution to coastal environmental problems must address the entire range of sources of disruption that causes adverse impacts.

Since 1972, important changes have taken place in government, science, engineering, and the expectations of the public in regard to wastewater and stormwater management and environmental protection. Budget limitations at all levels of government point to the need to spend public money more efficiently. Much has been learned from experience in managing coastal environments. Advances in science have greatly improved understanding of coastal environmental processes, and advances in engineering have led to the development and use of improved technologies for managing coastal resources. As a result of the 1972 act, there is now a well developed permitting system for point source dischargers coupled with a federal enforcement authority.

Constituents of Concern

Wastewater and stormwater management strategies focus on controlling the release of potentially harmful constituents to the environment. As with any activity that affects the environment, the potential for harm depends on the magnitude of the insult, where it occurs, and the characteristics of the stress. In general, a wastewater constituent may be considered to be of high concern if it poses significant risk to human health or ecosystems well beyond points of discharge and is not under demonstrable control. A wastewater constituent may be generally considered to be of lower concern if it causes only local impact or is under demonstrable control.

In the collective judgement of the Committee, in general, it may be anticipated that national level priorities for wastewater constituents in coastal urban areas over the next several decades will be as described below and summarized in Table ES.1. It is noted, however, that priorities may differ at the local and regional level depending on site-specific circumstances.

High Priority

Nutrients. Many estuaries of the Atlantic and Gulf Coasts currently experience widespread eutrophication from excess inputs of nutrients, usually nitrogen, and more are vulnerable to excess nutrient enrichment. Secondary treatment does not remove significant amounts of nitrogen from wastewater. Nutrients come from a variety of point and diffuse sources. To adequately address their effects on coastal water bodies, all relevant sources need to be identified and compared, and the most important inputs reduced or otherwise diverted.

Pathogens. Over 100 pathogenic viruses and bacteria have been identified in runoff and sewage. Numerous shellfish beds and bathing beaches are closed due to unacceptable levels of coliform bacteria each year. However, neither the true extent of contamination by actual human pathogens nor the dominant sources of contamination are adequately known in most regions.

TABLE ES.1 Anticipated National-Level Priorities for Constituents of Concern

Priority	Pollutant Groups	Examples
High	Nutrients	Nitrogen
	Pathogens	Enteric viruses
	Toxic organic chemicals	PAHs
Intermediate	Selected trace metals	Lead
	Other hazardous materials	Oil, chlorine
	Plastics and floatables	Beach trash, oil, and grease
Low	Biochemical Oxygen Demand (BOD)	
	Solids	

NOTE: Within each priority group the order of listing does not indicate further ranking.

Toxic Organic Chemicals. Chronic industrial and wastewater point sources of toxic chemicals such as chlorinated dioxins, polynuclear aromatic hydrocarbons (PAHs), and solvents have been identified and controlled or are readily subject to control with existing technology. In fish and shellfish, levels of some toxic organics (including chemicals no longer produced in the United States, such as PCBs and DDT) are dropping nationwide, while others such as petroleum hydrocarbons are apparently not declining. Urban runoff, combined sewer overflows and contaminated sediments due to past uncontrolled discharges are major continuing sources of toxic organic chemicals in many coastal urban areas. Although the original source of contamination may have been controlled, contaminated sediments may continue to be secondary sources of contamination to fish, shellfish, and seabirds for many years or decades.

Intermediate Priority

Metals. Elevated concentrations of potentially toxic metals such as mercury, cadmium, and tin are still found in shellfish in localized urban areas, but these problems are not large-scale or region-wide concerns. Dissolved metals may affect species distributions in coastal ecosystems. Most metals do not biomagnify through marine food webs. Source control has been effective in several areas in reducing concentrations. Future problems can be expected to be with lead and localized cases of contamination by organometals. As with toxic organic chemicals, metals from past uncontrolled discharges still contaminate sediments especially near harbors, and can be a significant source of contamination to overlying waters and local aquatic life.

Oil and Other Hazardous Materials. The probability of major oil spills is low, but their immediate impacts on coastal ecosystems and local industries (e.g., fishing, tourism) can be devastating. Of greater consequence, however, are the thousands of unpublicized small spills and leaks (e.g., illegal disposal of used automobile crankcase oil in storm drains) which occur daily in coastal urban areas and may add up to large chronic inputs of petroleum hydrocarbons.

Toxic chemicals used in wastewater treatment (e.g., chlorine compounds) and industrial and commercial settings (e.g., solvents, arsenicals) are transported across urban coastal areas and subject to accidental release. Though not a central part of the wastewater management issue, spills need to be accounted for in addressing coastal quality issues.

Floatables and Plastics. Beaches continue to be fouled by trash from land-based sources, especially following episodic weather conditions such as storms and unusual changes in coastal currents. Marine debris poses hazards to wildlife as well as people, and is aesthetically displeasing. There is considerable opportunity for use of predictive simulation models, such as oil spill trajectory models, to identify sources of marine debris and develop control strategies.

Low Priority

Biochemical Oxygen Demand (BOD). In open coastal waters and well-flushed estuaries, oxygen depletion due to BOD from wastewater discharged through a well-designed outfall is generally not of ecological concern. In these situations, organic material from wastewater is a minor, localized cause of oxygen depletion, especially relative to that due to nutrients. In most coastal urban areas in which BOD from wastewater is of significant concern, it is being controlled under existing requirements.

Solids. Settleable and suspended solids from large wastewater outfalls were once the major cause of localized accumulations of anaerobic sediments and damaged seafloor ecosystems. Where they were significant in the United States (e.g., large municipal outfalls, pulp mills), these conditions have been controlled with primary or advanced treatment, and high dilution outfalls. Today, the degree of solids removal required is driven by the need to protect sediments from accumulations of particle-associated pollutants. Heavy urban runoff, including CSOs, in some areas may still be a source of localized solids accumulations and warrant control.

KEY ISSUES RELATING TO WASTEWATER AND STORMWATER MANAGEMENT

The Committee identified seven specific areas which present opportunities for improving wastewater management in coastal urban areas. Then, based on its analysis of these and other issues, the Committee proposes a new framework for managing coastal waters, integrated coastal management.

Regional Differences

Finding: Because of the wide variations encountered in coastal systems, it is not possible to prescribe a particular technology or approach at the national level that will address all water quality issues at all locations satisfactorily. Any such approach would necessarily fail to protect resources in some coastal regions and would place excessive and unnecessary requirements on others.

Recommendation: *Coastal wastewater and stormwater management strategies should be tailored to the characteristics, values, and uses of the particular receiving environment based on a*

determination of what combination of control measures can effectively achieve water and sediment quality objectives.

Discussion: The environmental effects of a POTW discharge from an outfall or urban stormwater from a shoreline outlet depend strongly on the physical, chemical, and biological nature of the receiving water body, and its geography and bathymetry. The degree of flushing of the receiving water with relatively uncontaminated ocean water is a major factor in determining the concentration of nutrients or persistent contaminants in coastal or estuarine waters. In general, this coastal exchange is much slower for the estuaries and shallow coastal shelf waters along the East and Gulf coasts than for the deeper narrow shelf waters of the Pacific coast.

The opportunity for accumulation of wastewater particles and any associated pollutants in bottom sediments also depends greatly on receiving water characteristics. Estuaries may trap sediments and pollutants because flocculation is enhanced where fresh water mixes with salt water. Along the open coasts, deposition is more likely to occur in areas with slow currents and limited exchange with deep water.

Finally the resources to be protected, and water and sediment quality objectives may be quite different among various regions and discharge sites. The engineering and scientific capability needed to account for these variations has developed significantly over the past 20 years.

Nutrients in Coastal Waters

Finding: Nutrient enrichment, primarily due to nitrogen, is an important problem in many estuarine and some coastal marine systems.

Recommendation: *Greater attention should be focused on preventing excess regional enrichment of nitrogen and other nutrients at levels that are harmful to ecosystems.*

Discussion: Nutrient enrichment can cause oxygen depletion, reduced fish and shellfish populations, nuisance algal blooms, and dieback of seagrasses and corals. While not known to be a problem along much of the open Pacific coast, excess nutrient enrichment, or eutrophication, is a persistent problem in many estuaries, bays, and semi-enclosed waterbodies along the Atlantic and Gulf coasts, and may even be of concern over a large scale in some more open areas along these coasts. Nitrogen controls primary production and eutrophication in most temperate estuaries and coastal waters, although phosphorus can be of concern in many tropical waters and perhaps in some temperate estuaries. By contrast, in freshwater systems, phosphorus is almost always the nutrient limiting growth. It may be important to keep nitrogen and phosphorus concentrations low relative to silicon to avoid causing nuisance algal blooms such as red and brown tides.

Both the sources of nutrients to coastal waters and the associated effects occur at the regional scale making them difficult to measure, assess, and manage. Nutrient inputs to coastal waters come from both point and diffuse sources including wastewater treatment plants, agricultural runoff, urban runoff, ground water seepage, atmospheric deposition, and release of previously accumulated nutrients from bottom sediments.

Source Control and Water Conservation

Findings: 1) Reduction or elimination of pollutants at their sources is an effective tool for managing both point and diffuse sources. For example, for trace metals and toxic organics, source control is more efficient than removal at central plants, which may then have problems of safe disposal of large volumes of contaminated sludge.

2) Water conservation reduces the volume of sewage requiring collection and treatment, however, it does not change the total mass of wastewater pollutants; in fact, pollutant concentrations may actually be increased. The benefits of water conservation include reduced cost of facilities for water supply and wastewater treatment, and reduced impacts in the region from which surface or ground water supplies are extracted.

Recommendation: *Source control of pollutants should be strongly encouraged by incentives and regulation.*

Discussion: Many toxic substances are difficult and/or expensive to remove from wastewater. Often, however, these materials can be prevented from entering the wastestream or significantly reduced in amount through pollution prevention programs. For example, industrial pretreatment and source control programs have already achieved significant reductions of trace metals, toxic organics, and oil and grease in the influent and thus in the effluent and sludge products from municipal wastewater treatment plants (AMSA 1990). In the case of urban runoff, erosion controls at construction sites, street sweeping, storm drain warning signs, and public education efforts have led to improvements in some areas. In new developments, stormwater designs can significantly slow runoff and increase infiltration into the ground and improve stormwater quality.

Levels of Treatment

Findings: 1) Important water and sediment quality problems in the coastal zone include excessive levels of nutrients, pathogens, and toxic substances.

2) Toxic pollutants are often associated with particles in wastewater discharges. Particle removal is therefore a very important treatment step for protecting sediments from excessive carbon enrichment and accumulation of toxic substances.

3) Chemically-enhanced primary treatment has been used successfully to increase the removal of suspended solids in POTWs. Removals of 80 to 85 percent have been achieved with low doses of chemicals; higher removals are possible with higher doses. This level of removal for suspended solids is nearly equivalent to the EPA performance standard for secondary treatment. EPA requires that 30-day averages for removal of suspended solids be at least 85 percent, with effluent concentrations of less than 30 mg/l.

4) The depletion of dissolved oxygen (DO) is generally not of ecological concern in the ocean or in open coastal waters. Where low DO levels are of concern, as in some estuaries, they are more likely to result from eutrophication by nutrients rather than from point source inputs of BOD. In these situations, secondary or any other treatment implemented solely for BOD removal produces little improvement in receiving water quality.

5) Implementation of an environmental quality-based approach in coastal areas would require levels of treatment in POTWs that, depending on regional needs and receiving-water characteristics, will often be different, either higher or lower, than current requirements.

Recommendation: *Coastal municipal wastewater treatment requirements should be established through an integrated process on the basis of environmental quality as described, for example, by water and sediment quality criteria and standards, rather than by technology-based regulations.*

Discussion: A wide array of wastewater treatment processes is available, however, the costs of treatment and volumes of waste sludges produced tend to increase with increasing removal capabilities. Generally, it is simplest to remove large solids, oil, and grease, then BOD, and then nutrients. Some removal of fine solids, toxic metals and organic substances, and pathogens can be expected with most treatment systems.

Environmental and human health concerns associated with wastewater contaminants differ depending on the location and mechanism of their introduction into coastal waters. Accordingly, wastewater treatment, sludge disposal practices, and other management controls should be guided by water and sediment quality requirements of the receiving waters. Wastewater solids are of concern in most environments because of the possible toxicity of associated heavy metals, organic substances, and pathogens. BOD is of interest in most bays, estuaries, and semi-enclosed waterbodies because of the effects of oxygen depletion on aquatic life. Widespread problems of oxygen depletion in estuaries and coastal waters are much more likely to result from excess nutrient enrichment than from BOD originating directly from wastewater flows. BOD from wastewater flows is generally not important in the open ocean.

Chemically enhanced primary treatment is an effective technology for removing suspended solids and associated contaminants. It has potential application in situations where BOD is not a significant concern. It can also be combined with biological treatment for BOD and/or nutrient removal.

Stormwater and Combined Sewer Overflows

Finding: Urban runoff and combined sewer overflows (CSOs) are major contributors to water quality problems in coastal urban areas.

Recommendation: *Stormwater and CSO abatement requirements should be based to the greatest extent possible on an understanding of regional and local hydrology and coastal oceanography. They should be designed in conjunction with other regional environmental protection programs to produce the most cost-effective program for achieving the desired level of protection for receiving waters.*

Discussion: Many older cities, primarily in, but not limited to, the northeastern United States, have combined collection systems that carry both stormwater and municipal sewage. During even small rainstorms or if improperly maintained, these systems can overflow, discharging untreated sewage, industrial wastewater, and urban runoff into nearby waterways.

The way in which urban runoff and CSOs affect receiving waters is significantly different from continuous, point loadings. Rainfall induced loads are not constant, but intermittent, pulsed loads. In general, the greatest concentration of pollutants is contained in the first flush of stormwater, with concentrations decreasing as a storm continues.

Reducing pollutant loads from urban runoff and CSOs is significantly more challenging and potentially more costly than removing pollutants from municipal and industrial wastewaters. Wastewater treatment processes are designed to treat relatively constant and continuous flows, and perform poorly when subjected to the extreme variations in flow that are characteristic of stormwater flows.

Currently, pollutant removal efficiencies of treatment facilities for CSOs and urban runoff cannot be stated with sufficient confidence to design a facility plan that will limit

pollutant loads from these sources to a prescribed level. Given the cost of constructing these facilities on a large scale in urban areas ($20 to $60 million per square mile for combined sewer areas and $6 thousand to $3.8 million per square mile for stormwater facilities (APWA 1992)), a serious, well-funded research program is needed.

In the absence of the ability to predict pollutant discharge concentrations accurately, there have been proposals to legislate technology-based requirements mandating the capture and treatment of precipitation from all storms up to a certain size and frequency. The difficulty with such requirements is the same as that for other technology-based treatment requirements: in some cases they are likely to result in costly overcontrol; in others, undercontrol with continued adverse environmental effects; and in relatively few cases will they likely meet the environmental protection requirements of a particular region in a cost-effective way.

Detecting Human Pathogens

Finding: Although concentrations of coliform bacteria higher than conventional standards indicate unacceptably high risk of exposure to human pathogens through water contact sports or consumption of shellfish, the opposite is not true—concentrations of coliform bacteria below the standards do not reliably predict that waters and shellfish have safe levels of pathogens.

Recommendation: *The EPA, public health agencies, and wastewater treatment agencies should vigorously pursue the development and implementation of techniques appropriate for routine monitoring to measure more directly the presence of pathogens, particularly in marine and estuarine waters.*

Human pathogens (e.g., enteroviruses associated with diabetes, diarrhea and meningitis, and protozoa such as *Giardia*) can be detected routinely in untreated wastewater. Levels of such pathogens present in treatment plant discharges vary as a function of the level of infection in the community that produces the wastewater and the type of treatment processes used.

The traditional method for assessing the presence or potential presence of human pathogens in wastewater effluent, stormwater, and the ambient environment has been to use coliform bacteria as an indicator of disease-causing organisms. However, coliforms are not predictors of the presence or survival of pathogens, such as viruses or parasites. For example, in the United States, outbreaks of illnesses due to enteric pathogens such as the hepatitis A virus continue to occur and are associated with consumption of shellfish from areas contaminated by nearby wastewater discharges although coliform standards were being met. The risk of disease transmission related to wastewater management practices needs to be better understood.

Evaluation and Feedback

Finding: The effectiveness of management systems and approaches can only be determined and corrected when necessary, if there is adequate monitoring, research, evaluation, and feedback.

Recommendation: *Management systems should be flexible so that they may be changed as needed to respond to new information about environmental quality and the performance of existing management systems.*

Discussion: It is important that management systems be sufficiently flexible to allow for changes and improvements in response to new information. Evaluations should take into account both the effectiveness of specific components and that of the whole integrated management effort. In order to improve future decisions and control measures, evaluations should focus on lessons learned through implementation experiences. For example, the ability to use mathematical models to predict the behavior of sewage effluent in coastal systems has advanced dramatically over the past 20 years. However, comparatively little effort has been put toward the prototype verification of model predictions. In order to make good use of and improve these tools, it is important that follow-up studies be carried out.

INTEGRATED COASTAL MANAGEMENT

The Committee believes that whether because of any of the seven issues identified above or because of other concerns, most coastal cities now, or in the near future will, face the need to address complex coastal quality management issues. With increasing population pressures, increasing recognition of the importance of nonpoint sources in coastal waters, and the decreasing availability of public funding at the federal, state, and local levels, coastal cities face the need to establish objectives and set priorities for protecting coastal resources. The Committee therefore proposes a framework for managing coastal resources toward which coastal environmental quality management should evolve. This framework, integrated coastal management, should provide the opportunity to consider regional differences, multiple sources of perturbations, costs, and benefits in the development of management strategies.

Finding: Wastewater and stormwater management strategies should be developed in the context of each other and other important sources of perturbation in the coastal zone. Successful management strategies must take into account the multiple sources and identify approaches for controlling inputs in the most cost-effective manner. For example, there may be cases where it is more effective and/or efficient to control other sources rather than upgrading wastewater treatment systems or where cooperative efforts among stormwater agencies, wastewater agencies, water supply agencies, and other institutions charged with managing and/or protecting the region's resources can arrive at mutually beneficial solutions in a more cost-effective manner. Urban coastal wastewater and stormwater management should be based on the following concepts:

- Water quality and sediment quality criteria and standards should be established taking account of risk, uncertainty, and variability among regions and sites.
- A water- and sediment-quality driven approach should be used, with appropriate modeling, to design pollution control systems.
- All sources of pollutants should be considered in the development of regional strategies.
- Policies should be integrated across all media, taking account of environmental impacts on water, air, and land.
- Management options should reflect societal goals and priorities, incorporate public inputs, be cost effective, consider relative risks, and achieve benefits at least commensurate with the costs of controls.
- Management actions should be implemented incrementally so as to provide the flexibility to respond to feedback from monitoring the effect of operating systems, new research results, new technologies, and changing objectives.

Recommendation: *Wastewater and stormwater management and other protection strategies for coastal urban areas should be developed and implemented within a system of integrated coastal management (ICM). ICM is an ecologically based, iterative process for identifying and implementing, at the regional scale, environmental objectives and cost-effective strategies for achieving them.*

Integrated coastal management, as proposed here, is an approach that holds much promise for effective and efficient systematic management of the coastal environment. ICM is an ecologically based, iterative process for identifying, at a regional scale, environmental objectives and cost-effective strategies for achieving them. Through ICM, environmental and human resources that require protection can be identified, the multitude of factors that may contribute to adverse impacts can be considered, and the relative importance of various impacts and contributors can be weighed. The ICM process is flexible so that problems can be addressed at a variety of levels of integration depending on their complexity, and priorities can be set in an explicit manner. ICM, as proposed here, has two fundamental objectives: (1) to restore and maintain the ecological integrity of coastal ecosystems, and (2) to maintain important human values and uses associated with those areas.

Six key principles underlie the implementation of ICM. (1) Management actions need to be developed on the basis of the best scientific knowledge available about ecological functions as well as on a comprehensive understanding of human needs and expectations. (2) Management objectives should be expressed as water- and sediment-quality based, and other environmentally and health based goals. (3) Comparative assessment of both risk scenarios and management options should drive the selection of management strategies. (4) A trans-disciplinary perspective is critical in coastal problem solving. (5) The system should function in a context that is responsive to scientific uncertainty about functions of coastal ecosystems. (6) The system should be driven by science and engineering together with public expectations.

The Process

ICM is a three-part process which should be implemented on a continuing basis. It is iterative with the aim of making incremental improvements in coastal environmental quality over time. The three principal components of the process are (1) dynamic planning, (2) selection and implementation, and (3) research and monitoring. The relationships among these components are shown in Figure ES.1. Of the three, the dynamic planning process is perhaps the most complex. It is within this component that ICM objectives should be evaluated for the region, goals set, risks identified and analyzed, and management alternatives developed and compared. The dynamic planning process should produce two types of results. One is a set of management alternatives to be considered for selection and implementation. The other is an agenda for research and monitoring that is needed to improve understanding and provide feedback on how well the selected management alternatives are working. It is within the selection and implementation process that alternatives should be weighed in regard to objectives, fiscal, regulatory, legal, and institutional constraints, and one should be selected and implemented. Finally, the research and monitoring component should drive the system into future, bringing new information into the dynamic planning process and developing new methods and techniques for managing coastal resources. Through the continuing ICM process, problems should be tackled in a stepwise, incremental fashion, beginning with those that are of greatest importance as well as those that are easily solved, and then moving on to the next set of concerns.

prescriptive mandate to a partnership with regional authorities in developing a management system that meets coastal quality objectives.

As with any effort to change systems long in place, efforts to develop ICM plans are likely to encounter resistance. Identifying the appropriate geographical region defined by hydrologic and ecologic factors will inevitably cross political jurisdictions and require that there be coordination and cooperation where there may also be conflicting interests. The failure of earlier regional planning efforts mandated by the 1972 act may cause some to dismiss the potential effectiveness of ICM. However, ICM differs significantly from the Area-Wide Planning Studies mandated under section 208 of the Clean Water Act and carried out in the 1970s. The 208 planning process suffered from two fundamental flaws. First, it often was carried out by local agencies having few other water-quality responsibilities. Second, other provisions of the 1972 act, particularly the permitting and facilities funding requirements, forced action so rapidly that they could not be influenced by the planning process.

With ICM, the planning process should be carried out by institutions that are vested with sufficient responsibility, resources, and authority to implement the resulting plan. Building consensus on objectives and goals among interested parties, responsible agencies, and other stakeholders is fundamental to the success of integrated coastal management and will require extensive deliberations and skillful leadership. A regional plan may result in increased public awareness, involvement, and support. In the final analysis, the public is the most important component in making the ideals of an integrated approach a reality.

Implementation

Recommendation: *Improvements in coastal environmental protection in the United States should take place in an incremental manner, building on what has been learned through past efforts and evolving toward a fully integrated and comprehensive approach to coastal protection.*

Moving toward integrated coastal management requires a continuing effort to press forward on scientific, engineering, regulatory, and management frontiers. It will involve risk taking and inevitably experience some setbacks; however, in the long term, ICM is expected to provide the opportunity to apply the most up-to-date information and technologies to coastal problems resulting in efficient and effective coastal protection. In many coastal regions an initial ICM plan could be based primarily on existing information.

Immediate Actions

There are several immediate actions that could be taken to shift the direction of current wastewater, stormwater, and coastal management policies toward one of integrated coastal management. Specifically, existing regional initiatives including those in the National Estuary Program provide an opportunity for implementing the principles of integrated coastal management. The development of Comprehensive Conservation and Management Plans (CCMP) under the National Estuary Program could be done through the ICM process. EPA should encourage states to include ICM concepts in CCMPs by providing supplemental funding to the expanded planning effort.

There are three key areas in which any ongoing activities (including the preparation of a CCMP) directed at the protection and management of coastal waters could be improved. First, public involvement is critical to the success of coastal protection efforts and can be enhanced by increased agency budgets for public-involvement related activities, monitoring programs designed to use citizens, clear communication, and clear lines of authority. Second,

scientific and technical information could be applied more effectively to decision-making. This area can be advanced by comparative analyses of risks and management options, good peer review, proper monitoring, directed research, and easily accessible information. Third, improvements could be made in existing institutional arrangements. Consideration should be given to vesting one entity responsible for a coastal region with at least the following functions: responsibility for carrying out the ICM planning process, oversight for budget activities of responsible agencies, responsibility for the design and conduct of monitoring programs, and focal point for public accountability.

Longer-Term Actions

Although some aspects of ICM could be carried out under existing legislation, longer-term strategies are needed that could more fundamentally change the governance of coastal environmental quality, substituting flexibility and local initiative for rigidity and detailed federal control. Several modifications should be made to the two major pieces of federal legislation that address coastal environmental quality.

- Section 320 of the Clean Water Act should be modified to establish, as a supplement to the National Estuary Program, a National Coastal Quality Program that would also apply to those coastal regions that are not estuaries. It would include an integrated planning and management process and supplant the existing CCMP with an Iterative Action Plan that would embody ICM.
- The Clean Water Act and the Coastal Zone Management Act should be amended to provide the flexibility needed to facilitate local ICM initiatives and to better integrate the planning and implementation process between the two statutory systems. An initial effort has been made in this direction with respect to nonpoint sources of pollution.
- In the event that significant new federal funds are authorized to assist states and local governments in complying with the requirements of the Clean Water Act, the availability of these funds should be tied to appropriate use of the ICM process.
- Finally, some of the experience gained in implementing section 301(h) of the Clean Water Act, which provided the opportunity for waivers from secondary treatment for coastal dischargers, might be useful in the development of plans under the proposed National Coastal Quality Program.

Long-Term Implementation

In the next twenty years, it should be the nation's goal to implement a system of integrated coastal management for all of the country's urban shores. Full integration should include all sources of stress to the coastal environment. It should address all environmental media, looking at tradeoffs between disposal of waste to the land, water, and air. It should incorporate the principles of pollution prevention and source control and be a flexible process that facilitates progress and adapts to new information without prescribing the technological means for meeting specified goals. Integrated coastal management should be based in regional objectives and goals for the coastal zone and involve a partnership between federal, state, and local institutions. The lessons learned from the past twenty years of progress clearly point to integrated coastal management as the best direction for the future.

REFERENCES

APWA (American Public Works Association). 1992. A Study of Nationwide Costs for Implementing Municipal Stormwater BMPs. Final Report. Water Resources Committee, Southern California Chapter.

AMSA (Association of Metropolitan Sewerage Agencies). 1990. 1988-1989 AMSA Pretreatment Survey Report.

State of North Carolina
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P. O. BOX 629
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27602-0629

MICHAEL F. EASLEY
ATTORNEY GENERAL

--MEMORANDUM--

TO: Roger N. Schecter, Director
Division of Coastal Management

FROM: Robin W. Smith
Assistant Attorney General

DATE: May 26, 1993

SUBJECT: S.B. 1125

Per your request, I have reviewed S.B. 1125 and provide the following analysis. First, the bill would have the effect of voiding the Coastal Resources Commission's general use standard prohibiting the location of uses that are not water-dependent over public trust waters, estuarine waters and wetlands [15A NCAC 7H.0208(a)(1)] as it applies to food service facilities located in near-shore areas. Assuming the Commission's current rule continues in effect (with this legislation creating a statutory exception to the general policy), there may be some risk of an equal protection challenge to the general policy - that is, a permit applicant may argue that it is unreasonable to prohibit other uses that are not water-dependent while allowing food service facilities in these locations. An equal protection challenge on that basis will fail so long as the State can articulate a rational basis for the distinction between food service facilities and other non-water dependent uses.

With regard to the specific language in the bill, I would be most concerned about the attempt to define "nonnavigable waters" in a manner that is inconsistent with established State and federal law under the public trust doctrine. Under the public trust doctrine, "navigable water" has been defined to include all waters that are subject to the ebb and flow of the tide (whether actually navigable or not)[1] and all waters that are navigable by commercial vessels. As a result, this bill defines as nonnavigable many coastal waters that would be considered navigable as a matter of both State and federal law.

The established definition of "navigable waters" plays an important role in the State's coastal management permitting program, in the Department of Administration's implementation of leasing and easement programs applicable to

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[1] Phillips Petroleum Co. v. Mississippi, 484 U.S. 469 (1988).

GENERAL ASSEMBLY OF NORTH CAROLINA

SESSION 1993

S 1

SENATE BILL 1125

Short Title: Amend CAMA. (Public)

Sponsors: Senator Sands.

Referred to: Agriculture, Marine Resources, and Wildlife.

May 11, 1993

A BILL TO BE ENTITLED

AN ACT TO PROVIDE THAT IT IS PERMISSIBLE TO PREPARE AND SERVE FOOD AND BEVERAGES IN A GAZEBO OR OTHER STRUCTURE LOCATED OVER NONNAVIGABLE WATERS.

The General Assembly of North Carolina enacts:

Section 1. G.S. 113A-107 is amended by adding a new subsection to read:

"(g) Notwithstanding any other provision of law, it is permissible to prepare and serve food and beverages in a facility such as a gazebo, dock, or porch, whether enclosed or not, located over nonnavigable waters, provided that the facility complies with health and building laws. For purposes of this subsection, 'nonnavigable waters' are those bodies of water that are partially enclosed and that have a depth at low tide of no more than 12 inches."

Sec. 2. This act is effective upon ratification.

APPENDIX IV:

CITIZEN PARTICIPATION PLAN

APPENDIX IV

TOWN OF LONG BEACH
CITIZEN PARTICIPATION PLAN

PREPARATION OF LAND USE PLAN
FISCAL YEAR 1992-93

The Town of Long Beach has received a FY92-93 Coastal Area Management Act grant for the update of its 1988 Land Use Plan. Adequate citizen participation in the development of the Plan is essential to the preparation of a document responsive to the needs of the citizens of Long Beach. To ensure such input, the following citizen participation program will be utilized by the town.

The Long Beach Town Manager's office will be the principal town department responsible for supervision of the project. The Town Manager will report to and coordinate plan development with the Long Beach Planning Board and Town Council. To support and assist in the development of the plan, a Land Use Plan Advisory Committee will be appointed by the Long Beach Town Council. The committee will be composed of representatives of the following:

Three (3) Planning Board representatives
Two (2) Town Council representatives
Two (2) citizens at large

One of the two Town Council representatives will serve as the committee chairperson and will be designated by the Mayor of Long Beach.

The committee will work with the town's staff and consultant to ensure that the final product will survey existing land use, identify policies, recommend strategies/actions, and identify Areas of Environmental Concern. Specifically, the town staff, consultant, and committee will be responsible for ensuring accomplishment of the following:

- Develop an effective citizen participation process;
- Survey and map existing land uses;
- Identify and map AECs;
- Develop land use policies and strategies;
- Identify land use regulatory needs;
- Establish a specific work plan schedule for dealing with land use needs/problems;
- Identify and forecast growth and development issues;
- Implement the requirements of 15A NCAC 7B.

At the outset of the project, an article will be prepared in cooperation with a local newspaper. The newspaper will be requested to print the article which will include a proposed schedule for completion. The following schedule will be utilized:

1. January 19, 1993 -- Meet with the Town of Long Beach Town Council and Planning Board to review the scope of work. Have the Citizen Participation Plan adopted.

   -- Conduct a public information meeting. The meeting will be advertised in a local newspaper. The town will specifically discuss the existing policy statements contained in the 1988 Long Beach land use plan. The significance of the policy statements to the CAMA land use planning process will be described. The process by which Long Beach will solicit the

views of a wide cross-section of citizens in the development of updated policy statements will be explained at the public information meeting.

2. January, 1993 -- Complete identification of existing land use problems, and map of existing land uses and AECs.

-- Meet with the Land Use Plan Advisory Committee.

3. February, 1993 -- Present draft section of plan dealing with existing issues and land use to the Land Use Plan Advisory Committee.

4. March to June, 1993 -- Continue review of the draft land use plan.

5. July, 1993 -- Present draft of land use plan, including policy statements, to the Land Use Plan Advisory Committee.

6. August, 1993 -- Review draft plan with the Town Council and conduct a public information meeting for review of the proposed plan. The meeting will be advertised in a local newspaper.

7. September, 1993 -- Town Council will submit draft of completed land use plan to the Division of Coastal Management for review and comment.

8. January, 1994 (estimate) -- Present final draft of land use plan, including responses to CRC comments, to the Town Council for review and conduct of a formal public hearing. The Town Council will adopt the final plan and submit it to the Coastal Resources Commission for certification.

All meetings of the Town of Long Beach Land Use Plan Advisory Committee will be open to the public and advertised in a local newspaper. The town will encourage and consider all economic, social, ethnic, and cultural viewpoints. No major non-English speaking groups are known to exist in Long Beach.

1/8/93