



Town of Carolina Beach Water Use and Harbor Management Plan

Final Draft

**Prepared for the Town of Carolina Beach
Planning Department by**

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**Town of Carolina Beach
Water Use and Harbor Management Plan
2006**

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Acronyms Used in the Report

BMP	Best Management Practice
BOD	Biological Oxygen Demand
CAMA	Coastal Area Management Act
CBD	Central Business District
COE	Army Corps of Engineers, United States
COG	Cape Fear Council of Governments
CRS	Community Rating System
CWA	Clean Water Act
DCM	Division of Coastal Management
DENR	Department of Environment and Natural Resources
DEM	Division of Environmental Management
DMF	Division of Marine Fisheries, DENR
DO	Dissolved Oxygen
DWQ	Division of Water Quality, DENR
DWR	Division of Water Resources, DENR
EPA	Environmental Protection Agency, United States
ETJ	Extraterritorial Jurisdiction
FEMA	Federal Emergency Management Agency, United States
GIS	Geographic Information System
GPS	Global Positioning System
ICW	Intracoastal Waterway
MHHW	Mean Higher-High Water
MLLW	Mean Lower-Low Water
MSD	Marine Sanitation Device
NC	North Carolina
NCAC	North Carolina Administrative Code
NC CREWS	North Carolina Coastal Region Evaluation of Wetland Significance
NCGS	North Carolina General Statutes
NC NHP	North Carolina Natural Heritage Program
NC WRC	North Carolina Wildlife Resources Commission
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NPS	Nonpoint Source
PL	Public Law
SOD	Sediment Oxygen Demand
TMDL	Total Maximum Daily Loading
UNCW	University of North Carolina Wilmington
USFWS	United States Fish and Wildlife Service

Section I

Overview

Introduction

Over the last two decades, the Town of Carolina Beach has experienced tremendous change as a result of population growth and development. This has increased demand for public access to the Town's harbor area. These problems are exacerbated by the increases in the population density in Southeastern North Carolina because many of these residents also desire to access the recreational opportunities provided in communities like Carolina Beach. Accordingly, the Town of Carolina Beach's updated land use plan prepared pursuant to the State of North Carolina's 1974 Coastal Area Management Act (CAMA) recommended that the Town develop a water use and harbor management plan to address the competing interests for the use of public trust waters at Carolina Beach (Action 8.1.2 C(1)).

This plan analyzes the condition and uses of the Town of Carolina Beach's harbor area commonly referred to as Myrtle Grove Sound. Accordingly, the planning area extends from the intersection of the Intracoastal Waterway (ICW) and the eastern end of Snow's Cut on the north to the Carolina Beach Municipal Marina on the south [See Map 1 in Appendix D]. Hereafter, this plan will simply refer to this as Carolina Beach Harbor or the harbor area.

This plan is also designed to build upon and implement a number of the other policies and recommended actions contained in the Town's draft land use plan dated April 25, 2005. A summary of the policies and recommended actions is contained in Appendix A. Moreover, the plan addresses a series of issues identified by the Town in its original request for proposals as well as discussions with staff over the course of the planning process. These include:

- Addressing the location, size, and operation of wet slip marinas;
- Finding ways to improve the enforcement of policies prohibiting floating homes from occupying limited public trust water areas;
- Addressing the location and design of moorings and mooring fields;
- Addressing the location and operation of commercial fishing dockage;
- Designing plans for street ends facing public trust waters;
- Updating the Town's pier head line; and,
- Updating the existing marina ordinance to ensure state and federal compliance.

The planning process began early in 2006 with a series of meetings with Town staff. These meetings helped to further refine the scope of issues that would be addressed during the planning process. A public workshop was held on March 8, 2006 to gather additional public input on the issues to be addressed. The next few months focused on gathering and analyzing the data and information contained in this plan and developing policies and recommended actions designed to address the issues identified by the Town. This includes:

- An inventory of the location, size, and operation of all existing wet slip marinas, mapping these facilities, and identifying any suitable areas for additional wet slip marinas if desired;
- An updated marina ordinance that is consistent with federal and state standards;
- Existing and proposed mooring fields will be mapped on the Town's geographic information system (GIS);
- Policies for the design and location of mooring fields;
- Policies and proposed ordinance changes to prohibit floating homes from permanently occupying public trust waters;
- Updating and mapping the Town's pier head line and reviewing existing ordinances for potential changes;
- Updating the Town's GIS maps to include water use and harbor information to improve future decision making; and,
- An inventory of existing public access points on the harbor area, mapping the facilities, and recommendations for access improvements at designated street ends facing public trust waters.

Additional meetings with Town staff were held to review the draft water use and harbor management plan. In addition, another public workshop was then held on June 29, 2006 to gather public input on the preliminary policies and recommendations. The plan was revised further based on public input and then forwarded to the planning and zoning commission for review and comment. A public workshop with the planning and zoning commission and the public was held on September 14, 2006. The plan was then revised further based on the comments at this meeting. The final plan was then submitted to the Planning and Zoning Commission and the Town Council for its consideration.

Organization of the Report

This plan is designed to provide local decisionmakers with the information needed to make sound decisions regarding the future management of the Town's harbor area. Much of this information is contained in *Section II: Summary of Existing Conditions* and the updated GIS maps contained in Appendix D. *Section III: Recommendations* discusses the main issues raised during the planning process and contains a series of goals, policies, and recommended actions to address them. Our objective was to develop policies and recommended actions that balance the needs of conservation and development as well as the interests of shoreline landowners and the general public. Accordingly, the recommended actions attempt to accomplish several competing goals:

- Protect the harbor's sensitive public trust resources from degradation;
- Increase the public's access to the harbor and its shoreline;
- Preserve traditional water dependent uses like marinas;
- Protect riparian rights of shoreline land owners; and,
- Minimize user conflict associated with uses of the harbor area.

However, no attempt has been made to prioritize the issues or recommendations. All are considered to be equally important. However, given the complexity associated with managing a public mooring area, and the specific request from the town that the Water Use and Harbor Management Plan address this issue, the plan does contain numerous recommendations for this issue and *Section IV: Mooring Field Design and Administration* contains a more detailed discussion of the policy and management issues that should be considered if the Town of Carolina Beach were to pursue the recommendations associated with designing a mooring field, allocating mooring permits, and managing its use. *Section V: Potential Sources of Implementation Funding* discusses sources of funding that can be used to implement the recommendations contained in Section III.

The plan also contains a series of Appendices with supplemental information to assist local decisionmakers with the management of water uses and the harbor area in the Town of Carolina Beach. *Appendix A: Policies from the CAMA Land Use Plan* summarizes the policies that pertain to the management of the shoreline and harbor area within the Town. *Appendix B: Model Harbor Management Ordinance* contains the text of a model ordinance that could be used to implement the recommendations contained in Section III and addresses the issues identified in *Section IV*. *Appendix C: Public Access Inventory* analyzed each of the public access sites along the harbor in order to identify potential sites to improve access to the harbor and its shoreline. *Appendix D: Maps* contains a series of maps containing the information that was updated in the Town's GIS database. This information is designed to support the public access policies and actions recommended in Section III.

Section II

Summary of Existing Conditions

Introduction

The current physical, environmental, and regulatory conditions within the harbor area are important elements to consider when determining the future use and management of this area. This section analyzes the existing conditions of Myrtle Grove Sound to identify potential management issues that should be considered when making decisions regarding the management of the harbor area.

Physical Setting

There are several aspects of the physical configuration of Myrtle Grove Sound that should be considered when formulating policies regarding water use and the management of the harbor area. These include: water depths; shoreline land use; shoreline flooding potential; harbor protection; and, the presence of submerged cables or pipelines.

Water Depths

Water depths within the harbor area were obtained through physical observation on April 21, 2006, with members of the Cape Fear Power Squadron. The harbor was traversed via a small boat at idle speed. Depth measurements were collected every 30 seconds with mounted sounder equipment. A GARMIN GPS was used to collect latitude and longitude coordinates and accurate time information. Depth measurements were then corrected to reflect the Mean Lower-Low Water (MLLW) level, using published National Oceanic and Atmospheric Administration (NOAA) tide information. Depth measurements were also corrected to reflect the depth of the mounted sounder equipment (6 inches below surface). A map illustrating the water depths is included as Map 1 in Appendix D. As illustrated on Map 1, water depths within the harbor range from less than one foot to approximately 30 feet at MLLW levels.

The mean range of tide between the Mean Higher-High Water (MHHW) and the MLLW within the Carolina Beach Harbor is estimated to be 4.64 feet. This tide range is based upon data provided by the Center for Operational Oceanographic Products and Services within NOAA. The tide range is based upon the Wrightsville Beach, NC Station (number 8658163)

water level differential. This is the NOAA observation station located closest to Myrtle Grove Sound.

Shoreline Land Use

Carolina Beach Harbor is contained entirely within the Town of Carolina Beach. The area of the basin south of Snow's Cut is approximately 130 acres and the surrounding land use includes residential, multi-family, condominiums, and commercial development.

Commercial development is concentrated at the southern end of the harbor adjacent to the Town center and its commercial business district (CBD). Figures 1 – 6 contain aerial photos that depict the development of the harbor area since 1949. Today, there is little undeveloped land along the harbor and much of its western side is being redeveloped with higher density condominium projects replacing older residential and commercial development.

A map illustrating the zoning for the areas around the Carolina Beach Harbor is attached to this report as Map 2 in Appendix D. As illustrated on the zoning map, the northeast portion of the harbor is zoned for single-family dwellings (R-1B). This district is established to provide for moderate density, single-family residential use. The eastern portion of the harbor is zoned residential for single and two-family dwellings (R-1). This district is established to provide for moderate to high-density single-family and two-family (duplexes) residential use. The southeastern portion of the harbor is zoned as a tourist district (T-1). This district is established to provide land for the Town's tourist industry and as a complementary district to the central business district (CBD). The primary land uses intended for the T-1 zoning district are moderate to high-density residential development, as well as hotels, motels and restaurants. The southern end of the harbor is zoned as the CBD. This district is established to accommodate, protect, rehabilitate and maintain the traditional central business district and boardwalk area of Carolina Beach. This area accommodates a wide variety of pedestrian oriented, commercial and service activities including retail, business, office, professional, financial, entertainment, and tourism. A small portion of the northwest shoreline along the harbor is zoned for single-family dwellings (R-2). This district is established to provide for moderate density single-family residential use and other compatible uses. In addition to these land uses, lift stations for the Town of Carolina Beach's wastewater treatment plant are located along the harbor.

Areas along the western portion of the harbor are zoned primarily as marina business district (MB-1). This district is established to reserve areas along the water's edge for maritime uses, water dependent uses, and water oriented uses. The district also provides for certain residential and other non-water dependent uses which are closely aligned with water oriented uses. There is also a large municipal marina owned by the Town at the southern end of the harbor. Sixteen marinas are located around the basin south of Snows Cut [See Map 5 in Appendix D]. Marinas are defined here as any facility with slips for more than 10 boats. Many of the single- and multi-family properties also have piers capable of handling boats of various sizes. Thus, there can be quite a bit of vessel traffic on a peak summer weekend.



Figure 1: Carolina Beach Harbor in 1949



Figure 2: Carolina Beach Harbor in 1956



Figure 3: Carolina Beach Harbor in 1966



Figure 4: Carolina Beach Harbor in 1981



Figure 5: Carolina Beach Harbor in 1998



Figure 6: Carolina Beach Harbor in 2002

Shoreline Flood Potential

Shoreline flood potential along the harbor area was obtained from the North Carolina Floodplain Mapping Program conducted in conjunction with the Federal Emergency Management Agency (FEMA) under the National Flood Insurance Program (NFIP). A map illustrating the flood zone elevations is attached to this report as Map 3 in Appendix D. Map 3 illustrates that the majority of the eastern and southern sides of the harbor area are located within Special Flood Hazard Area AE, which is subject to inundation by the 100-year flood where wave action does not occur or where waves are less than 3-feet high. The base flood elevations within these portions of the Carolina Beach Harbor range from 12 to 13 feet above mean sea level.

A small area of the shoreline in the northeast portion of the harbor area, as well as most of the western shore, are considered coastal high hazard areas, and are located within Special Flood Hazard Area VE. This flood zone is subject to inundation by the 100-year flood with additional hazards due to high-velocity wave action from storms or seismic sources. The base flood elevations within this portion of the harbor range from 14 to 15 feet above mean sea level.

Harbor Protection

A wooden bulkhead has been installed along the majority of the eastern and southern shoreline in the harbor area. This bulkhead reduces the impacts of erosion by waves along the shoreline of the harbor. Building seawalls along a receding shoreline often leads to the loss of the sandy beach in front of the wall. In bulkhead situations, landward recession is converted to vertical erosion and the area in front of the wall that was dry beach or intertidal habitat begins to disappear and eventually becomes underwater. Fixed seawalls contribute to the narrowing and eventual loss of intertidal beaches immediately seaward of the walls if the shoreline is receding anyway. This process is called “passive erosion”; the wall fixes the landward edge of erosion on an eroding coast.

This process has both ecological and societal implications. Stopping landward shoreline recession with a bulkhead eventually removes the entire intertidal habitat, except for that associated with the vertical wall. Ecologists generally agree that the intertidal and adjacent sub-tidal areas are very productive habitat for marine organisms. Loss of the intertidal zone also restricts public walking along the shoreline, particularly in those areas with a riparian right of access below mean high water line. If there is no intertidal beach to walk on, walking along the shoreline would require trespassing on upland areas. The societal implications of the loss of intertidal habitat may also include the loss of access to shellfish resources at low tide.

Submerged Cables or Pipes

According to correspondence with the Town of Carolina Beach, a 12 inch water line is submerged in the northern portion of the harbor area. The water line runs from just south of the Wildlife Resources Commission boat ramp (located at the northwest portion of the harbor area) to the public right-of-way located at Maryland Avenue [See Map 5 in Appendix D]. According to the Subaqueous Waterline Installation Map prepared by Henry VonOesen & Associates 2/11/85, the line is buried along the contours of the harbor (with a lower depth where the navigation channel is present) and was placed at least 2.5 feet below the harbor floor at the time of installation. Any construction in the northern portion of the Carolina Beach Harbor should pay special attention to the presence of this water line.

According to a Progress Energy representative, no Progress Energy utility lines are located within Carolina Beach Harbor south of Snow's Cut. Overhead utility lines surround the harbor, but there are no submerged lines.

As of the date of this report, no return correspondence has been provided from Bell South, or the New Hanover County tax mapper, regarding the presence of utility easements or other submerged cables or pipes within Carolina Beach Harbor. If future correspondence is received indicating that easements, cables, or pipes, *are* present within the Carolina Beach harbor, an addendum to this report will be issued.

Environmental Conditions

Environmental conditions within the harbor area are also important to consider when determining appropriate water and shoreline uses within the harbor area. The following sections document the harbor area's environmental conditions. In particular, this section examines: the quality of the surface waters and impacts due to nonpoint runoff; biological resources including the presence or absence of wetland areas; critical habitat areas and submerged aquatic habitats; and, its fish and shellfish resources.

Water Quality

Under the North Carolina General Statutes G.S. 413-214.1, the state's Environmental Management Commission (the Commission) has the responsibility for determining the usage of surface waters. The North Carolina Department of Environment and Natural Resources (DENR), Division of Water Quality (DWQ) works in conjunction with the Commission to assign surface water classifications for streams, rivers, and lakes. The classifications define the uses to be protected within these waters such as swimming, fishing, and drinking water supply. Each classification carries with it an associated set of water quality standards to protect the established uses. The standards also help determine whether the designated uses of a surface waterbody are protected. Every three years the State of North Carolina is required by the Clean Water Act to review its surface water quality standards and classifications to determine if changes are necessary. The Clean Water Act also requires the review of surface water quality standards every three years. The surface water classification

and review process is used as a tool for state and federal government to protect and maintain the water quality in the surface waters of North Carolina.

The Carolina Beach Harbor Area is referred to as the “Carolina Beach Yacht Basin” within the Cape Fear River Basin classifications. This area extends south from the northern edge of Snow’s Cut to the municipal marina. Based upon schedules of classification information obtained from the DWQ, dated September 30, 2005, the current classification of waters within the harbor area is “SB”. This has been the classification of the harbor area since July 1, 1987. The “SB” classification is used for saltwater primary recreation activities, such as swimming, which occur on a frequent or organized basis. All “SC” uses including aquatic life propagation and secondary recreation including recreational fishing, boating, and water related activities that involve minimal skin contact.

Historically, the harbor area was classified as “SC” waters since the first classifications for the Cape Fear River Basin were adopted in 1959. However, in 1981 the harbor was reclassified as “SA” waters due to sewer system upgrades and the removal of wastewater discharges. The “SA” classification was sought because it prevented future point source wastewater discharges into the harbor. “SA” is considered the highest primary classification for saltwater given by the DWQ. The “SA” classification includes all primary and secondary recreation uses, as well as commercial shellfish harvesting.

In November 1985, the Town of Carolina Beach requested that the harbor area be reclassified as “SB” with the added provision of no sewage discharge discharges. The Town sought reclassification to allow for less restrictive stormwater and marina pollution controls in the harbor area, consistent with the existing and economically “best” uses. A public hearing regarding the reclassification was held on September 17, 1986. In order to make this decision, the Division of Environmental Management (DEM) conducted a use attainability study of the harbor area in the winter/spring of 1986. The results indicated that there was no existing shellfish use. Moreover, shellfishing was unlikely to be attainable due to minimal shellfish resources combined with existing and potential sources of pollution due to the high density of boats. Based upon the information examined, DEM staff concluded that shellfishing was not an attainable use in the harbor area. Reclassification to “SB” with the added stipulation that “no sewage discharges” be allowed to the harbor was recommended and adopted.

The source of the harbor’s water quality problems is due primarily to nonpoint source (NPS) runoff from the surrounding urbanized area since there are relatively few direct discharges. Stormwater runoff enters the Carolina Beach Harbor from nearly all sides via overland flow. Additionally, the municipal storm sewers along Canal Drive discharge directly to the harbor at 31 outfall locations. Carolina Beach Lake is also one of the main drainage basins within the Town of Carolina Beach. The lake has a surface area of seven acres with a drainage basin of approximately 600 acres. Currently, the lake discharges water directly into Carolina Beach Harbor via a one-way tidal gate located near the Town Marina bulkhead. The DWQ has advised that this is not the best scenario for preserving water quality within the Carolina Beach Harbor.

Recently, the Town of Carolina Beach entered into a partnership with the UNCW Aquatic Ecology Laboratory to obtain water quality monitoring data, supplemented with additional biological parameters, to develop an understanding of the physical, chemical and biological processes affecting the Town of Carolina Beach's stormwater runoff ditches, lake, and outfall waters. Water quality sampling was conducted during 2003 and early 2004. In addition to several other sampling points, samples were collected from the outflow ditch to the marina (CB-O). According to the information obtained by the UNCW Aquatic Ecology Laboratory, samples collected from the outflow ditch had acceptable dissolved oxygen levels, low inorganic nutrient concentrations, and chlorophyll *a* concentrations that were nearly eutrophic. Biological Oxygen Demand (BOD) concentrations were generally highest at the outflow ditch to the marina, compared to other sampled sites. Thus, this ditch exports live and decaying phytoplankton and probably macrophyte material to the marina area. Fecal coliform bacteria levels were well within health standards on all sampling occasions.

The harbor areas water quality problems are exacerbated by the close-ended configuration of the municipal marina which limits flushing and circulation patterns. Pollutants may accumulate in the sediment as a result of poor circulation. Benthic organisms or those organisms that live on the bottom or in the sediment are exposed to pollutants that accumulate in the sediments and may be affected by this exposure or may avoid the contaminated area. Dredging and other hydromodifications can also cause water quality problems. Dredging disrupts the bottom environment and elevates water-column turbidity by re-suspending contaminated sediments. Turbidity reduces the penetration of sunlight through the water and can also impair filter-feeding organisms such as clams that rely on clean water. Re-suspension of bottom sediment can also redistribute toxic substances into the water column. Disruption of the bottom during dredging and positioning of pilings forces migrations of mobile species like fish and crabs, and localized mortality of less mobile benthic species.

Environmental Impacts Associated with Recreational Boating

Other intensive uses of the harbor area such the presence of marinas and recreational boating can cause a wide range of water quality and environmental problems. The more serious environmental impacts are often associated with high-use areas like marinas. Marinas can impact the environment, beginning with their construction and continuing throughout their operation and use. Construction operations such as dredging, dock installation, and onshore facility development have a wide-range of physical and biological impacts. In addition, valuable wetlands may be destroyed during marina-construction activities. However, private docks and the operation of recreational boats can cause water quality and environmental problems as well. Some of the general problems associated with marinas and recreational boating include: low dissolved oxygen levels; metals; petroleum hydrocarbons; fish waste; disruption of sediment and habitat; increased pathogen levels; and, shoaling and shoreline erosion.

Low dissolved oxygen: The organics in sewage discharged from recreational boats require dissolved oxygen (DO) to decompose. The BOD of a waterbody is a measure of the DO required to decompose sewage and other organic matter. Accumulation of organic material in sediment results in sediment oxygen demand (SOD) that negatively impacts water column DO. The effect of boat sewage on DO can be intensified in temperate regions because the peak boating season coincides with the highest water temperatures and thus the lowest solubility of oxygen in the water and the highest metabolism rates of aquatic organisms. (As temperature increases, dissolved oxygen levels decrease.)

Metals: Metals and metal-containing compounds have many functions in boat operation, maintenance, and repair. Lead is used as a fuel additive and may be released through incomplete fuel combustion and boat bilge discharges. Arsenic is used in paint pigments, pesticides, and wood preservatives. Zinc anodes are used to deter corrosion of metal hulls and engine parts. Copper and tin are used as biocides in antifoulant paints. Other metals (iron, chrome, etc.) are used in the construction of marinas and boats. Many of these metals/compounds are found in marina waters at levels that are toxic to aquatic organisms. Copper may be input to the surface water via bottom paints and scrapings.

Petroleum hydrocarbons: Elevated concentrations of hydrocarbons are often present in marina waters. The source of these pollutants is often attributed to refueling activities and bilge or fuel discharge from nearby boats. The operation of many recreational boats can also produce small discharges of hydrocarbons that cumulatively impact coastal waters.

Fish waste: Fish waste can result in water quality problems at marinas with large numbers of fish landings or at marinas that have limited fish landings but poor flushing. The amount of fish waste disposed of into a small area such as a marina can exceed that existing naturally in the water at any one time. Fish waste decomposes, which requires oxygen. In sufficient quantities, disposal of fish waste can thus lower DO and cause odor problems.

Disruption of sediment and habitat: Boat operation and dredging can destroy habitat, resuspend bottom sediment (resulting in the reintroduction of toxic substances into the water column), and increase turbidity. This can affect the photosynthetic activity of algae and estuarine vegetation. Propeller-driven boats may impact the aquatic environment by disturbing bottom habitat and eroding shoreline areas. Dredging may alter the marina and the adjacent water by increasing turbidity, reducing the oxygen content of the water, burying benthic organisms, causing disruption and removal of bottom habitat, creating stagnant areas, and altering water circulation. Some of these impacts (e.g., turbidity and reduced DO) are temporary and without long-term adverse effects. Others can have lasting impacts.

Increased pathogen levels: Boats can be a significant source of fecal coliform bacteria in areas with high boat densities and low hydrologic flushing. Fecal coliform levels in marinas and mooring fields typically become elevated near boats during periods of high boat occupancy and usage. Many times the source of these problems is illegal discharges from holding tanks and marine sanitation devices (MSDs). NOAA has identified boating activities (the presence of marinas, shipping lanes, or intracoastal waterways) as a contributing source

in the closure to harvesting of millions of acres of shellfish-growing waters on the east coast of the United States.

Shoaling and shoreline erosion: Shoaling and shoreline erosion result from the physical transport of sediment due to waves and/or currents. These waves and currents may be natural (wind-induced, rainfall runoff, etc.) or human-induced (alterations in current regimes, boat wakes, etc.).

Biological/Wildlife Areas

When determining water and shoreline uses for the harbor area, it is useful to examine whether there are important biological or wildlife areas that may be adversely affected. Accordingly, this section of the report examines the wetlands present within the study area as well as the presence or absence of critical habitat areas and submerged aquatic habitat.

Wetlands: Wetlands provide important habitat for the juveniles of organisms that need the protection of grasses, shallow water, and a sufficient food supply to grow into adults. Wetlands also provide temporary refuge for an extraordinary number of migrating birds. The structure and function of wetlands allows them to absorb pollutants such as sediment and nutrients that would otherwise drain off into surface waters. They also help slow the flow of water across the land surface to reduce erosion and provide a buffer that prevents flooding and other damages associated with severe weather events. Thus, wetlands provide a range of benefits to both terrestrial and aquatic life as well as humans.

The National Wetlands Inventory was initiated by the United States Fish and Wildlife Service (USFWS) in 1975 in response to a dramatic loss of wetlands across the United States. The North Carolina Coastal Region Evaluation of Wetland Significance, or NC CREWS, is a watershed-based wetlands functional assessment model that uses GIS software and data to assess the level of water quality, wildlife habitat, and hydrologic functions of individual wetlands. The primary objective of the NC CREWS wetland functional assessment is to provide users with information about the relative ecological importance of wetlands for use in planning and the overall management of wetlands. Map 4 in Appendix D provides NC CREWS information for the areas surrounding Carolina Beach Harbor. As illustrated on Map 4, salt/brackish marsh wetland areas exist within the harbor area and in a few small areas along the northwest portion of the harbor. Several sections of managed pineland wetland are present near the western portion of the harbor.

Conservation areas or critical habitat areas: The North Carolina Wildlife Resources Commission (NC WRC) is responsible for establishing conservation areas and critical wildlife habitat areas within the State. Accordingly, it administers many programs that promote conservation and wise use of North Carolina's abundant natural resources. It also provides assistance for landowners wishing to manage wildlife on their lands. Based upon information provided by the NC WRC, no conservation areas or critical habitat areas exist within Carolina Beach Harbor. The NC WRC has recommended that a wetland delineation be conducted with construction plans overlaid on a wetland map to determine if wetland

impacts will occur prior to initiating any construction activities within or adjacent to the harbor area.

The North Carolina Natural Heritage Program (NC NHP) also maintains a list of aquatic and terrestrial species and habitats of concern throughout the state of North Carolina. A site's significance may be due to the presence of rare species, rare or high quality natural communities, or other important ecological features. Based upon correspondence with the NC NHP, no significant natural habitat areas are present in the harbor or immediately adjacent to or along its shoreline. According to the NC NHP, a Natural Heritage Element Occurrence has occurred within the harbor area. A Natural Heritage Element Occurrence includes identifying locations of rare and endangered species, occurrences of exemplary or unique natural ecosystems (terrestrial or aquatic), and special animal habitats (e.g., colonial waterbird nesting sites). A Natural Heritage Element Occurrence of a West Indian Manatee was observed within the Harbor in 1976. Additionally, nerve-flowered witch grass was observed on the northwest shore of the Harbor in 1937.

Submerged aquatic vegetation: Submerged aquatic vegetation is a fish habitat dominated by one or more species of underwater vascular plants. Submerged aquatic vegetation is important for many coastal fisheries because it provides habitat for juvenile fish and small invertebrates. Submerged aquatic vegetation produces oxygen and detritus that is exported to other habitats, and reduces moderate turbidity and turbulence. Submerged aquatic vegetation is extremely dependent on water clarity. Accordingly, it often serves as an indicator for healthy water quality because excessive nutrient loadings and sedimentation can lower water clarity, which in turn leads to the loss of submerged aquatic vegetation.

Since these submerged aquatic vegetation beds serve such important marine ecosystem functions, it is critical to minimize impacts to these areas whether it be through water quality degradation or through human impacts like commercial fishing or recreational boating. However, based upon information provided by the North Carolina Division of Marine Fisheries (DMF), Habitat Protection Section, no submerged aquatic vegetation areas of ecological significance exist within the Carolina Beach harbor.

Fish and Shellfish Resources

The presence or absence of important fishery habitat and shellfish resources also influences the development of policies for the management of the harbor area. Salt marshes and estuaries along the North Carolina coast serve as nursery grounds for 90 percent of the State's fisheries. The DMF has established three categories of nursery areas in North Carolina's coastal waters:

- **Primary nursery areas** are located in the upper portions of creeks and bays. These areas are usually shallow with soft muddy bottoms and surrounded by marshes and wetlands. Low salinity and the abundance of food in these areas are ideal for young fish and shellfish. In order to protect juveniles, many commercial fishing activities are prohibited in these waters; including the use of trawl nets, seine nets, dredges or any mechanical methods used for taking clams or oysters.

If a violator is caught in a Primary Nursery Area, he is faced with a very substantial penalty. In North Carolina, there are 80,144 acres designated as Primary Nursery Areas.

- **Secondary nursery areas** are located in the lower portions of creeks and bays. As they develop and grow, young fish and shellfish, primarily blue crabs and shrimp, move into these waters. Trawling is not allowed in the Secondary Nursery Areas. In North Carolina, there are 35,502 acres designated as Secondary Nursery Areas.
- **Special secondary nursery areas** are located adjacent to Secondary Nursery Areas but closer to the open waters of the North Carolina sounds and the ocean. For the majority of the year when juvenile species are abundant, these waters are closed to trawling. In North Carolina, there are 31,362 acres designated as Special Secondary Nursery Areas.

Based upon information obtained from the Marine Fisheries Commission, there are no primary, secondary, or special secondary nursery areas that exist within Carolina Beach Harbor.

There are also no shellfish resources of concern. In June 2002, DENR's Shellfish Sanitation Section released *A Report of Sanitary Survey – Myrtle Grove Sound Area*. According to this report, all of Carolina Beach Harbor and all of Snows Cut are prohibited for shellfish harvesting. Thus, no oysters, clams or mussels may be taken from these areas for human consumption. This finding should not be surprising. Carolina Beach Harbor area has not been open for shellfishing since 1947 due to existing and potential sources of pollution and a high density of boat traffic. For example, the DEM conducted a use attainability study of the harbor area in the winter/spring of 1986 as a result of the Town of Carolina Beach petitioning to have the water quality in the harbor reclassified as "SB". This study concluded that there was no existing shellfish use at that time, and shellfishing was not attainable due to:

- Existing and potential sources of pollution (high density of boats). Due to the presence of marinas within the harbor, as well as the numerous boats docked at private piers, the shellfish closure buffer zone extends beyond Snows Cut;
- Carolina Beach harbor area had not been opened to shellfishing since 1947;
- Minimal shellfish resource;
- Some oysters were present in sandy areas in the northern portion of the basin, however, there were few areas with suitable bottom substrate for oyster beds;
- There was a limited substrate available for oysters. Sandy substrate was present in a few areas along the shoreline (where there was not a bulkhead) and around the small islands in the northeast portion of the basin;
- The shellfish resources were limited with few clams and slightly less than 10 bushels/acre of oysters, which is the criterion DEM and DMF use to define a shellfish resource. It should be noted that during the sampling of shellfish, only 4 hard clams and 49 oysters were found in a total of 50 samples collected using patent tongs. Collection of one shellfish per patent tong sample would represent a shellfish resource of 10 bushels/acre.

- Fecal coliform samples indicated that water quality was not sufficient to promote shellfishing, and; the public health threat from boat pollution was extremely high due to boat densities.

Based upon these results, the DEM concluded that shellfishing was not an attainable use in Carolina Beach Harbor. Reclassification to “SB” with the requirement that “no sewage discharges” be allowed was then recommended and adopted.

Regulatory Setting

It is also important to understand the regulatory setting governing the harbor and its resources. Of particular interest are the state and federal policies that would influence the development of policies and actions to address the issues identified in this report.

Local Policies and Ordinances

As noted in Section I, the development of this plan is designed to implement a variety of policies and actions recommended in the Town’s newly revised land use plan. These are listed in Appendix A. Several ordinances listed in the Town of Carolina Beach Code of Ordinances also apply specifically to the management of the harbor area. Chapter 6 of the Town of Carolina Beach Code of Ordinances is entitled “Harbor and Marina”. This chapter is devoted entirely to the rules of the Carolina Beach Harbor. During the opportunities for public comment on the draft plan, it was common for the public to complain about the lack of enforcement of the existing ordinances. Recommended modifications for this chapter to address the enforcement problems and to address other issues and recommended actions are included in Section III and Appendix B of this report.

Chapter 12 of the Town of Carolina Beach Code of Ordinances is entitled “Planning and Development”. Section 12-111 in this chapter references the establishment of a “harbor and pier headline” to limit the extension of piers and docks from private property to protect the general health and safety of the citizens who use the waters of the Carolina Beach Harbor for commercial and recreational purposes. Specific coordinates are provided for the pier headline boundary. An updated “harbor and pier headline” map is attached to this document as Map 9 in Appendix D while language for a potential ordinance change is contained in Appendix B. Chapter 10 of the Town of Carolina Beach Code of Ordinances is entitled “Offenses”. Section 10-6 in this chapter references noise disturbances. According to Section 10-6, no person shall engage in any activities within the *harbor business district* that produce sounds greater than 75dB(A) (daytime level) between the hours of 7:00 a.m. and 11:00 p.m., or 65 dB(A) between the hours of 11:00 p.m. and 7:00 a.m. On Friday and Saturday, the daytime levels shall remain in effect until 12:00 midnight.

State Policies and Regulations

The North Carolina Administrative Code (NCAC.) is a bit unclear with respect to a Town's ability to adopt and enforce a harbor management ordinance. For example, North Carolina General Statutes (NCGS) § 76-18 gives local governments the power to appoint a harbormaster who has the same powers as the harbormaster of Wilmington but this office was abolished in 1975. Accordingly, it is likely to be useful for the Town of Carolina Beach to work with its local legislative delegation to submit legislation that would enable enforcement of the provisions of its current Harbor and Marina Ordinance or the harbor management ordinance proposed in Appendix B.

There are other statutes and regulations applicable to the harbor management plan relating to uses of public trust waters. The NCAC defines public trust areas in Section 15A NCAC 07H .0207. According to 15A NCAC 07H .0207, public trust areas are defined as

“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.”

Based upon this definition of “public trust waters”, the Carolina Beach Harbor is a public trust area. 15A NCAC 07H .0207 further recognizes these public trust waters as areas where the public has rights to both navigation and recreation. These areas are recognized as valuable commercial and sports fisheries, with aesthetic value, and are important resources for economic development. Under 15A NCAC 07H .0207, the State is charged with the responsibility of protecting public rights for navigation and recreation in public trust waters, additionally these areas are to be conserved and managed so as to safeguard and perpetuate their biological, economic and aesthetic value.

The NCAC provides Use Standards for activities in coastal wetlands, estuarine waters, and public trust waters in Section 15A NCAC 07H .0208. Before activities may be conducted in these areas, evidence must be provided that minimum adverse impact on *productivity and biologic integrity of coastal marshland, shellfish beds, beds of submerged aquatic vegetation, spawning and nursery areas, important nesting and wintering sites for waterfowl and wildlife, and important natural erosion barriers (cypress fringes, marshes, clay soils)*, will occur. The review of existing conditions within Carolina Beach Harbor (discussed in this Water Use and Harbor Management Plan) has sought to address each of these items. Section

15A NCAC 07H .0208 also provides specific guidance on use standards for Marinas, Docks and Piers, Freestanding Moorings.

Federal Policies and Regulations

Under Section 10 of the Rivers and Harbors Act of 1899, the U.S. Army Corps of Engineers (COE) requires permits for work seaward of the mean high water line when it has the potential to create an obstruction, excavates, or fills in navigable waters of the United States. Accordingly, any improvements such as boat ramps, docks, or installation of mooring fields may require the Town of Carolina Beach to obtain permits from the COE. COE permits are also required under Section 404 of the Clean Water Act for activities involving the discharge of fill material into U.S. waters. On the coastline, the COE jurisdiction under the Clean Water Act extends landward to the high tide line, or to the landward limit of any wetland, whichever is more extensive.

Several COE policies are of particular interest to this plan. The COE regulatory program seeks to ensure that unobstructed access to harbor channels is maintained, and that harbors that have been dredged or maintained with federal funds by the COE are made available on a policy of “open to all on a fair and equitable basis.” Under provisions of this policy, moorings located in harbor areas that were dredged or maintained by the COE are considered integral elements of the accessibility issue, and are subject to the COE policy that access to these mooring be non-exclusionary. This means that non-residents of the Town of Carolina Beach must be granted equal opportunity to obtain mooring permits with those of residents, and that a certain percentage or proportion of available mooring space within a federally maintained harbor must be made available to transit boaters for anchorage. The policy also states that any funds received by the municipality for the rental of mooring is federal navigation projects must not exceed that required to maintain and service the mooring area.

Existing Uses

The existing and potential uses of the Carolina Beach harbor area are also an important consideration when determining the management and future uses of the harbor. The following sections document the existing uses within Myrtle Grove Sound.

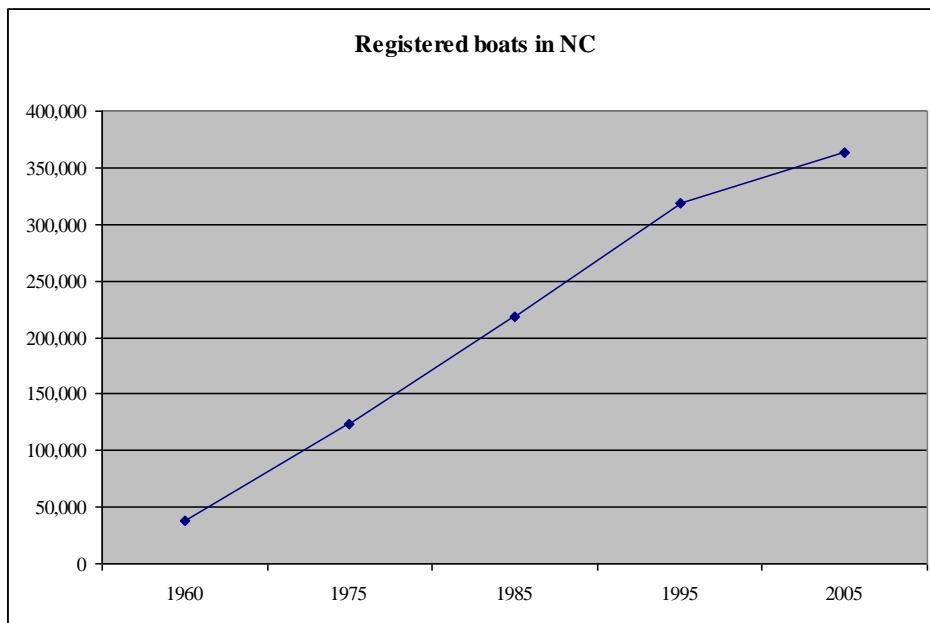
General

There is a general feeling that population growth and increased development will lead to an increased demand for access to the harbor area. Examining the growth of registered boats in North Carolina may be one means to estimate the trend and how it might influence future demand for access to the harbor. For example, Table 1 and Figure 7 illustrate the dramatic increase in the number of registered boats in NC. In the last decade alone, the number of registered recreational boats has increased by about 13.9 percent. Moreover, the NC WRC reported 9,948 registered boats for New Hanover County in October 2005. Thus, if the increasing number of registered boat owners is any indication, there is likely to be growing demand for boater access to public trust waters. It is also likely to be increasingly important

Table 1: Number of Registered Boats in North Carolina

Year	North Carolina Registered Boats
1960	37,542
1975	123,391
1985	218,019
1995	318,515
2005	362,907

Source: North Carolina Wildlife Resources Commission email correspondence

Figure 7: Number of Registered Boats in North Carolina

for local governments to have a plan to balance competing uses of their harbor areas by commercial, recreational and transient users.

It should also be noted that several people at the public workshop on March 8 suggested that the Town already needs a greater presence on the harbor to help enforce safe boating rules and that there should be greater control over the existing moorings.

Municipal Marina Facility

The Town of Carolina Beach operates a municipal marina located at the southern end of the Carolina Beach Harbor [See Map 5 in Appendix D]. The marina is dedicated to commercial sport fishing charter boats and party boats. Town rents 29 slips to boats of various sizes for these purposes. The process used to allocate the slips is defined in Chapter 6 of the Town's Code of Ordinances. The slip fees are about \$947 per quarter including water and trash collection for the smaller vessels and about \$2,800 per quarter for the larger party boats.

A variety of services and amenities are present at the marina. A gravel metered parking area is located adjacent to the western portion of the Municipal Marina. The parking area can accommodate approximately 70 cars that are charged either an hourly or daily parking fee. A floating dock is located at the southwest corner of the marina. This dock is for use by government vessels and private recreational vessels for loading and unloading passengers and supplies. There is a 2-hour limit for the use of this dock space. A picnic area is located adjacent to the southwest portion of the Municipal Marina. This area is comprised of a wooden deck with 3 picnic tables. The party boats occupy the rental slips at the southern end of the marina. Two ticket booths are located adjacent to these slips. A holding tank pumpout station is also located at the southern end of the Municipal Marina. This is a private pumpout station for use by the party boats and sport fishing charters. No public pumpout facility is available at the Municipal Marina. An approximately 8-inch high curb runs along the eastern side of the boardwalk, on the eastern portion of the marina. This construction is appropriate as a gas station is located adjacent to the eastern portion of the Municipal Marina across Canal Drive.

A small deck is located at the northeast portion of the marina. A wooden boardwalk has also been constructed along the harbor at the Municipal Marina to provide public access along the waterfront. Several benches are located along the boardwalk and there is ample opportunity for the public to view the harbor and boats. In fact, there is often a crowd on hand to view the catch from returning sport fishing charter boats at the Municipal Marina. A fish cleaning board is located at the deck in the northeastern portion of marina. Additionally, trash cans have been placed along the boardwalk at the marina. Some receptacles are labeled "fish only" while others are labeled "no fish".

Other Marina Facilities

As indicated in Table 2, there are sixteen additional marinas located within the Carolina Beach Harbor. North Carolina defines a "marina" as *a facility with slips for more than 10 boats*. The sixteen marinas include both public and private facilities. They range in size from as many as 160 slips to as few as 15. A map illustrating the locations of the various marinas is attached to this report as Map 5 in Appendix D.

Table 2: Inventory of Marinas within Carolina Beach Harbor

Map ID Letter	Marina Name
A	Waterfront Villas
B	Harbor Pointe
C	Pleasure Cay
D	Otter Creek Landing
E	Forest by the Sea
F	St. Joseph's Place
G	Harbor Oaks Boataminium
H	The Cove
I	Mona Black Marina
J	Federal Point Yacht Club
K	Carolina Bay
L	St. Joseph's Marina
M	Inland Harbor
N	Municipal Marina
O	Captain's Quarters
P	Yachtsman
Q	Oceana Marina

Source: Field Investigation conducted by K. Theodorson on 4/4/06, 4/5/06, and 4/12/06

Mooring and Anchorage Areas

There is currently a designated anchorage area west of Canal Drive between Scotch Bonnett Lane and Sand Dollar Lane. This anchorage area is established in the Town of Carolina Beach Code of Ordinances (i.e., Section 6-45). The Town of Carolina Beach also allows waterfront property owners to establish private mooring buoys adjacent to their property line in accordance with CAMA rules and approval. The Town's ordinance states that vessels may not anchor in a manner which jeopardizes others at anchor, might cause damage to other property or person(s), or impedes access to docks or slips. The placement of mooring buoys by any other person(s) is prohibited. It is also illegal to permanently moor a floating home. The harbor is also frequently used by transient boaters who moor their vessel for some period of time. During storm events, vessels may also seek refuge in the harbor. Subsequent sections of the plan examine the implications of expanding the size and capacity of the mooring areas within the harbor.

There has been some discussion regarding the possible presence of a federally designated mooring area in the northern section of Carolina Beach Harbor. An investigation regarding this site was initiated through the DMF. Contact was made with U.S. Coast Guard offices for the North Carolina Sector, Wrightsville Beach, and in Washington, D.C. Contact was also made with the COE. None of these inquires were able to confirm the presence of a federally designated mooring area within Carolina Beach Harbor. The U.S. Coast Guard for the North Carolina Sector has indicated that there is *no* federally designated mooring area in this vicinity.

Pumpout Facilities

Many boats are designed with marine sanitation devices to store the human waste generated on board. It is also illegal to improperly dispose of the waste from a marine sanitation device in coastal waters. Accordingly the provision of pumpout facilities available to the public is important in trying to minimize water quality problems due to recreational boating. They are also an important service if you are looking to attract transient boaters to use dockage or mooring areas. Currently, there are two pumpout facilities available to boaters in the harbor area. A pumpout facility is available at the Mona Black Marina [Site I on Map 5 in Appendix D]. This facility has a \$5.00 fee. A second pumpout facility is available at Federal Point Yacht Club [Site J on Map 5 in Appendix D]. This facility also has a \$5.00 fee. While these facilities are important, additional pumpout facilities will likely be needed to serve the growing number of boaters in the future.

Public Access

It is hard for the public to use and enjoy its public trust waters if they are unable to gain access to or along shoreline areas. Public access includes physical access (rights-of-way, boat launching ramps, fishing piers, ability to pass along the shoreline), visual access (viewing platforms, observatories, scenic drives, and innovative architectural designs that provide unobstructed views), and interpretive access (education of the public about historical, ecological, or cultural significance of a site). Picnic tables, public restrooms, lighting, and other improvements are considered vital contributions to public access.

The Town of Carolina Beach is like many other waterfront communities in the United States. Increased residential development along shoreline areas has limited or prevented public access at a time when demand for access is increasing. Improperly planned commercial development and conversion of water dependent uses to nonwater dependent uses has a similar affect. Thus, preserving and enhancing public access often requires careful planning and management of harbor areas.

Section III of this plan contains a variety of policies and actions that can be taken to protect and enhance access to the harbor area. Given the cost associated with the Town acquiring new land, this plan focuses mostly on protecting existing access sites and where possible enhancing these opportunities. An inventory of current access points along Myrtle Grove Sound is included in Appendix C. A map illustrating the location of all access points is included as Map 5 in Appendix D. Public access opportunities are also available surrounding the Municipal Marina.

Fishing and Shellfishing Activities

As noted earlier in this section of the report, the estuarine waters within and surrounding the Town of Carolina Beach are closed to shellfishing, with the exception being waters surrounding the north end natural area that are located in the ETJ. Myrtle Grove Sound is closed to shellfishing due to relatively heavy marina boat traffic and dense development along the sound's edge. According to the DMF, there are some limited shrimp trawling activities conducted within Carolina Beach Harbor. Both commercial and recreational shrimpers utilize these waters with the harbor area opened and closed based upon the size of the shrimp that are present. Most of the vessels harvesting shrimp in this area are small (less than 25 feet) and pull only one net. The number of participants has been decreasing and only 10 users were documented in each year between 2000 and 2003. There is also some recreational fishing in the harbor area.

Wharves and Piers

The environmental impacts associated with the construction of docks and piers is highly correlated with the flushing characteristics of the area in which they are located and whether they have to span wetland areas or otherwise disturb sensitive aquatic habitat areas. Other factors would naturally include number of boats using the dock and the overall size of the facility. Overall, the environmental impacts of a dock (due to its smaller size) are less than for a marina, but the cumulative impacts of many docks within a given area can be significant. Many of the residential properties along the harbor area have already built private docks. The Town of Carolina Beach requires that the construction of these private docks and piers is in compliance with CAMA regulations and is consistent with the pier head line established by the Town of Carolina Beach. The purpose of the pierhead line is to minimize the user conflicts that can be created when residential property owners permanently occupy space over public trust waters. Map 9 in Appendix D contains a slightly modified pierhead line so that the line is incorporated into the Town's GIS system to make it easier for Town staff to enforce these provisions of its ordinances.

Basin on the West Side of the Island

In addition to the harbor area, there is a basin on the west side of the Island, commonly referred to as the "dredge hole", which might be used in some manner to enhance boating access for the residents of southeastern NC. The dredge hole was created when sand was excavated and reportedly used to renourish Carolina Beach in the 1970s. While plans were to fill it in, it has never been filled in and continues to be used by recreational boaters and fishermen. Depths in the middle are reported to be near 40 feet, but with depths of only 5 feet near the mouth of the basin. It also continues to be used as a refuge where boats anchor during major storm events.

The basin is located within federal land used as a buffer zone for the Sunny Point facility and is located on the eastern side of the Cape Fear River. Given the large acreage of vacant land surrounding the basin and its proximity to Carolina Beach, it would be possible to construct a

large regional boat ramp and parking area to increase access to the harbor area, Cape Fear River, and surrounding coastal waters. One obstacle could be Sunny Point and the Department of Homeland Security's objection to using the land based on national security concerns. However, in the past the federal government has entered into long-term leases with the Town's of Carolina Beach and Kure Beach to use portions of the buffer area for municipal facilities.

Another possible objection might be on environmental grounds since the entrance to the harbor might need minor dredging and this section of the Cape Fear River is also designated as a Special Secondary Nursery Area. The dredging issue should be relatively minor given that the recent harbor deepening project was authorized with much more significant potential environmental impacts. Moreover, based on contact with the DMF, the installation of a boat ramp is unlikely to present an environmental issue provided its impact on water quality and other habitat areas is minimized. This can be done through proper engineering and design that minimizes environmental disturbances. For example, the parking areas associated with the facility could utilize pervious surfaces and large buffer zones could be maintained to limit stormwater impacts.

Section III

Recommendations

Introduction

Based on the analysis of the existing conditions, discussions with Town staff, and public input at several workshops, a series of management issues were identified. This section of the plan examines each issue and recommends actions that can be taken to improve the management of the harbor and its resources. No effort has been made to prioritize the issues. All are considered to be equally important. Similarly, no effort was made to prioritize the recommendations. Instead, the focus was on providing local decisionmakers with options that could be pursued to address each issue. Accordingly, some recommendations involve changes in policy (e.g., changes to an ordinance) while others involve capital expenditures (e.g., improvements to public access sites). Some recommendations involve actions that can be accomplished quickly while others require additional planning or involve higher expenditures and would be accomplished over a longer time periods. Some recommendations suggest changes to Town ordinances while others would require new duties or responsibilities for Town staff (i.e., the harbormaster) or other actions for staff to undertake. Since the creation and operation of a public mooring area would have serious implications for town officials, Section IV of this plan describes the management implications of these recommendations in further detail. Section V contains a description of some of the federal and state grant programs that can be used to fund the recommended actions. Appendix B contains language for a model harbor management ordinance that can be used to implement many of the recommendations associated with creating a mooring field. Appendix C contains an inventory of public access facilities to help prioritize the recommended improvements identified in this section of the plan.

Boater Access to the Harbor

As noted in the previous section, the demand for boater access to coastal waters in southeastern North Carolina (NC) is increasing. Accordingly, one of the main issues that led to the creation of this plan was a desire on the part of the Town of Carolina Beach to protect and where possible enhance boater access to the harbor area. Moreover, given the increase in the number of boaters, it is important to manage existing uses of the harbor areas. This can be accomplished in several ways.

Establish a Mooring Field

One way to improve boater access to the harbor is to use some portion of the harbor area for boats to be permanently moored. Boat owners would then access their boat through a launching facility. Initially, this might be located at the Municipal Marina (or potentially a private marina facility contracted by the Town) with the goal of building a dedicated facility that could also serve to improve access to the harbor area. Based on the analysis in Section II, the depths in the harbor area offer several possibilities for locating mooring fields. The possible locations for mooring fields are indicated on the shaded areas on Maps 5, 6, and 7 in Appendix D.

Adopting one or more public mooring fields could provide additional boating access to residents and nonresidents alike. It could also be designed to primarily serve transient boaters. In either case, it should offer the possibility of encouraging additional economic growth and tourism in the downtown area. While these benefits are notable, the decision should be considered carefully by Town officials because it will have several implications. Permits from the COE and a CAMA Major Permit will have to be secured and an engineer may have to be hired to prepare the site plans and application materials. A CAMA Major permit will be required for Marina Development (DCM-MP-6). The area of public trust waters impacted, the number of slips provided, and the waste-handling facilities to be provided will be carefully considered by the DCM.

These regulatory programs impose some requirements on the design of a mooring field. For example, in accordance with CAMA requirements (15A NCAC 7H .0208 (b) (10)), mooring fields must provide suitable access areas to moorings and land-based operation, including wastewater pumpout, trash disposal and parking. Mooring fields may not be located within areas where shellfish harvesting is a significant use, or adjacent to shellfish areas if the mooring field could lead to shellfish closure. Based upon current and historic shellfish closure status within the Carolina Beach Harbor, this should not be an issue. If the submerged lands are leased or deeded, permission must be obtained from the person/people controlling the submerged lands, prior to mooring field placement. Open water moorings may not be enclosed within breakwaters that prevent water from circulating. Moorings and associated land-based operations must meet all applicable stormwater management requirements. Mooring fields must post a notice prohibiting the discharge of waste from boat toilets and explaining the availability of pumpouts and waste disposal.

Assuming the permits are secured, mooring equipment will have to be purchased and installed *or* town staff will have to be responsible for overseeing the vessel owner's installation of the equipment in a manner consisted with the Town's engineering specifications. The harbormaster's duties would also expand greatly. It would become a full-time position on call 24 hours a day during the boating season (April through October). Since a significant number of transient boaters use the harbor area during winter months it would also require a year round harbormaster presence on the water. A rental system for the moorings would have to be established with an accounting and billing system. The Town would have to purchase a boat for enforcement purposes and keep it docked in the harbor

year round. While the costs associated with this new program could be significant, it may be possible to offset many of these costs through the rental fees charged for using the moorings. One way to accomplish this is to establish a harbor management fund where all fees collected from mooring permits and other uses of the tidal waters of the Town are used solely for harbor related costs. The Town would also need to establish a harbor ordinance such as the one contained in Appendix B to manage the operation of the mooring program. The Town should also take steps to ensure that the operation of the mooring facility does not cause water quality or other environmental problems.

Establishing the mooring program will also involve making some policy choices. The Town will need to decide on the size and location of the facility. Map 5 in Appendix D identifies three possible locations for a mooring field. If fully utilized, the combined area could serve from 30 to 100 boats, depending on the size and placement of the boats. The mooring fields could also start in a small area and expand over time as additional launch and parking facilities are developed to serve the mooring field. The Town also needs to determine if it will operate the facility or contract out its operation to a private vendor.

Developing the mooring rental program would have its own set of policy choices. Determining the ownership and installation procedures for mooring tackle will involve some choices. A common approach is to require the vessel owner to pay for this expense and to install equipment consistent with the Town's requirements. However, the Town would have to install equipment to serve transient boaters. A fee schedule will have to be adopted that balances the need for making the moorings affordable and competitive with prices being charged at existing marina facilities, including the Town's. The fees charged for transient moorings should also be priced competitively in order to attract this type of boater. At the same time, the fee schedule will have to be structured to generate revenue sufficient to make the program revenue neutral unless the Town decides to subsidize its operation due to the economic impacts that boaters bring to the community. Finally, a determination would have to be made on how to allocate the moorings. A common approach is to develop an allocation system that has a ratio of no greater than three resident mooring permits to one non-resident mooring permit (3:1), unless the mooring field is within a federal navigation project, then mooring allocations shall meet the USACE requirement of "open to all on a fair and equitable basis".

If the Town chooses to establish a mooring field in one or more of the areas identified on Map 5 in Appendix D, then we recommend the following actions:

Recommendation III.A.1: Appoint a harbor commission to finalize the model ordinance:

The Town should appoint a harbor commission to determine the location and capacity of public mooring fields contained in Map 5 in Appendix D. The harbor commission would also finalize the details of the program used to manage the mooring areas and use the model ordinance contained in this plan as the starting point for revising the current ordinances. The harbor commission would also provide oversight for the harbormaster and the harbor management program and make recommendations to the Town Council regarding the implementation of this plan and future uses of the harbor area.

Recommendation III.A.2: Hire a full time harbormaster: In order to implement an effective mooring program, the Town should hire a full-time Harbormaster during the boating season (April through October) that has the duties and responsibilities described in Section IV of this report and in the model ordinance specified in Appendix B. The harbormaster will also need to maintain a presence on the water during winter months due to the large number of transient boaters who use the harbor during this time of year.

Recommendation III.A.3: Improved enforcement of existing harbor ordinance: The town shall work to aggressively enforce the provisions of its current harbor ordinance within the limits of what is allowed under federal and state laws.

Recommendation III.A.4: Submit legislation to improve enforcement authority: The Town should work with its local legislative delegation to introduce legislation to ensure that expands the Town's authority to enforce the provisions of its current harbor management ordinance as well as the model ordinance contained in Appendix B.

Recommendation III.A.5: Mooring distribution between residents and nonresidents: Moorings should be allocated on no greater than a 3 to 1 ratio of residents to nonresidents to ensure that the general public benefits from improved access to the public trust waters. Transient boaters shall be considered as non-residents.

Recommendation III.A.6: Mooring allocation system: Moorings shall be allocated on a first come, first serve basis. In the advent that the demand exceeds the supply of permits, an official waiting list shall be maintained for both residents and nonresidents.

Recommendation III.A.7: Public accessibility to information: Information pertinent to the harbor management program including, but not limited to, rules and regulations, lists of mooring holders, waiting lists, and fee schedules shall be readily available to the public at all times.

Recommendation III.A.8: Use of fees: All revenue generated from the collection of fees for using moorings shall be used to pay for the management of the harbor and operation of the mooring program.

Recommendation III.A.9: Municipal Marina: The operation and management of the municipal marina should become the responsibility of the harbormaster. Slip rental fees shall be used to pay for maintenance and improvements at the marina and to offset other costs associated with the harbor management program.

Recommendation III.A.10: Waiting lists: All waiting lists for slips for public mooring fields shall be updated annually.

Recommendation III.A.11: Obstructing navigation: In no case shall moorings or mooring fields be located in a federal navigation channel or otherwise be located in a manner that interferes with navigation or impedes the ability of shoreline residents to access docks or moorings by boat.

Recommendation III.A.12: Blocking or impairing navigational channels: Projects that directly or indirectly block or impair existing navigational channels shall be prohibited. This includes, but is not limited to, projects that deposit spoils below mean high water, extend piers beyond the established pier head line, or any projects determined to be detrimental to navigation of the public trust waters.

Recommendation III.A.13: Prohibiting floating homes: The Town shall continue to prohibit the permanent occupation of public trust waters by floating homes. Floating homes are defined as a house built on a floating platform without a means of propulsion.

Recommendation III.A.14: Placement of moorings by riparian owners: The placement of moorings by riparian landowners will be subject to approval by the harbormaster and be in accordance with the requirements of the model ordinance contained in Appendix B. They will also be subject to the same fee structure as moorings located within the mooring fields.

Recommendation III.A.15: Purchase boat for the harbormaster: In order to manage the harbor management program and enforce the model ordinance, the Town shall purchase a boat capable of accessing all areas within the harbor. The boat shall be permanently moored at a location in close proximity to the mooring field.

Recommendation III.A.16: Construction of a launching facility: The Town shall construct a dock to serve as a means for boat owners to access the mooring field. The dock could also serve as a viewing area or fishing pier to enhance public access to the harbor. Other desirable shore-based amenities at this location include:

- Dinghy storage racks placed land-side adjacent to the dock site;
- Trash disposal;
- Public restrooms;
- Showers;
- Laundry facilities;
- Harbormaster's office.

Based on our analysis, the public access site at Sandpiper Lane may be the most suitable location for such a facility due to its proximity to public parking and central location with respect to the potential mooring field locations and the CBD. Otherwise, the Town should consider purchasing one or more parcels along the harbor to service the mooring fields.

Recommendation III.A.17: Improved signage for boaters: Since the mooring field will increase the number of transient boaters using the harbor, additional signage regarding "no wake" zones, the location of pumpout facilities, and how to contact the harbormaster to rent a transient mooring should be installed.

Recommendation III.A.18: Information materials for transient boaters: Since the mooring field will increase the number of transient boaters using the harbor, educational

materials with a list of rules as well as a map of land-based services and attractions should also be developed for distribution by the harbormaster to transient boaters

Maximizing Use of the Municipal Marina

The Municipal Marina is an important source of public access to the harbor area. The party boats and sport fishing charters provide residents and visitors alike with an opportunity to utilize the state's public trust waters. The dock also provides an opportunity for transient boaters to frequent businesses in the downtown area, although, due to its size, it cannot accommodate a large boat or multiple smaller boats. The adjacent public parking lot also enables people to visit the facility and enjoy the access provided along the harbor area. In fact, there is often heavy foot traffic along the marina as a result of its proximity to the CBD. Thus, it is not unusual for there to be a crowd on hand to witness the sport-fishing charters as they off load their catch. Thus, there is an opportunity to take advantage of this foot traffic and install some signage to educate the public about steps they can take to improve water quality, minimize their impacts on the environment, or engage in safe boating practices. Accordingly, the plan recommends the following actions.

Recommendation III.B.1: Unutilized slip in the municipal marina: The Town shall investigate the feasibility of dredging the northeastern-most slip in the municipal marina to make it available either for permanent dockage or to expand marina's ability to provide dockage for transient boaters or dinghy access to a newly created mooring field.

Recommendation III.B.2: Expand the dockage available for transient boaters: Increase the size of the existing dock space for transient boaters so that they can access businesses in the downtown area.

Recommendation III.B.3: Waiting lists: All waiting lists for slips for public mooring fields shall be updated annually.

Recommendation III.B.4: Install public education signs: The Town shall investigate the feasibility of installing some educational displays along the walkways and boardwalk areas adjacent to the municipal marina to educate the public about steps they can take to improve water quality and safe boating practices. An initial location may be the blank kiosk (electrical meter cabinet) located at the deck on the northeastern portion of the marina.

Developing Additional Boat Launch Facilities

Another means of improving boater access to the harbor area would be through the creation of additional boat launch facilities in the Town. Unfortunately, much of the shoreline has already been developed and the land values probably render the acquisition of a parcel and sufficient parking area by the Town as being cost prohibitive.

Another option would be to encourage a private land owner to construct additional dry stack storage facilities near the harbor area. While much of the land surrounding the harbor has been developed, there are several parcels close to the shoreline which might make operating

such a facility possible if some water access to launch the boats could be secured. However, given the increasing property values and likelihood that the remaining vacant property is more valuable developed as residential property than it is as commercial property, it may be unlikely that the remaining vacant parcels will be used in this fashion. Moreover, it may be increasingly unlikely that anyone will seek to redevelop parcels in this manner.

The next best option is for the Town to develop a boat launch facility in close proximity to the harbor. One possible location for such a facility is adjacent to the basin on the west side of the island located within the buffer zone for the Sunny Point facility. The installation of a large boat ramp and gravel parking area would have minimal environmental impact while improving boating access throughout the region. Water depths in the center of the basin are reportedly near 40 feet, however, the depth is reported to be only around 5 feet near the entrance. Thus, some minor dredging and marking of a channel would be necessary to increase the accessibility and improve navigational safety. It may also be possible to establish a public mooring area within the harbor that serves primarily transient boaters. However, given national security interests, the necessity for a long-term lease agreement, and the construction costs associated with building the facility, the Town may wish to encourage the state to construct the facility and work with its political representatives to secure the necessary approvals and funding. Thus, the following actions are recommended:

Recommendation III.C.1: Seek formal approvals from Sunny Point: The Town shall work with its local legislators and Congressman to seek appropriate approvals and enter into a long-term lease agreement to use the “dredge hole” and surrounding lands to construct a large regional boat launch facility to serve southeastern NC and explore the feasibility of adding a small public mooring area adjacent to the facility.

Recommendation III.C.2: Design the facility and seek federal and state permits: The Town shall design a facility, estimate the construction costs, and seek the appropriate federal and state permits to construct the facility.

Recommendation III.C.3: Apply for grant money: The Town shall apply for federal and state grant money to offset the estimated cost of building the proposed facility.

Recommendation III.C.4: Launching fees: The Town shall charge a fee to launch boats at the facility. The fee shall be the same for residents and nonresidents. The revenues collected shall go to pay for the cost and maintenance of this facility and other services provided by the harbor management program.

Recommendation III.C.5: New or expanded marina facilities: The Town shall consider proposals for new or expanded marina facilities if they improve boating access to the harbor without having a detrimental impact on adjacent land uses or other forms of public access to the shoreline area.

Public Access to the Harbor Area

As the population in Carolina Beach grows and the shoreline is developed, public access (both visually and physically) to public trust waters is increasingly limited at a time when the demand continues to increase. As part of the analysis in Section II, an inventory of all designated rights-of-way along the Carolina Beach harbor was completed on April 4, April 5, and April 12, 2006. The results of this inventory are contained in Appendix C and the locations of all known public access sites are contained on Map 5 in Appendix D. For the purpose of this inventory, public rights-of-way were assumed to be present where the street ends were “open” to the Carolina Beach harbor, as illustrated on the tax maps obtained from New Hanover County. Photographs were taken at each site. Amenities available at each site were also recorded such as signage, trash receptacles, parking, and restrooms. Where gravel drives were present at the public access point, it was assumed that parking was available. However, there were no marked parking spaces available in the areas immediately surrounding the Carolina Beach harbor. Thus, while some parking may be present, it is not clear to the public who owns these parking areas. One large public parking lot with approximately 25 marked spaces is located at the southeast corner of the intersection of Canal Drive and Sandpiper Lane. There is a fee of \$1 per hour or \$5 for the day for this lot.

The access inventory in Appendix C indicates that the amenities provided are limited and that there is generally limited to no signage to alert the public that there are public access points along the harbor. The only public access site with signage indicating that it is for public use is the small beach located adjacent to Florida Avenue (Appendix C and Map 5 in Appendix D). The lack of signage and use of these areas in some cases by adjoining landowners for parking likely leaves the public with the faulty impression that there is much less access to the harbor than actually exists. Some of the access sites may need improvement as well. While the majority of the areas adjoining the access sites are bulkheaded, few of the access sites actually have bulkheads in place. This could lead to erosion problems in the future and is cause for some concern.

Accordingly, while the loss of public access to and along the harbor is cause for some concern as a result of continued population growth and development, commercial redevelopment activities and the presence of the access sites identified in Appendix C offer a wide range of opportunities for improving physical and visual access to the harbor. The following recommendations can be used to expand and enhance public access to the harbor:

Recommendation III.D.1: Existing Access Facilities: The Town shall maintain and where possible improve existing public access facilities along the harbor. Where possible the Town should seek funding from federal, state, or county sources for these improvements.

Recommendation III.D.2: Further site investigation: The ownership and boundaries for several of the access sites listed in Appendix C should be conducted as identified in Table 3 before marking or improving these locations. Any encroachments by adjacent land owners onto public lands or the riparian area for the public access site shall be remedied.

Table 3: Public Access Inventory and Recommendations

Map ID Number	Name	Investigation Required	Suggested Improvements	Notes
1 (Florida Avenue		<ul style="list-style-type: none"> ▪ Canoe/kayak launch. 	<ul style="list-style-type: none"> ▪ Site is already improved with a small beach
2	Maryland Avenue	Determine if adjacent property owners are encroaching on land-side and water-side public right-of-way. Survey may be required.	<ul style="list-style-type: none"> ▪ Signage. ▪ Marked parking spaces. ▪ Bench for viewing. ▪ Install trash receptacle. ▪ Dinghy dock for mooring area. ▪ Bike rack 	<ul style="list-style-type: none"> ▪ Public viewing area ▪ Dinghy dock for public mooring field
3	Delaware Avenue	Determine if adjacent property owners are encroaching on water-side public right-of-way.	<ul style="list-style-type: none"> ▪ Signage. ▪ Remove debris. ▪ Marked parking spaces. ▪ Bench for viewing. ▪ Install trash receptacle. ▪ Dingy dock for mooring area. ▪ Bike rack 	<ul style="list-style-type: none"> ▪ Public viewing area ▪ Dinghy dock for public mooring field
4	Clam Shell Lane	Determine if adjacent property owners are encroaching on water-side public right-of-way.	<ul style="list-style-type: none"> ▪ Signage. ▪ Remove silt fencing along harbor. ▪ Install trash receptacle. ▪ Canoe/kayak launch. ▪ Bike rack 	<ul style="list-style-type: none"> ▪ Lift station present and use could be expanded
5	Sanddollar Lane		<ul style="list-style-type: none"> ▪ Signage. ▪ Mark parking areas. ▪ Bench for viewing. ▪ Install trash receptacle. ▪ Dinghy dock for mooring area. ▪ Bike rack 	<ul style="list-style-type: none"> ▪ Public viewing area ▪ Dinghy dock for public mooring field
6	Starfish Lane	Determine ownership of small pier.	<ul style="list-style-type: none"> ▪ Signage. ▪ Mark parking areas. ▪ Install trash receptacle. ▪ Bike rack 	<ul style="list-style-type: none"> ▪ Public viewing area
7	Scotch Bonnet Lane	Consider impact of blocking north driveway. Determine if adjacent property owners are encroaching on water-side of public right-of-way.	<ul style="list-style-type: none"> ▪ Signage. ▪ Mark parking areas. ▪ Bench for viewing. ▪ Install trash receptacle. ▪ Bike rack. 	<ul style="list-style-type: none"> ▪ Public viewing area

Table 3: Public Access Inventory and Recommendations (Cont.)

Map ID Number	Name	Investigation Required	Suggested Improvements	Notes
8	Seahorse Lane	Determine if adjacent property owners are encroaching on the land-side and water-side public right-of-way.	<ul style="list-style-type: none"> ▪ Signage. ▪ Bulkhead. ▪ Marked parking spaces. ▪ Bench for viewing. ▪ Install trash receptacle. ▪ Dinghy dock for mooring area. ▪ Bike rack 	<ul style="list-style-type: none"> ▪ Public viewing area ▪ Dinghy dock for public mooring field
9	Sandpiper Lane	Determine ownership of small pier. Determine if adjacent property owners are encroaching on the land-side public right-of-way.	<ul style="list-style-type: none"> ▪ Signage. ▪ Bulkhead. ▪ Bench for viewing. ▪ Install trash receptacle. ▪ Bike rack. 	<ul style="list-style-type: none"> ▪ Public viewing area ▪ Large parking lot located east, across Canal Drive so it is an excellent choice for other improvements to serve a mooring field or other access opportunities
10	Oystershell Lane	Consider purchase of adjacent lot to the south.	<ul style="list-style-type: none"> ▪ Signage. ▪ Install trash receptacle. ▪ Canoe/kayak launch. ▪ Bike rack. 	<ul style="list-style-type: none"> ▪ Large public parking area 1 block north ▪ Lift station present; use could be expanded ▪ If lot to south is purchased, use could be expanded for other improvements to serve a mooring field or other access opportunities
11	Sail fish Lane	Determine if adjacent property owners are encroaching on the land-side public right-of-way.	<ul style="list-style-type: none"> ▪ Signage. ▪ Marked parking spaces. ▪ Install trash receptacle. ▪ Bench for viewing 	▪ Public viewing area
12	Seagull Lane	Determine ownership of small pier.	<ul style="list-style-type: none"> ▪ Signage. ▪ Mark parking spaces. ▪ Install trash receptacle 	▪ Public viewing area
13	Scallop Lane	Consider impact of blocking south driveway. Determine if adjacent property owners are encroaching on the water-side public right-of-way	<ul style="list-style-type: none"> ▪ Signage. ▪ Mark parking spaces. ▪ Install trash receptacle. ▪ Bench for viewing. 	▪ Public viewing area

Table 3: Public Access Inventory and Recommendations (Cont.)

Map ID Number	Name	Investigation Required	Suggested Improvements	Notes
14	Dolphin Lane		<ul style="list-style-type: none"> ▪ Signage. ▪ Marked parking spaces. ▪ Install trash receptacle. ▪ Bench for viewing 	▪ Public viewing area

Recommendation III.D.3: Access improvements: Town staff in conjunction with other applicable committees (e.g., the harbor commission or planning and zoning commission) should develop a strategy for improving the 14 public access sites around the harbor. Table 3 identifies a range of possible improvements to the access points contained in the inventory in Appendix C. Town staff shall seek federal or state grants to fund improvements to these sites. When undertaking these improvements, every effort should be made to ensure that the facilities are handicapped accessible and that bulkheads are installed to prevent erosion problems.

Recommendation III.D.4: Acquisition of land for additional access sites: The Town shall work towards acquiring land or work with existing land owners on the western side of the harbor to secure additional public access sites. Currently, there is no public access point located on the western side of the harbor [See Map 5 in Appendix D].

Recommendation III.D.5: Maintaining public access sites: The Town shall establish a program to provide regular maintenance of the public access facilities. If cost becomes an issue, Town staff may consider creating an “adopt-a-spot” program where by community organizations or homeowners associations help clean and maintain a site and are recognized for their volunteer efforts through signage and or other means of recognition.

Recommendation III.D.6: Signage: All public access points to the harbor shall be marked. The Town shall consider requesting their designation by the DCM as CAMA access points. All hazards at these sites should be marked to warn the public.

Recommendation III.D.7: Prohibiting private use of public access sites: The private use of public access areas for private parking or storage of other items by adjoining land owners shall be strictly prohibited and enforced by town officials.

Recommendation III.D.8: Improve public access from commercial development and redevelopment: All commercial development and redevelopment of the harbor shoreline shall provide physical or visual access to the public. Where practicable, the development activities should make it possible for the public to walk along the shoreline area.

Recommendation III.D.9: Preserving visual access from roadways: Development activity that completely obstructs the view from the road to public trust waters in the harbor shall be discouraged. Where possible, development and redevelopment activities should allow some visual access to public trust waters from the adjacent roadway.

User Conflicts in the Harbor Area

Due to increased development, population growth, and a general increase in recreational boaters throughout the region, it is important that the Town take steps to manage user conflicts among competing uses of the shoreline, public trust waters, and submerged lands. Many of the previous recommendations focused on improving boater access and public access are designed to balance these competing uses. This section contains some additional recommended actions. Moreover, it includes recommendations designed to ensure that boating safety remains a priority as the number of recreational boaters using the harbor area increases.

One area where user conflicts can be avoided is to ensure that the riparian right to build a dock or pier doesn't interfere with those of other riparian owners. Similarly, it is important to ensure that the riparian right to build a dock doesn't interfere with the ability of boaters to navigate the harbor and use the public trust resources. Continued enforcement of the Town's pierhead line contained in Section 12-111 of the Town of Carolina Beach Code of Ordinances is one tool that can be used to prevent these conflicts. However, its current delineation is hard to enforce and is in need of being updated in the Town's GIS system.

The area of public trust waters within the Town of Carolina Beach is also limited and unsuitable for certain uses such as the permanent occupation by floating homes. Floating homes are defined as a house built on a floating platform without a means of propulsion. In addition to obstructing other uses of public trust waters, floating homes can contribute to problems with waste discharge and can pose unnecessary navigational hazards. Accordingly, the location of floating homes in the harbor area is considered to be a detrimental use of public trust waters.

One area where the permanent occupation of public trust waters and submerged lands may be appropriate is the operation of aquaculture facilities designed to improve commercial and recreational fisheries or shell fisheries. Suitable locations for these facilities are likely to be the three mooring field locations indicated on Map 5. Accordingly, the decision to allow the installation of aquaculture facilities should be balanced by concerns about the possible loss of locations for current or future mooring field operations.

In order to address these user conflicts, the Town of Carolina Beach should implement the following recommendations:

Recommendation III.E.1: Safe boating: The Town shall take steps to increase public awareness of safe boating rules. These include:

- Post safe boating rules at all public boat ramps, marinas, and facilities used to access mooring facilities;

- Post safe boating rules at five strategic locations along specific, well-traveled navigation channels;
- Work to print and distribute safe boating rules on Tide Tables distributed by local merchants;
- Work with a nonprofit organization or other local governments to prepare a video to broadcast on local cable access television that describes boater safety tips and steps that boaters can take to reduce pollution and environmental impacts associated with these activities;
- Develop and distribute educational materials that promote the responsible use of Jet Ski's and other personal watercraft in the harbor area

Recommendation III.E.2: No Wake Zones: The Town shall take steps to improve existing no wake zone signage and enforcement. Actions include:

- The Town shall work with federal, state, and County officials to find ways to improve the enforcement of existing no wake zones;
- The Town shall request that New Hanover County, working in conjunction with the US Coast Guard, COE, and the NC WRC, make all official no wake zone signs consistent throughout the area;
- The Town shall request the State prohibit private individuals and organizations from posting unauthorized, but official looking, regulatory type signage on or near public waters. Courtesy signs, however, using unofficial color and non-legal wording should still be permitted but use a consistent color scheme different than regulatory signage;
- The Town shall request that New Hanover County restore full funding to New Hanover County Sheriff's Marine Patrol.
- The Town shall seek to establish a no wake zone around any mooring fields established pursuant to this plan.

Recommendation III.E.3: Pierhead line: The Town shall update Section 12-111 of the Town of Carolina Beach Ordinances to update the pierhead line as recommended on Map 9 in Appendix D. The proposed map codifies the existing boundary on the eastern side of the harbor but modifies the boundary of the western side of the harbor to more closely approximate the current locations of structures in order to prevent further encroachments that could create conflicts. The new ordinance shall clarify that the pierhead line establishes the seaward limit that residential property owners can build a new dock or rebuild an existing dock in the event that it is destroyed by more than 50%. Nonconforming uses that result from the reconfiguration of the pierhead line shall be allowed to remain until it is destroyed by more than 50% in which case it shall conform to the new pierhead line. A narrative description of the pierhead line for the western side of the harbor is as follows: No pier shall be constructed within a parallel distance of 115 feet of the channel line of Carolina Beach Yacht Basin starting at a point at coordinates latitude 34.057449 and longitude -77.889791 at the mouth of the Carolina Beach Yacht Basin and running in a south southeast direction 1,229.57 feet to latitude 34.054129 and longitude -77.889041. No pier shall be constructed within a parallel distance of 65 feet of the channel line starting at point at coordinates latitude 34.050835 and longitude -77.890345 running south 2,461.84 feet to a point at coordinates latitude 34.044073 and longitude -77.890566. No pier shall be constructed within a parallel distance of 65 feet of the channel line starting at a point at coordinates latitude 34.044073

and longitude -77.890566 running south southwest 975.25 feet to a point at coordinates latitude 34.041467 and longitude -77.891314. No pier shall be constructed within a parallel distance of 50 feet of the channel line starting at a point at coordinates latitude 34.041467 and longitude -77.891314 running south southwest 494.53 feet to a point at coordinates latitude 34.040146 and longitude -77.891698. No pier shall be constructed within a parallel distance of 40 feet of the channel line starting at a point at coordinates latitude 34.040146 and longitude -77.891698 running south southwest 706.35 feet to a point at coordinates latitude 34.038286 and longitude -77.892360. No pier between Lee's Land and the head (terminus) of the Carolina Beach Yacht Basin shall extend more than 35 feet from shore (mean high water level) (Coordinate system is Decimal Degrees WGS 1984).

Recommendation III.E.4: Floating homes: In no case shall floating homes be considered as an acceptable use of public trust waters within the Town limits. Accordingly, the Town of Carolina Beach Ordinances shall be amended to include the following language: "Floating homes shall not be permitted within the jurisdictional waters of Carolina Beach. It is not the intention of the Town of Carolina Beach to prevent live-aboard boaters in the Harbor; but rather, to prevent the construction of floating homes without propulsion. Floating homes are defined as a house built on a floating platform without a means of propulsion. " This recommendation is not intended to cover the location of houseboats.

Recommendation III.E.5: Abandoned boats: The Town shall amend its harbor management ordinance to empower the harbormaster to take custody and control of abandoned vessels and structures located in the coastal waters and harbor areas of the Town and remove, store, or otherwise dispose of such vessel or structure at the expense and sole risk of the owner of the abandoned vessel or structure. Reasonable notice of such removal, storage, or disposal shall be publicly advertised. Vessel owners shall be charged fees to offset the cost to the Town to enforce these provisions. The Town shall also investigate the feasibility of contracting with a boat yard or storage facility in the region to store and dispose of the boats if they are not claimed within a specified period of time. The Town shall also seek additional state legislation to strengthen its authority when it comes to removing abandoned vessels that are a public nuisance and navigation hazard.

Recommendation III.E.6: Aquaculture facilities: Aquaculture facilities designed to improve recreational and commercial fisheries or shellfisheries may be an appropriate use of public trust waters and submerged lands in the harbor area. Appropriate locations include the three mooring field locations contained in Map 5 in Appendix D. Any decision to allow these facilities should be balanced by the corresponding loss of current or future mooring field locations.

Water Quality and Other Environmental Issues

The analysis in Section II indicates that there are two main sources of water degradation and environmental problems in the Harbor area: nonpoint source (NPS) pollution from urban stormwater runoff; and, water quality and other environmental impacts from marinas and recreational boating. These problems are important because recreational users may be discouraged from using the harbor area if there is poor water quality. Thus, it is important to address both sources of water quality degradation and work towards improving it in the future.

Urban Stormwater Runoff

As noted in Section II, stormwater runoff is a significant source of the water quality degradation to Myrtle Grove Sound. These problems are likely to worsen as the Island continues to develop and the percentage of impervious surface increases because much of the surface area surrounding the harbor drains to the Harbor via surface runoff or through 31 storm drains. The stormwater that drains to Carolina Beach Lake also drains into the sound. Accordingly, any attempt to significantly improve the Harbor's water quality requires taking actions to either reduce the volume of stormwater that flows into the harbor or to improve the removal of pollutants from the stormwater before it enters the harbor. While solutions exist, many of them are complicated and will require significant planning and capital expenditures. As a first step, this plan recommends the Town undertake the following actions:

Recommendation III.F.1: Long term stormwater improvement plan: The Town of Carolina Beach shall prepare a long-term stormwater improvement plan designed to maintain and improve water quality within the Carolina Beach Harbor within 10 years. The plan shall:

- Identify, measure, and document all point and nonpoint sources of pollution to the harbor area;
- Identify short-term actions including modifications to ordinances that can be taken to minimize the volume of stormwater and encourage the use best management practices to reduce the pollutants in stormwater that discharges to the harbor area resulting from new development and redevelopment activities;
- Contain a strategy for reducing pollutant loads and volume of stormwater entering the harbor from each of the 31 stormdrains with cost estimates for relevant alternatives;
- Contain a strategy for eliminating runoff into stormdrains in the vicinity of the gas stations and the parking lots at the southern-most end of the harbor since they have a high potential to carry harmful pollutants and enter the most poorly flushed portion of the harbor;
- Identify a means of reducing the overflow from Carolina Beach Lake into the harbor area or find other means of treating the stormwater that drains to the lake to minimize the flow of pollutants from the lake to the harbor area; and,

- Identify funding sources at the federal, state, and local to pay for the capital improvements required to implement the ten-year strategies contained in the stormwater improvement plan.

The Town of Carolina Beach shall then begin a systematic long-term program focused on implementing the stormwater improvement plan.

Recommendation III.F.2: Minimize use of impervious surface: In order to minimize stormwater runoff, future improvements to the Town's parking areas associated with public access points, boat launching facilities, or mooring fields should use impervious surfaces whenever practicable.

Recommendation III.F.3: Pollution prevention: The Town of Carolina Beach shall establish a pollution prevention program that ensures that waste oil, plastics, trash, paint, varnish, and other inorganic materials used at municipal facilities are disposed of properly.

Recommendation III.F.4: Storm drain stenciling: The Town shall work with a volunteer organization to stencil storm drains along the Carolina Beach Harbor to make residents and the general public aware that activities near storm drains affect water quality within the harbor.

Recommendation III.F.5: Street sweeping program: The Town shall implement a street sweeping program along Canal Drive, Carl Winner Avenue, and St. Joseph Street (and any other streets that have storm drains leading directly to Carolina Beach harbor) to reduce the amount of sediment and other pollutants that enter the harbor from stormdrains.

Recommendation III.F.6: Public education program: The Town shall work with other local governments and nongovernmental organizations in New Hanover County to establish and implement a public education program that educates homeowners about NPS pollution and the structural and nonstructural best management practices that can be taken to help reduce the adverse consequences of stormwater runoff to the harbor area. Where possible, the Town shall seek grant funds from federal or state sources to supplement and expand these education efforts.

Recommendation III.F.7. Recycling: The Town shall work to educate the public about the importance of recycling and the proper disposal of household hazardous materials (e.g., where to dispose of batteries, solvents, paints, and used motor oils) that are not collected by the current recycling program.

Marinas and Recreational Boating Activities

Section II of this report details the wide range of water quality and other environmental problems associated with the design and operation of marina facilities. The close-ended configuration of the Town marina also makes it extremely important to minimize pollution impacts from the operation of the municipal marina as well as the other sixteen marinas within the harbor. Moreover, it is important for the Town to set a positive example for the other 16 marinas in the harbor area in order to encourage these marina operators to undertake the best management practices (BMPs) that improve water quality. However, the impacts on water quality and the environment are not limited to marinas alone. The cumulative impacts of private docks and recreational boating can also have adverse impacts on the harbor and its ecological resources. Accordingly, it is important for the Town and marina owners to educate boat owners about the steps they can take to minimize their impacts on the environment. Accordingly, it is recommended that the Town of Carolina Beach implement the following actions.

Recommendation III.G.1: NC Clean Marina Program: The Municipal Marina will fully implement the BMPs recommended by the North Carolina Clean Marina Program and encourage other marina operators in the Town to participate in the program and achieve Clean Marina status. Some of the recommended best practices for all marinas include:

- Establish fish-cleaning areas and educate boaters regarding the importance of proper fish-cleaning practices.
- Best practices associated with boat washing that include: washing boat hulls above the waterline by hand; where feasible, removing smaller boats from the water and performing cleaning where debris can be captured and properly disposed of; keep the use of detergents to a minimum; use cleaning compounds that are phosphate-free and biodegradable; and, discourage the use of detergents containing ammonia, sodium hypochlorite, chlorinated solvents, petroleum distillates, or lye.
- Where feasible, prevent in-the-water hull scraping or any process that occurs underwater to remove paint from the boat hull.
- Properly design and operate marina hull maintenance areas such that they use impervious surfaces, are covered, and are designed to divert stormwater runoff away from the hull maintenance area. Source controls are encouraged including: sanders with vacuum attachments; large vacuums for collecting debris from the ground; and, the use of tarps under boats that are being sanded or painted.
- Encourage the use of pervious surfaces for non-hull maintenance areas to reduce the quantity of runoff. Place filter strips around parking areas and utilize swales for conveyance of stormwater instead of drains or pipes.
- All marinas with fuel pumps should have petroleum spill containment equipment on hand including the Municipal Marina where boats are refueled dockside by trucks.

Recommendation III.G.2: Increase availability of marine pumpout facilities: All new marinas and all significant expansions of marinas shall be required to install a pumpout facility. The Town shall also take steps to expand the number of pumpout facilities accessible to boaters in the harbor. This can be accomplished by either operating a town facility or by working with marina operators to create incentives for them to install or expand the availability of pumpout facilities. Incentives might include grants, low interest loans, discounted sewer connection fees, or other incentives to encourage the installation, repair, maintenance, and continued operation of these facilities by marina owners. If a mooring field is established, the Town shall investigate the possibility of contracting with a pumpout boat or “honey dipper” to service individual users of the mooring field.

Recommendation III.G.3: Improve enforcement of prohibitions on discharges from MSDs: The Town shall encourage marina owners to enforce the prohibitions on discharges from marine sanitation devices (MSDs) into coastal waters. This can be accomplished by including penalties for violations into lease agreements and placing dye tablets into holding tanks. If a mooring field is established, the harbormaster shall take steps to enforce illegal discharges from MSDs. Violators shall lose their mooring permit and the lease agreement should authorize the harbormaster to place dye tablets in holding tanks to discourage illegal disposal.

Recommendation III.G.4: Boater Education: The Town shall work with marina operators and volunteer organizations such as the Cape Fear Power Squadron to develop a boater education program that distributes materials about best practices that advance boating safety and minimize impacts on the environment. Examples of topics to cover in the program include:

- Boating safety, the location of no-wake zones, and the importance of minimizing shoreline erosion and disturbances to sensitive habitat areas;
- What to do with your vessel in the event of a hurricane watch or hurricane warning;
- Location of pumpout facilities and the importance of using them; and,
- The best practices associated with fish cleaning, boat washing, and boat maintenance to minimize these impacts on the environment.

Many of these educational materials are already produced by organizations such as DENR and may be appropriate for distribution to boaters.

Recommendation III.G.5: Enforce no-wake zones: The Town of Carolina Beach shall take steps to enforce no-wake zones in order to minimize the disruption of sediment and habitat and reduce shoreline erosion within Carolina Beach Harbor.

Recommendation III.G.6: Hurricane preparation: The Town shall develop a hurricane preparation plan for any newly designated mooring field and the Municipal Marina and update the plan annually when it updates the Town’s Incident Command Plan. It should also encourage all 16 marina operators in the harbor to have plans and update them annually when the Town updates its Incident Command Plan in the spring.

Recommendation III.G.7: Improved navigation: The Town shall make the updated navigation chart for Myrtle Grove Sound contained in Map 8 in Appendix D available for download on its website.

Section IV

Mooring Field Design and Administration

Introduction

Designating and operating a public mooring field raises a series of issues and policy decisions requiring careful consideration by the Town of Carolina Beach. Map 5 in Appendix D illustrates three possible locations that are suitable for use as a public mooring field. If fully utilized, the three areas could serve from 30 to around 100 boats, depending on the size of the boats and their placement within the fields. Map 6 indicates what the approximate spacing and distribution might look like when boats are less than 26 feet in length (swing arc of 45 feet). Map 7 indicates what the approximate spacing might be at the other end of the continuum with large boats less than 55 feet in length (swing arc of 75 feet). In all likelihood, the configuration would be closer to Map 6 in terms of the number and density of boats. Accordingly, the first big policy decision is whether to utilize the public trust areas for this purpose and how intensively.

When making this decision it is important to recognize that the designation of even a small public mooring area will have consequences and impacts on the Town in terms of additional duties and responsibilities. For example, there are still costs associated with:

- Getting the requisite federal and state permits;
- Providing a launching facility for dinghies to access boats in the mooring field;
- Purchasing and installing mooring tackle for transitory boaters;
- Maintaining a program to issue mooring permits and maintain a waiting list;
- Approve the placement of moorings and inspect mooring tackle; and,
- Patrol the mooring field and enforce other provisions of the harbor ordinance.

Thus, even a small mooring field will greatly expand the duties and responsibilities of the existing harbormaster. It is also important to recognize that there will be some economies of scale associated with operating a larger mooring field. Many of the costs noted above will be similar regardless of whether the mooring field has 20 boats or 100. Therefore, the additional revenue raised from mooring fees in a larger field will come at little additional cost making them more cost-effective to operate. Similarly, whether these additional duties and responsibilities for the harbormaster are carried out by Town officials or are contracted

out with another private or nongovernmental entity would be a related issue for Town officials to consider in their decision making.

The remainder of this section explores some of the other policy and management issues associated with administering a program to manage one or more of the public mooring fields identified in Map 5 in Appendix D. It begins with a discussion of how the implementation of a mooring field and associated harbor management program would change the duties of the Town's harbormaster as well as some of the additional resource needs associated with administering the harbor management program. It then discusses several issues associated with managing mooring fields that will involve policy choices and then describes some of the additional aspects of the model harbor management ordinance contained in Appendix B. Additional information that can be used by local officials in making the decision on whether or not to establish a mooring field is also provided in this section.

Duties of the Harbormaster

Even though the Town of Carolina Beach has a staff member who serves as the "harbormaster", the model ordinance in Appendix B would greatly expand current duties and responsibilities. Establishing a public mooring field would also require a much greater presence on the water to enforce its provisions and manage the mooring field's operations. The Harbormaster should be appointed by the Town Council and be available on a full-time basis during the boating season (April until November) with significant time commitments in the off season associated with preparing for the forthcoming boating season and the large number of transient boaters who use the harbor area in winter months. It may even be necessary to hire additional part-time employees as assistant harbormasters during summer months to carry out the duties and responsibilities imposed by the ordinance contained in Appendix B. These include:

- Process applications for the issuance of permanent mooring permits;
- Inspect mooring tackle prior to its placement for conformance with the requirements outlined in this plan;
- Assign proper placements of moorings in mooring fields;
- Patrol the harbor, enforce boating safety rules, and ensure that boats are properly moored. Conversely, remove illegally moored boats or abandoned vessels;
- Keep proper records of all mooring application information, including the locations of moorings, mooring ownership and occupancy, type of vessel on mooring, etc. These records shall be updated annually and on file for public review at the Town Clerk's office;
- Issue mooring permits to transient boaters and distribute appropriate information in accordance with what is recommended in this plan;
- Prepare, keep current, and make available waiting lists for new and relocation mooring permits in accordance with the harbor management plan if the demand for available mooring permits is greater than the number of available mooring locations in any given year. The waiting lists shall be available for public review at the Town Clerk's office;

- Assist in the preparation of grant applications as they pertain to waterways and harbors within the Town with the approval of the Town Council;
- Assist the Town Council and the Harbor Management Commission in recommending rules and regulations for the harbor;
- Recommend candidates for the position of assistant harbormaster. Candidates for assistant will be appointed by and serve at the pleasure of the Town Council;
- Coordinate, maintain, and repair of the patrol boat and other departmental equipment;
- Prepare an operational budget subject to the approval of Town Council;
- Interface with Town departments, committees, and commissions as necessary relating to harbors and waterways under the jurisdiction of the Harbormaster;
- Set schedules for the Harbormaster and assistant harbormasters with respect to patrolling the waterways and administrative duties;
- Attain and read regularly, the “Local Notice to Mariners Bulletin” published by the US Coast Guard and ensure that these are read by the assistant harbormasters;
- With the Town Council, conduct two public hearings per year for the purpose of soliciting public comments regarding all elements of the harbor plan. The dates and times for such hearings are to be determined by the Harbormaster;
- Carry out all other powers and duties authorized to the Harbormaster under various state and federal marine laws, including, but not limited to, Marine Sanitation Device (MSD) inspection and discharge responsibilities afforded through the U.S. Coast Guard, MARPOL ANNEX V, Section 312 of the Clean Water Act, G.L. 1956, 46-22-1 et seq.;
- Attend annual First Aid and CPR training classes, attend one US Coast Guard Boating Safety Course, and attend specific harbormaster and harbor management training courses as designated by the Town Council and the Town Manager. The assistant harbormasters are also required to attend these classes and courses. Attending such classes shall be a prerequisite to appointment or reappointment as a harbormaster or assistant harbormaster.

In order for the harbormaster to perform many of these tasks, the Town of Carolina Beach will also need to have a boat available for daily use by the harbormaster. It is important that the boat is docked close to the harbor and its mooring field so that there is quick access in the event of an emergency and to improve enforcement.

Harbor Commission

Many municipalities choose to form a harbor commission to oversee the development and implementation of their harbor management plans and ordinances in much the same way that communities use other advisory bodies like a planning board or recreation advisory committee. The model ordinance contained in Appendix B recommends the creation of such an advisory body comprised of citizens who are town residents. Other ex officio representatives can be added as well. The basic role of the harbor commission is to provide oversight and guidance to the harbormaster. It also provides a mechanism for regular feedback on the implementation of the harbor management plan to the Town Council. Thus, many harbor commissions are actively involved in making suggestions for changes in policy

to the Town Council. Having a mechanism for institutionalizing public input is important because many aspects of setting up and implementing a harbor management program such as setting and enforcing vessel speed zones, the location of moorings, fee structures, and the mooring permit allocation process can create conflicts. Moreover, a harbor management commission can be a useful mechanism for finalizing the model ordinance and making the wide range of smaller policy choices associated with setting up a harbor management program. It can also oversee subsequent revisions to this plan. The harbor commission could also be tasked with the responsibility for overseeing other issues covered in the plan as well. Accordingly, the harbor commission could be given the responsibility for recommending improvements to water quality and public access in the harbor area.

Mooring Allocation, Placement, Tackle Requirements, & Inspections

One area where some policy choices have to be made is for the detailed policies and regulations that guide mooring allocation, placement, tackle requirements, and inspection procedures. Many of the details described in the model ordinance such as application requirements, waiting lists, and number systems are typically not controversial but they do require discussion to develop a procedure that will work well given local contextual factors. Two of the more controversial decisions are typically the ratio of residents to nonresidents and the number of moorings to set aside for transient boaters since they are then unavailable to be allocated on a permanent basis. The model ordinance contained in Appendix B recommends using no greater than a 3:1 ratio of residents to nonresidents with transient boaters counted towards the nonresident share of the total even if they are used by town residents. However, the more reliant the Town is on federal or state grant money, the more it may be appropriate to increase the ratio of nonresidents. Similarly, many communities charge nonresidents higher fees. Thus, for revenue generating purposes it may be desirable to increase the nonresident ratio. Moreover, if the transient moorings are in high demand, it may be appropriate to set aside a larger ratio of nonresident, transient moorings due to the other economic impacts that these visitors can have on a community.

It will also be necessary to establish a fee schedule for the use of the moorings. This set of policy choices is often controversial as the perceived “fairness” of the fee schedule often hinges on different conceptualizations of the equity concept. Thus, when deliberating fee schedules it is often useful to begin by reaching some agreement on what is a “fair” schedule. Three general goals may be useful to help frame these discussions. First, it is important that the program generates enough revenue (or other economic benefits) to justify its adoption of a fee system. Ideally, the program would charge mooring fees that enable the program to be revenue neutral or at least limit the public subsidy associated with the facility. At a minimum, the fees should at least offset the cost of administering the permit portion of the program. Since the public in general will benefit from other aspects of the program (e.g., increased harbor patrols, improved boating safety, etc.) it is less important that the fee schedule recover these costs. Second, it is important to set fees that are lower than what marinas charge to offset the added inconvenience and to ensure that there is some incentive for boater to utilize the mooring field. Conversely, the fees should not be so low as to charge less than what the market would otherwise allow and unfairly compete with private marinas.

Table 4: Sample Mooring Fee Schedule

User Type	Designated Use	Fee
Private Moorings (resident or non-resident taxpayer)	All vessels, length overall	\$12.00 / foot
	“Mooring only”	\$50.00
Private Moorings (nonresidents)	All vessels, length overall	\$18.00 / foot
	“Mooring only”	\$100.00
Town Transient Moorings	Resident or non-resident taxpayer	\$5.00 / night
	Non-resident – current mooring permit holder	\$10.00 / night
	Non-resident – transient	\$25.00 / night
Waiting List Fees (Initial fee and annual renewal fee)	Resident or non-resident taxpayer	\$5.00 / boat
	Non-resident	\$15.00 / boat
Late Fees	Mooring permit received after April 1	\$10.00 / month
	Waiting list renewal received after March 1	\$10.00
	Waiting list received after April 1 through June 30	\$20.00

Third, all else being equal, a simple fee system will be easier to administer and explain to the public than one which is very complicated.

The model ordinance [Appendix B] contains a simple version of a fee schedule that has commercial moorings charged \$1,000 per year, non-resident moorings \$500 per year, and resident moorings charged \$350. The amounts are only meant to be a starting point for discussions. Town officials or the harbor commission may wish to adopt a fee schedule with substantially higher or lower fees after discussing the aforementioned issues. They may also wish to have a more complicated fee schedule that uses vessel size or other factors to determine the pricing system. In either case, it is important to point out that while these costs contained in the model ordinance may seem significant at first glance, they are all substantially lower than what is currently paid at other commercial marinas in the harbor area or the municipal marina. Conversely, mooring owners currently pay no annual fee so for many homeowners who have a mooring this would be a significant increase. A more sophisticated approach to a fee schedule is to charge vessels based on their size such that larger boats pay higher fees than smaller boats. One obvious advantage to this approach is that the mooring owner is compensating the public for their permanent occupation of submerged public trust lands. The other advantage of this approach is that since there is a fixed amount of possible mooring space, this fee system can yield a more predictable revenue streams for budgeting purposes than one based on a fixed fee. A sample mooring fee schedule based on boat sizes and their occupation of public trust waters is contained in Table 4.

Another set of decisions, many of which are not controversial, entails the tackle requirements and procedures for the placement of moorings. However, since they impose responsibilities on both the Town and mooring owners, it is important that these procedures receive due consideration. The Town would be responsible for purchasing, installing, and maintaining the mooring tackle used for transient boaters. Accordingly, it is important that the mooring

Table 5: Sample Mooring Tackle Specifications

Boat Length Up To	Block or Stone Weight	Block/Stone Dimensions	Heavy Chain Diameter	Chain Diameter	Light Pennant Nylon
12 ft	200 lb	18 x 18 x 6"	3/8"	1/4"	5/16"
16 ft	300 lb	20 x 20 x 8"	3/8"	5/16"	3/8"
18 ft	800 lb	30 x 30 x 8"	1/2"	3/8"	7/16"
25 ft	1,000 lb	40 x 40 x 8"	5/8"	3/8"	1/2"
35 ft	2,000 lb	48 x 48 x 8"	3/4"	1/2"	5/8"
45 ft	4,000 lb	60 x 60 x 12"	3/4"	1/2"	3/4"
55 ft	6,000 lb	72 x 72 x 12"	3/4"	9/16"	1"

Note: Concrete blocks 1000 lbs and over shall be steel-reinforced. Hairpins shall be 25% heavier than required chain.

fees are structured in a manner that, at a minimum, recovers these costs. Typically, vessel owners are then responsible for purchasing their own tackle that conforms to a set of general requirements once they have obtained a mooring permit.

Table 5 contains some general recommendations on the tackle for moorings. However, these are best viewed as minimum standards and would not be satisfactory in severe weather. Therefore, there will need to be a plan and procedures for evacuating the mooring field during severe storm events or otherwise ensure that tackle is properly sized. Most mooring programs rely on the harbormaster to ensure that the mooring tackle used is consistent with the general requirements described in Table 5. The harbormaster also approves the location of all permanent mooring anchors, including blocks, within the field and records the exact latitude and longitude positions using GPS or some other system. All mushroom anchors should be equipped with an appropriately sized shank weight to assist in the proper 'setting' of the mooring. Examples of some of the general tackle requirements suggest that the length of chain should be at least three (3) feet longer than the depth of water at mean high water where the mooring is located. Mooring pennants (hawsers) should: consist of three strand-nylon or its equivalent; not float; be fitted with thimbles of appropriate size where they are attached to chain or metal fittings; be shackled directly to the chain; and, be equipped with adequate chaffing gear where they pass through chocks or hawse holes. Shackles should be at same size as the chain or larger. Swivels, if used, should be one size larger than the chain to which they are connected. Shackles and swivels should be safety wired or welded to prevent loosening. Screw anchors should be installed by a licensed installer certified by the anchor manufacturer and approved by the Harbormaster.

Given the details and importance of having tackle appropriate to the size of the vessel to be moored, it is also important that mooring tackle is inspected and approved by a qualified person before being placed in service in the Carolina Beach Harbor. This could be the harbormaster or the Town could approve inspectors and rely on an inspector's certification. After their installation, all moorings and mooring tackle shall be inspected on a regular basis (e.g., at least once every two years) by a qualified person. The harbormaster should also have the right to inspect any mooring or its tackle at anytime. The harbormaster should also

have the right to and may remove or cause to be removed any mooring that fails to meet the provisions of the regulations.

Every set of mooring tackle will also require a permanently affixed mooring buoy that contains information that is used for identification and enforcement purposes. A common approach is to use a white mooring ball with a blue horizontal stripe that is a minimum of 12 inches in diameter. Moorings must be marked in accordance with US Coast Guard and NC WRC requirements, and must bear the owner's name, state vessel registration numbers and/or US Customs documentation numbers, and assigned mooring permit number. The last name of the owner / permit holder and the assigned mooring permit number should be permanently and legibly displayed on the mooring buoy in block characters (letters and Arabic numerals) of at least one (1) inch in height and must contrast in color with the background. All mooring permit numbers are permanently assigned and will not change from year to year. Each vessel or other object attached to a mooring shall display the current mooring permit sticker. The mooring sticker shall be displayed in a visible location on the port (left) side of the vessel. The numbers of the mooring tag and mooring sticker shall be the same unless otherwise authorized by the harbormaster.

Summary

Obviously, the designation and operation of a public mooring field in the harbor area would benefit recreational boaters in Carolina Beach and elsewhere in southeastern NC. The additional boating activity and influx of transient boaters is also likely to have economic impacts on the Town and the CBD. Moreover, there are few similar geographic areas in the region that lend themselves to a similar use of public trust waters.

However, as noted throughout this section the designation of one or more public mooring fields carries with it additional duties and responsibilities and requires additional policy choices. The creation of a harbor commission to carry out these deliberations and provide continued oversight for the harbor management program would be the next step in pursuing this policy option. The next section of the report provides some possible funding sources that could be used to help pay for some of the recommendations associated with establishing a harbor management program and implementing other recommendations contained in Section III.

Section V

Potential Sources of Implementation Funding

Sources of Potential Implementation Funding

This section of the report describes some of the federal and state grant programs that are available to fund some of the recommendations contained in Section III. At the local level, fees associated with mooring rentals, stormwater utility fees, parking revenues, and general revenue funds could also be used to pay for the implementation of these recommendations or serve as matching funds for the grants described below.

Clean Water Management Trust Fund

The *Clean Water Management Trust Fund* receives a direct appropriation from the General Assembly in order to issue grants to local governments, state agencies and conservation non-profits to help finance projects that specifically address water pollution problems. The Clean Water Management Trust Fund pays for projects that:

- Enhance or restore degraded waters,
- Protect unpolluted waters, and/or
- Contribute toward a network of riparian buffers and greenways for environmental, educational, and recreational benefits.

More information on the Clean Water Management Trust Fund can be obtained by contacting Lisa Schnell at (919) 716 - 0057.

Public Beach and Waterfront Access Grant Program

The DENR's DCM has established a *Public Beach and Waterfront Access Grant Program* for Local Governments. The DCM awards about \$1 million a year in matching grants to local governments for projects to improve pedestrian access to the state's beaches and waterways. Local governments can use access grants to construct low-cost public access facilities, such as parking areas, restrooms, dune crossovers and piers. Projects range in size

from small, local access areas to regional access sites with amenities such as large parking lots, bathrooms and picnic shelters. Towns and counties also may use the grants to replace aging access facilities. In addition, local governments can use the funds to help acquire land for access sites or to revitalize urban waterfronts. For more information on the Public Beach and Waterfront Access Grant Program, contact John Thayer at (252) 808 - 2808.

Marine Sewage Pumpout and Dump Station Grant Program

The state's DCM has also established a *Marine Sewage Pumpout and Dump Station Grant Program* to provide financial assistance to marinas and other boat-docking facilities for the installation and renovation of pumpout and dump stations in North Carolina. For more information on the Marine Sewage Pumpout and Dump Station Grant Program, contact Mike Lopazanski at (919) 733 - 2293.

Water Resources Development Project Grant Program

The *Water Resources Development Project Grant Program* is administered by the Division of Water Resources (DWR) within DENR. This program is designed to provide cost-share grants and technical assistance to local governments throughout the State. Applications for grants are accepted for the following purposes:

- General navigation;
- Recreational navigation;
- Water management;
- Stream restoration;
- Beach protection;
- Land acquisition;
- Facility development for water-based recreation; and,
- Aquatic weed control.

For more information on the Water Resources Development Project Grant Program, contact John Southerland at (919) 715 - 5446 or Jeff Bruton at (919) 715- 0387.

Park and Recreation Trust Fund

The North Carolina General Assembly established the *Parks and Recreation Trust Fund* on July 16, 1994 to fund improvements in the state's park system. It also funds grants for local governments and provides funds to increase the public's access to the state's beaches. The Parks and Recreation Trust Fund is the primary source of funding to build and renovate facilities in the state parks as well as to buy land for new and existing parks. The Parks and Recreation Trust Fund program also provides dollar-for-dollar grants to local governments. Recipients use the grants to acquire land or to develop parks and recreational projects that serve the general public. For more information on the Parks and Recreation Trust Fund, contact John Poole at (919) 715 - 2662.

Boating Infrastructure Grant (BIG) Program

At the federal level, the U.S. Fish and Wildlife Service (USFWS) administers the *Boating Infrastructure Grant (BIG) Program* to help improve docking facilities for recreational, transient, non-trailer-able boats along the navigable waterways of the United States. The grants are part of the BIG program authorized by the Sportfishing and Boating Partnership Act of 1998 and are funded through excise taxes on motorboat fuel. The BIG program provides states with funding for:

- Mooring buoys;
- Day-docks;
- Transient slips;
- Safe harbor facilities (including temporary safe anchorage or a harbor of refuge during a storm);
- Floating and fixed piers and breakwaters;
- Dinghy docks;
- Restrooms;
- Retaining walls;
- Bulkheads;
- Dockside utilities;
- Pumpout stations;
- Trash collections and recycling facilities;
- Dockside electric;
- Water and telephone capabilities;
- Navigational aids; and,
- Marine fueling stations.

BIG transient facilities must be built in waters deep enough for boats 26 feet and larger to navigate at a minimum of six feet of depth at low tide. One-time dredging will be allowed to provide access between open water and a tie-up facility. For information on the BIG Program contact David Taylor at (252)726 - 7021.

Section 319 Grant Program

The *Section 319 Grant Program* was established by amendment to the Clean Water Act (CWA) in 1987 to provide funding for efforts to curb NPS pollution, including that which occurs through stormwater runoff. The U.S. Environmental Protection Agency (EPA) provides funds to state and tribal agencies, which are then allocated via a competitive grant process to organizations to address current or potential NPS concerns. Best management practices (BMPs) are defined in 15A NCAC 02B .0202 (7) as a means of structural or nonstructural management-based practice used singularly or in combination to reduce nonpoint source inputs to receiving waters in order to achieve water quality protection goals. Funds may be used to demonstrate BMPs, establish Total Maximum Daily Load (TMDL) for a watershed, or, to restore impaired streams or other water resources.

In North Carolina, the 319 Grant Program is administered by DENR's DWQ. Each fiscal year, North Carolina is awarded nearly \$5 million to address NPS pollution through this grant program. Grants are divided into two categories – base and incremental. Base projects concern research-oriented, demonstrative, or educational purposes for identifying and preventing potential NPS areas in the state where waters may be at risk of becoming impaired. Incremental projects seek to restore streams or other portions of watersheds that are already impaired and not presently satisfying their intended uses. State and local governments, interstate and intrastate agencies, public and private nonprofit organizations, and educational institutions are eligible to apply for Section 319 grants. For more information on the Section 319 Grant Program, contact Kim Nimmer, Section 319 Grant Program Coordinator, at (919) 733 - 5083.

Appendix A

CAMA Land Use Plan Policies

Section 4.3 – April 25, 2005

Policies	Actions
Establishment of Town Shoreline Access Plan	<ol style="list-style-type: none"> 1) The Town shall seek funding from the North Carolina Division of Coastal Management for the preparation of a Shoreline Access Plan to address the needs of public access along Myrtle Grove Sound. 2) In the absence of CAMA funding for a Shoreline Access Plan, the Town shall integrate shoreline public access considerations into the Myrtle Grove Sound Water-Use Plan. 3) Soundfront public access may consist of Local Access Sites at a desired ratio of one per block.
The Conversion of Threatened and Eroding Land to Public Access	<ol style="list-style-type: none"> 4) The Town may seek to identify and prioritize land along Myrtle Grove Sound that is severely threatened and/or impacted by repeated erosion, and where development of such land for uses other than passive recreation, is not feasible or allowed by law. 5) The identified land may be evaluated for public access opportunity, including consideration of public safety and the impact on neighboring areas. 6) When feasible, the identified lands may be sought through acquisition, dedication, easement, or some other form of transfer of rights of use to the Town, state, federal, or non-profit entity.
Shoreline Access for People with Disabilities	<ol style="list-style-type: none"> 7) In areas where the topography and character of the natural environment permit, applicable accessways and paths shall be provided for the disabled by building paths and ramps for wheelchairs if this can be done without significant alterations to major landforms, damage to sensitive habitats or unreasonable financial burden. 8) In using state and federal funds for public access, the Town shall adhere to all applicable federal and state law requirements regarding public trust access for people with disabilities.
Public Access Signage	<ol style="list-style-type: none"> 9) A uniform system of signs that clearly identify all public accessways, access boundaries, vista points, bicycle paths, specific shoreline destinations and areas where access is hazardous and/or restricted shall be provided by the appropriate managing agency or the Town. 10) Natural or visually compatible materials shall be used and signs and accessway boundary markers shall be compatible with the scenic quality of the area. 11) All unimproved accessways available to the public shall have signs posted regarding possible safety risks. 12) Hazardous areas that are closed to the public shall be appropriately signed to prohibit access.

Policies	Actions
Public Moorings	<p>20) The Town shall support public mooring buoys designed to serve currently unmet needs of transient and recreational boaters who could contribute substantially to the local economy.</p> <p>21) The Town shall prepare a Water-Use Plan for Myrtle Grove Sound and all other steps necessary to meet the requirements of a major mooring field permit as issued by the NC DCM under 15A NCAC 7H. 0208 (b) (10).</p>
Development Patterns	<p>22) The Town shall support a growth pattern which reinforces the community's existing commercial areas and protects existing residential areas from inappropriately designed and scaled non-residential development. The compact, pedestrian oriented nature of the Town's historic center – the boardwalk area and boat basin area – shall receive special diligence in this regard.</p> <p>28) Businesses locating in or near the boardwalk and marina/boat basin area shall be pedestrian oriented, while those locating along US 421, away from the Town center, may be more automobile oriented.</p> <p>34) Dry Stack storage facilities shall be prohibited at Carolina Beach.</p>
Tree Cover and Landscaping	<p>50) The Town shall also promote the generous use of indigenous landscape materials in new and existing developments to improve appearances, absorb stormwater runoff and reduce ambient air temperatures.</p>
Myrtle Grove Sound and Marina Land Use Compatibility	<p>55) Land use activities in the immediate vicinity of Myrtle Grove Sound shall be compatible with continued recreational and commercial retail operations of the sound, and similarly, plans for the significant increases in activities in the Sound shall consider impacts on, and be compatible with, land-based activities, transportation modes, and infrastructure capacity (dinghy docks, pump outs, waste disposal) and other commercial activities in the immediate vicinity.</p> <p>56) The Town shall encourage low intensity restaurants or similar low intensity commercial to develop soundside. Restaurants and water dependent commercial retail could provide public access and public small craft facilities.</p>
Scenic Vistas and Views	<p>57) The Town shall actively seek Grant Funding and available Capital Improvement Funding for the protection and enhancement of natural views and vistas provided by street corridors and street ends, and open spaces.</p> <p>61) The Town shall avoid installing structures or excess vegetation that completely obstructs the view of public trust waters from Town land and/or public roadways.</p>
Flood Hazard Reduction	<p>69) The Town shall enforce rigorous development standards consistent with the Town National Flood Insurance Program (NFIP) and the Community Rating System (CRS) program for flood hazard reduction including: location of buildings landward of the reach of the mean high tide; requirement to elevate structures two (2) feet above base flood elevation as specified on FEMA and other official maps; anchoring standards to resist flotation, collapse, and lateral movement; prohibiting fill used as structural support in V flood zones, and; prohibiting alteration of sand dunes which would increase potential flood damage.</p>
Stormwater Runoff	<p>81) (A) Future developments must meet all local, state and federal stormwater runoff regulations as applicable to the individual development.</p> <p>(B) The Town shall require the use of "best management practices" to minimize the release of pollutants to coastal waters through stormwater runoff. Examples include using pervious or semi-pervious materials, such as turfstone or gravel for driveways and walks, retaining natural vegetation along marsh and waterfront areas to retain its natural filtering properties, and allowing stormwater to percolate into the ground rather than discharging it directly to coastal waters.</p>

Policies	Actions
Development in Estuarine Watershed Areas	83) The Town shall continue to strengthen controls over development and redevelopment in estuarine watershed areas to prevent further degradation of water quality in Myrtle Grove Sound, Snow's Cut (including the Intracoastal Waterway) and the Cape Fear River. Strengthening development and redevelopment control is intended to enhance the protection of public health, and to ensure the protection of vital natural resources by reducing nutrients, pesticides, sediment and other harmful pollutants through density controls, setbacks, buffers, impervious surface limits, and other means.
Fisheries Resources	84) The Town will support state and federal regulations to insure the water quality of local waters that support both commercial and recreational fishing.
Marina Environmental Stewardship	85) The Town shall require new and existing private and public marinas to follow the North Carolina Clean Marina Program's management and operations techniques and the practices outlined in the <i>Best Management Practices Manual for North Carolina's Marinas</i> .
Myrtle Grove Sound	<p>90) The Town shall prepare a Water-Use Plan for the management of activities related to Myrtle Grove Sound. The Planning and Zoning Commission shall be responsible for reviewing and recommending the water-use plan.</p> <p>91) (A) The Town shall prepare a Water-Use Plan for Myrtle Grove Sound to manage and balance the interests of commercial boating and fishing enterprises with the interests of recreational and transient boaters. (B) The plan shall include an evaluation of the current uses of the limited docking facilities within the Myrtle Grove Sound and provide solutions for the equitable and most efficient use of those facilities.</p> <p>92) Due to the important role of commercial and recreational fishing to the economy and ambient character of Carolina Beach the Town shall encourage and support commercial fishing operations and sport fishing operations provided that such operations meet all applicable development standards and are otherwise consistent with the policies of this plan.</p> <p>93) Due to the potential beneficial economic impacts that recreation and transient boating add to the local economy and ambient character of Carolina Beach, the Town shall encourage recreation and transient boaters, and support the development of associated accommodating facilities, provided that such accommodations and boater impacts meet all applicable development standards and are held to remain consistent with the policies and goals of this plan.</p> <p>94) (A) The Town shall continue to provide financial support and managerial guidance to the Carolina Beach Boat Basin and Marina, including periodic major capital improvement projects as may be authorized and budgeted by the Town. (B) Day-to-day management of the marina shall be handled by a semiautonomous Town Council appointed Marina Authority. Alternatively, the Town may elect to lease the boat basin out to a private management company, but with the Town maintaining ownership of all facilities. Under either management option, the marina's normal operation and maintenance shall be self-sustaining through revenues received. (C) Future improvement to the marina area shall be in keeping with the pedestrian-oriented character of the central part of Town.</p> <p>95) Due to the limited surface area of public trust waters for use and enjoyment by the public, floating homes shall not be permitted within the jurisdictional water of Carolina Beach.</p>
Informing Property Owners on the Benefits of Scenic Easements	102) The Town supports inventorying scenic viewsheds and developing and distributing brochures or flyers to property owners with information that the option to donate certain "development rights" on their property to non-profit agencies or the Town may make the property-owner eligible for tax credits, such as state personal or corporate income tax.

Policies	Actions
Parks and Recreation	103) (A) As the community of Carolina Beach grows and annexes, the Town shall support a commensurate increase in the development, maintenance and enhancement of its parks, open space and recreational facilities, including sound and ocean access facilities.

Appendix B

Model Harbor Management Ordinance

Introduction

This appendix contains a model ordinance that can be modified and adopted to implement the recommendations contained in Section III of the report that pertain to establishing one or more public mooring areas. It also specifies the parameters of a harbor management program and defines the duties and responsibilities of the harbormaster in a manner consistent with the discussion found in Section IV of the report. It is not intended to replace Chapter 6 of the Town of Carolina Beach Code of Ordinances entitled “Harbor and Marina” but rather would be a new section or major addition to this ordinance. While the text of the entire model ordinance which follows is obviously subject to modification, there are several areas where additional policy choices will have to be made by Town officials. These choices have been shaded in the text. Some have been deliberately left blank while others have language consistent with the recommendations in Section III and are explained in Section IV.

Appendix C

Public Access Inventory

- Site 1: Florida Avenue
- Site 2: Maryland Avenue
- Site 3: Delaware Avenue
- Site 4: Clam Shell Lane
- Site 5: Sanddollar Lane
- Site 6: Starfish Lane
- Site 7: Scotch Bonnet Lane
- Site 8: Seahorse Lane
- Site 9: Sandpiper Lane
- Site 10: Oystershell Lane
- Site 11: Sail Fish Lane
- Site 12: Seagull Lane
- Site 13: Scallop Lane
- Site 14: Dolphin Lane

Appendix D

Maps

- Map 1: Topographic and Bathymetric Map of Myrtle Grove Sound
- Map 2: Zoning Districts for the Myrtle Grove Sound Area
- Map 3: Special Flood Hazard Areas Base Flood Elevation Map
- Map 4: NC CREWS Map
- Map 5: Proposed Mooring Field Areas, Existing Marinas, and Public Access Sites
- Map 6: Proposed Mooring Field Areas for Small Boats less than 26 feet (45 foot swing radius)
- Map 7: Proposed Mooring Field Areas for Large Boats less than 55 feet (75 foot swing radius)
- Map 8: Navigation Chart for Myrtle Grove Sound
- Map 9: Proposed Pierhead Line for Myrtle Grove Sound

Appendix E

Plan Implementation

Adoption

Pursuant to the authority of the Carolina Beach Code of Ordinances, the Carolina Beach Town Council has the legislative capacity to adopt policies, ordinances and amendments. Based on the authority provided under the Carolina Beach Code of Ordinances the Carolina Beach Town Council Adopted the Carolina Beach Water Use and Harbor Management Plan on _____..

Monitoring, Evaluation, Update, and Revision

The Water Use and Harbor Management Plan for Carolina Beach will be evaluated by the Senior Planner, Harbor Master, and Harbor Commission annually to access how effective implemented mitigation strategies have been. The primary issue that monitoring and evaluation should address is whether public access, recreation uses, and water quality have improved as a result of the strategies adopted in the plan. At the annual evaluation the Harbor Commission shall consider:

- 1) What activities need to be implemented in the coming year?
- 2) Have current activities continued successfully? Would additional measures be more successful or should revisions be made to existing measures?
- 3) Has there been an efficient and effective process for compiling information on the strategy outcome?
- 4) What changes in development, technology or the capabilities to implement the strategies adopted in the plan could necessitate the need for revisions in the plan itself?
- 5) What resources are needed for new and existing activities?
- 6) Is there any redundancy among strategies that can be eliminated to free-up resources
- 7) Are there any technical, legal and/or coordination problems associated with implementation
- 8) Are actions are being implemented according to the prioritization scope

Implementation through Existing Programs

Carolina Beach addresses planning goals and legislative requirements through its CAMA Land Use Plan, Water Use and Harbor Management Plan, Central Business District Master Development Plan, Parks and Recreation Open Space Master Plan, Subdivision Ordinance, Flood Damage Prevention Ordinance, Stormwater Management Ordinance, Zoning Ordinance, Hazard Mitigation Plan, the North Carolina State Building Codes, and other long range planning documents. The Water Use and Harbor Management Plan provide a series of goals, objectives, and strategies that are closely related to the goals and objectives of these existing planning programs. Carolina Beach will have the opportunity to implement adopted mitigation strategies through existing programs and procedures.

Continued Public Involvement

- Upon adoption of the plan a public information notice will be posted in the local newspaper stating that the plan has been adopted by the governing board and is

available on the Town sponsored website and at the Town Hall for further review by the public.

- Subsequently, a copy of the adopted plan will be placed at the Town Hall and the closest public library for the public to provide input on the plan.
- All meetings of the Harbor Commission shall be open to the public and held in accordance with the Standards of Practice.

Table 6: Town of Carolina Beach, NC Action Outline

This table includes: activities (goals), implementation measures, strategies, responsible parties, funding source, and evaluation indicators. Each strategy is also organized into one of 3 categories: new project, amended policy/ordinance, and continued project.

Type of Strategy

There are 5 strategy types and each strategy will be classified as one of the five types.

- Preventative – activities that are intended to keep vulnerability from increasing.
- Natural Resource Protection – activities that reduce impacts on our waters by preserving or restoring natural areas.
- Structural Projects – projects that require upgrading existing or creating new structures that will enhance public access, water quality or recreational water uses.
- Public Information – activities that are used to advise citizens, business owners, potential property buyers, and visitors about public access availability or needs; water quality issues; and recreational use goals.
- Planning and Management – administration of these activities requires coordination between the Harbor Commission, staff and other stakeholders before the project can begin.

Responsible Party/Organization

The responsible party/organization will be the main source of information for the project manager. The organization will be a key player in seeking out appropriate funding, overseeing strategy implementation, and help the Harbor Commission to be a liaison between the community and any other organization participating in the project. The responsible party/organization will help the project manager coordinate and present on the status of monitoring and evaluation of each activity's status.

Potential Funding Source

It is a well known fact that many small communities lack the resources to implement water use and harbor management strategies. Thus, this plan identifies potential funding sources for each strategy identified herein. The funding sources are those sources that are currently available to communities and may change from year to year. As a result, the responsible

party/organization for each strategy should always research funding sources not listed in this document.

Monitoring and Evaluation Indicators

Monitoring and evaluation indicators are benchmarks that will allow the monitoring and evaluating party to determine if a strategy has been completely implemented. Additionally, they will identify if a strategy is achieving the goal. If it is found that the strategy is not successful in the community it may need to be altered or discontinued.

Table 7: Criteria and weights for goal implementation

Criteria	Definition/Explanation
Harbor Commission	Harbor members listed their top five concerns for the harbor area
Environmental	Extent to which project enhances or helps preserve our natural resources
Improving Access	Extent to which project improves community access
Safety	Extent to which project eliminates, prevents, or reduces hazard to safety.
Financing	Extent to which the project can be financed with non-general fund revenue sources.
Community support and town long-term plans	Extent to which project has broad and/or strong support from the community and is consistent with the town strategic plan or other long-term plans.
Timing/linkages	Extent to which project is timely, a continuation of a project currently under way, related to other high-priority projects, etc.
Economic Impact	Extent to which project enhances economic development in town, while it directly or indirectly adds to the tax base.
Maintaining current level of service	Extent to which project is necessary for town to continue to provide one or more services or improves the quality of existing services

Criteria and weights for goal implementation provide a more objective way to measure what is valued by the Town. This table helps to focus on each activities importance to the community and the level of support it will require to implement or maintain.

Table 8: Activity ratings

Priority	Activity	Project Manager
1	Urban stormwater runoff (water quality)	Randy/Rick
2	Marinas and Recreational Boating Activities (water quality)	Pat/Randy
3	Maximizing Use of the Municipal Marina	Caleb/Tom
4	User Conflicts in the Harbor Area	Kevin/Caleb
5	Public Access to the Harbor Area	Pat/Tom
6	Contingency Planning	Planning Staff
7	Developing Additional Boat Launch Facilities	Rick/Fred
8	Establish a Mooring Field	Fred/Tom/Rick

The activities are prioritized to allow the Town to strategically plan for annual implementation focus areas. Many strategies, especially those that will take multiple years to complete, will require the project manager's to establish an individual timeline where benchmarks can be used to monitor the progression of the strategy.

Prioritized items that the Harbor Commission has focused on will be evaluated annually by utilizing the 8 criteria under Monitoring, Evaluation, Update, and Revision. Although the focus will be maintained on reviewing the cost and benefits of highlighted policy choices within the plan, project managers will be responsible for researching their respective area and providing pertinent information regarding their assigned activity. In addition, project

managers are expected to give annual updates as to what is going on with their activity and recommendations in accordance with “Plan Implementation” as defined in this supplement.

Appendix F

Mission Statement:

The Harbor Commission exists to serve the Town by implementing a working Harbor Management Plan. We provide a resource to Town Council by researching the costs and benefits of management issues associated with water use and harbor management. Our focus is to improve the water resources of the harbor and encourage economic activity by improving the water access needs of residents as well as area visitors.

Vision Statement:

The commission will serve the public by developing best management practices to help create a readily accessible and hospitable harbor for the local community and tourists, and creates positive economic opportunities throughout the town while preserving and enhancing the environmental quality of the area.

Powers and Duties: The Harbor Commission shall be the local regulatory body authorized to regulate the coastal waters and harbor areas of the Town through the implementation of the Harbor Management Plan and its subsequent ordinances. The Harbor Commission shall adopt rules of procedure and operation for its meetings and is authorized to:

- (1) Recommend to the Town Council the adoption of rules, regulations fees, penalties, and other amendments to the Harbor Management Plan and its subsequent ordinances which may be necessary to fulfill the goals and objectives of the Harbor Management Plan and meet the requirements of its ordinances;
- (2) Create additional authorities and duties for the Harbormaster, herein detailed, with the approval of the Town Council;
- (3) Assist in the preparation of an annual budget in accordance with the provisions of the Town to expend monies in the Harbor Management Fund;
- (4) Review and revise as necessary the Water Use and Harbor Management Plan and its subsequent ordinances for Town Council approval. The Harbor Management Plan and its ordinances shall be reviewed and revised annually.

The Harbor Commission shall fulfill its commission through ethical standards, practices and procedures so set forth in the Standards of Practice adopted October 16, 2007 ***and as subsequently revised***). All commission members shall thoroughly familiarize themselves with these standards, procedures and practices.

A. MEMBERSHIP

The Harbor Commission shall consist of **seven (7)** members who shall be persons of recognized experience and qualifications. The members shall be appointed by the Town Council. The Senior Planner and Harbor Master shall be the ex officio, non-voting members of this commission and shall attend all meetings for the purpose of providing technical assistance when requested by the commission.

B. OFFICERS

1) Chairman: The Chairman shall be elected by the voting members of the commission. The term of the Chairman shall be for one (1) year, such term ending on June 30th of each year;

2) Vice-Chairman: The Vice-Chairman shall be elected by the voting members of the commission. He/she shall serve as acting Chairman in the absence of the Chairman, and at such times have the same powers and duties as the Chairman. The term of the Vice-Chairman shall run concurrent with that of the Chairman.

3) Secretary: The Secretary shall be appointed by the committee. The Secretary, shall keep all records, shall conduct all correspondence of the commission and shall generally supervise all clerical work of the commission. The Secretary shall keep the minutes of each meeting of the commission. These shall show the records of all important facts pertaining to every meeting and hearing, every resolution acted upon by the commission, and all votes of members of the commission upon any resolution or other matter, indicating the names of members absent or failing to vote.

C. Fulfillment of Duties

Each commission member shall become thoroughly familiar with the current Carolina Beach Water Use and Harbor Management Plan.

Each commission member shall exercise due diligence of their duties by preparation and familiarization of issues before the commission **and adhere to policy of attendance adopted by the Town Council for appointed Boards and Commissions (see attachment)**.

III Meetings

- 1) **Regular Meetings** Regular meetings of the commission may be held on the ***4th Wednesday*** in the Police Training Room of the Town Hall; provided, that if the Chairman so directs, meetings may be held at other locations or times as required.
- 2) **Special Meetings** Special meetings of the commission may be called at any time by the Chairman. At least twenty-four (24) hours notice of the time and place of special meetings shall be given, by the Secretary or Chairman, to each member of the Commission; provided that this requirement may be waived by a majority of all the members.
- 3) **Cancellation of Meetings** Whenever there is no business for the commission, the Chairman may dispense with a regular meeting by giving notice to all members not less than twenty-four (24) hours prior to the time set for the meeting.
- 4) **Quorum** A quorum shall consist of ***four (4)*** members of the commission.
- 5) **Conduct of Meetings** All meetings shall be open to the public as required by law. The order of business at regular meetings shall be as follows:
 - (a) Roll Call
 - (b) Reading/Acceptance of previous minutes
 - (c) Public Input
 - (d) Reports of Committees
 - (e) New Business
 - (f) Old/Other Business
- 6) **Vote** The votes of a majority of those members present shall be sufficient to decide matters before the commission, provided a quorum is present. In the event of a tie vote for an item on the agenda requiring a simple majority vote, the item shall be automatically tabled to the next scheduled meeting.
- 7) **Absence of Chairman and Vice-Chairman** In the event that the Chairman and Vice-Chairman are absent from the meeting, the

quorum of the Commission by simple majority vote shall appoint a member of the Commission as presiding officer of the meeting.

8) Manner of Addressing Commission; Time Limit:

Each person addressing the Commission shall give his/her name and address for the record, and shall limit his/her remarks to five (5) minutes. All remarks shall be addressed to the Commission as a body and not to any member thereof. No person, other than the Commission and the person having the floor shall be permitted to enter into any discussion, either directly or through a member of the Commission without the permission of the Chairman. No question shall be asked of a member of the Commission except through the presiding officer.

9) Meeting Etiquette and Maintaining Effectiveness:

Members of the audience at meetings shall observe the following rules of conduct while the meeting is in progress:

Attendees shall not display signs or any similar type of written communication or device that may obstruct the view of citizens, cause injury, or affect the overall presentation of the item at hand.

Attendees shall not talk to other members of the audience.

Attendees shall not approach the podium unless invited to do so by the presiding officer.

Attendees shall not engage in any behavior that is not in keeping with proper and courteous conduct.

Attendees shall not cheer, jeer, applaud, or express of approval or disapproval of comments made by any speakers or any actions taken by the Commission.

No attendee shall make personal, impertinent, or slanderous remarks, nor otherwise disturb the order of any Commission meeting.

Ground Rules for Effective Groups

- (a) Test assumptions and inferences
- (b) Share all relevant information
- (c) Focus on interests, not positions
- (d) Be specific—use examples

- (e) Agree on what important words mean
- (f) Explain the reasons behind your statements, questions, and actions
- (g) Disagree openly with any member of the group
- (h) Make statements, then invite questions
- (i) Jointly design ways of testing disagreements and solutions
- (j) Discuss undiscussable issues
- (k) Keep the discussion focused
- (l) Don't take cheap shots or otherwise distract the group
- (m) All members are expected to participate in all phases of the process
- (n) Exchange relevant information with nongroup members
- (o) Make decisions by consensus
- (p) Do self-critiques

The Chairman shall take whatever action is necessary to insure that these rules are observed and the meeting proceeds in an orderly fashion.

**POLICY AND PROCEDURES
FOR APPOINTMENTS TO CAROLINA BEACH BOARDS, COMMISSIONS,
COMMITTEES OR AUTHORITIES**

**SECTION 1. THE POLICY OF CAROLINA BEACH GOVERNING APPOINTMENTS TO THE VARIOUS
BOARDS, COMMISSIONS, COMMITTEES OR AUTHORITIES IS AS FOLLOWS:**

- A. Any resident of Carolina Beach is eligible to serve on the appointed boards, commissions, committees or authorities of the town, where such appointment is not prohibited by state statute or by town ordinance or any non-resident as allowed by town ordinance.
- B. All appointments will be made according to the appointment statute or ordinance that created that board, commission, committee or authority.
- C. No resident of the Town of Carolina Beach may serve in more than two appointed positions of Carolina Beach government, unless exempted by nature of the position he or she may hold in governmental service.
- D. Unless otherwise stated by statute or charter, all terms of office shall be three years. No appointees may serve more than two consecutive terms. This policy may be waived if the Town Council determines that the removal or a number of individuals made ineligible by this policy would be detrimental to the functioning of that board, commission, committee or authority.
- E. Whenever any appointee shall incur three consecutive unexcused absences, said appointee's failure to attend shall be reported by the presiding officer of the respective board, committee, commission or authority to the Town Council. Such unexcused absences on the part of any appointee may, at the election of the Town Council, be deemed to constitute resignation on the part of the appointee, from such board, committee, commission or authority. Excused absences are defined as absences caused by events beyond one's control and are subject to approval by the board on which the appointee is serving.

Upon such resignation and acceptance, the Town Council shall select a replacement from the applications of persons who applied for the last vacancy on such board, committee, commission or authority, without further notice, advertisement of action by the Town Council

- F. Appointees must uphold town policies pertaining to the committee he/she serves.
- G. In the event an issue comes before a board, commission, committee or authority and a member of that board, commission, committee or authority has a financial, personal or employment related interest in the outcome of the issue, that member should notify his fellow members that he/she has a potential conflict of interest and request that he/she be excused from voting.
- H. An appointee will not be considered for any employment vacancy in the agency or department he/she is serving, until said appointee resigns his/her seat on the board, committee, commission or authority
- I. The clerk to the Town Council shall have a binder containing a list of all town appointments with the following data provided:
 1. Name of the board, commission, committee or authority
 2. Brief on the functions of each board, commission, committee or authority.
 3. Ordinance of cause creating board, commission, committee or authority.
 4. Number of members and terms of office.

5. Current members, addresses, telephone numbers, terms of office, numbers of terms served, and expiration dates
6. Regular meeting day, time and location

SECTION 2. PROCEDURES FOR FILLING VACANCIES FOR APPOINTED POSITIONS:**A. Notification of Available Appointments**

1. The secretary of the affected board, commission, committee or authority shall prepare an advertisement to be published in the local newspaper. All advertisements must be submitted to the Clerk to the Town Council prior to publication. The affected board, commission, committee or authority may make a recommendation to the Town Council; however, the Town Council will consider all potential candidates and make the appropriate appointment.
2. Thirty (30) days prior to the terms expiring, the secretary of the board, commission, committee or authority will mail a notice to each person who is eligible for reappointment, requesting information on his or her interest in continuing to serve. If an individual is not eligible for reappointment, he or she will be notified and given reason for being ineligible.
3. If, because of policy or otherwise, an individual is not reappointed, he or she will be presented a Certificate of Appreciation for service by the Mayor of the Town Council at a regular meeting of the Town Council.

B Selection Process

1. All applications for a particular position will be returned to the Clerk of the Town Council
2. All applications will be forwarded to the Town Council with those who are ineligible noted and the reasons for ineligibility given.
3. The Clerk to the Town Council shall place on the agenda the "Appointments" for action at the next meeting of the Town Council.

C. Notification of Appointment

1. The Clerk to the Town Council shall prepare a letter of notification to the appointee and a copy to the affected board, commission, committee or authority notifying each of the appointment.

D. Applications

1. All applications received shall be retained for 18 months. Applications shall be kept on file for all active appointees. All of the above data shall be maintained by the Clerk to the Town Council.

