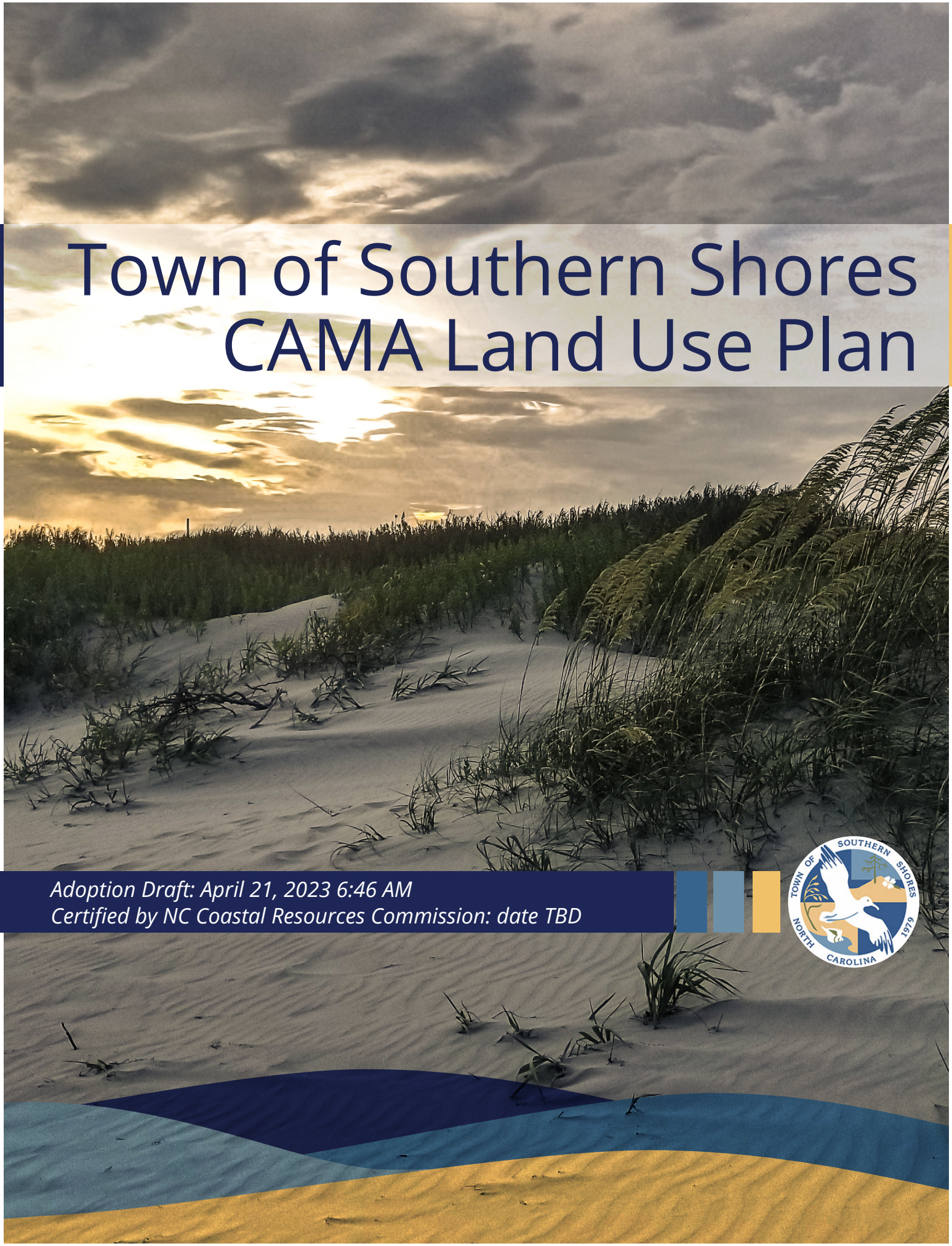

Town of Southern Shores CAMA Land Use Plan

Adoption Draft: April 21, 2023 6:46 AM
Certified by NC Coastal Resources Commission: date TBD

ACKNOWLEDGMENTS

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STEWART

Plan adopted by the Town:

<Date>

Plan certified by NC Coastal Resources Commission:

<Date>

Table of Contents

Table of Contents will be completed in a future draft.

About the Plan

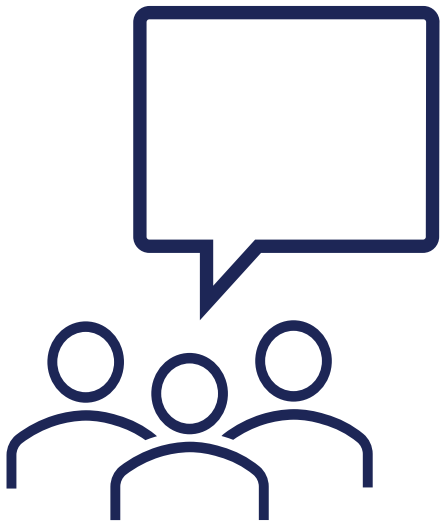
1

Who we heard from?

583
Survey Responses

2
Public Meetings

4
Focus Group Meetings



A Few Participant Voices...

"I value the ambiance provided by the separation of the residential and commercial zones."

-Survey Respondent

"Beautiful natural beaches and family friendly environment."

-Survey Respondent

Planning Process

This Coastal Area Management Act (CAMA)-Certified Comprehensive Land Use Plan, sometimes referred to as a comprehensive plan, incorporates land use and transportation plans previously adopted by the Town of Southern Shores, while creating policy framework to guide responsible growth and natural resource conservation over a 25-year planning horizon.

What's a Comprehensive Plan?

It is a document that contains a shared community vision to guide the growth, development, and natural resource conservation for the Town of Southern Shores. This comprehensive plan considers existing conditions and trends to envision the future community, a community vision created by the people of Southern Shores. It contains goals that define this vision and implementation strategies to achieve these goals. It provides an analysis of the forces that have shaped the Town of Southern Shores overtime, as well as the current socioeconomic qualities of the Town of Southern Shores. Finally, the plan provides implementation strategies to achieve the vital elements that make the Town of Southern Shores a safe and welcoming, place to live, work, and play.

Who's Been Involved

- Planning Board - reviewed the plan regularly and provided direction over the lifespan of the project.
- Town Council - reviewed the plan as a part of the formal adoption process.
- Town Staff - facilitated meetings and outreach, internal review and coordination, provided perspective and background information.
- Members of the public - participated in public meetings, plan review, survey, and input through various methods.

Public Engagement

Public engagement included a series of steering committee meetings, a kickoff meeting, two public meetings, and a community survey.

In addition to the Planning Board reviewing and shaping all elements of the plan, the public also weighed in regularly.

Public Meetings

- Kickoff/Public Meeting #1 November 15, 2022 - introduced the community to the plan development process and reviewed preliminary information that had been collected and analyzed. Gathered community concerns and visions for the plan through feedback activities.
- Public Meeting #2: April 26, 2022

Survey

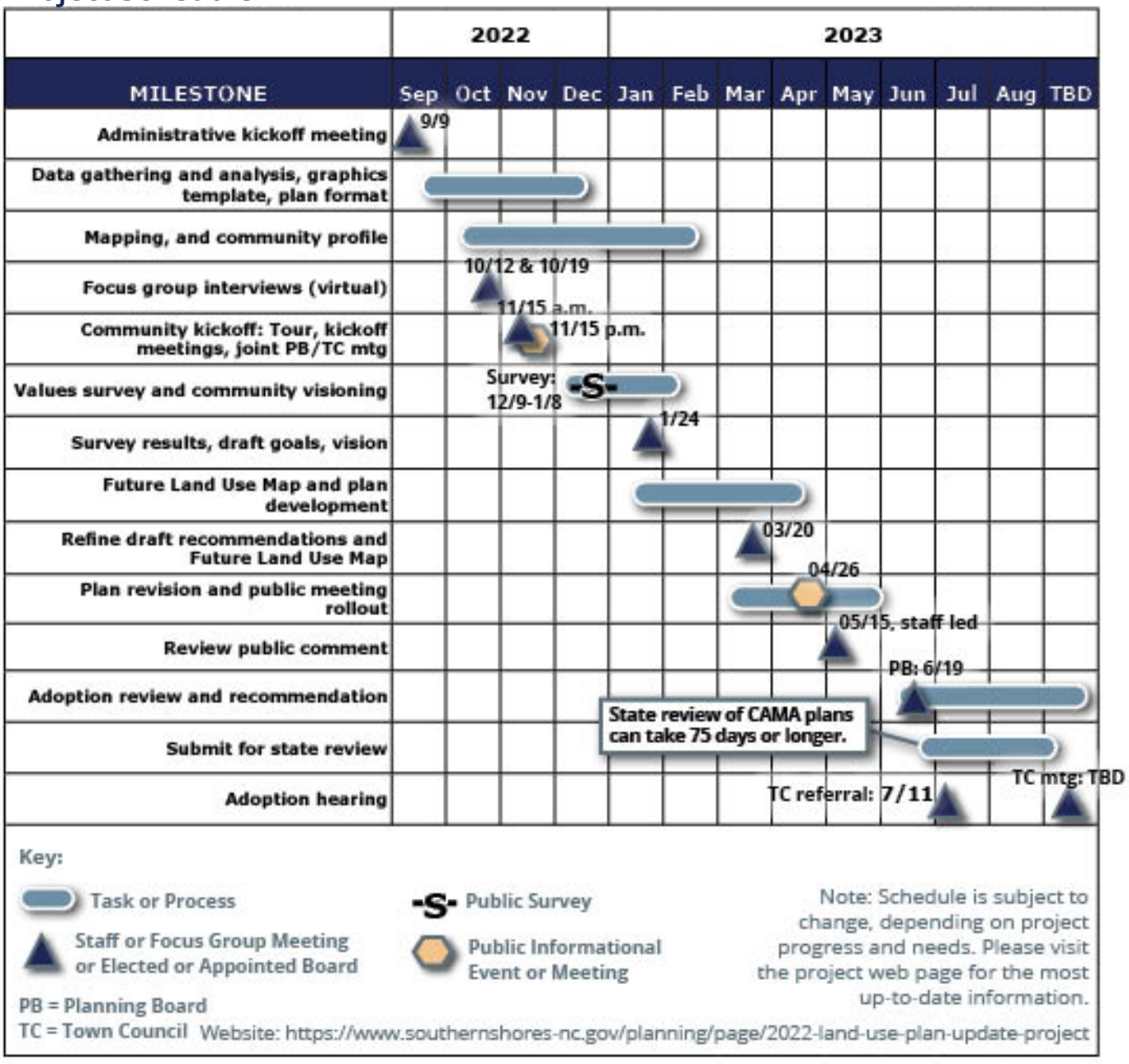
- Timeline: December 5, 2022 - January 8, 2023 - gathered information on community values and vision.
- The survey was extensively advertised and shared with civic associations. Southern Shores residents demonstrated their typical enthusiasm for their town on the survey, with 583 responses collected. See "Appendix B: Public Survey Results" on page 115.

Schedule

The project kicked off in September 2022 by collecting valuable data from town staff. Next, the Stewart team visited the Town for a community tour and kickoff meetings with Town staff, Town representatives, and members of the community. This led to obtaining valuable insight and local perspectives related to land use and development in the town. Following the community tour, a vulnerability assessment

was performed to identify areas of environmental concern, existing land use, transportation, infrastructure, water quality, stormwater, and other environmental concerns. Throughout the process, the project team met with Town staff and the steering committee to help guide the plan and address required topics by the Coastal Area Management Act. A combination of public meetings and a community survey were conducted to gain community insight on future growth, development, preservation, and conservation concerns. Updating the Town's CAMA-Certified Comprehensive Land Use plan is a year-long process that includes public engagement and analysis, followed by state review of the draft plan, which can take up to 75 days.

Project Schedule



Community Concerns and Aspirations

2

Community Values

A Few Participant Voices...

"The trees, beautiful lots, community protected land, neighbors, beach and sound accesses!"

-Survey Respondent

"It's beauty and community orientation with a small town feel."

-Survey Respondent

"The low-density residential character of the community and the uncrowded beaches."

-Survey Respondent

Significant Existing & Emerging Conditions

The following description of existing and emerging conditions is not exhaustive but does capture the general state of land use and development concerns in the Town and sets the stage for further discussion in the plan of relevant concerns. A discussion of Coastal Area Management Act (CAMA) related concerns is also included and is based on the information gathered from stakeholders, Town staff, background research, and the community survey.

Land Use

Context

The Town of Southern Shores is a quaint coastal community with scenic ocean, sound, and maritime forest views. The Town is characterized by its low density neighborhoods consisting of single-family homes on large lots with integrated recreational facilities, private beach accesses, walkways, and open space. These neighborhoods are served by private and public roads along the beach, in the dunes, or in the sound side maritime forest. The community is served by a small commercial district located on the southern edge of town.

Existing Land Use

Much of the land within Town limits is devoted to detached residential uses. These single-family land uses make up more than half of the incorporated land area. Nearly 1/3 of land is considered open space, parks, conservation, beaches, or vacant. Much of this area is not buildable due to the presence of coastal and non-coastal wetlands, and other environmentally sensitive areas. Institutional uses, including a school, a church, and local government facilities, occupy a small portion of land area. An existing land use map and further breakdown of the categories is available on page 64.

Southern Shores is a quiet coastal residential town located on the Outer Banks of Dare County.

Future Land Use

The Town's 2012 Future Land Use Map classifies the area within the Town's planning jurisdiction into the following categories:

- Commercial
- Conservation
- Educational
- Municipal
- Recreational
- Residential

Due to Southern Shores being mostly built-out, the future land use categories generally align with the existing land use. The largest category is the Residential Category. The Future Land Use component of this plan will build on the ideas from the 2012 Future Land Use map.

Development Trends

Most of the land within Southern Shores' corporate limits is built-out with residential development, with few significant undeveloped parcels remaining. These picturesque neighborhoods are interspersed with open space, forests, wetlands, and vegetation.

Nonresidential Uses

Southern Shores features few commercial and institutional uses mostly along N Croatan Highway (US 158), N Virginia Dare Trail, and NC Highway 12. Institutional uses include Town Hall, the Pitts Center, Kitty Hawk Elementary School, and a fire and EMS station. Commercial uses include a mix of large-scale and small-scale retail stores, neighborhood serving businesses, restaurants, and more.

Housing

Southern Shores features a variety of residential neighborhoods which are home to a mix of housing types and styles. Neighborhoods are found north of N Croatan Highway (US 158) from soundside to oceanside. The average year built is 1987, however, there have been a total of 216 homes constructed since the 2012 CAMA Land Use Plan. Residential lot sizes range from 9,000 square feet to over 40,000 square feet but the average lot size is 21,000 square feet.

Housing in Southern Shores consists of a variety of housing styles.

Transportation

Roadways

The Wright Memorial Bridge and N Croatan Highway (US 158) serve as the entryway to the Town of Southern Shores. This four-lane highway is divided with a middle turning lane and provides access for residents and visitors to Southern Shores commercial district. NC 12 is the other main corridor in Southern Shores that runs north/south along the ocean side. In addition, South and East Dogwood Trail is heavily congested with seasonal traffic during the summer months.

Active Transportation and Recreation

Multi-use paths and sidewalks are located along N Croatan Highway (US 158) and NC 12. There is a desire to expand the current multi-use paths throughout the Town. Crosswalks along NC 12 provide access to private beach access areas.

Infrastructure

Water and Wastewater Treatment

The Town of Southern Shores purchases its water from the Dare County Water Department. The Water Department operates five water plants, four of which are reverse osmosis plants; located at Kill Devil Hills, Stumpy Point, Rodanthe, and Frisco. The fifth is a freshwater softening plant located on Roanoke Island.

The Town predominantly relies on individual septic tank systems for wastewater treatment. These systems are owned and maintained by private property owners. Southern Shores Landing has a private wastewater treatment plant that they maintain.

Water Quality

Environmental water quality (not to be confused with drinking water quality) is very important locally, as it supports the economy as well as residents' quality of life.

Stormwater Management

The Town of Southern Shores' drainage system consists of hard and soft infrastructure. Hard infrastructure includes drains, curb and flumes, and culverts. Soft infrastructure includes roadside swales. Stormwater flows through a series of pipes and swales that are both publicly-owned and privately-owned.

Multi-use paths and canals provide recreational benefits to residents in Southern Shores.

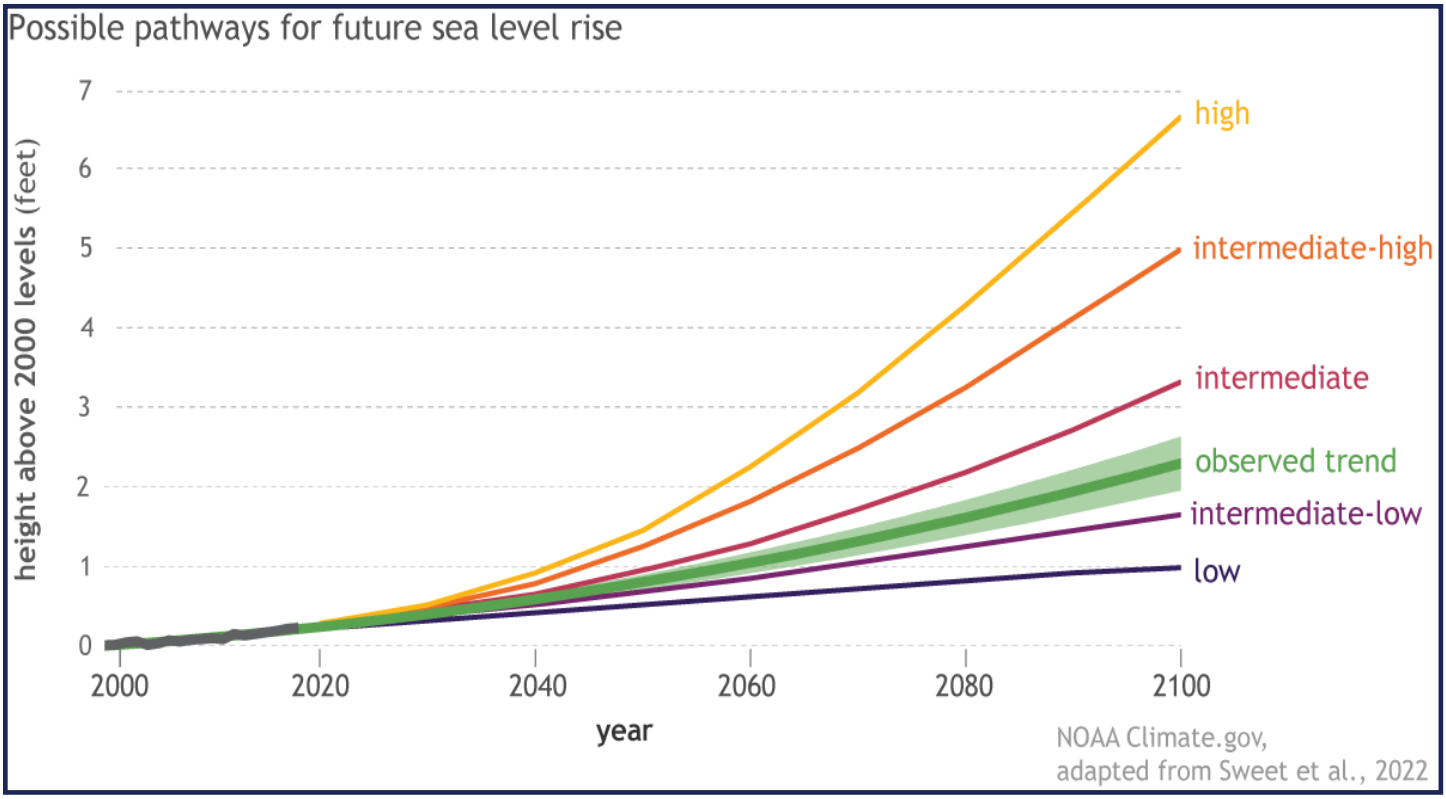
Other Environmental Concerns

Sea Level Rise and Flooding

As seas rise globally, the Town of Southern Shores is also threatened by local land subsidence, which means that the land is submerging even faster than in other locations on the East Coast. Understanding and preparing for these threats using the best available data and projections can help the community mitigate the negative impacts of sea level rise.

Unless mitigation actions are taken, The National Oceanic and Atmospheric Administration (NOAA) projects that sea level rise will cause chronic inundation of some properties, with major impacts possibly occurring as early as 2060. Though 2060 is beyond the horizon of this plan, it is still relevant to long-range decision-making. Many of the structures constructed and renovated today have lifespans beyond 50 years.

The best available projections from NOAA indicate the potential sea level rise scenarios, based on worldwide carbon emissions rates shown in the graph below.



National Oceanic and Atmospheric Administration, Potential Sea Level Rise Scenarios

Key CAMA-Related Issues

The Coastal Area Management Act (CAMA) is particularly concerned with five land use topics. Additional description of issues related to those topic areas is provided below. For the full description of these topic areas and their CAMA-related objectives, please see the state administrative code(15A NCAC 07B. 0702).

Public Access

There are no public access points to the ocean or the soundside in Southern Shores. Southern Shores offers private beach access. Beach access paths are owned by the Southern Shores Civic Association (SSCA). Membership to the SSCA gives association members access to these beach access paths and SSCA-owned beach parking areas. The Town of Southern Shores offers parking permits for town-owned beach access parking lots with approximately 135 parking spaces. Property owners in Southern Shores are eligible to apply for a parking permit; Southern Shores does not offer parking permits for guests.

Land Use Compatibility

The future land use map for the Town primarily focuses on maintaining the existing land use pattern, avoiding intensification of development in sensitive areas, and respecting natural resources.

Infrastructure Carrying Capacity

There is no public sewer infrastructure in the Town, and almost all wastewater is treated on-site through the use of on-site wastewater treatment systems, often referred as septic systems. There is one private wastewater treatment plat that services the Southern Shores Landing neighborhood. Poorly maintained or planned septic systems can fail and contribute to nonpoint source pollution contaminating ground and surface water. Failing systems are health hazards and are considered illegal discharged when surface water is contaminated.

Natural Hazard Areas

Natural hazard areas are areas that are subject to recurrent flooding, storm surge, high winds, and shoreline erosion. The Town has significant land use and development protections in place to avoid the placement of life and property in harm's way. Structure elevation standards are beyond the

The Southern Shores Civic Association offers private beach access to its members.

minimum required by the National Flood Insurance Program. The Town will continue to be susceptible due to recurrent flooding, shoreline erosion, storm surge, wave overwash due to its barrier island location. As sea levels continue to rise and the climate continues to warm, these impacts may become more frequent.

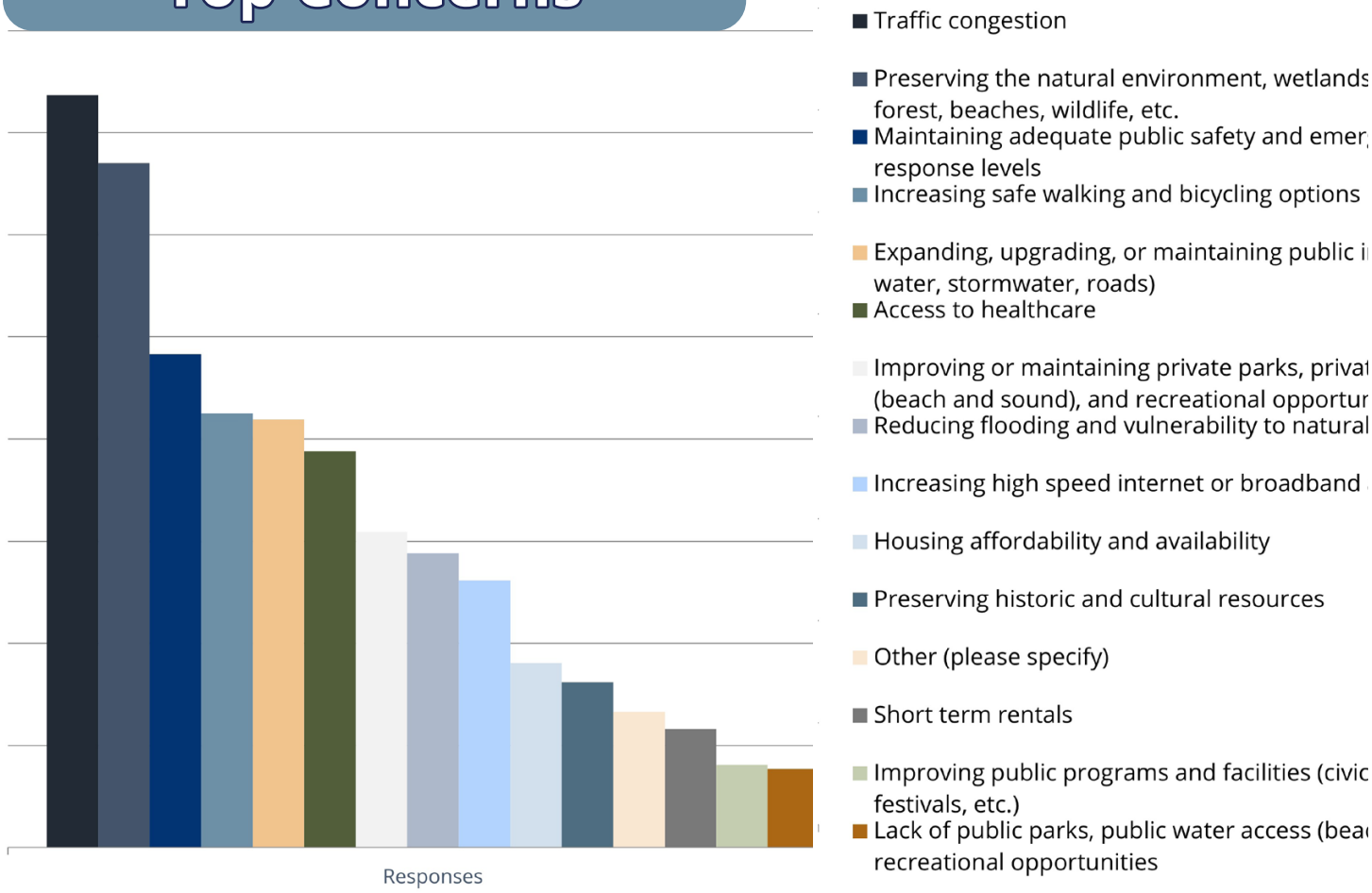
Water Quality

Environmental water quality is a key driver in the local economy and quality of life. Jean Guite Creek was reported to exceed approved standards but due to the presence of marinas, residential development, and a golf course shellfishing is prohibited. The Town has committed in this plan to continuing to prioritize the protection of environmental water quality.

Existing Conditions

3

Top Concerns



A Few Participant Voices...

"Fix the summer traffic on S. Dogwood Trail."

-Survey Respondent

"Keep Southern Shores low density and uncrowded."

-Survey Respondent

Population Estimates & Projections

The Town has gained approximately 889 people (40.4% growth) since the year 2000. Projections based on growth data and adjusted for potential build-out estimate the Town may add another 400 people by 2055, although this is not a given depends on how the Town manages growth over the same time period.

Permanent Population

Southern Shores' permanent population within Town limits was sourced from the US Decennial Census, and is estimated to be 3,090 permanent residents as of 2020. The Town grew faster between 2000 and 2010 (Average Annual Growth Rate of 2.1%) than between 2010 and 2020 (Average Annual Growth Rate of 1.3%).

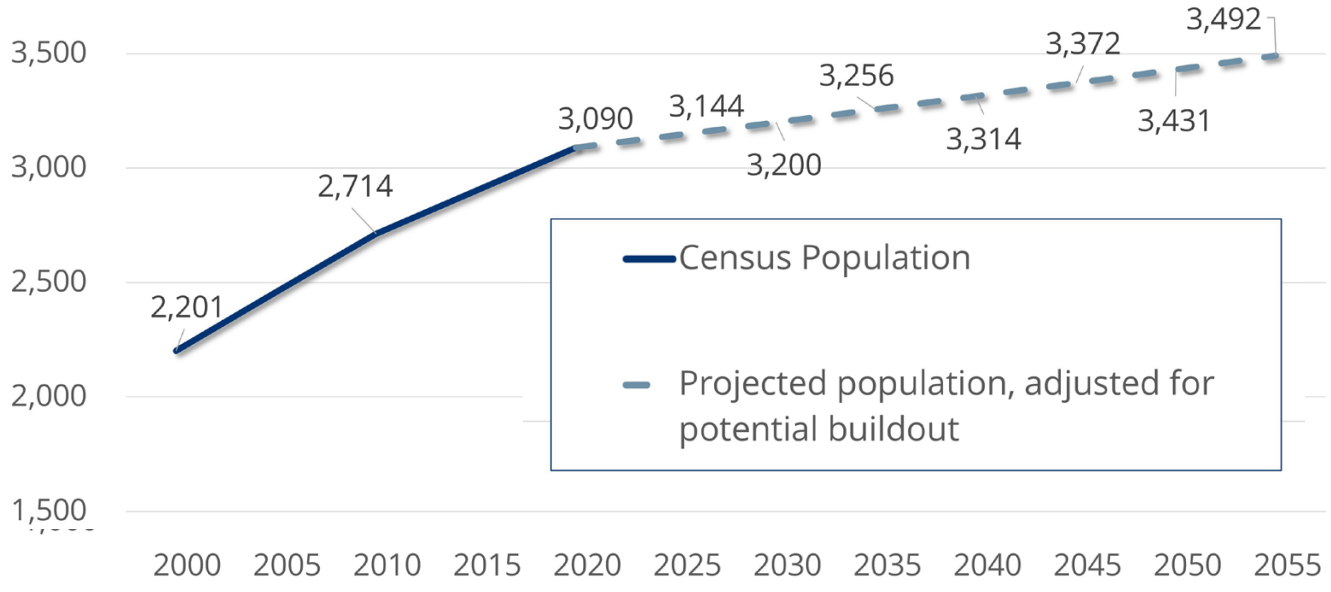
Permanent Population Projections

Permanent population was projected forward 30 years, as required by the Coastal Area Management Act. This was based on past growth trends and adjusted for potential buildout, since most of the town is already developed and limited opportunities exist for new development or redevelopment.

Using Past Growth Trends

The population projection method extrapolates from the current population estimate, using a modified 2010-2020 Annual Average Growth Rate (1.3%) adjusted by buildout estimate. The Average Annual Growth Rate was modified based upon land availability and potential buildout at the

Permanent Population Projections



	Census[1]			Projected Population						
	2000	2010	2020	2025	2030	2035	2040	2045	2050	2055
Population[2]	2,201	2,714	3,090	3,144	3,200	3,256	3,314	3,372	3,431	3,492

[1]*Source: US Decennial Census*

current densities. This methodology was chosen because it projects slower growth than using the Average Annual Growth Rate from 2010 to 2020 and includes consideration of the geographic and physical constraints of the Town. Due to Southern Shores limited land availability, this was considered more realistic for the Town. This projection estimates an additional 402 residents might be added by the year 2055.

Seasonal Population Projections

The peak seasonal population provides an estimate for how many visitors Southern Shores likely hosts during the busiest tourist season. It was estimated by using the ratio for residential population in Dare County's Local Water Supply Plan. The estimate does not include day trippers.

It should be noted that all population projections are estimates based on known data. Unforeseeable factors, such as natural disasters or cultural factors, are not accounted for and may influence future population.

To project the total seasonal population, meaning permanent residents and visitors together, the ratio of current visitor population to permanent population was calculated and applied to the permanent population projections. This assumes a constant ratio of tourists to full-time residents.

Understanding Population Projections

Permanent Population

Persons who usually reside in the planning area, year-round.

Peak Visitor Population

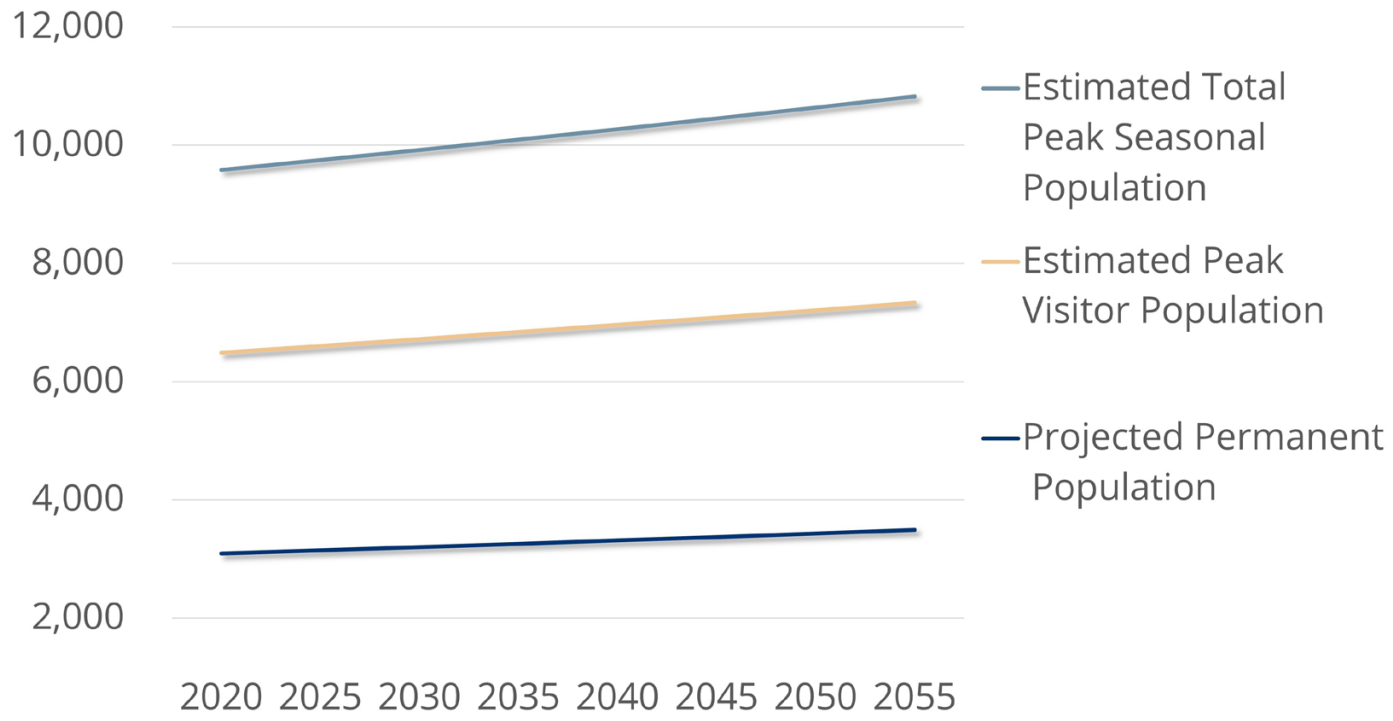
Persons who are temporary residents in the planning area, such as tourists and vacationers, but who normally reside in another location; does not include day-trippers.

Peak Seasonal Population

Permanent plus visitor population. This is an approximation of the planning area's population on a "typical" peak day during the high season. Does not include day trippers.

	2020	2025	2030	2035	2040	2045	2050	2055
Projected Permanent Pop.	3,090	3,144	3,200	3,256	3,314	3,372	3,431	3,492
Estimated Peak Visitor Population	6,489	6,603	6,720	6,838	6,959	7,081	7,206	7,333
Estimated Total Peak Seasonal Population	9,579	9,748	9,920	10,094	10,272	10,453	10,638	10,825
Estimated Water Needs (MGD based on per capita needs derived from 2021 LWSP)		2.09	2.12	2.16	2.20	2.24	2.28	2.32

Total Population Projections



Demographics

Population

The Town of Southern Shores has seen a steady increase of residents from 2000 to 2020, growing to over 3,090. Recent projections show this slowing slightly from 2010 to 2020, but overall, the Average Annual Growth Rate since 2000 has been 1.7%.

Age & Ethnicity

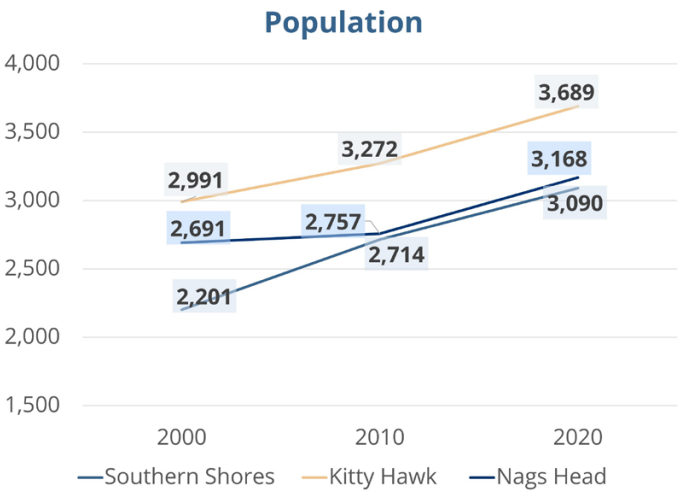
The community is majority white at 93% (not taking Hispanic ethnicity into account). The Hispanic population, defined as people with Hispanic heritage regardless of race, increased from 1.5% in 2010 to 2.0% in 2020.

The median age increased by 2.9 years over the past decade, and is higher than the county average. This is evident in the cohort population changes noted from 2010 to 2020 indicating a large increase in people 75 years and over.

Employment

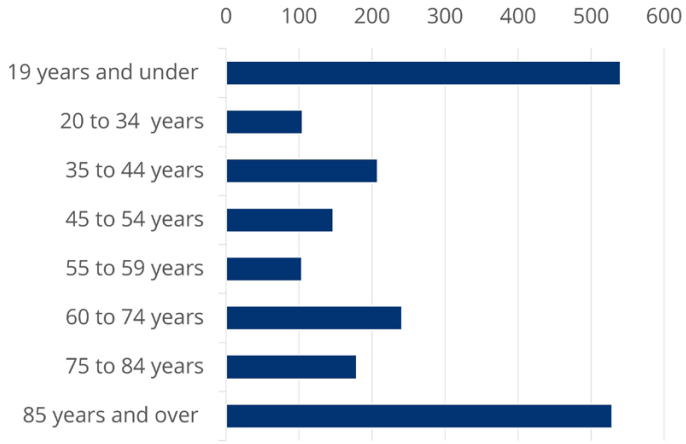
Data from the US Census and the NC Department of Commerce show a decrease of employees in Southern Shores, with the majority (84%) of the workforce living outside of town limits. Construction, arts and accommodation, and finance and real estate represented the largest employment sectors in Southern Shores. The only sector that experienced job growth was construction, all other industries saw shrinkage.

Population

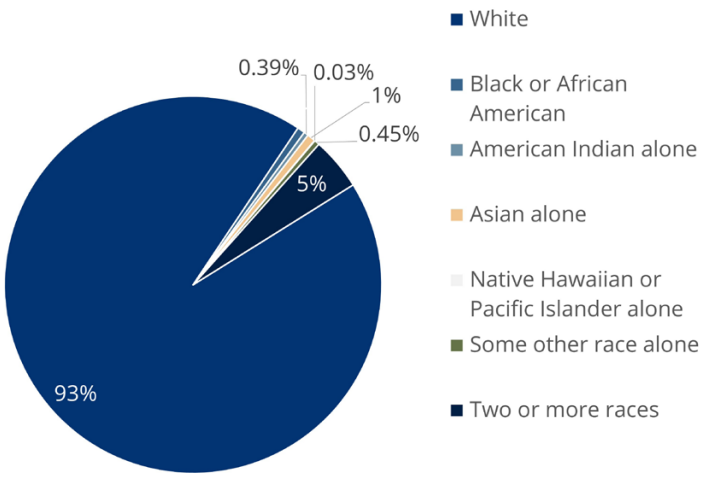


Source: 2000, 2010, 2020 Decennial Census

2020 Age Cohorts (# of people)

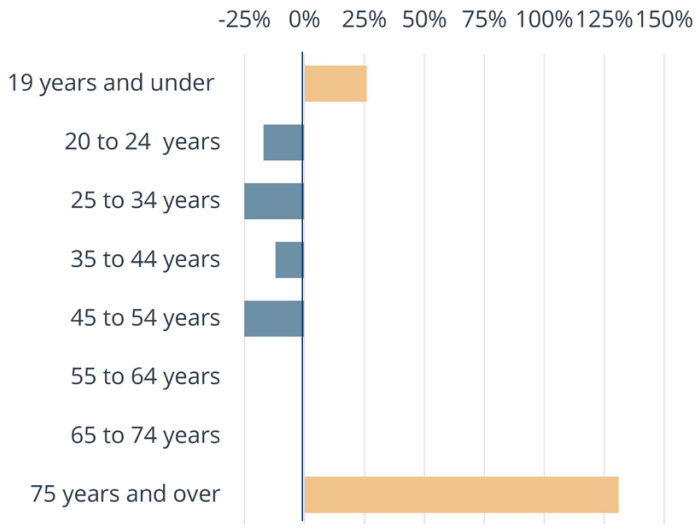


Race



Source: 2010 and 2020 Decennial Census.

Age Cohorts - Change 2010 to 2020



Source: 2010 and 2020 ACS

Economy & Workforce

Commuting

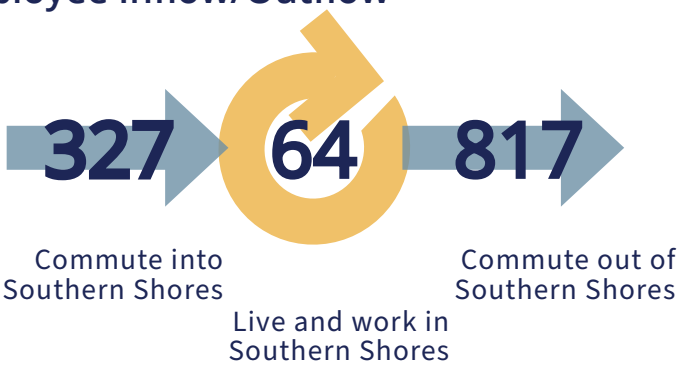
The majority of the workforce in Southern Shores are commuting from other parts of Dare County or other surrounding counties. Eighty-nine percent (89%) of the total workforce are commuting as single occupancy drivers or carpooled.

Income

The median household income was estimated to be $106,523 in the 2020 American Community Survey. This is higher than both the median incomes estimated for Dare County and the State of North Carolina. This income level is also higher than Nags Head and Kitty Hawk. It has grown by 44% since 2010, relative to 21% and 24% growth seen in the county and state in the same period, respectively.

In 2020, an estimated 3.99% of families in Southern Shores were determined to be below the poverty level, this is lower than the national average of 12.8%.

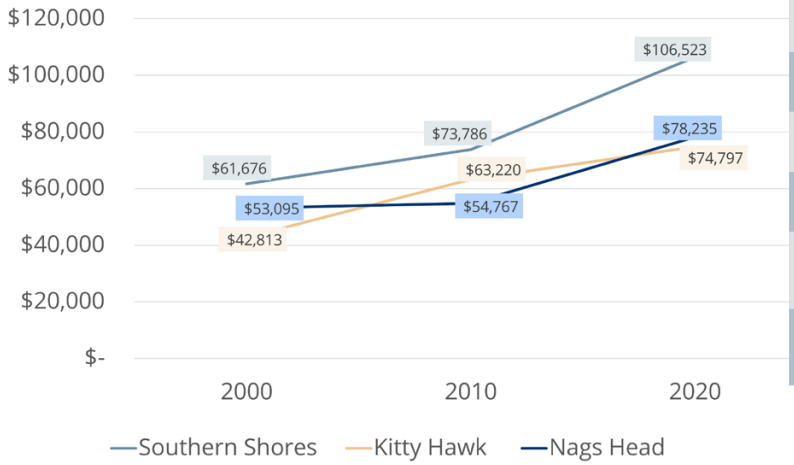
Employee Inflow/Outflow



Employment by Industry (Residents of Southern Shores)	2010	2019
Retail Trade	14.49%	2.30%
Arts, Entertainment & Recreation, and Accommodation & Food Services	7.44%	13.04%
Educational Services, and Health Care & Social Assistance	0%	0%
Finance and Insurance, and Real Estate and Rental and Leasing	9.66%	11.76%
Public Administration	0%	0%
Construction	6.24%	23.27%
Professional, Scientific, & Management, and Administrative & Waste Management Services	8.85%	8.44%
Information	1.21%	0.77%
Manufacturing	0%	0%
Wholesale Trade	1.81%	1.53%
Other Services, Except Public Administration	3.02%	1.53%
Agriculture, Forestry, Fishing & Hunting, and Mining	0%	0%

Source: US Census On The Map, OSBM 2019 and 2010.

Median Household Income



Source: 2000, 2010, 2020 Decennial Census.

Housing

Characteristics

Housing in Southern Shores is predominantly single family detached homes. In the 2020 estimates there were 2,277 housing units in the Town of Southern Shores. Of these, 46% are homeowner households, 4% are renter households, and 50% are vacant seasonal homes. Median year of construction is 1987 and the median home value is $475,900.

The average family size grew from 2.56 in 2010 to 2.73 in 2020. The total number of households is estimated at around 890. The average household size in 2020 was 2.56 people.

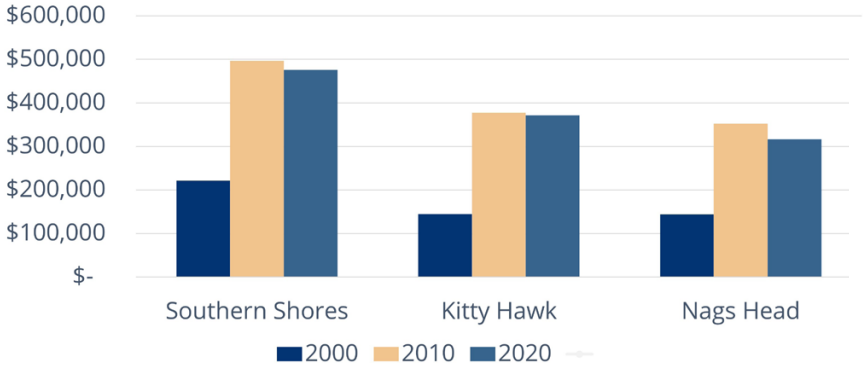
Housing by Type

98.6% of homes are considered single-family detached homes. 1.4% are considered townhomes.

As a coastal town, Southern Shores has a large amount of homes that are not primary residences and instead are used for vacation rental or seasonal use. Approximately 46% of housing units in town are permanent residences, and 50% are classified as "vacant" (see box on opposite page). The number of occupied housing units increased by 17% from 2010 to 2020, while the number of vacant housing units decreased slightly from 2010. This could indicate that more second homeowners are moving permanently to Southern Shores. Of the homes that are not primary residences, it is estimated that 80% are for seasonal or recreational use. This has decreased by 4% in the 2000 Census.

According to 2022 Dare County tax parcel records, there were 2,706 housing units total out of the 3,062 residential lots in Southern Shores. Since the 2012 CAMA Land Use Plan, there have been approximately 216 homes (Dare County tax parcel data) constructed, most were constructed in 2016 and 2019. Using this data, Southern Shores is 88% built-out.

Median Home Value



2020 Median Home Value

$475,900 within Town Limits

$302,400 within Dare County

$150,500 North Carolina

Source: 2000, 2010, 2020 ACS 5-year estimates.

Defining Primary & Secondary Residences

How do we know who lives in Southern Shores full-time? Using the US Census data definitions of occupied and vacant housing units, we can determine how many homes are primary residences and extrapolate secondary residences.

Occupied Housing Units are defined as those that are the "usual place of residence" for persons or a family. A primary residence.

Vacant Housing Units are defined as units where no one is living, or units owned by people whose "usual place of residence" is elsewhere. In popular tourist locations, "vacant" units are generally second homes or vacation rentals.

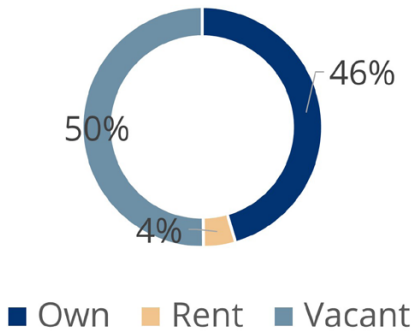
Renter Occupied Housing Units are defined as units used for year-round rental purposes .

80% of homes that are not occupied full-time are used as seasonal or recreational homes

Housing Units	2000	2010	2020
Occupied	946	1,159	1,355
Vacant	986	1,210	1,151
Total	1,932	2,369	2,506

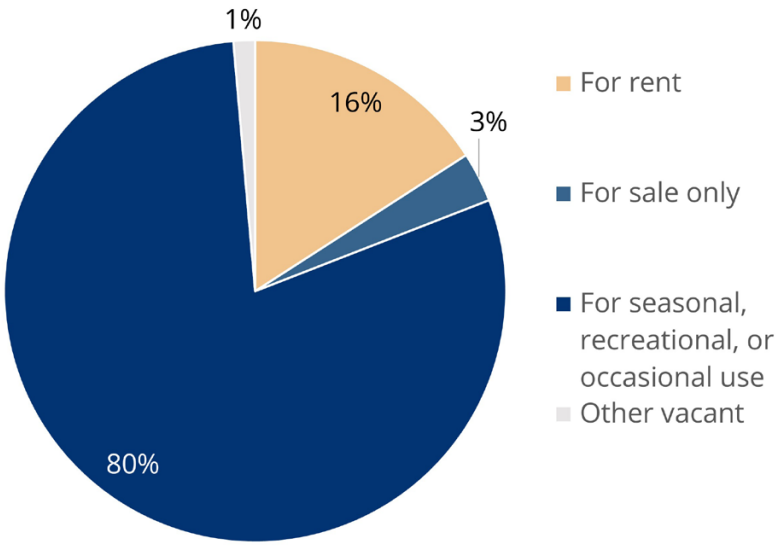
Source: 2000, 2010, 2020 Decennial Census.

Tenure (2020)



Source: 2000, 2010, 2020 ACS 5-year estimates.

Vacancy Home Characteristics



Source: ACS 5-year estimates for 2020.

Owner-Occupied Housing

As indicated on the map (pg. 29), most owner occupied homes are located on the sound side, whereas, the majority of secondary residences are located closer to the beachfront.

Southern Shores consists of mainly low density residences.

Owner Occupied Housing Map Methodology

By using the Existing Land Use for each parcel, the residential parcels were able to be selected, leaving out all commercial, open space/parks, and vacant properties. From this selection, the parcel site address was compared to the associated parcel mailing address.
Those parcels where the site address matched the mailing address were determined to be 'Owner Occupied'.

Parcels where the mailing address and the site address were not the same were not determined to be Owner Occupied and are likely short term rentals or vacation/second homes.

Owner Occupied Housing

Existing Plans and Programs

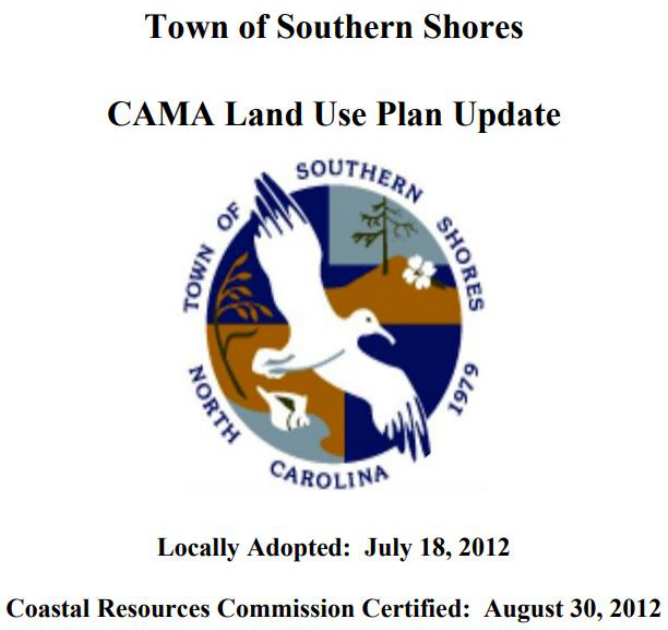
This plan will not exist on its own, but rather will update the Town's 2012 CAMA Plan and function alongside its other, more specific existing plans. As a Comprehensive Plan, it will guide land use, programming, policy, and funding decisions for the Town. As a CAMA plan, its CAMA-related policies will guide permitting decisions for projects within the Coastal Area Management Act's purview.

A summary of existing plans and major recommendations are listed below.

Town of Southern Shores CAMA Land Use Plan Update (2012)

MAJOR POLICY RECOMMENDATIONS

- Encourage development/redevelopment that considers land suitability, and avoids fragile areas.
- Endorse the proper use and maintenance of approved septic systems in suitable soils for treating and disposing of waste from both low-density and high density development.
- Allow commercial and municipal sites to use package sewage treatment plants as an alternative means of treating waste to traditional septic systems when and only when traditional septic is environmentally infeasible.
- Support the Dare County water service and system maintenance to ensure public health and safety of the public water supply is maintained for all uses.
- Support stormwater management programs that reduce flooding and improve coastal water quality
- Maintain NC 12 as a two-lane highway, without additional through lanes or two-way continuous turn lanes.
- Ensure an adequate system of roads, bridges and pathways to meet the transportation and pedestrian safety needs of the Town in a way that protects, preserves and where possible improves the environment and water quality.
- Encourage the protection, preservation, maintenance and use of common areas and open space.
- Minimize and mitigate potential damages to individual properties from natural hazards, and establish plans that support reconstruction after natural hazards.
- Protect, maintain, and conserve coastal and 404/401 wetlands as established by State and Federal standards.



Dare County Comprehensive Transportation Plan (2015)

In July of 2011, the Transportation Planning Branch of the North Carolina Department of Transportation (NCDOT) and Dare County initiated a study to cooperatively develop the Dare County Comprehensive Transportation Plan (CTP), with Dare County and the incorporated municipalities of Southern Shores, Nags Head, Kill Devil Hills, Kitty Hawk, Southern Shores and Duck. This is a long-range multi-modal transportation plan that covers transportation needs through 2040. Modes of transportation evaluated as part of this plan include: highway, public transportation and rail, bicycle, and pedestrian.

MAJOR RECOMMENDATIONS

- US 64-NC 12: Access Management Improvements from the Roanoke Sound Bridge to the eastern end of Currituck Sound Bridge
- US 158 Currituck Sound Bridge Rehabilitation
- US 158-NC12 Intersection Improvements

Outer Banks Hazard Mitigation Plan (2020)

The plan was developed in a joint and cooperative manner by members of a Hazard Mitigation Planning Committee which included representatives from County, City, and Town departments, federal and state agencies, citizens, and other stakeholders. The plan included numerous "Action Items" for the Town of Southern Shores:

- Utilize and enforce the Zoning Ordinance, Waterways and Beaches Ordinance, Beach and Dune Management Ordinance, and the Flood Damage Prevention Ordinance as a forms of hazard mitigation.
- Seek the maximum points available from the Community Rating System to keep flood insurance costs to the citizens as low as possible.
- Continue enforcing the state Erosion and Sedimentation Control regulations.
- Continue enforcing Coastal Area Management Act (CAMA) regulations.
- Modeling various "what-if" scenarios to estimate potential vulnerabilities in order to develop sea level rise mitigation priorities.
- Continue enforcement of the state building code, including wind load requirements.
- Keep emergency plans up to date, have a standing reconstruction task force and maintain the Emergency Operations

Southern Shores Bicycle and Pedestrian Plan 2014

This plan was created through a matching grant with NCDOT to develop strategies to promote and improve bicycle and pedestrian safety and infrastructure. Narrow roads and bridges, high traffic volumes, limited connectivity, and bicycle/pedestrian crashes were identified issues in the document. Through public input, and analysis of concerns and the local cycling environment, the plan outlined the types of cyclists that exist, and their needs that were further expressed through the recommendations. Although the plan was never adopted, the major recommendations from the plan are listed below.

Major Recommendations

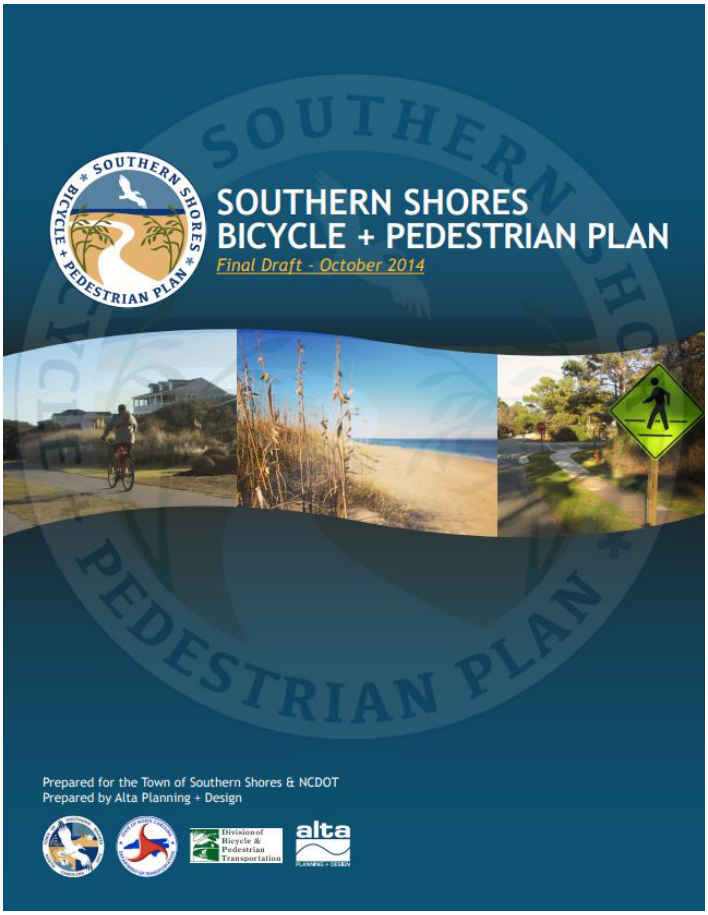
- Increase connectivity through new construction of sidewalks and multi-use paths.
- Increased pedestrian friendly road crossings using hi-visibility markers.
- Shared lane markings on roads with speed limits of 35 MPH or less.
- Explore the opportunity for a pedestrian bridge to connect Fairway Drive to Beach Tree Trail.

Albemarle Regional Bicycle Plan

The Albemarle Regional Bicycle Plan was developed by the Albemarle Commission, NCDOT, and the Division of Bicycle and Pedestrian Transportation, and their consultant teams. This plan highlights the needs assessment and results through their infrastructure recommendations, project prioritization, and funding opportunities across the region.

Major Recommendations

- Provide connectivity with a proposed paved multi-use trail along N. Dogwood Trail that continues on to E. Dogwood Trail and Duck Road.
- Pave the shoulders of US HWY 158 coming off of the Wright Memorial Bridge.
- Provide signed route connecting US HWY 158 to E. Dogwood Trail along Trinite Trail, Chicahauk Trail and Sea Oats Lane.

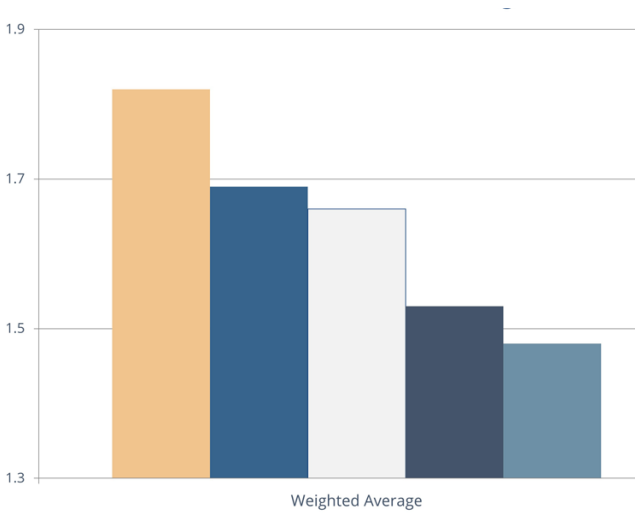

SOUTHERN SHORES
BICYCLE + PEDESTRIAN PLAN
Final Draft - October 2014
Prepared for the Town of Southern Shores & NCDOT
Prepared by Alta Planning + Design
Division of Bicycle & Pedestrian Transportation
alta


Proposed Paved Shoulders
Proposed Bicycle Boulevard
Proposed Signed Route
Proposed Multi-Use Trail
Corridor Improvements
Paved Multi-Use Trail
Paved Shoulder
Bike Route
Municipal Boundary
State Conservation
Other Conservation
County Boundary
0
0.25
0.5
Miles
SOUTHERN SHORES
12
Pamlico Sound: Offseason Route

Environmental, Natural, and Cultural Resources

4

Relevancy of Previous Plan Goals



- Preserve, protect, enhance, maintain and improve the natural environment and water quality.
- To protect enhance and support lands uses that are compatible with surrounding land uses and maintain the existing community character.
- Protect public health and safety from the damaging effects of storm surges, wave action, flooding, high winds, and erosion associated with hurricanes, severe weather, nor'easters and other hazards.
- Encourage the maintenance and improvement of existing private access facilities to public trust waters and shorelines.
- Ensure that providing infrastructure services does not affect the quality and productivity of Areas of Environmental Concern (AEC's), important resources and other fragile areas.

A Few Participant Voices...

"The character and quiet, dark [night] skies, small houses and quiet neighborhoods."

-Survey Respondent

"The entire town is the premier place to live, retire, and enjoy all benefits of coastal life.."

-Survey Respondent

Natural Systems

Areas of Environmental Concern (AECs)

Areas of environmental concern (AECs) are areas of natural importance designated by the NC Coastal Resources Commission (CRC) and include the estuarine and ocean system, ocean hazard areas, public water supplies, and natural and cultural resource areas. The State Guidelines for Areas of Environmental Concern (15A NCAC 07H) require local land use plans give special attention to the protection of appropriate AECs because of their environmental, social, economic, and aesthetic values.

Due to Southern Shores's geographic location on the Outer Banks, areas of environmental concern surround the Town on all its aquatic borders. Most development in the Town of Southern Shores requires a CAMA permit due to the presence of AECs that could be impacted .

The following sections include the four categories that make up AECs established by the NC Coastal Resources Commission.

The Estuarine And Ocean System

Estuarine Waters

Estuarine waters are defined as waters of the Atlantic Ocean within the boundary of North Carolina and all the waters of the bays, sounds, rivers, and tributaries located seaward of the dividing line between coastal fishing waters and inland fishing waters. (15A NCAC 07H 0206)

Estuaries and their surrounding lands are unique places of transition from land to sea. Estuarine environments support unique communities of plants and animals including, fish nursery areas, spawning areas, and shellfish beds. Estuarine systems provide habitat for more than 90% of North Carolina's commercial and recreational seafood species. (DMF, 2020) Estuarine systems perform other valuable services, such as trapping debris, filtering pollutants, providing food and nesting materials for waterfowl and other wildlife, and dissipating erosion-causing wave energy. Estuarine waters within or adjacent to Southern Shores include the Currituck Sound, Jean Guite Creek, and the Atlantic Ocean.

Southern Shores has various types of estuarine shorelines, predominantly in their canal system and along Jean Guite Creek and Currituck Sound, the most common being marsh with 11,809 feet of shoreline. Modified shorelines (58,177 ft), sediment banks (46,404 ft), and miscellaneous (63 ft) are also categories of estuarine shoreline that are found in the study area.

Public Trust Areas

Public trust areas are all waters of the Atlantic Ocean and the lands thereunder from the mean high water mark to the seaward limit of state jurisdiction; all natural bodies of water subject to measurable lunar tides and lands thereunder to the normal high water or normal water level; all navigable natural bodies of water and lands thereunder to the normal high water or normal 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 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.

Areas of Environmental Concern

Public trust areas located within the study area include the Currituck Sound, Jean Guite Creek, the Atlantic Ocean, and all navigable creeks, canals, and other bodies of water that are publicly accessible.

Estuarine Shoreline

The Coastal Shorelines category includes estuarine shorelines and public trust shorelines. Estuarine shorelines AEC are those non-ocean shorelines extending from the normal high water level or normal water level along the estuarine waters, estuaries, sounds, bays, fresh and brackish waters, and public trust areas as set forth in an agreement adopted by the Wildlife Resources Commission and the Department of Environment and Natural Resources [described in Rule .0206(a) of this Section] for a distance of 75 feet landward. For those estuarine shorelines immediately contiguous to waters classified as Outstanding Resource Waters by the Environmental Management Commission, of which there are none in or adjacent to Southern Shores, the estuarine shoreline AEC shall extend to 575 feet landward from the normal high-water level or normal water level, unless the Coastal Resources Commission establishes the boundary at a greater or lesser extent following required public hearing(s) within the affected county or counties. Public trust shorelines AEC are those non-ocean shorelines immediately contiguous to public trust areas, as defined in Rule 07H .0207(a) of this Section, located inland of the dividing line between coastal fishing waters and inland fishing waters as set forth in that agreement and extending 30 feet landward of the normal high-water level or normal water level.

Development within coastal shorelines influences the quality of estuarine and ocean life and is subject to the damaging processes of shore front erosion and flooding. The coastal shorelines and wetlands contained within them serve as barriers against flood damage and control erosion between the estuary and the uplands. Coastal shorelines are the intersection of the upland and aquatic elements of the estuarine and ocean system, often integrating influences from both the land and the sea in wetland areas. Some of these wetlands are among the most productive natural environments of North Carolina and they support the functions of and habitat for many valuable commercial and sport fisheries of the coastal area. Many land-based activities influence the quality and productivity of estuarine waters. Some important features of the coastal shoreline include wetlands, flood plains, bluff shorelines, mud and sand flats, forested shorelines and other important habitat areas for fish and wildlife.

The estuarine shorelines in Southern Shores consist of marshes, sediment banks, miscellaneous, and hardened shorelines (bulkheads).

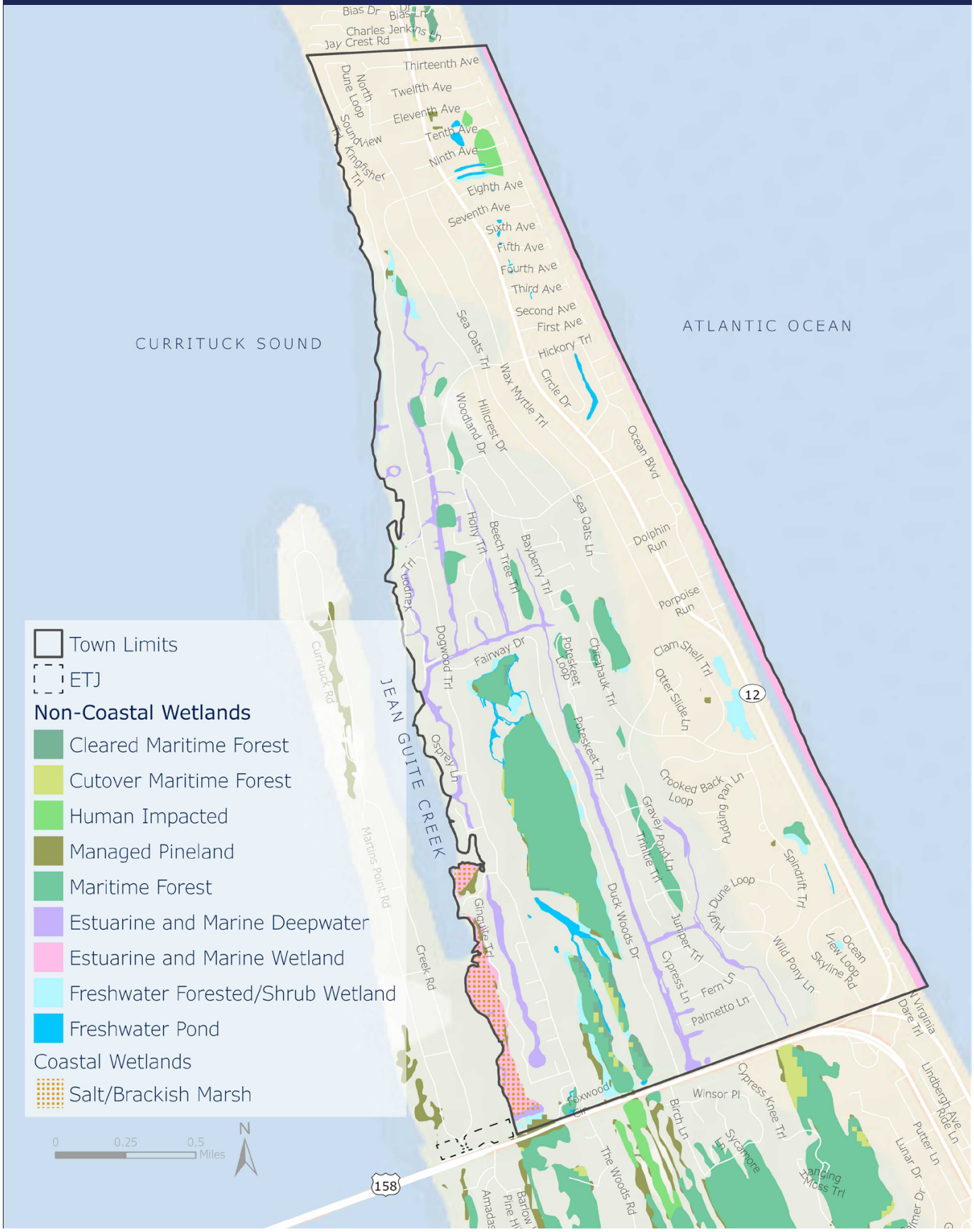
Coastal Wetlands

The final component of the estuarine ocean system is coastal wetlands. Coastal wetlands are defined as marshes subject to regular or occasional flooding by lunar or wind tides, these tides reach the marshland areas through natural or artificial watercourses. (15A NCAC 07H)

Coastal wetlands are an important part of Southern Shores' landscape and are often threatened by storm surges, erosion from wave activity, invasive species, and development. There are over 600 acres of coastal wetlands (salt/brackish marsh) inside the Town limits. Coastal wetlands may contain one of more of the following marsh plant species:

- Cord Grass (Spartina alterniflora);
- Black Needlerush (Juncus roemerianus);
- Glasswort (Salicornia spp.);

Wetlands


CURRITUCK SOUND
ATLANTIC OCEAN
JEAN GUITE CREEK
Town Limits
ETJ
Non-Coastal Wetlands
Cleared Maritime Forest
Cutover Maritime Forest
Human Impacted
Managed Pineland
Maritime Forest
Estuarine and Marine Deepwater
Estuarine and Marine Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Coastal Wetlands
Salt/Brackish Marsh
0 0.25 0.5 Miles
N
12
158

- Salt Grass (Distichlis spicata):
- Sea Lavender (Limonium spp.);
- Bulrush (Scirpus spp);
- Saw Grass (Cladium jamaicense);
- Cat-tail (Typha spp.):
- Salt Meadow Grass (Spartina patens); or
- Salt Reed Grass (Spartina cynosuroides).

Not only do coastal wetlands provide complex food chains typically found in estuaries but they serve as barriers against flood damage and control erosion between the estuary and the uplands. Coastal wetlands should be safeguarded to perpetuate their biological, social, economic, and aesthetic values as a natural resource.

Coastal wetlands

The remaining wetlands are considered non-coastal wetlands. Although non-coastal wetlands have significant value because of their relationship to water quality, habitat, and hydrologic function, they are not considered AECs. Since wetlands are dynamic systems, their boundaries are constantly shifting. This limits the accuracy of regional wetlands mapping.

Southern Shores is home to multiple non-coastal wetlands including estuarine and marine wetlands, estuarine and marine deepwater, and freshwater forested/shrub wetlands. The freshwater wetlands are typically found near the maritime forests and throughout the study area, while Jean Guite Creek system makes up the estuarine and marine deepwater designation. The beaches along the Atlantic Ocean are designated as estuarine and marine wetlands.

Coastal wetlands

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Environmental Conditions

The Ocean Hazard System

The CRC has designated three ocean hazard AECs covering North Carolina's beaches and oceanfront lands: Ocean Erodible, Inlet Hazard, and Unvegetated Beach. Ocean hazard areas are ever changing as they are constantly being impacted by tides, waves, and winds. It is typical that these ocean hazard areas are under the ownership of private individuals and public agencies.

Ocean Erodible Area

This is the area where there exists a substantial possibility of excessive erosion and significant shoreline fluctuation. The oceanward boundary of this area is the mean low water line. The landward extent of this area is the distance landward from the first line of stable and natural vegetation as defined in 15A NCAC 07H .0305(a)(5) to the recession line established by multiplying the long-term annual erosion rate times 90; provided that, where there has been no long-term erosion or the rate is less than two feet per year, this distance shall be set at 120 feet landward from the first line of stable natural vegetation. For the purposes of this Rule, the erosion rates are the long-term average based on available historical data.

Oceanfront erosion is measured by the North Carolina Department of Coastal Management are calculated using the long-term (approximately 50 years) average annual shoreline change rates for the purpose of establishing oceanfront construction Setback Factors and Ocean Erodible Areas of Environmental Concern. This rate can be impacted by large storms that may wipe out areas of the shoreline, beach renourishment programs counting towards shoreline accretion, and the typical erosion that beaches see.

Despite beach nourishment programs in recent years, Southern Shores is seeing an average of 6 inches (.5 feet) of shoreline erosion each year, some areas of the study area are experiencing an average of 15.5 inches (1.3 feet) of shoreline erosion each year, making the town very susceptible to oceanfront erosion.

Public Water Supplies

The protection of public water supplies for drinking water, irrigation, and industry is one of CAMA's main goals. The CRC has designated two AEC categories, small surface water supply watershed and public water supply well fields, that protect designated coastal public water supplies from the negative impacts of development.

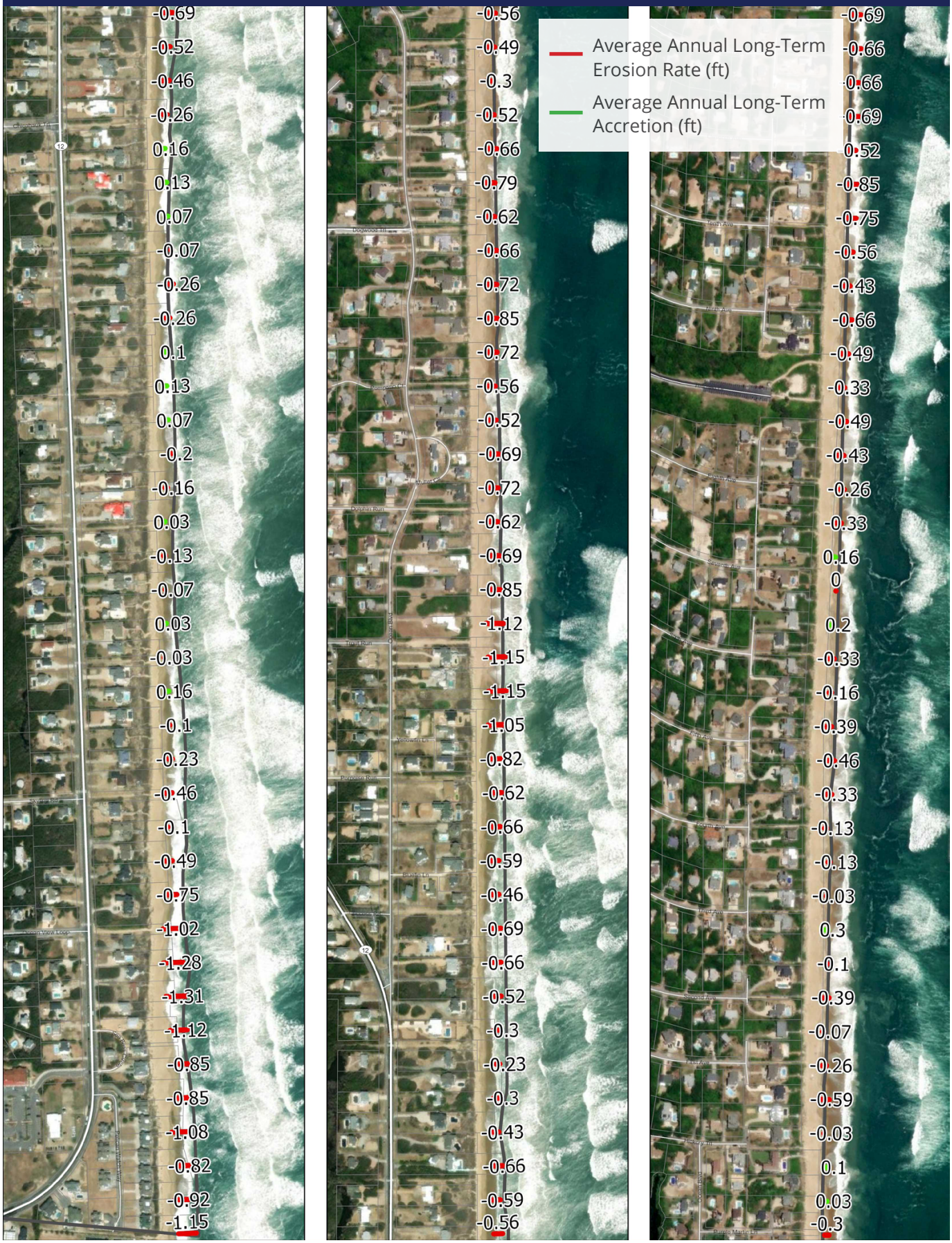
The small surface water supply watershed protects coastal drainage basins that contain a public water supply designated for public drinking water and classified as A-II by the NC Environmental Management Commission. This classification does not apply to Southern Shores.

Public water supply well fields are areas of rapidly draining sands extending to a shallow groundwater table that supplies public drinking water. Since the previous 2012 CAMA plan, a wellhead protection plan for Dare County was approved in 2014 to prevent contamination of groundwaters used as public drinking water supplies. There are no well fields in Southern Shores.

The Dare County Water Department provides water service to the community. Southern Shores water is provided by both Skyco Water Plant and the North Reverse Osmosis Plant.

Southern Shores' water supply draws from the confined Yorktown aquifer, which is isolated from the land surface by a clay sedimentary unit confining layer. The North Reverse Osmosis Plant has a set of five wells that are

Oceanfront Erosion



protected by a wellhead protection area. The Skyco Plant has one large single wellhead protection area for its wells. These plants are located in areas with greater business and residential land usage. The Skyco and North Reverse Osmosis wellfields are extensive in size, and have more potential contamination sources. The North Reverse Osmosis wellfield located in Kill Devil Hills and the Skyco wellfield are at the most risk due to their location in areas were there is high seasonal traffic; the sudden increase in population increases traffic flow, places greater demand on logistics, and causes rapid turnover of business inventories, which all increase the likelihood that a release will occur.

The permitted capacity for the North Reverse Osmosis and Skyco water plants is 11.3 million gallons per day (MGD). There are 24 total wells supplying water to the system. Distribution lines consist of asbestos cement (2%), ductile iron (4%), and polyvinyl chloride (94%) ranging in sizes from 2-30 inches in diameter. The Dare County Regional system consists of 247 miles of distribution lines . In 2021, 1,200 feet of new water mains were added to the system and 1,816 meters were replaced. The oldest meters in the system are 34 years old. The system is flushed semi-annually.

According to the "2021 Local Water Supply Plan", in 2021 Dare County was currently using 83% of its supply, with greater demands on the system during seasonal peaks in population. Off-season demands are easily met by existing systems. To meet future supply needs Dare County will begin a leak detection program and fund engineering studies for plant expansion. Anticipated upgrades to the North Reverse Osmosis includes nanofiltration to create an additional 1 MGD of water. Dare County plans on expanding the Skyco plant in 2024/2045 to provide an additional 2 MGD.

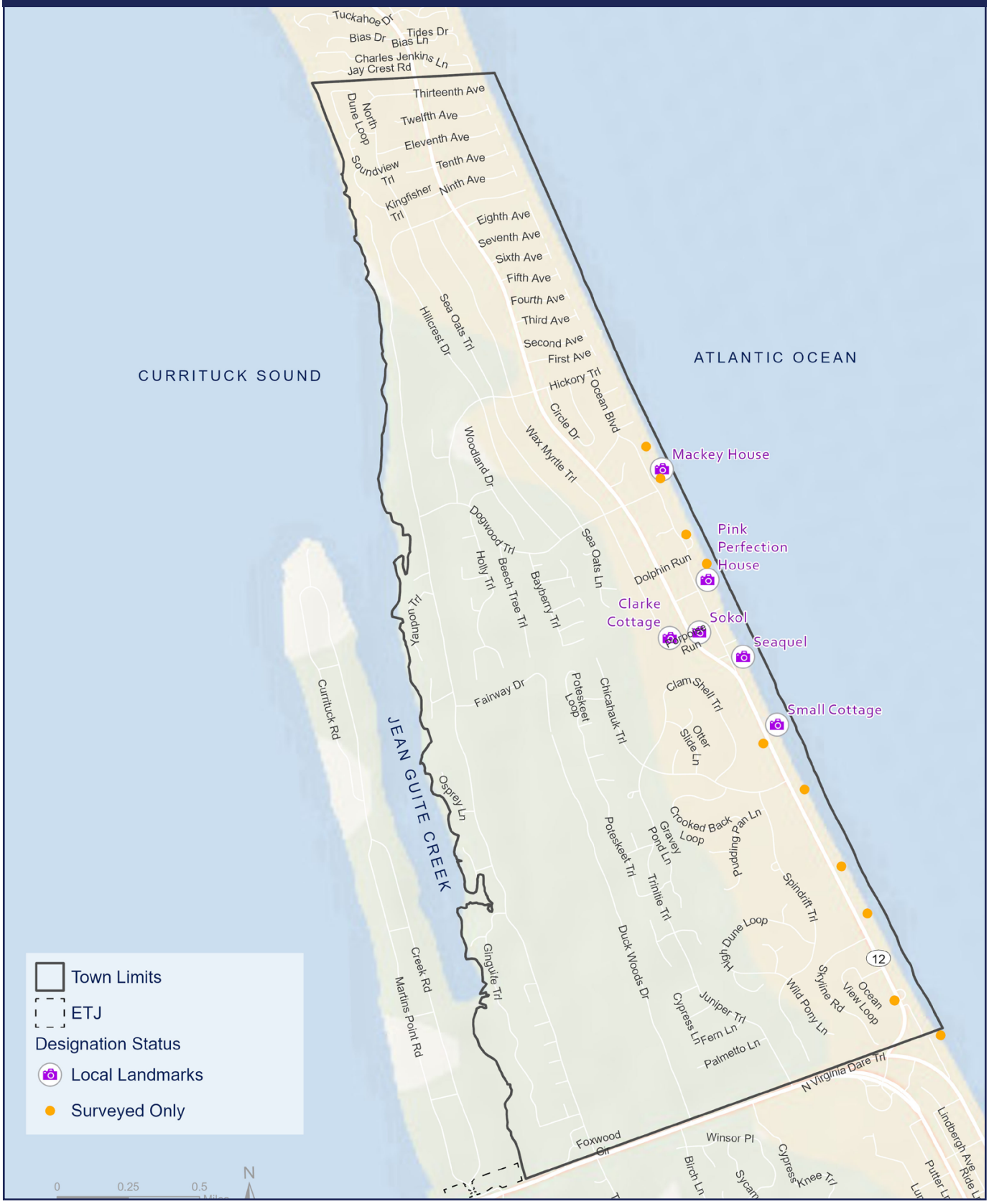
Natural and Cultural Resource Areas

Natural and cultural resource areas are the fourth and final group of the AECs and are defined as areas containing environmental, natural, or cultural resources of more than local significance in which uncontrolled or incompatible development could result in a major or irreversible damage to natural systems or cultural resources, scientific, educational, or associative values, or aesthetic qualities (15A NCAC 07H .0501). There is one Natural Heritage Natural Area , the Cypress Swamp in Southern Shores. Cypress Swamp is discussed in the Environmentally Fragile Areas section.

There are six Historic Landmarks under the purview the Historic Landmarks Commission (see map on page 45). These properties have been surveyed and deemed potentially eligible for listing on the National Register of Historic Places but none are currently listed.

The Historic Landmark Commission was established by the Town Council to protect and preserve local historical resources. The commission's role is to make recommendations to Town Council for the designation of Historic Landmarks or historic districts, approve or disapprove applications (using the historic landmarks standards) from local landmark property owners who wish to make exterior changes to their properties, and advise or assist the local government in preservation planning.

Cultural Resources



Soil Characteristics

Soil characteristics can lead to limitations for septic tanks, erodibility, and other development related restrictions. The soils on the oceanside consist of Newhan, Corolla, and Duckston soils. Newhan are well drained, and found in higher drier areas; Corolla is moderately well drained and found in intermediate areas; and the poorly drained

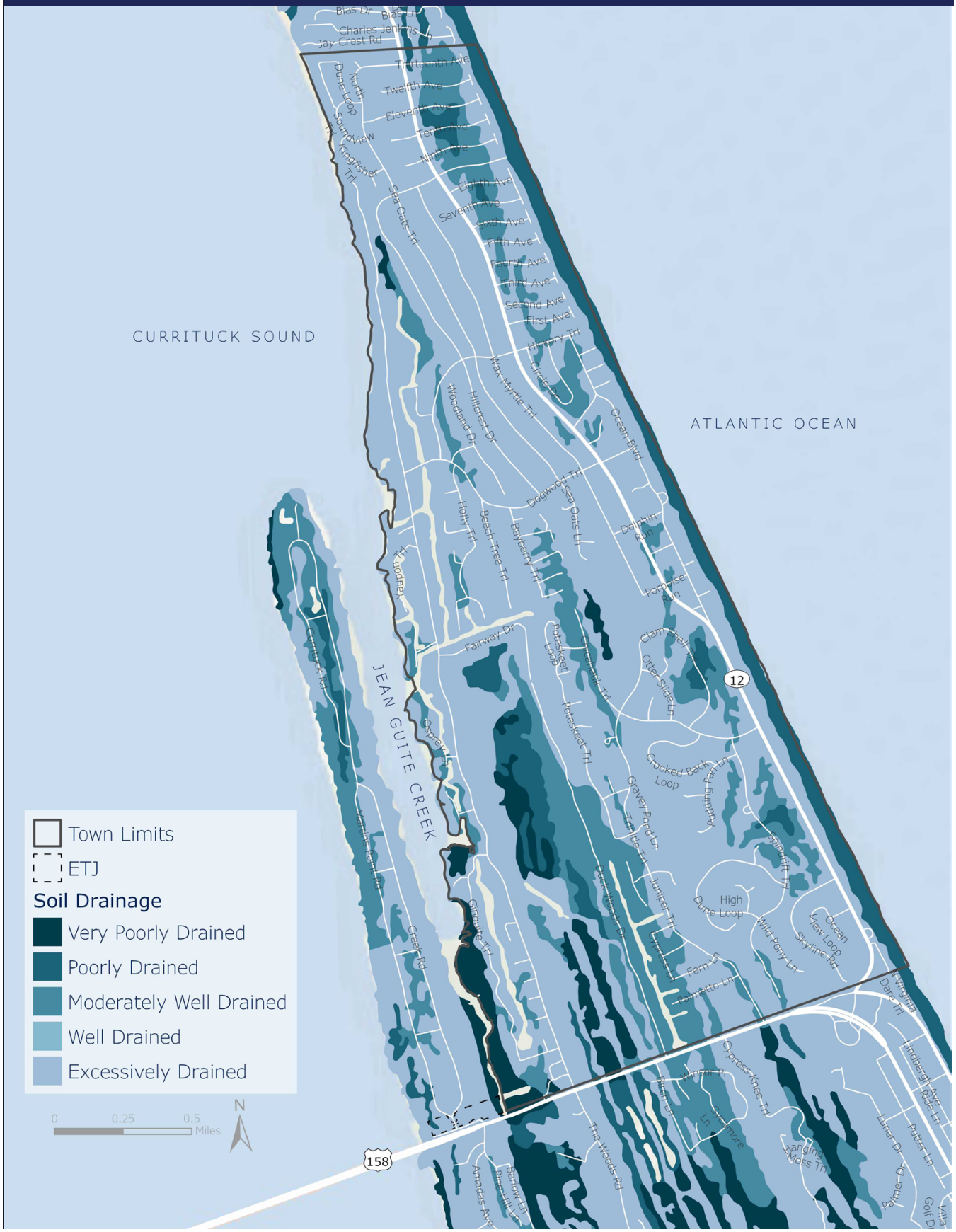
Duckston soils are in the lower wet areas. The soils in the lower and more protected area of the high dunes and adjacent to Jean Guite Creek have moreorganic matter on the surface than the soil in the first two zones. Fripp fine sand is found in higher drier areas, while Osier fine sand is found in level wet areas, and Ousley fine sand is found in gently sloping area. Fripp fine sand is excessively drained; Osier fine sand is poorly drained; and Ousley fine sand is moderately well drained. These soil limitations can be related to wetness, restricted permeability, and or weakened soils. Southern Shores as a whole has soils that are excessively drained, with the exception of the wetlands and the beaches that are poorly to very poorly drained due to their soil characteristics.

Almost the entirety of Southern Shores has soils designated as “very limited” in its suitability for high intensity development (See page 47). This rating indicates that the soil has one or more features that are unfavorable for the specified use. These soil limitations cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and maintenance can be expected. Whereas,“not limited” indicates that the soil has features that are very favorable for the specified use.

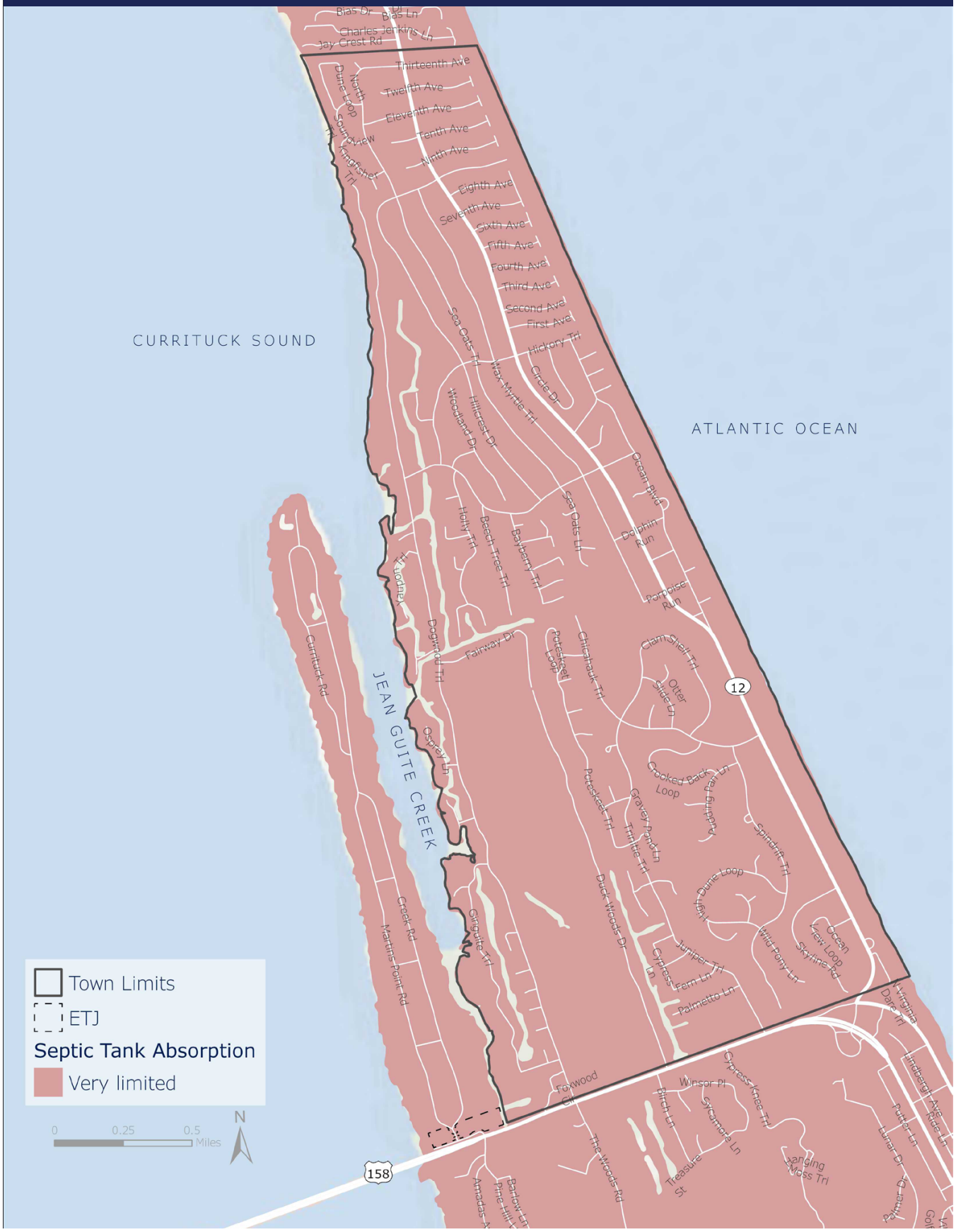
All land within the Town of Southern Shores is considered very limited for septic tank absorption fields. This is mainly due to being located on a barrier island where the depth of the soil to the water table is fairly shallow. The water table in this area is also artificially raised due to County-provided water coming in through water pipes but being released into septic systems to filter though the soil. This artificial elevation of the water table is exacerbated during the tourist season and by storms. Under these elevated water table conditions, some septic systems may be compromised, and could potentially contribute to water pollution.

As sea levels continue to rise, the natural water table will increase. Some lower lying septic fields may become compromised or fail as sea levels rise, unless these fields are relocated or retrofitted.

Soil Drainage Characteristics



Septic Suitability



Soil Development Suitability

Water Quality

The Town of Southern Shores is in the Pasquotank River Basin, one of North Carolina's 17 major river basins. According to the 2021 Pasquotank River Basinwide Water Resources Plan, the Pasquotank River subbasin 03-01-56 includes the Alligator River, Croatan Sound, part of the Albemarle Sound, and the western portion of Roanoke Sound. The Division of Water Resources does not have ambient monitoring or benthic macroinvertebrate sampling locations in Southern Shores, but the Currituck Sound is closed for shellfish harvesting due to potential fecal coliform bacteria levels. The Division of Marine Fisheries compiles data collected from monitoring locations into a sanitary survey report to assess water quality and effectively evaluate point and non-point pollution sources.

Pollutants fall into two general categories: point sources and nonpoint sources. Point source pollution refers to pollution that enters surface waters through "any discernible, confined and discrete conveyance, such as a pipe, ditch, channel, tunnel, conduit, discrete fissure, or container" (US EPA, 2019). Typically these are associated with wastewater discharges from municipal or private wastewater treatment facilities. They can also originate from small, domestic wastewater systems that serve schools, commercial properties, residential subdivisions, and individual homes. Nonpoint source pollution is defined as "any source of water pollution that does not meet the legal definition of "point source" in Section 502 (14) of the Clean Water Act" (US EPA, 2020). Nonpoint pollution can result from a number of activities and land uses.

Point source discharges that impact Currituck Sound include wastewater treatment plants for private developments on the Outer Banks. Non-point pollution sources may include marinas, stormwater runoff from agricultural fields, impervious surfaces and subdivisions, septic systems, and golf courses.

Local Waters and Water Quality Classifications

Water body classifications designated by the State aim to protect surface water bodies and fish and wildlife and are required by Federal Water Pollution Control Act (Clean Water Act). Surface waters in North Carolina are assigned a primary water classification by the North Carolina Division of Water Classifications ranging from SC (lower quality waters that support secondary recreation and wildlife habitat), to SA (higher quality waters that support all SC and SB uses as well as commercial shellfishing and primary recreation).

Currituck Sound, Jean Guite Creek, and the Atlantic Ocean are public trust waters located in or adjacent to Southern Shores. These waters are classified as SB and SC.

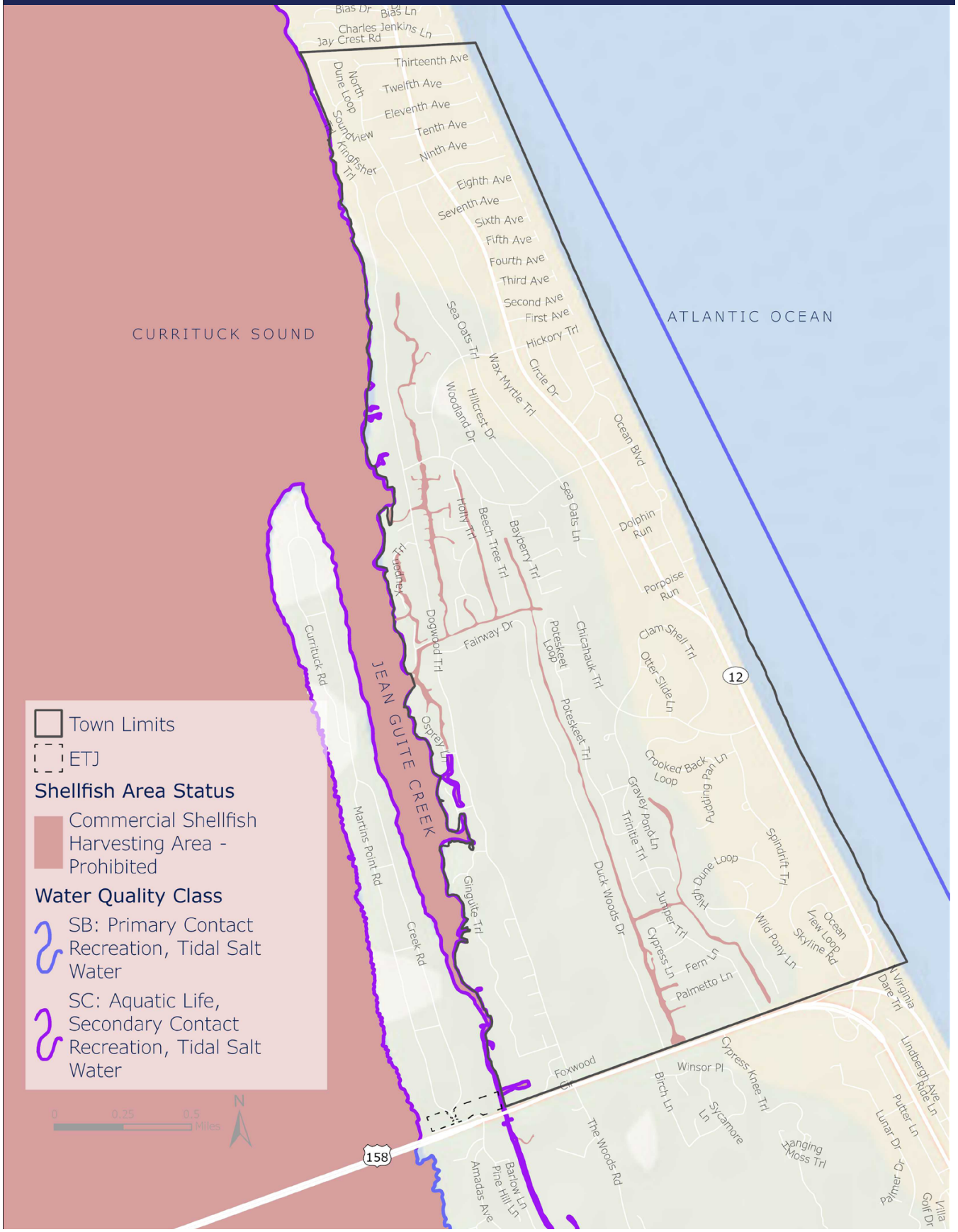
Water Body Classifications

Waters of the Town of Southern Shoress

Symbol	Description	Location
SB	Tidal Salt Waters (Primary Recreation)	Ocean
SC	Tidal Salt Waters (Secondary Recreation - minimal skin contact)	Currituck Sound, Jean Guite Creek

Source: NC Division of Water Resources (DWR)

Water Quality



Impaired Waters

The assessment of water quality in North Carolina is required under Sections 303 (d) and 305 (b) of the Clean Water Act and is reported every two years. Impaired waters must be prioritized and a management strategy or total maximum daily load must be developed for all listed waters.

There are no 303 (d) waters in Southern Shores. However, the portion of the Albemarle Sound located south of US 158 is on the state 303(d) list of impaired waters due to missing the mark on a number of water quality

Waters Designated for Commercial Shellfishing

Primary nursery areas are those areas in the estuarine and ocean system where initial post larval development of finfish and crustaceans takes place. They are usually located in the uppermost sections of a system where populations are uniformly early juvenile stages. They are designated and described by the N.C. Marine Fisheries Commission (MFC) and by the N.C. Wildlife Resources Commission (WRC).

The Albemarle and Currituck Sounds have been divided into 16 separate shellfish growing areas. The Currituck Sound and Jean Guite Creek are located in growing area I-16.The Division of Marine Fisheries most recent sanitary survey for shellfish growing areas I-1, I-3 through I-16 was prepared in 2013. The Currituck Sound and Jean Guite Creek inland waters are designated as SC and are permanently closed and prohibited for commercial shellfishing.

These waters are permanently closed and prohibited due to the presence of wastewater treatment plants, marinas, stormwater runoff, residential development, on site wastewater systems, substantial wildlife population, and golf courses. The hydrographic factors responsible for the spread of pollution are influenced by wind tides and heavy rainfall.

The bacteriological survey covered in the sanitary survey report includes water samples taken between 9/4/2007 and 11/27/2012. During this time frame, there were 1,140 water samples collected and analyzed for fecal coliform bacteria in compliance with the systematic random sampling regime. During the survey period, Station #17 located within Jean Guite Creek has a geometric mean of 8.54, and exceeds “approved” standards with an estimated 90th percentile of 55.

Continuous Improvements to Water Quality

Environmental water quality was a top priority in the previous land use plan and was one of the top priorities from the 2023 community survey for the development of this plan. In the past, the Southern Shores Civic Association has monitored water quality in Currituck Sound. Continuous efforts should be made to monitor and improve water quality.

Environmental water quality was a top priority in the community survey.

Natural Hazards

Like all coastal North Carolina communities, the Town of Southern Shores faces natural hazards including flooding, hurricane-level winds and storm surges, and shoreline erosion. In addition, these communities will all eventually face challenges associated with sea level rise.

CAMA's goal in characterizing natural hazards and establishing permitting processes for development in hazardous areas is to ensure human safety and protect property from storm dangers and erosion. Depending on the degree of hazard, towns may choose to protect structures by using specific building practices and/or limiting development.

Storm Surge Areas and High Winds

Flooding in Southern Shores can also be examined from the perspective of hurricane danger as measured by the Saffir-Simpson Hurricane Scale, which categorizes hurricanes on a scale of 1 to 5, 5 being the most intense and most damaging (see table on the right). It is used by the National Weather Service to assess potential dangers and communicate with public safety officials. Hurricanes are defined as tropical disturbances with sustained winds of 74 miles per hour or higher. They often cause storm surges, which are high waves driven inland by high winds.

The National Hurricane Center and the North Carolina Center for Geographic Information and Analysis have created a GIS data set called Hurricane Storm Surge Inundation Areas (1993) that shows areas along the North Carolina Coast that are likely to be flooded by hurricanes. The data is based on Sea, Lake, and Overland Surges from Hurricanes (SLOSH) models. Wind speed and storm surge (defined as the abnormal rise in water level caused by wind and pressure from a hurricane or tropical storm) are the two factors that are most important in determining the amount of potential damage. The SLOSH models do not account for rainfall produced by hurricanes. There are many variables that could alter the outcome, such as whether a hurricane approaches from the south or from the east, and whether it was preceded by heavy rainfall. The SLOSH models create only a generalized picture of lands likely to be inundated by different categories of hurricanes.

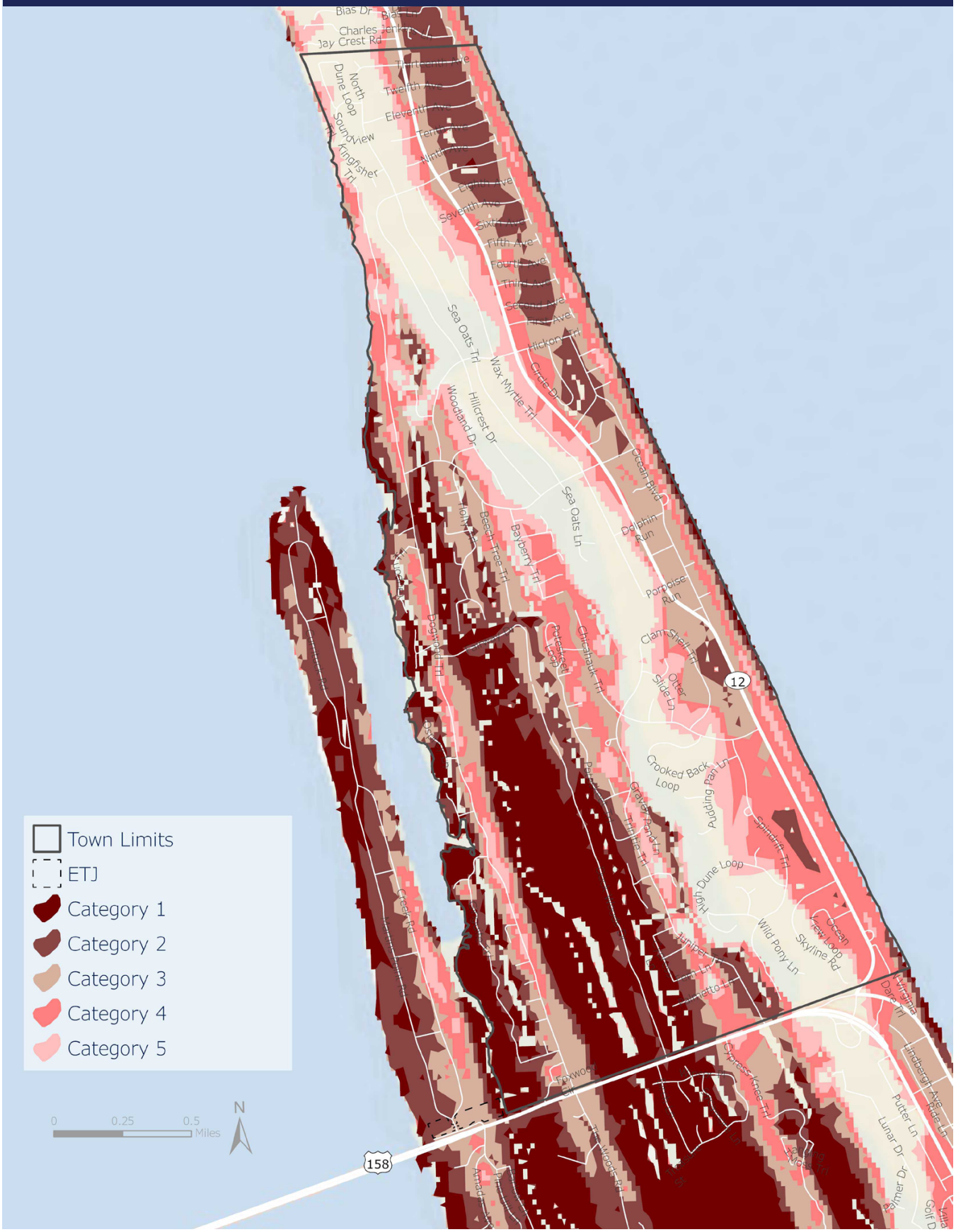
The SLOSH model for the Town of Southern Shores shows many properties located on the sound side of the island could be inundated in a Category 2 or stronger hurricane. The properties adjacent to the Duck Woods Country Club, Jean Guite Creek system, and along the Atlantic Ocean are the most at risk for storm surge during hurricanes and tropical storms. The surrounding areas just outside of Southern Shores are also highly susceptible to similar inundation, including the HWY 158 entrance to the island.

Characteristics of Hurricanes

Hurricane Category	Wind Speed (mph)	Storm Surge (feet above normal)	North Carolina Example (that first made landfall in North Carolina)
1	74-95	4-5	Hurricane Ernesto (2006) Hurricane Charley (2004) Hurricane Matthew (2016) Hurricane Florence (2018)
2	96-110	6-8	Hurricane Arthur (2014)
3	111-130	9-12	Hurricane Irene (2011) Hurricane Fran (1996)
4	131-155	13-18	Hurricane Floyd (1999) Hurricane Hazel (1954)
5	>155	>18	Hurricane Dorian (2019)

Source: National Hurricane Center, National Office of North Carolina

Modeled Storm Surge Inundation Probability (SLOSH)



Efforts to Minimize Flood Dangers and Property Damage

Natural hazards such as hurricanes, coastal storms, sea level rise, and flooding from storm surge are all situations that Southern Shores will likely encounter in the coming years.

The flood hazard areas in Southern Shores include the 100-year floodplain or land with a 1% annual chance of experiencing a flood, and the 500-year floodplain or land with a 0.2% annual chance of flooding. Essentially all land bordering Jean Guite Creek system is within the 100 year flood plain and is susceptible to flooding. All of the Duck Woods County Club, and adjacent properties face the possibility of flooding as well.

The existing FEMA flood hazard areas found on Flood Zone map on the following pages, shows the oceanfront a VE zone (labeled as Open Water) and the soundside as AE (1% annual chance of flooding) zone. These areas are vulnerable to erosion and flood hazards, especially during storm events.

Since 1992, the Town has participated in FEMA's Community Rating System, a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the National Flood Insurance Program (NFIP). The program provides incremented discounts on flood insurance premium rates, Southern Shores receiving a class 6 reduction of 20% for Special Flood Hazard Areas (SFHA) and 10% for non-SFHA.

Areas Experiencing Significant Shoreline Erosion

Southern Shores as a whole is still seeing an average of 6 inches (.5 feet) of shoreline erosion each year, some areas of the study area are experiencing an average of 15.5 inches (1.3 feet) of shoreline erosion each year.

Areas experiencing significant shoreline erosion are as follows:

- Oceanfront properties south of Ocean View Loop to Southern Shores boundary
- Oceanfront properties north of Porpoise Run to Trout Run

Sea Level Rise

Sea level rise will affect current and future development in the town of Southern Shores. As sea level rises, the land's capacity to absorb flooding and storm surges will be reduced, making residents more vulnerable to storms, storm surge, and rainfall. Additionally, the storm surge from a hurricane or nor'easter builds upon a higher base water level due to

The pole located at Town Hall provides a visual representation of how high water can rise above the ground in the event of a storm.

Storm Events

Probability of occurrence of various storm events over spans of time					
	1 year	**10 years**	**30 years**	**50 years**	**100 years**
1-in-10 year storm (10% annual chance)	10%	65.1%	95.8%	99.5%	99.9%
1-in-100 year storm (1% annual chance)	1.0%	9.6%	26.0%	39.5%	63.4%
1-in-500 year storm (0.2% annual chance)	0.2%	2.0%	5.8%	9.5%	18.1%
1-in-1,000 year storm (0.1% annual chance)	0.1%	1.0%	3.0%	4.9%	9.5%
Significance			*Length of a typical mortgage*	*Within the lifespan of most structures*	*Within the lifespan of many sturdy structures*

Note that the percentages above show the probability of the occurrence of at least one of the specified storms of a particular intensity. More than one storm of a given intensity during a certain time period are certainly possible.

sea level rise, resulting in an increase of the land area subject to flooding.

High tide flooding events will also increase as seas rise. According to NOAA's Intermediate scenario, using data projected for Sewells Point, VA – the closest site available – indicates a likelihood of at least 51 additional days of high tide flooding by the year 2050. See also "Acknowledging rising seas" on page 86.

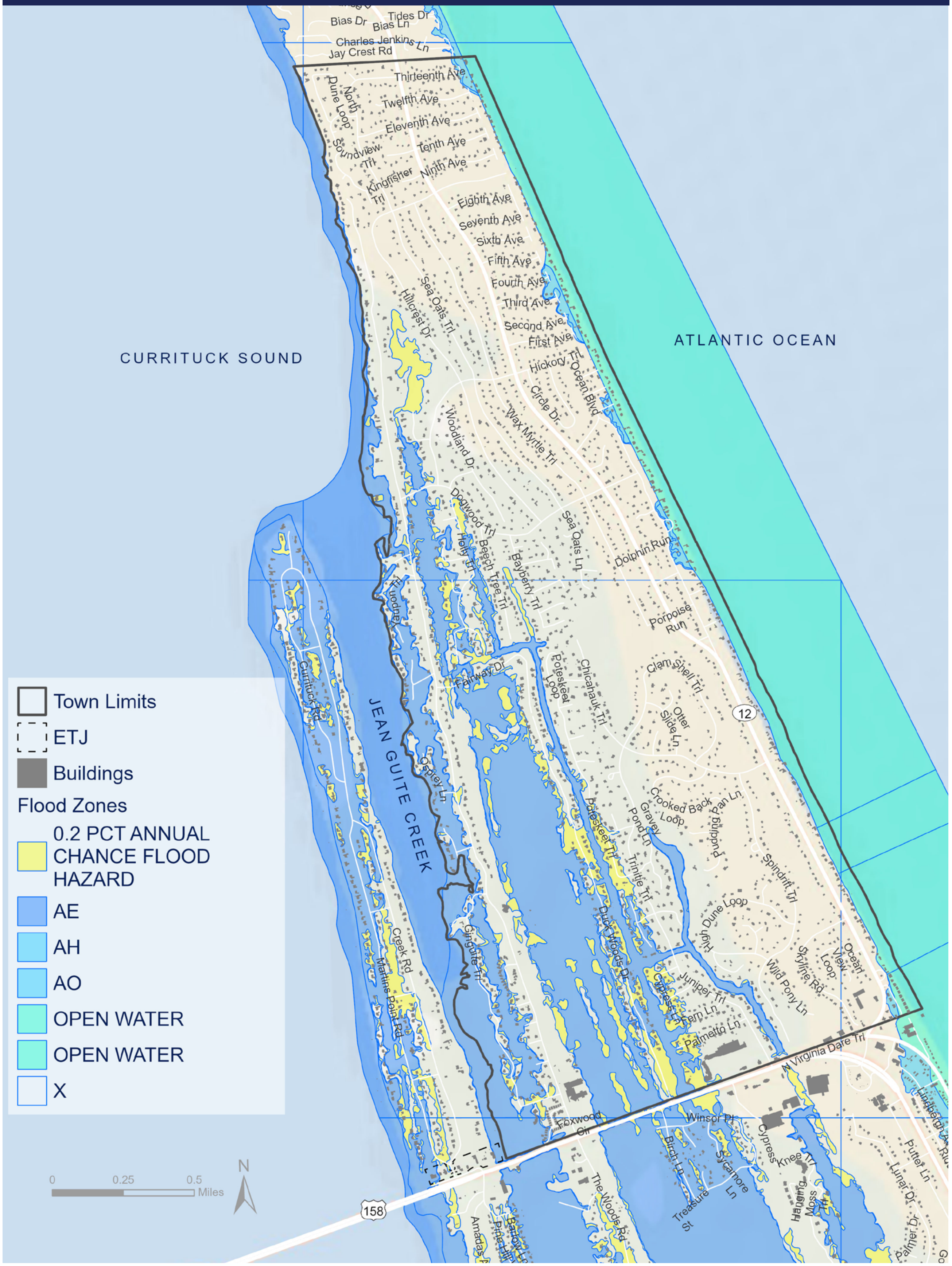
Vulnerability and a Changing Climate

For the past nine decades, seas have been rising in the Southern Shores area, as recorded at the USGS tide gauge at Sewells Point located in nearby Virginia. With sea levels continuously rising and a warmer ocean surface, storms may be stronger and more frequent in the future. Stronger winds from these storms will lead to a greater amount of debris to cleanup.

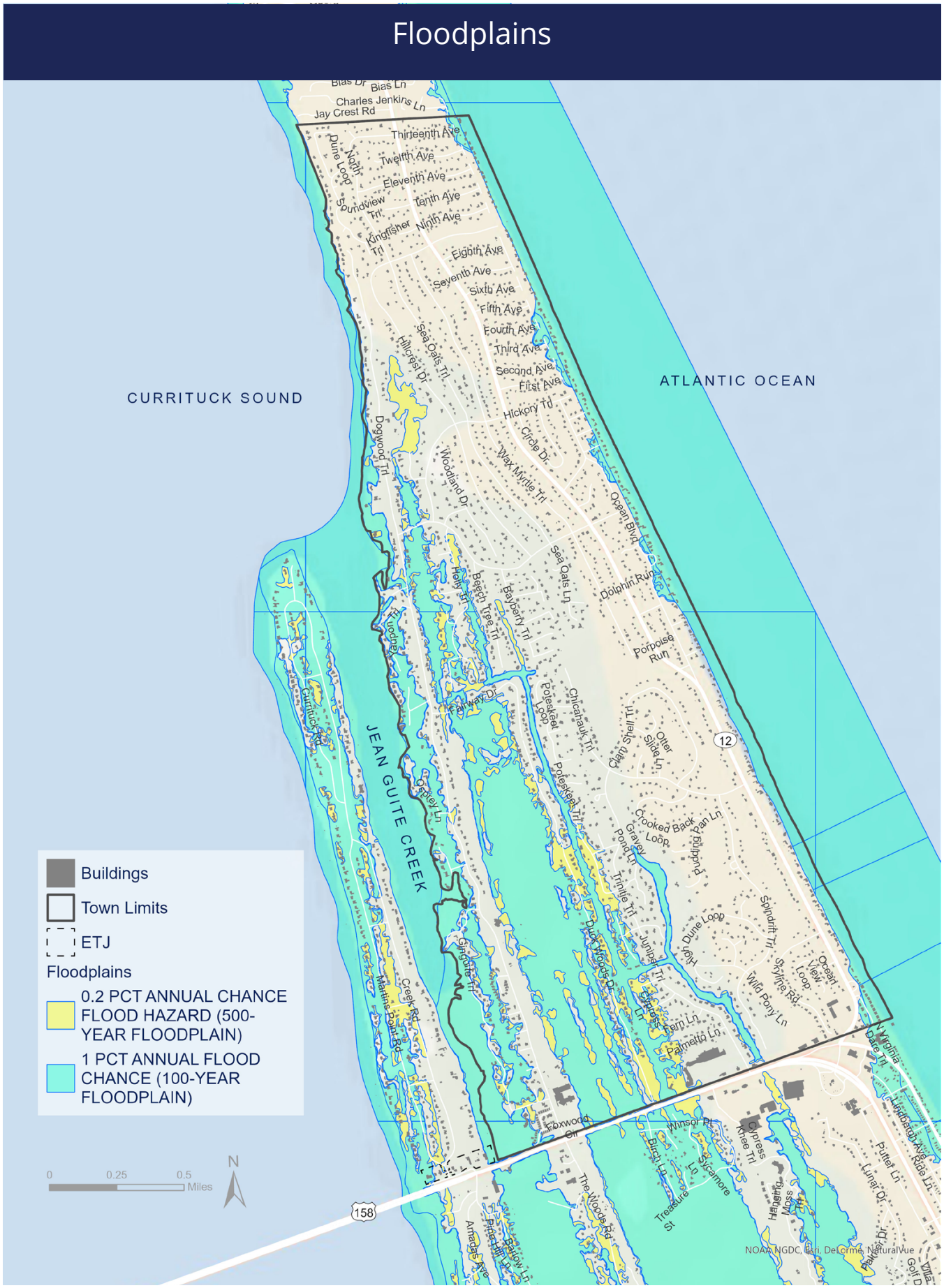
Rising seas will consequently lead to higher water tables which will likely impede private septic systems. Underground salt intrusion or overwash from storm-driven waves into areas where infrastructure exists (pipes, wires, foundations, parking areas, etc.) has the potential to reduce the operational lifespan of these facilities and lead to increased maintenance costs.

Flood zones will continue to move upland as seas rise. As this occurs, some structures may not be adequately protected from flooding, particularly in low lying areas.

Flood Zones


CURRITUCK SOUND
ATLANTIC OCEAN
JEAN GUITE CREEK
Town Limits
ETJ
Buildings
Flood Zones
0.2 PCT ANNUAL CHANCE FLOOD HAZARD
AE
AH
AO
OPEN WATER
OPEN WATER
X
0
0.25
0.5
Miles
N
12
158
Thirteenth Ave
Twelfth Ave
Eleventh Ave
Tenth Ave
Ninth Ave
Eighth Ave
Seventh Ave
Sixth Ave
Fifth Ave
Fourth Ave
Third Ave
Second Ave
First Ave
Hickory Trl
Ocean Blvd
Circle Dr
Wax Myrtle Trl
Woodland Dr
Dogwood Trl
Sea Oats Ln
Dolphin Run
Porpoise Run
Clam Shell Trl
Otter Slide Ln
Chicahauk Trl
Poteskeet Loop
Bayberry Trl
Beech Tree Trl
Holly Trl
Fairway Dr
Kingfisher Trl
Soundview Trl
North Dune Loop
Sea Oats Trl
Hillcrest Dr
Bias Dr
Bias Ln
Tides Dr
Charles Jenkins Ln
Jay Crest Rd
Currituck Rd
Osprey Ln
Creek Rd
Martins Point Rd
Gingerte Trl
Poteskeet Trl
Duck Woods Dr
Trinitie Trl
Gravey Pond Ln
Crooked Back Loop
Pudding Pan Ln
Spindrift Trl
High Dune Loop
Wild Pony Ln
Skyline Rd
Ocean View Loop
Juniper Trl
Fern Ln
Palmetto Ln
Cypress Ln
N Virginia Dare Trl
Foxwood Cir
Winsor Dr
Birch Ln
Sycamore Ln
Treasure St
The Woods Rd
Cypress Knee Trl
Hanging Moss Trl
Putter Ln
Luner Dr
Palmer Dr
Amadas

Floodplains



Natural Resources

Natural resources in and around Southern Shores include public trust waters (canals, Currituck Sound, Jean Guite Creek,Atlantic Ocean), and coastal and non-coastal wetlands, public water supplies, wildlife habitats, and forests. Survey data demonstrates residents' commitment to preserving these resources. This section identifies and discusses Southern Shores's natural resources and assesses the threats that future development may pose to them so that their protection can be integrated into planning policy.

Environmentally Fragile Areas

Environmentally fragile areas are areas where natural resource functions may be negatively impacted as a result of development. These areas include wetlands, Significant Natural Heritage Areas (SNHA), and areas containing endangered species, prime wildlife habitats, or maritime forests. These natural resources are highly valued by residents (both year-round and seasonal).

The Town of Southern Shores and its adjacent waterways are home to many wildlife habitats with high levels of biodiversity according to the Biodiversity and Wildlife Habitat Assessment developed by the N.C. Natural Heritage Program. The maritime forests, beaches, and estuarine shorelines of Jean Guite Creek and the canal system are the most prominent locations for higher biodiversity levels. Where the creek system meets the Currituck sound is also an area with large amounts of submerged aquatic vegetation that continues North and South along the sound side of the Town.

Beach heather (*Hudsonia tomentosa)*. Source: USDA

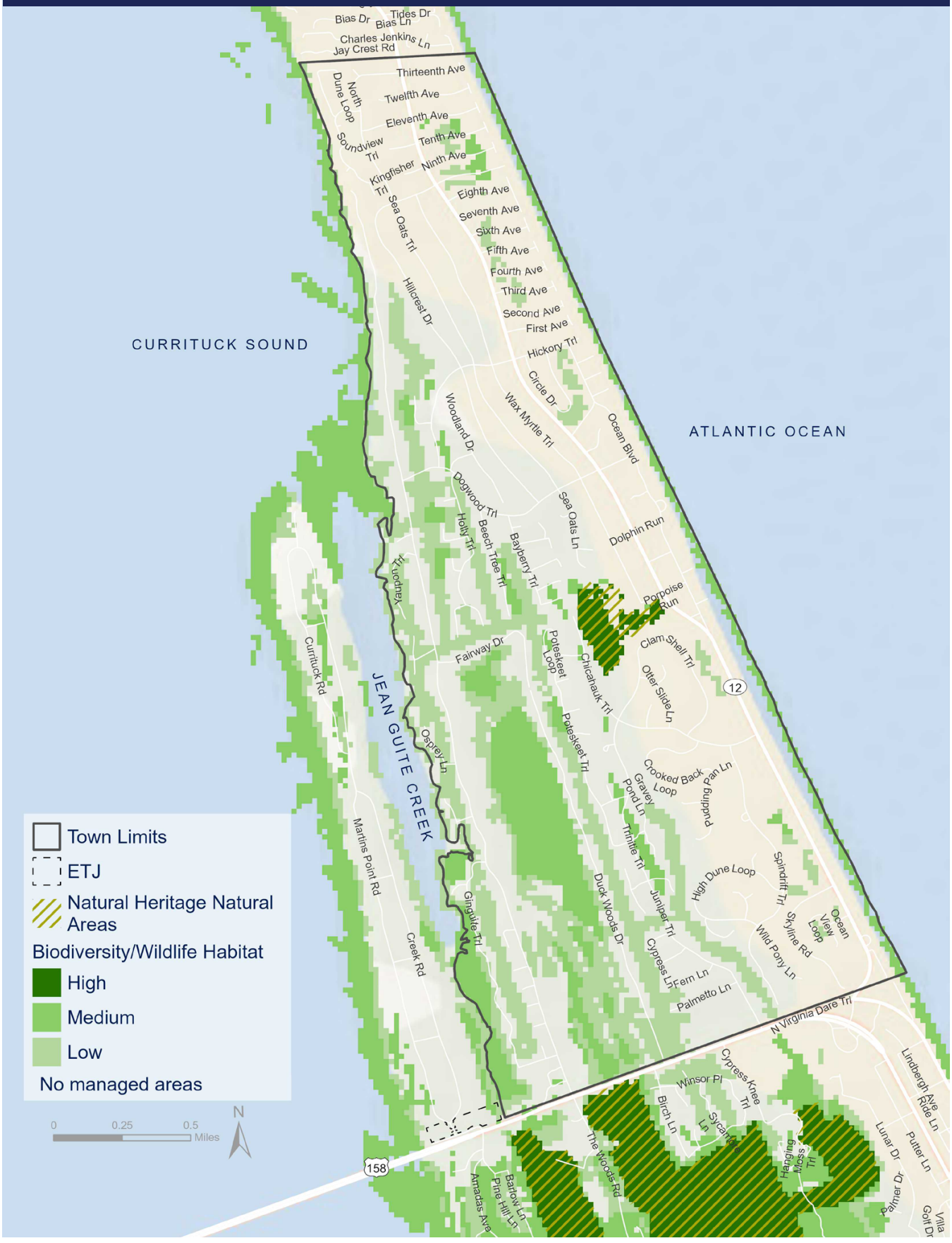
Natural Areas

A natural area is an area of land or water identified as having special importance for the preservation of the natural biodiversity of North Carolina. Biodiversity is generally recognized in the scientific community to refer to the diversity, not only of species but also of natural communities and ecosystems, as well as genetically distinct populations below the species level. The Southern Shores Cypress Swamp is an example of a rare non-coastal wetland that is designated as a Natural Heritage Site. It includes 34.36 acres identified by the North Carolina Heritage Program.

Cypress Swamp (also known as Cypress pond) is one of two known examples of the Cypress Subtype of Maritime Swamp Forest communities. Within Cypress Swamp, is an area of sand dunes which support Dune Grass and Stable Dune Barren communities and an area of deep swales which support a Maritime Swamp Forest natural community with old-growth bald cypress trees. Two rare plant species occur in this natural area, the beach heather (*Hudsonia tomentosa*), and maritime pinweed, *(Lechia Maritima var. virginica*). Both plant species Both are considered threatened species of plants in North Carolina.

Being designated as a Natural Heritage area is not associated with any regulatory program nor does it provide protection status on its own. Additionally, it is not afforded protection from development by state or local regulation and does not have a conservation easement or other protection for conservation or preservation purposes. The Cypress Swamp is currently owned by the Chicahauk Property Owners Association

Environmentally Fragile Areas



whose covenants and by-laws make it difficult for the association to change ownership or use of this property for any purpose other than a conservation area.

Non-coastal Wetlands

Non-coastal wetlands include wetlands not classified as coastal wetlands. Non-coastal wetlands are areas where water covers the soil for most of the year and include a variety of natural systems, such as marshes, swamps, bottomland hardwoods, pocosins, and wet flats (See map on page 39). The prolonged presence of water causes the growth of specially adapted plants and the development of hydric soils. Hydric soils have a distinctive color, texture, and odor; and its presence means that the area was once a functioning wetland or is still a functioning wetland. The plants that can grow in such conditions, such as marsh grasses, are called hydrophytes. Together, hydric soils and hydrophytes give clues that a wetland area is present.

Non-coastal wetlands do not require a

CAMA permit unless the Coastal Resource Commission designates them as a natural resource, but under the Clean Water Act Section 404 a permit is required from the Army Corps of Engineers to dredge or fill wetlands. The precise location of non-coastal wetlands can only be determined through field investigation and analysis.

In the study area, and specifically within the Duck Woods Country Club property are maritime forests. These maritime forests show up in other small pockets throughout the sound side of the island. There are some areas of salt/brackish marsh just south of Jean Guite Creek, as well as some areas of managed pineland. There are also human impacted wetlands located along HWY 12 between Eighth and Eleventh Avenue.

Additional Natural Features

Dunes are built with wind deposited material and northern beach grass (Ammophila breviligulata), sea oats (Uniloa paniculata), and salt meadow cordgrass (Spartina patens). The roots of these grasses act much like rebar in cement to hold and stabilize the fore dune. Dunes form the primary defense against storm tides, waves, and wave overwash. In addition, dunes provide habitat for sea turtles, beach nesting birds, and shorebirds. Loggerhead sea turtles are an endangered species and have been found nesting on the beaches of Southern Shores.

Development is one of the primary causes for depletion of dune habitat. Direct and indirect disturbance, not only by humans but also their pets, causes problems for non-nesting and nesting birds and sea turtles. The Network for Endangered Sea Turtles (N.E.S.T.) is an all-volunteer non-profit organization dedicated to the protection and conservation of sea turtles on the Outer Banks of North Carolina. The organization monitors and/or relocates nests that need to be relocated for various reasons. Beach nourishment is discouraged between May and November because it can destroy sea turtle nests. Educating community members about organizations such as N.E.S.T. should be a priority to protect sea turtles.

Activities that breach or weaken the dunes or reduce sand available to replenish it and its vegetative cover make it susceptible to erosion. Dune height and width may be enhanced with beach grass planting, in combination with sand fencing to reinforce sand dunes. In addition, beach walkovers prevent impacts to the roots of the dune vegetation.

Areas West of NC 12, contains grasses and scattered shrubs forming thickets which provide shelter and habitat for small mammals and bird species. Live oak (Quecus virginiana), persimmon (Diospyros virginiana), bayberry, wax myrtle, and yaupon are located in low-lying areas behind the dunes, which are where rainwater collects from storm events and vegetation is protected from winds. Areas adjacent to Jean Guite Creek contain small remnants of maritime forest that provide habitat for wildlife, areas for groundwater infiltration,shelter for residences, and are an important aesthetic resource of the community. Marshes (maybe coastal wetlands see definition) are located on the sound side and contain black needle rush (Juncus roemerianus), salt marsh cordgrass (Spartina alternaflora) with occasional patches of common reed.

The majority of natural resource areas in Southern Shores are owned by cSouthern Shores Civic Association and Chicahauk Property Owners Association, due to this, covenants and by-laws make it difficult to change ownership of these natural areas or develop these areas.

Existing Land Use & Development

Existing Land Use

Existing land use includes residential, commercial, institutional, vacant, parks, and open space.

Residential Uses

Residential uses make up 64% of the land area (1,410 acres). The Southern Shores Civic Association and the Chicahauk Property Owners Association provide additional regulation to the residential uses.

Commercial, Service, & Office Uses

Commercial uses make up 2% of Southern Shores' land use and consist of 41 acres. The majority of commercial uses lies along Highway 158 at the southern edge of Town.

Institutional Uses

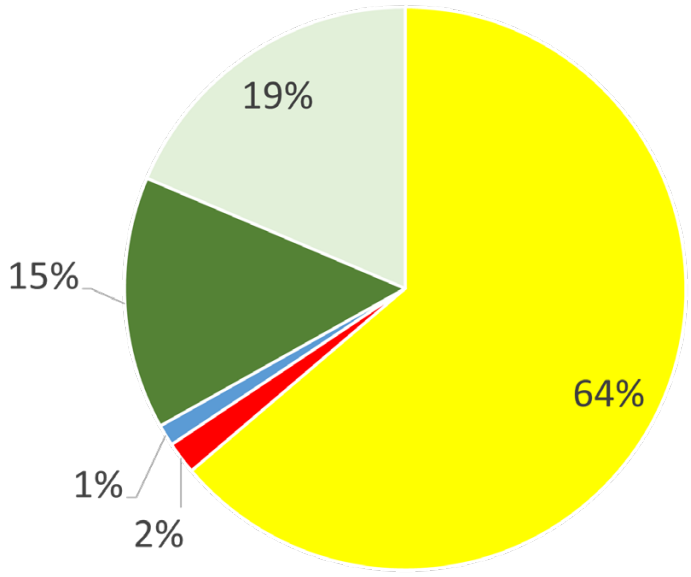
Institutional uses make up 1% of the land use of Southern Shores and are mostly occupied by schools, government buildings, and churches. These uses make up 27 acres.

Parks

Open space and parks land uses make up 15% of the land area. Open space and parks total 321 acres within the town's limits. This includes the Duck Woods Country Club Golf Course.

Vacant/Undeveloped/Open Space

Vacant and undeveloped property make up 19% of the land area in Southern Shores. Vacant and undeveloped land within totals of 411 acres.



Existing Land Use

Historic, Cultural, and Scenic Areas

Cultural, historic, and scenic areas are important to Southern Shores residents and include views to the sound and ocean, maritime forests, wetlands, Southern Shores' neighborhoods, and historic structures.

The community of Southern Shores was a planned community designed by Frank and David Stick and partners. The community consisted of lots for permanent residents along a winding road lined with trees known as Dogwood Trail and oceanside lots. The community included canals making it possible to navigate both north, south, east, and west. It also included a secret, land locked, series of Cypress swamps. The Chicahauk community would later join the community and bring 555 developed and undeveloped properties consisting of large lots with considerable open space, parks, pathways, and canals. By 1979, the Town of Southern Shores was incorporated.

The Town of Southern Shores residents value the existing character that exists throughout the town. Southern Shores historic resources consist of flat top and cottage style coastal homes. The buildings that have been determined to be significant and received local status are listed below.

Historic Landmarks

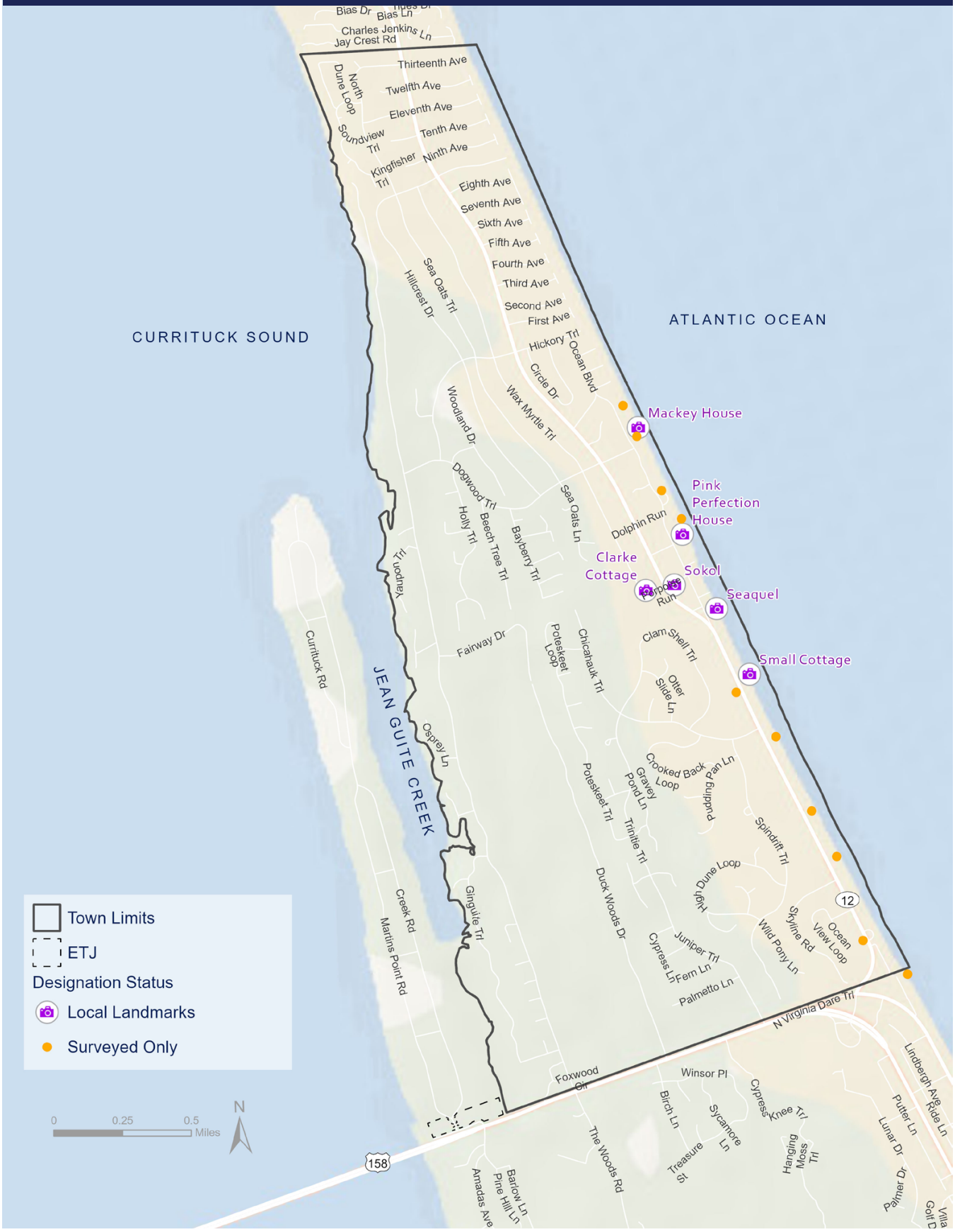
- Mackey House, 218 Ocean Boulevard
- Pink Perfection House, 170 Ocean Boulevard
- Clarke Cottage, 156 Wax Myrtle Trail
- Sokol, 23 Porpoise Run
- Seaquel (formerly Atlantica), 142 Ocean Boulevard
- Small Cottage, 116 Ocean Boulevard

There are no National Register properties or districts in Southern Shores. Any exterior changes to the Historic Landmarks require a Certificate of Appropriateness from the Historic Preservation Commission prior to a permit being issued. In the State of North Carolina, Historic Landmarks are eligible to apply for an annual 50% property tax deferral as long as the property's important historic features are maintained.

Currently, the local government and the Historic Preservation Commission do not participate in the North Carolina's Certified Local Government Program. Participation in this program has numerous benefits, including, eligibility for grant funding, increased expertise and knowledge for historic preservation commission members through required continued education, and the ability to review all new nominations to the National Register of Historic Places for properties and districts within their boundaries.

Sokol, the first designated local landmark in Southern Shores.

Cultural and Historic Resources



Community Facilities

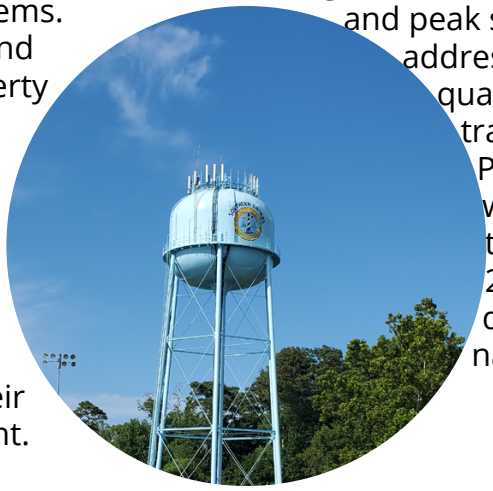
The basic services that Southern Shores depends upon for daily needs and safety include water supply, wastewater treatment, transportation networks, stormwater systems, schools, police service, and fire protection. Assessing the condition and capacity of these facilities is a fundamental step toward determining how Southern Shores can meet service needs for its residents in the future.

Public and Private Water Supply and Wastewater Systems

Water supply and sewer systems effect the location, form, density, and timing of local and regional development. The Coastal Resource Commission's goal in requiring the examination of infrastructure is to "ensure that public infrastructure systems are appropriately sized, located and managed so that the quality and productivity of AECs and other fragile areas are restored and protected."

The Town of Southern Shores purchases its water from the Dare County Water Department. The Water Department operates five water plants, four of which are reverse osmosis plants; located at Kill Devil Hills, Stumpy Point, Rodanthe, and Frisco. The fifth is a freshwater softening plant on located on Roanoke Island. The Town relies on individual wastewater septic tank systems. These systems are owned and maintained by private property owners.

This section describes the current status of the public water and wastewater systems for the Town, evaluates their existing capacity and future demands, and discusses their implications for development.



Water Supply

The Dare County Regional Water Supply System (DCRWSS) consists of five water treatment facilities. The facilities serving Southern Shores are the Skyco Plant and the North Reverse Osmosis Plant which was designed to provide 5.0 million gallons per day (mgd) but upgrades in 2021 have increased production to 6.3 MGD. The Skyco Plant has a permitted capacity of 5 MGD. In 2021, the plants exceeded 80% and 90% of their approved capacity for five consecutive days. During this time, no water conservation was implemented.

The Skyco Plant is supplied by 10 wells located on NC345 between Skyco and Wanchese. The wells average from 200 to 250 feet deep and are screened at depths from around 140 feet to 220 feet below the ground surface. The North Reverse Osmosis Plant is supplied by 14 wells located in Kill Devil Hills and Nags Head. There is an elevated water tank located in Southern Shores.

Water supply from the Yorktown Aquifer was once characterized as limitless, but as growth in the Outer Banks has skyrocketed, the long-term viability of this groundwater supply has come into question. Dare County reports that it has experienced no shortage of available supply as it continues to develop groundwater supplies to meet growing needs and peak season demand. The County is addressing source water quantity and quality issues through the addition of 3 trains at the North Reverse Osmosis Plant (NRO) in 2021, blending raw water at the NRO, adding two trains to the Skyco plant (anticipated 2024/2025), developing a leak detection program, and through nanofiltration at the NRO plant.

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Wastewater

Septic tank systems are the most common method of wastewater treatment in Southern Shores and Dare County.

Stormwater

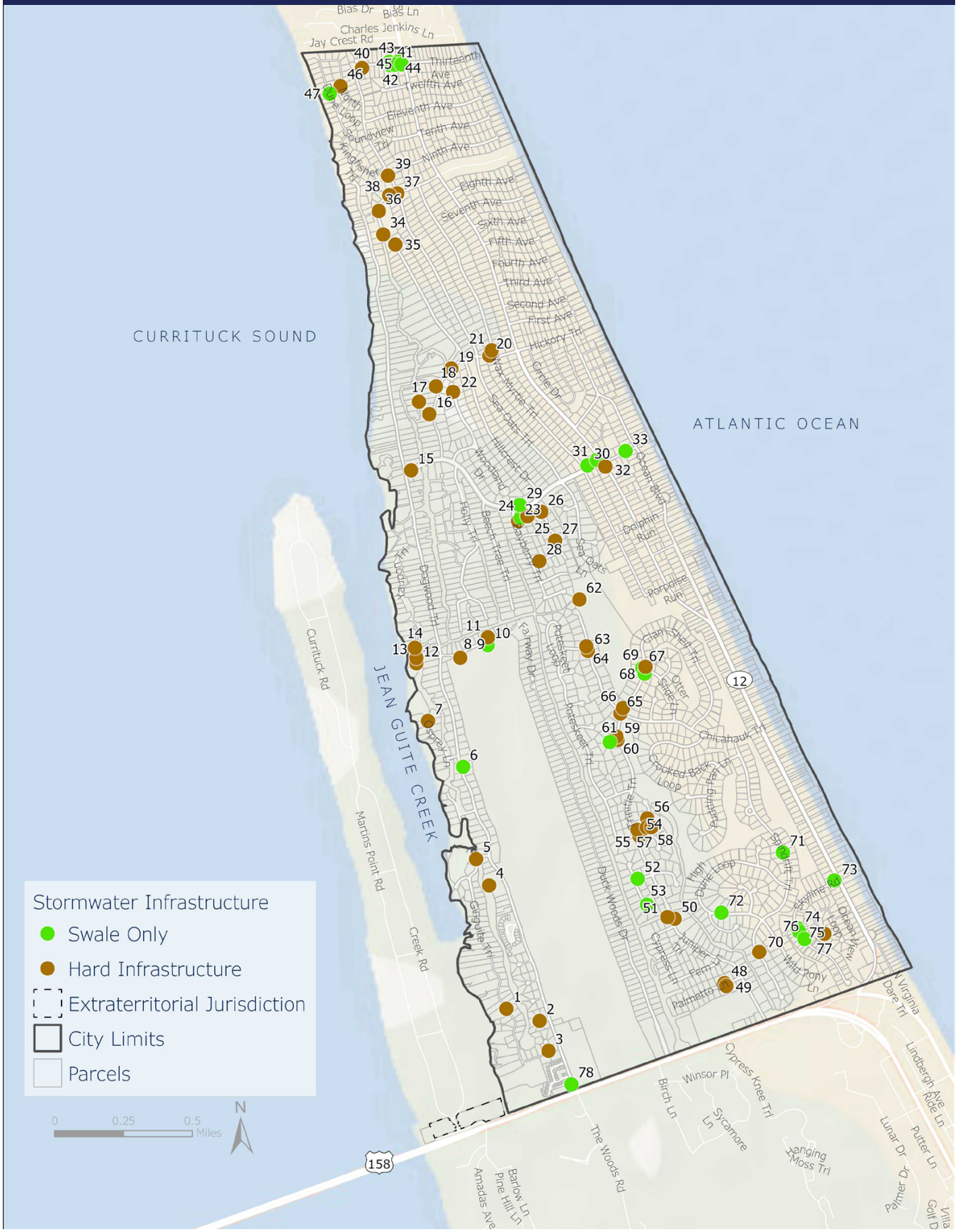
In order to address poorly draining soils and stormwater runoff, the Town of Southern Shores has invested into their stormwater infrastructure. These investments include grading stormwater swales into the right-of-way or along property lines, and constructing trench drains or concrete flumes to guide the stormwater to another location and out of the roadway and sidewalks.

A majority of the stormwater infrastructure is hard infrastructure that guides the runoff to a swale, however there are still some locations in Southern Shores that there is only a swale to hold runoff. Most of the stormwater infrastructure is located west of NC 12.

Annual average rainfall in Southern Shores is nearly 50 inches per year, with the average precipitation rates highest August to January. Poorly draining soils, and a low elevation pose challenges to stormwater control especially during the months of higher precipitation and hurricane season.

Stormwater is managed through a series of grading, filling, or alteration of the topography or elevation of any unimproved lot, or demolition or land clearing activity, or improvements to real estate that result in the discharge of stormwater onto an adjacent property and require a building permit. All of which are required to apply for a lot-disturbance stormwater management permit.

Stormwater Infrastructure



Stormwater Infrastructure

1. 12 & 19 Ginguite Trail – Groundwater lowering system that drains just before entering the wetland.

2. Wigeon Court – Overflow drain in the middle of the cul-de-sac that is piped to 23 Wigeon Court.

3. Pintail Court – Trench Drain that crosses the entrance of street.

4. 50 S Dogwood Trail – Duck Woods Country Club storm drains and culverts that empty in retention area.

5. Ginguite Trail North End – Overflow drain with culvert under Ginguite trail to prevent overflow from pond.

6. 92 S Dogwood Trail – Shallow swale between sidewalk and road.

7. 107 Osprey Lane - Storm Drain and culvert run underneath cul-de-sac to canal.

8. Fairway Drive – Trench drain to a swale across from 64 Fairway Drive.

9. Fairway Drive – Curb and concrete flume to a swale across from 58 Fairway Drive.

10. Fairway Drive – Swale across from 54 Fairway Drive.

11. 52 Fairway Drive – Curb and concrete flume to swale.

12. 121 Tall Pine Lane – Drain with culvert under road to canal.

13. 123 Tall Pine Lane - Drain with culvert under road to canal.

14. 127 Tall Pine Lane - Drain with culvert under road to canal.

15. N, S, & E Dogwood Trail intersection – Curb and gutter with culverts that empty to retention area located adjacent to 226 N Dogwood.

16. Red Bay Lane adjacent to 56 Hickory Trail – Trench drain across road with culvert that empties into retention area located on Hickory Trail at 56 Hickory Trail.

17. 7 Red Bay Lane – Trench drain across road draining to the West side of the road to a swale.

18. 46 Hickory Trail – Curb leading to concrete flume.

19. 43 Hickory Trail – Trench drain across with culvert that drains to retention area at Azalea Lane. Curb directing water to same area.

20. 264 Sea Oats Trail – Asphalt flume directing water Hickory Trail onto private property. It has been filled with dirt at the request of the property owner to prevent damage to private property.

21. 264 Sea Oats Trail - Asphalt flume directing water from Wax Myrtle Trail onto private property.

It has been filled with dirt at the request of the property owner to pervert damage to private property.

22. N Woodland Drive adjacent to 49 Hickory Trail – Concrete curb and flume to large swale.

23. 50 Dewberry Lane - Trench drain across road draining to large swale in front of 50 Dewberry Lane.

24. 168 Dewberry – Small swale with overflow into swale located at 47 Dewberry Lane.

25. 47 Dewberry Lane – Swale with concrete flume with overflow into retention area located at the end of the road.

26. 39 N Fox Grape Lane - Curb with 3 storm drains that drain to small retention area.

27. 46 S Fox Grape Lane – Curb with concrete flume to retention area.

28. 49 Honeysuckle Lane – Curb with trench drain across the road that drains to retention area at 49 Honeysuckle Lane.

29. 46 E Dogwood Trail – Swale that collects water for E Dogwood Trail.

30. 212 Wax Myrtle Trail – 2 swales that collects water from E Dogwood Trail.

31. 211 Duck Road – Swale that collects water from E Dogwood Trail.

32. E Dogwood Trail and NC 12 intersection – 6 storm drains that drain to retention basin located at 29 E Dogwood Trail.

33. 209 Ocean Boulevard – 2 swales along E Dogwood Trail that drain E Dogwood Trail.

34. 315 Hillcrest Drive – 2 asphalt flumes directing water onto private property.

35. 312 Hillcrest Drive – Asphalt flume directing water onto private property.

36. 320 Hillcrest Drive – Asphalt flume directing water onto private property.

37. Hillcrest Drive and Sea Oats Trail intersection – Curb and concrete flumes directing water to swales at all 4 corners of the intersection.

38. 323 Hillcrest Drive – Trench drain across driveway

directing water to swale.

39. 335 Sea Oats Trail – Curb and concrete flume to swale.

40. 370 Sea Oats Trail – Concrete flume to swale.

41. 389 Sea Oats Trail – Swale.

42. 388 Sea Oats Trail – Swale.

43. 393 Sea Oats Trail – 2 swales.

44. 390 Sea Oats Trail – Swale.

45. 392 Sea Oats Trail – 2 swales.

46. 15 N Dune Loop – Curb and storm drain directing water to a swale.

47. 23 N Dune Loop – Swale to collect water and drain water standing in the road.

48. 6 Palmetto Lane – Curb and concrete flume to swale.

49. 5 Palmetto Lane – Curb and concrete flume to swale.

50. 50 Juniper Trail - Storm drain and culvert under the road to swale located on Juniper Trail at 2 Sweetgum Lane.

51. 2 Sweetgum Lane – Concrete flumes to swale located on Juniper Trail.

52. 62 Deerpath Lane – Swale around the corner of the lot.

53. Deerpath Lane – Swale around median.

54. 66 Trinitie Trail – Curb and storm drain that drains to swale at 66 Trinitie Trail.

55. 72 Trinitie Trail – Curb and storm drain to swale.

56. 79 Gravey Pond Lane – Curb and storm drain to swale.

57. 77 Gravey Pond Lane – Curb and storm drain to swale at 79 Gravey Pond Lane.

58. 78 Gravey Pond Lane – Curb and storm drain to swale at 79 Gravey Pond Lane.

59. 97 Trinitie Trail – Concrete flume to a swale located at the corner of Bear Track Lane.

60. 107 Bear Track Lane – Concrete flume to a swale located at the corner of Trinitie Trail.

61. Bear Track Lane – Swale located around the median.

62. Chicahauk Trail Groundwater Lowering System – The underground perforated pipe begins at

109 Trinitie Trail. The pipe runs NE to Chicahauk Trail and turns West. The pipe runs on the SW side of Chicahauk Trail to 185 Chicahauk Trail. The Pipe Turns and enters the canal between 152 Poteskeet Loop and 131 Bayberry Trail.

63. 142 Gray Squirrel Lane – Concrete flume to swale at the corner of Chicahauk Trail.

64. 143 Gray Squirrel Lane – Concrete flume to swale at the corner of Chicahauk Trail.

65. 151 Chicahauk Trail – Curb and 2 concrete flumes to swale at the corner of Trinitie Trail.

66. 182 Clam Shell Trail – Curb and 3 concrete flumes to swale at the corner of Chicahauk Trail.

67. 170 Clam Shell Trail – Swale.

68. 171 Clam Shell Trail – Swale at the corner of Otter Slide Lane.

69. 169 Clam Shell Trail – Curb and 2 concrete flumes to swale at the corner of Otter Slide Lane.

70. 22 Spindrift Trail – Concrete curb with trench drain across the driveway to a swale.

71. 53 Spindrift Trail – Shallow swale between sidewalk and road.

72. 151 High Dune Loop – Shallow swale to allow water to drain off roadway.

73. 39 Ocean Boulevard – 2 swales along Skyline Road to help drain the intersection with Ocean Boulevard.

74. 52 Skyline Road – Swale.

75. 50 Skyline Road – Swale.

76. 44 Skyline Road – Swale.

77. 35 Ocean View Loop – Large retention basin in center of cul-de-sac with 2 concrete flumes directing water to retention area. Curb and storm drain on E side of the cul-de-sac to direct water to a natural low spot.

78. 1 S Dogwood Trail – Swale to help drain intersection at US158.

74. 52 Skyline Road – Swale.

75. 50 Skyline Road – Swale.

76. 44 Skyline Road – Swale.

77. 35 Ocean View Loop – Large retention basin in center of cul-de-sac with 2 concrete flumes directing water to retention area. Curb and storm drain on E side of the cul-de-sac to direct water to a natural low spot.

78. 1 S Dogwood Trail – Swale to help drain intersection at US158.

Transportation

Southern Shores can be accessed two separate ways, either HWY 158 over the Wright Memorial Bridge coming in directly to the edge of Town limits, or further south on HWY 64 which comes in through Nags Head, Kill Devil Hills, and Kitty Hawk. A majority of the roadways are owned and maintained by the Town, while Duck Road, also known as NC 12 is owned and maintained by the North Carolina Department of Transportation. There are also a few roads scattered around the Town that are owned and maintained by local HOAs. The Town's Powell Bill map has been updated on a regular basis and provides information on exactly which entity owns and maintains each of the roads.

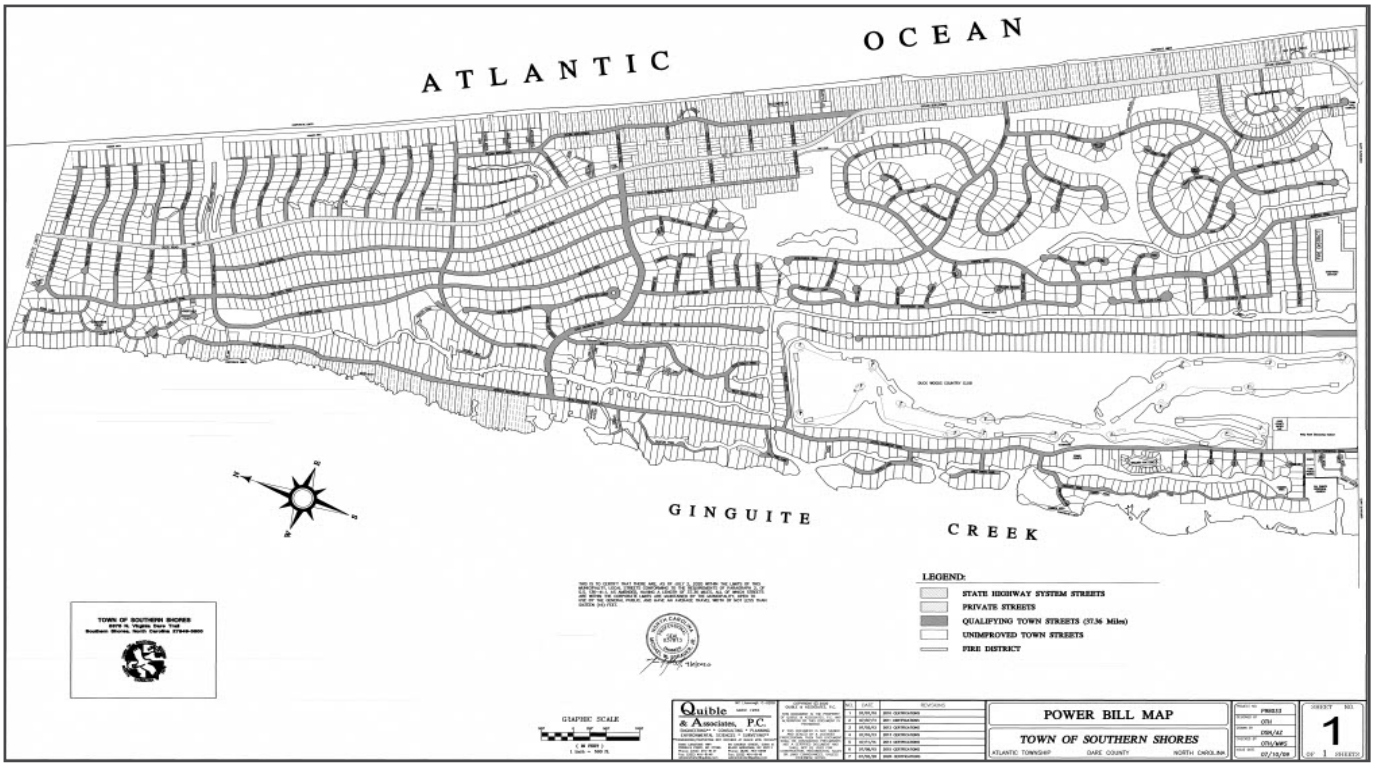
The Town maintains approximately 37 miles of paved and unpaved roadways. A condition assessment was conducted in 2018 and the Town recently approved a multi-year Capital Improvement Plan (CIP) to address street maintenance concerns.

Traffic Volumes

Annual average daily traffic (AADT) volume maps present the traffic average for a specific year on North Carolina Department of Transportation maintained roads. Traffic volumes on US 158 were 21,500 and for NC 12 were 16,500 in 2021.

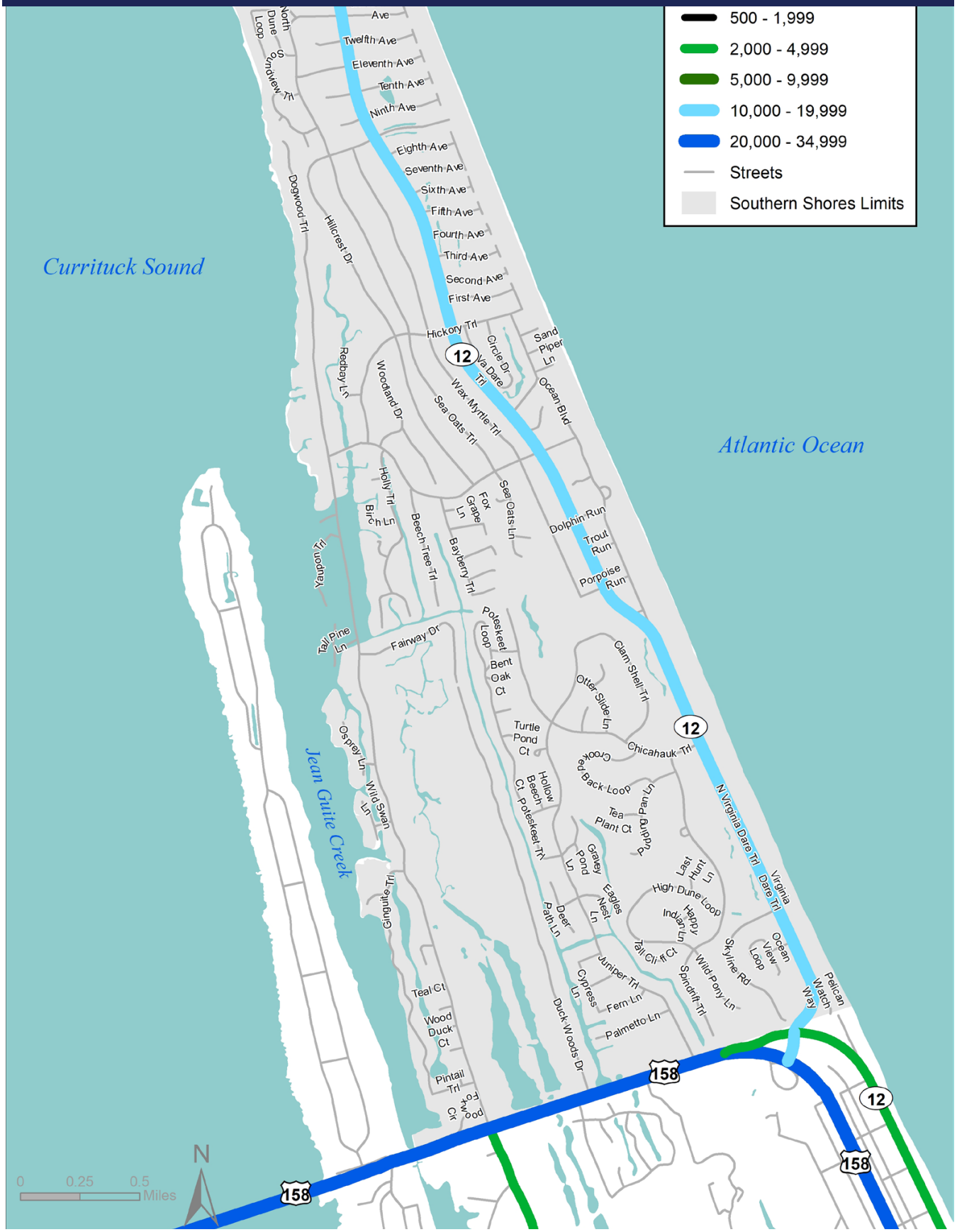
Infrastructure Capacities

In in the "2015 Dare County Comprehensive Transportation Plan", the 2012 studies on volume and capacity deficiencies show that there were no capacity deficiencies on roads within the Town of Southern Shores. However, the 2040 future volume and capacity deficiencies indicate that there will be increased traffic volume and thus capacity deficiencies along the Wright Memorial Bridge and up NC HWY 12.



Town of Southern Shores Powell Bill Map.

Annual Average Daily Traffic Volumes



Dogwood Trail

South Dogwood and East Dogwood Trail are heavily impacted by seasonal traffic. Numerous mitigation efforts have been made to minimize cut-thru traffic through this neighborhood. The neighborhood roads are not designed to withstand this type of traffic volumes. Survey participants indicated this is still a major issue during the tourist season.

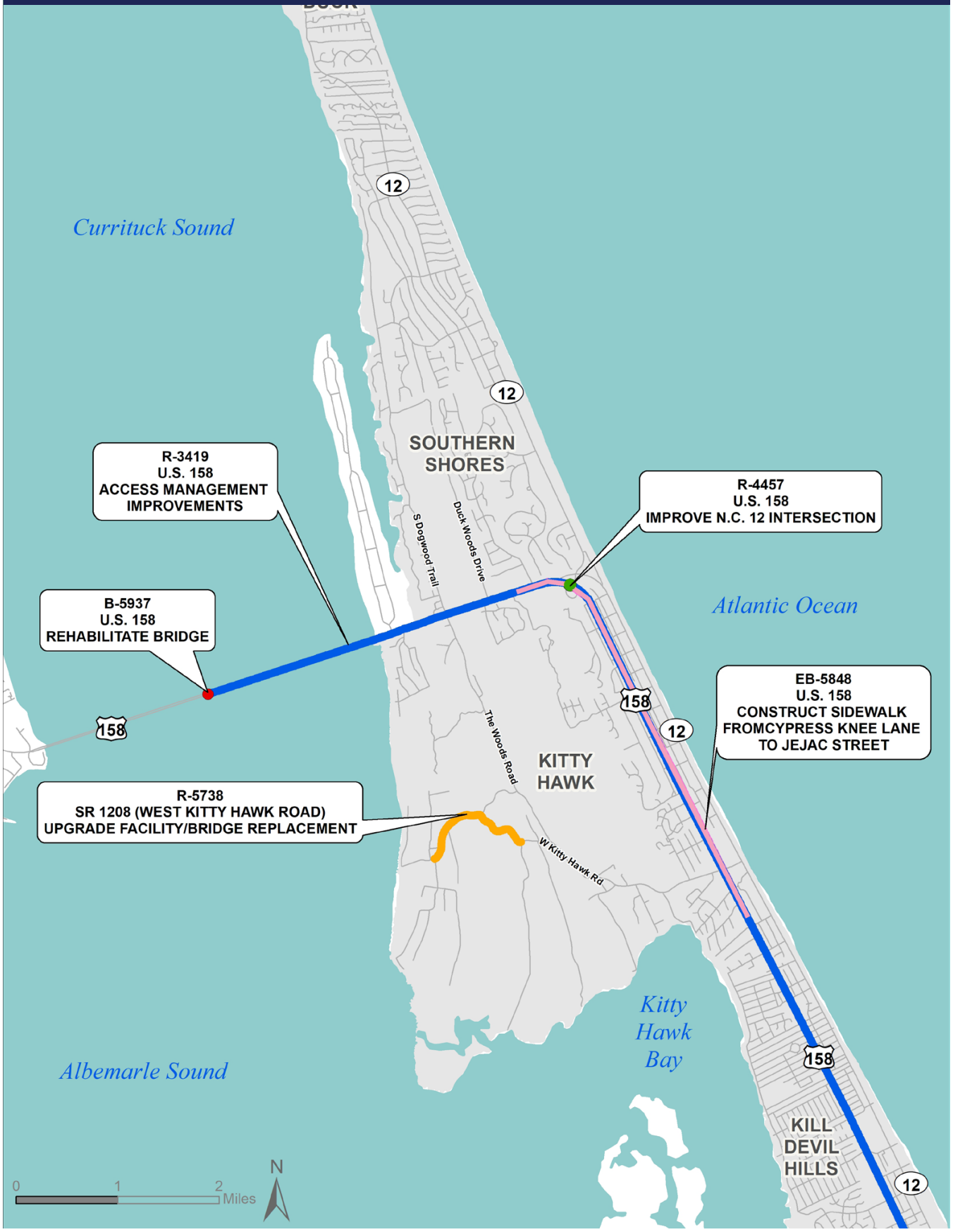
Pedestrian and Bicycle Routes

Pedestrian routes in the Town limits include multi-use paths along US 158 and NC 12 and in the Chicahauk community, sidewalks along one side of South and East Dogwood Trail, and at the Hillcrest beach access. There are 33 private beach access points throughout the community.

The Town received a Dare County Tourism Board grant in 2022 and are planning a future multi-use path along NC 12 from Triangle Park to E. Dogwood Trail.

Traffic congestion was a top concern in the community survey.

State Transportation Improvement Projects



Multimodal Facilities

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Vision for the Future

5

Community Vision Statement

"The Town of Southern Shores is a coastal town whose identity is intimately tied to its natural resources, history, community, and small-town charm. We strive to preserve and protect Southern Shores' unique character, environment, and tourism-based economy while supporting the local livelihoods and ensuring a high quality of life. The community's close-knit bonds create a transparent, responsive, and participatory local government."

GOALS

Access to Public Trust Waters

Encourage the maintenance and improvement of existing private access facilities to public trust waters, beaches, and shorelines and protect those public trust areas for public use and recreation.

Land Use Compatibility

Protect, enhance, and support land uses that are compatible with surrounding, existing land uses and are in alignment with the founder's original vision.

Community Character

Preserve the existing, low density, residential character of this unique coastal community and maintain alignment with the founder's original vision.

Public Infrastructure

Effective and efficient delivery of infrastructure maintenance and services.

Natural Environment

Ensure that providing infrastructure services does not affect the quality and productivity of Areas of Environmental Concern (AECs), important resources, and other fragile areas.

Water Quality

Preserve, protect, enhance, and improve the natural environment and water quality in the ocean, sound, creeks, and canals.

Natural Hazards

Protect public health and safety from the damaging effects of storm surges, wave action, flooding, high winds, and erosion associated with hurricanes, severe weather, nor'easters and other hazards.

Mobility

Ensure adequate mobility options that prioritize the needs of residents and visitors to the Town.

Future Land Use Map Purpose

The Future Land Use Map (FLUM) and character areas represent the community's vision for the future and are one of the factors that guide decision makers and town staff in future rezoning, land use, or permit issuance decisions. However, the issuance of CAMA and development permits will be based on the adopted standards of the Town Code and the Coastal Resources Commission's (CRC's) permitting rules that implement the Coastal Area Management Act. A FLUM also communicates public investment priorities (including possible emphasis areas for public facilities and services) to the private sector. This plan is a guidance and policy document, and is not intended to be used as a direct, regulatory tool.

Based on the community's satisfaction with the current balance of uses in town, the scarcity of greenfield development opportunities, and environmental constraints, the future of Southern Shores looks very much like the present. Although development of a similar nature to the existing conditions in Southern Shores should be expected, there are still opportunities to enhance and elevate the quality of life in Southern Shores.

The character areas should also be used to further refine the land use vernacular and preserve and enhance the local coastal character. These character areas and associated recommendations also provide direction for updates to the Town's land development regulations to help make the community vision a reality.

Land Use When Living "on the Water"

An especially important consideration in Southern Shores is the relationship of land uses and structures to the water and the environment. Some uses are water- dependent (marinas, etc.) and must be located in these vulnerable areas. In this case, "vulnerable" refers not only to the impact on the natural environment, but also the natural hazards vulnerability that the use or structure might encounter due to storm surge and other water-related hazards. Other uses are not water- dependent, such as general commercial operations, or residential homes, and should not be located or allowed in areas where they will have a negative impact on the natural environment. This negative impact can occur both in present day activities (e.g. through increased stormwater runoff because of increased impervious surfaces, etc.) or in the future (loss of natural shoreline as sea level rise and erosion prompts owners to convert natural shoreline to altered shoreline which reduces natural habitat, decreases water quality, prevents coastal marshland migration, etc.).

Even elevating a structure "out of" any regulatory floodplain can still have a long-term negative impact on the natural environment, especially if natural shoreline is converted to an artificial shoreline to prevent erosion from undermining structures. In these instances, a better approach might be to prohibit the location of non-water dependent uses in areas that will likely experience these conditions. Many dwellings in Southern Shores are already located in these areas and developers will confirm that the premium lots are right on the water.

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Future Land Use

Character Areas

Residential

The residential designation is characterized by neighborhoods with mostly single family detached homes, including year-round and seasonal residences as well as short-term rentals.

Typical Uses

Detached single family homes, occasional duplexes, accessory structures, associated community recreational facilities, civic association owned beach access, and occasional institutional uses (e.g., – church).

Recreational

The recreational designation includes active and passive recreational facilities that serve the residents of the community. This designation also includes existing environmentally sensitive areas that are currently being used for active and/or passive recreation, most are canals, privately-owned or accessed by privately-owned lands.

Typical Uses

Marinas, recreational paths, canals, beach/sound access areas, and community recreational facilities.

Municipal/Educational

The municipal/education designation includes community serving town facilities and an elementary school. Other governmental uses, like utilities, police, or emergency response, are also appropriate.

Typical Uses

Government support uses, cemeteries, open space areas, and schools.

Commercial

The commercial designation focuses on small-medium scale, neighborhood serving commercial development that is compatible with the existing coastal character of the community. This designation is located along US 158 and at the Ocean Boulevard and Duck Road intersection. Pedestrian friendly uses and interconnectivity with surrounding businesses and neighborhoods is encouraged. It may be appropriate to have buildings pulled up to the street with parking in the rear.

Typical Uses

Commercial, retail, services, or offices. Attached multi-family residences and upper story residential uses are possible if context appropriate.

Conservation/Open Space

The conservation/open space designation focuses on preserving environmentally sensitive natural areas and existing open spaces. These natural areas are comprised of wetlands, community open spaces, wildlife habitat, beaches and dunes, and/or existing forested areas. Development is not encouraged in this designation.

Typical Uses

Utility related uses, recreational paths, passive recreation, habitat preservation.

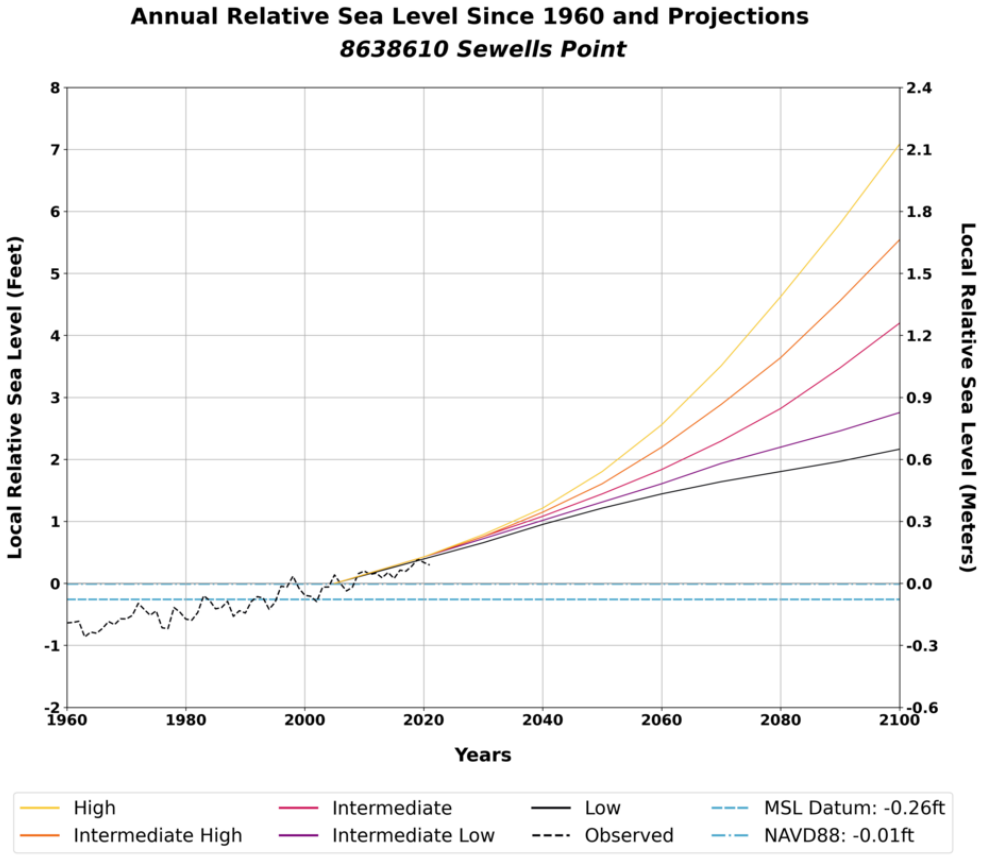
Future Land Use Map

Acknowledging Rising Seas

The Future Land Use Map with 2' foot seal level rise identifies lands likely to be inundated around 2060. The majority of Southern Shores will not be impacted by a 2' rise in sea level due to higher elevation in most areas of the town. However, development should be discouraged in areas that are likely to be inundated. As sea levels rise, the Town of Southern Shores is also threatened by local land subsidence, this means that the land is submerging even faster than in other locations on the East Coast. Understanding and preparing for these threats can help the community mitigate the negative impacts of sea level rise.

The National Oceanic and Atmospheric Administration (NOAA) projects that sea level rise will cause inundation of some properties (most are currently vacant), with major impacts occurring near 2060. Though 2060 is beyond the horizon of this plan, it is still relevant to long-range decision making because many structures are designed for at least 50 year lifespans. The best available projections from NOAA indicate the following potential sea level rise scenarios, based on worldwide carbon emission rate:

- Intermediate Scenario: Seas are 2 feet higher by 2060.
- High Scenario: Seas are 2.72 feet higher by 2060.



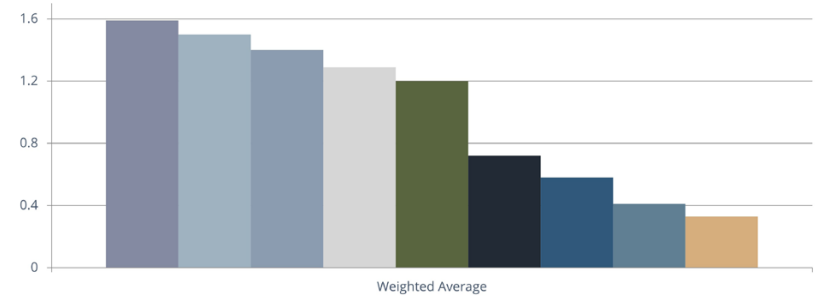
Source: NOAA Sea Level Rise Viewer (https://coast.noaa.gov/digitalcoast/tools/sir)

Future Land Use Map with 2’ Sea Level Rise

Land Use Management Topics

6

Community Priorities



- Protection of marshes, wetlands, wildlife, shorelines, and environmentally sensitive natural areas
- Improve environmental water quality (ocean, creeks, canals, sound, etc.)
- Maintaining beach nourishment and erosion control
- Improving pedestrian infrastructure
- Design standards for redevelopment or development of commercial structures
- Increase housing affordability/availability
- Increase private water access points including beach and sound
- Increasing the number of boat slips at marinas
- Construction of a community/civic center

A Few Participant Voices...

"Build the Currituck bridge."
-Survey Respondent

"Preservation of maritime forest/ prevention of clear-cutting."
-Survey Respondent

Land Use Management Topics

For Coastal Resources Commission (CRC) Review Purposes

A CAMA land use plan affords the opportunity for a local government to address areas or issues of local concern, which may be asset-based, programmatic, regulatory, geographic, or otherwise. These issues were identified during the land use plan development process and are included herein. The issues do not necessarily directly align with the CAMA management topic structure, but are locally important nonetheless. These recommendations are not required to have associated timelines for completion or implementation, although in some cases these may be provided.

Not all of the recommendations contain specific action items, but that should not be perceived as any less a call to action. In addition, not all of the recommendations outlined herein are immediately ripe for implementation, and (as with the Future Land Use Map, or FLUM) local discretion and leadership will determine priorities and timelines. Policies that are not able to be implemented immediately will guide future development decisions on the Town-level, so that all future development will bring the reality closer to the vision. While the FLUM and policies are intended to provide guidance during land use decisions, the issuance of CAMA and development permits will be based on adopted standards in the Town's Code of Ordinances and the CRC's permitting rules that implement the Coastal Area Management Act.

Implementation

In the following pages, policies and implementation steps (actions) are identified, with relevant CAMA Topics and implementation year(s) indicated at the end of actions. Some actions will be labeled as "ongoing" and will require constant vigilance. Where no entry is provided, the topic is not considered relevant to the CAMA Land Use Management Topics. Adherence to the established timelines listed herein will be used by the Coastal Resources Commission to track progress toward plan implementation, although it is understood that these timelines may be amended by the local government. The Town will use zoning, work planning, and other local government powers to progress the policies and actions described in this plan.

Public [Waters] Access (PA)

Management Goal:

Maximize access to the beaches and the public trust waters of the coastal region.

Planning Objectives:

The plan shall include policies that address access needs and opportunities, with strategies to develop public access and provisions for all segments of the community, including persons with disabilities. Oceanfront communities shall establish access policies for beach areas targeted for nourishment.

Land Use Compatibility (LUC)

Management Goal:

Ensure that development and use of resources or preservation of land balance protection of natural resources and fragile areas with economic development, and avoids risks to public health, safety, and welfare.

Planning Objectives:

The plan shall include policies that characterize future land use development patterns and establish mitigation concepts to minimize conflicts.

Infrastructure Carrying Capacity (ICC)

Management Goal:

Ensure that public infrastructure systems are sized, located, and managed so the quality and productivity of areas of environmental concern (AECs) and other fragile areas are protected or restored.

Planning Objectives:

The plan shall include policies that establish service criteria and ensure improvements minimize impacts to AECs and other fragile areas.

Natural Hazard Areas (NHA)

Management Goal:

Ensure that public infrastructure systems are sized, located, and managed so the quality and productivity of areas of environmental concern (AECs) and other fragile areas are protected or restored.

Planning Objectives:

The plan shall include policies that establish service criteria and ensure improvements minimize impacts to AECs and other fragile areas.

[Environmental] Water Quality (WQ)

Management Goal:

Maintain, protect, and where possible enhance water quality in coastal wetlands, oceans, and estuaries.

Planning Objectives:

The plan shall include policies that establish strategies and practices to prevent or control non-point source pollution and maintain or improve water quality.

Access to Public Trust Waters

PA 1. Continue to recognize existing private ownership, control and maintenance of current access to the beach and public trust waters.

PA 2. Expand capacity and number of no-pay parking areas for use by residents registered with the Town, as opportunities arise.

PA 3. Continue enforcement of dune protection regulations.

PA 4. Consider opportunities for town-owned accesses as opportunities arise.

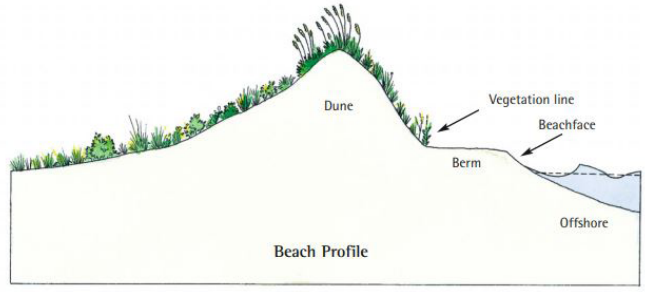
PA 5. Continue beach nourishment.

PA 6. Establish criteria to determine triggers for when private structures or development has encroached upon public trust areas (i.e. – when has enough erosion occurred that the structure is encroaching on the public beach or tidal area) and for subsequent action (removal, relocation, etc.).

PA 6.1. The process should consider regularly scheduled beach nourishment activities, but should also prevent the collapse of structures into the public trust beaches and ocean.

Sand dunes have repeatedly proven to provide protection from waves and storm-induced erosion during infrequent but severe storms such as hurricanes.

-The Dune Book, NC Sea Grant, 2003.



Dunes form through complex interactions between sand, winds, and water.
- The Dune Book, NC Sea Grant, 2003

Beach Nourishment in Southern Shores

The town's Beach Management Plan aims to sustain the oceanfront beach along the entirety of Southern Shores, which is approximately 3.7 miles of varying widths of shoreline. The plan recommends beach nourishment and provides 3 options varying in overall volumes. The 2022 beach nourishment project was a coordinated effort with neighboring communities in Dare County to achieve cost savings. Beach nourishment requires a 5-year maintenance cycle; the 2022 project was a followup from the 2017 beach nourishment project. A vulnerability assessment determines where higher volumes of sand are necessary based on erosion and accretion rates, areas most vulnerable to storms, and beach volume density.

Beach nourishment is the only tool in North Carolina that's available to mitigate erosion along the oceanfront. It provides storm protection for private and public structures, reduces risks of erosion, encourages new vegetation growth, and supports economic development and tourism by providing a larger recreational area. Although beach nourishment provides several benefits, it is costly and does not provide a permanent solution to the erosion problem. Sometimes, unintended consequences may occur, such as, wave pattern changes and temporary loss of habitat. Often, sand from beach nourishment often erodes faster and must be repeated periodically.

Beach nourishment in Dare County is funded by a 2% portion of Dare County's 6% occupancy tax, property and municipal service district taxes,and state and FEMA Public Assistance programs (when applicable). During the process, additional steps are taken to protect the public and wildlife. The 2022 beach nourishment project is scheduled to resume in 2023 to complete the northern portion of the project area before the tourist season begins and sea turtle nesting period begins.

LUC 1. Encourage development/ redevelopment that considers land suitability, the future land use map, and avoids impacts on environmentally fragile areas.

LUC 2. Use the future land use map, storm surge maps, flood exposure maps, wetlands assessments, and projected sea level rise and flood vulnerability data when deciding rezoning and development requests.

LUC 3. Preserve alignment with the founder's original vision, which involved a low-density residential community on large (20,000+ sqft) lots with a small commercial district on the southern end of Town.

LUC 4. Support Low-Impact Development strategies.

LUC 4.1. Low impact development techniques that should be supported include:

- Limiting areas of disturbance in residential and nonresidential districts.
- Innovative, green stormwater infrastructure that allows infiltration and filtering of pollutants.
- Incorporating pervious pavements, rain gardens, bio-swales, stormwater planters, and other features in new development.
- Develop LID stormwater manual or other educational materials to support innovative site design.

LUC 5. Evaluate the impact of Short-Term Rentals relative to the desired low-density residential character of the community, with attention paid to how these businesses affect the quality of life of year-round

Low Impact Development (LID) Strategies

Encouraging Low Impact Development (LID) strategies in new developments and public projects can help address and mitigate stormwater impacts. Bio-swales, rain gardens, stormwater planters, pervious pavements, disconnected impervious surfaces, rainwater harvesting with rain barrels and cisterns, and green ("living") roofs can help increase the retention of stormwater and improve infiltration rates. This can improve water quality in canals, Jean Guite Creek, and Currituck Sound while decreasing the impacts of new development.

residents and if these uses are compatible with the founder's vision.

LUC 6. Continue to encourage commercial development primarily along US 158 and the southern end of Highway 12.

LUC 7. Continue to enforce community design standards such as regulating building height, lot coverage, building size and capacity, and other standards that preserve local character.

LUC 8. Create standards so that existing commercial sites can be redeveloped and intensified in ways that encourage a family-friendly commercial experience where people can gather, shop, etc.

LUC 8.1. Commercial standards can include the following:

- Frontage requirements
- Facade materials and articulation
- Ground level details, such as, transparent glazing, minimal blank walls, presence of canopies/awnings, etc.

LUC 9. Enhance entryway, directional, and marker signage.

LUC 10. Monitor and preserve maritime forests.

LUC 10.1. Monitor forest cover and canopy and attempt to increase habitat quality and connectivity that is balanced with natural hazards concerns (wildfire, tree blowdowns, etc.).

LUC 10.2. Review standards for tree preservation in new development and redevelopment to ensure they protect and preserve the existing canopy and forest coverage.

LUC 10.3. Consider establishing or enhancing ordinances related to heritage tree and maritime forest preservation.

LUC 11. Continue protecting valuable historic resources.

LUC 11.1. Consider becoming a Certified Local Government. Certified Local Governments are eligible for grant funding for activities such as (1) architectural or archaeological survey, (2) National Register funding, (3) preservation planning, (4) design standards, (5) architectural plans or feasibility studies, and (6) occasionally, physical restoration and stabilization.

Case Study: The Manteo Way of Building

The Town of Manteo encourages small scale nonresidential development with upper story residential units by providing design standards for new development. These standards include architectural standards that control external materials and fenestration patterns, public standards that require sidewalks and landscaping, and building standards that control features, configurations, and functions of the building, and frontage requirements. The Town of Manteo also has a 36' height limitation for all of its zoning districts to protect existing viewsheds and maintain its existing coastal character.

Infrastructure Carrying Capacity and the Natural Environment

ICC 1. Maintain long range plans for public infrastructure systems to ensure that these systems are appropriately sized, located and managed to deliver the services the community needs while protecting adjacent environmental resources.

ICC 2. Discourage the filling of coastal wetlands.

ICC 3. Allow hard armoring (seawalls, bulkheads, rock vetments, modification, etc.) of natural shoreline in canals. Nature-based or habitat-enhancing armoring is preferred. Relocation or removal of structures is beneficial to the natural environment, but is not required.

ICC 4. Continue to prohibit hard armoring of the oceanfront (currently prohibited by the Town and the State).

ICC 5. Create a more formalized and proactive public education program relating to the natural environment, especially the maritime forest, local wildlife, and environmental uniqueness and identity of the area. Convey this information explicitly via signage, public education, and proactive communication. This might also involve pursuing and achieving certain designations like Tree City, Wildlife Sanctuary, or Bee Town at a community-wide level.

Coastal Wetlands

Coastal wetlands provide clean drinking water, flood protection, recreational opportunities, and more. They also provide important habitat for recreational fishing. According to a 2009 Status of Wetlands in the US study, conducted by the U.S. Fish and Wildlife Service, 80,000 acres of coastal wetlands were lost from 2004 to 2009 due to erosion, subsidence, sea level rise, development, and drainage.

Coastal wetlands are essential when it comes to providing storm protection especially for a coastal community like Southern Shores. During Hurricane Sandy, wetlands protected areas of the East Coast from more than $625 million in direct flood damages.

Living Shorelines versus Hardened Shorelines

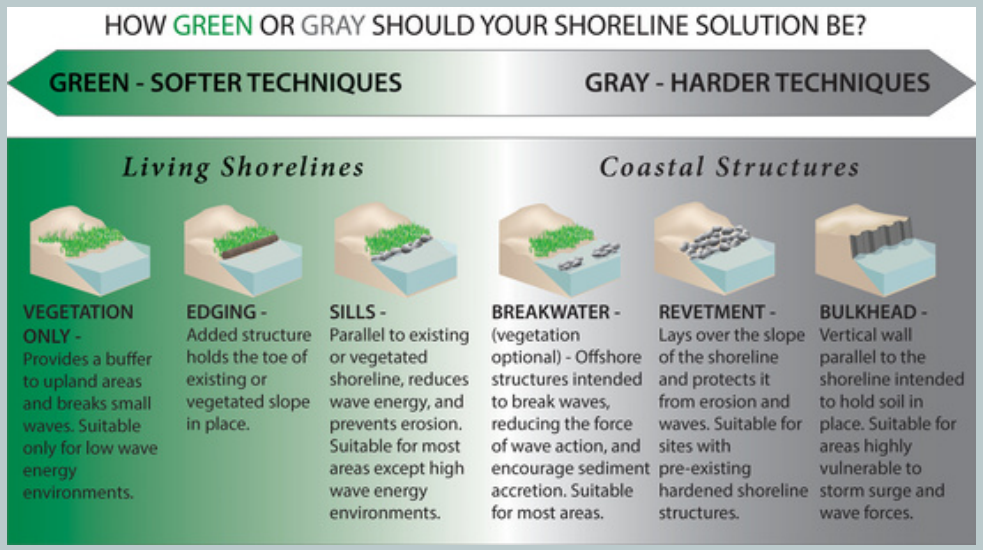
As the pressure rises to make shorelines resilient, the debate of living shorelines versus more typical methods such as bulkheads arises. Marsh sill and similar living shorelines are a less common but more beneficial shoreline stabilization technique, because they are more cost-effective, provide habitats, and have been shown to outperform bulkheads during storm events. Hardened shorelines protect less efficiently, at the cost of habitat loss and potential to increase erosion on neighboring properties.

Bulkheads work by halting shoreline erosion at a fixed point through a vertical wall-like structure. Vegetated structures or living shorelines such as marsh sills mimic natural shorelines. They help disperse wave energy and collect sediment and water to prevent erosion, all while creating a habitat that has many of the functions as a natural shoreline.

Unfortunately, current regulations and permitting processes do not encourage living shorelines, and in some ways favor hardened structures. For example, permitting processes for bulkheads are as quick as one to two days, and can often be done on-site. Fortunately,

North Carolina recently adopted a streamlined permitting process for living shorelines that makes permitting them as quick as it is for bulkheads. This is an important step in encouraging the use of living shorelines rather than bulkheads.

This graphic shows the spectrum of stabilization options. Projects on the left side of this continuum represent more “natural”, “green”, and “living” shoreline stabilization techniques, and projects on the right represent “gray” and “harder” shoreline stabilization techniques. Often the least intrusive intervention is most desirable.



WQ 1. Encourage the use of Low Impact Development (LID), vegetative buffers to filter stormwater, impervious surface limits, and innovative stormwater management alternatives to reduce runoff and to improve environmental water quality.

WQ 2. Establish a septic system monitoring program to identify underperforming or malfunctioning septic systems and ensure remediation by the property owner.

WQ 3. Establish a consistent water quality monitoring program at key locations in the canals and the sound and identify and remediate point and non-point sources of pollution.

WQ 4. ~~Discourage the use of package sewage treatment plants unless they are publicly-owned and operated.~~

WQ 5. Allow use of package system when traditional systems are environmentally infeasible. Follow best practices and state requirements for package systems (management, operations, etc.)

Southern Shores Civic Association

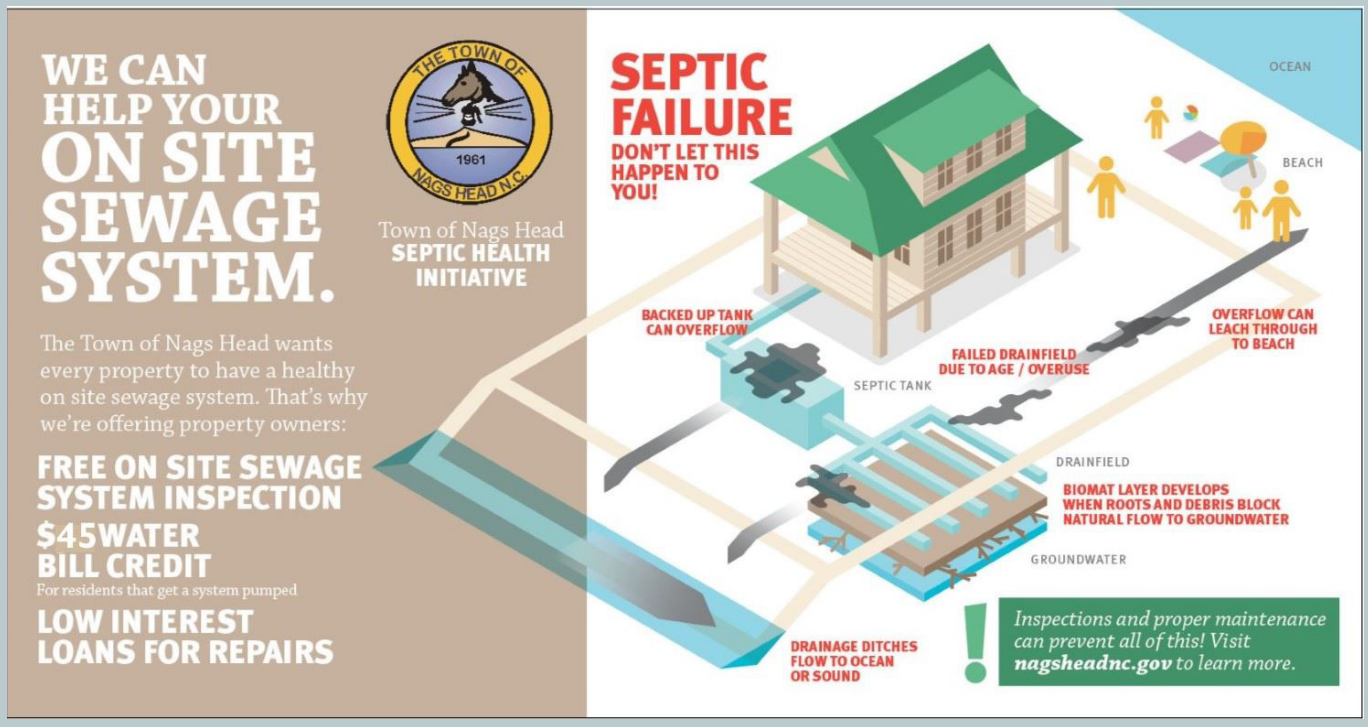
The Southern Shores Civic Association is a non-profit community civic association that has been managing and preserving green spaces in the town since 1976. The association takes great pride in caring for the community. In previous years, it was brought to the organization's attention that there were water quality issues that existed in Currituck Sound.

In response, the members of the association began to monitor water quality in the canals and the Currituck Sound. These results were posted at specific locations (e.g., Wading Beach, etc.).

Case Study: Town of Nags Head Septic Monitoring Program

Nearly 80% of properties in Nags Head are serviced by on-site septic systems. Higher rate of sea level rise, heavy rainfall, and more intense storms make these systems more susceptible to fail. According to the Coastal Studies Institute, there should be at least 1 1/2 feet of dry soil under a septic system to allow proper drainage and dispersal of nutrients. Older systems have less space than that available now, especially since groundwater levels have increased by a foot in Dare County.

To mitigate these issues, the Town of Nags Head offers free septic system inspections to homeowners that have conventional septic systems that are sized less than 3000 gallons per day. If the findings show the system needs pumped or repaired, staff assists with the necessary permitting and offers financial assistance. Additionally, property owners can receive a credit on their water account for having the system pumped. The town also offers low-interest loans for those who need to make repairs but are unable to do so without financial assistance. The maximum loan amount is $ 12,000 with 2.5% rate and can be paid back over a thirty-six month period.



NHA 1. Ensure that all stormwater management facilities and infrastructure within the Town, whether public or private, are designed, constructed and operated in a manner that, to the fullest extent possible:

- ***NHA 1.1.*** Eliminates flooding without intensifying other runoff related problems.
- ***NHA 1.2.*** Preserves and enhances the natural drainage systems within the Town.
- ***NHA 1.3.*** Contributes to preserving and enhancing overall water quality.
- ***NHA 1.4.*** Does not require power to function.
- ***NHA 1.5.*** Requires minimal regular maintenance to function properly.

NHA 2. Use the future land use map and zoning as a hazard mitigation tool by preventing development intensification in high hazard areas.

NHA 3. Evaluate high hazard and/or repetitive loss properties and assess the potential to acquire these, reduce community exposure, and provide flood protection and open space areas.

NHA 4. Use storm surge maps, flood exposure maps, and projected sea level rise and flood vulnerability data when assessing requests to intensify development in higher risk areas. Require alternative or mitigating design where appropriate.

NHA 5. Continue participation in FEMA's Community Rating System.

NHA 6. Educate residents and visitors about evacuation procedures regularly.

NHA 7. Continue wildfire prevention efforts.

- ***NHA 7.1.*** Educate property owners about wildfire potential and mitigation.
- ***NHA 7.2.*** Continue the enforcement of the NC State Fire Prevention Code, referenced by the Town's Fire Code.
- ***NHA 7.3.*** Continue enforcement of the Lot Disturbance provisions of the Town's Zoning Ordinance.

NHA 8. Petition the NC Building Council to require structures within the Town to be constructed with wind-loading resistance standards that are greater than state minimum.

Low Impact Development Techniques

Low impact development techniques can be applied at any stage of development. Typical post-development LID practices range from directing roof drainage to a rain garden or capturing in a rain barrel or cistern and retrofitting streets with features that infiltrate or capture rain water. Additional LID practices include bioretention, vegetated roof covers, grass swales, and permeable pavement.

Rain gardens slow stormwater as it travels downhill. Plants and soils are specifically chosen to clean stormwater and reduce nutrients and overall sediment loads.

Rain barrels collect and store stormwater runoff from rooftops, where it can be later used for watering lawns or gardens.

Disconnected Impervious Surfaces (DIS) is a low-cost effective way to reduce the volume and flow of stormwater runoff by directing it from impervious surfaces to graded and vegetated pervious surfaces.

Permeable pavement is designed to allow water to pass through it into the ground below where it is naturally filtered.

INF 1. Maintain the aesthetic quality and navigability of the town-owned canal system.

INF 1.1. Maintain programs for maintenance of the town-owned canal and lagoon system maintenance that includes but is not limited to periodic dredging, control of overhanging vegetation, and debris removal.

INF 1.2. Develop a formalized plan that details under what conditions future canal maintenance shall occur, a schedule for these activities, and acquire the agreements, facilities, and equipment needed to execute this maintenance on a routine basis.

INF 2. Ensure adequate road systems, bridges, and pathways meet transportation and pedestrian needs.

INF 2.1. Maintain a formalized plan for Town road maintenance including Town-owned sidewalks, trails, and bike paths. This would address general repairs, tree root control and tree trimming, road resurfacing, crack sealing, and right-of-way clearance. This plan could also include the conditions under which private roads will be accepted into the Town's public street network.

INF 2.2. Coordination with DOT for maintenance issues along Hwy 12.

INF 3. Continue beach nourishment and dune management in a way that distributes costs equitably based on benefits received.

INF 4. Beach access

INF 4.1. Consider partnerships between the Town and civic associations which

Southern Shores Canals

Stick studied the ecology of the coastal environment and decided to transform all but one existing swamps into navigable waterways, known as lagoons. In November 1959, land reclamation began in the back of the soundside area to develop canals that would lead to the sound. First, a canal was dug from the marina to a large swamp east of Old Duck Road. A ground level bridge was created using donated material, known as Dick White Bridge. Due to the extreme width of the existing swamp, an island was created in the middle of the canal along E Dogwood Trail. The remaining swamps (except for Cypress Swamp) would become navigable lagoons that would create connections throughout Southern Shores.

could lead to enhanced facilities at beach access points or on the crossovers.

INF 5. Continue to provide high quality public facilities including,police, fire, EMS, and ocean rescue.

INF 5.1. Ensure level-of-service standards and funding to adequately protect residents, visitors, and workers year round.

INF 5.2. Continue to annually evaluate lifeguard services to assure that they meet the Town's needs.

INF 6. Support protection, maintenance, and preservation of existing parks and open spaces.

INF 6.1. Maintain a dialog with and promote civic associations and other property owners associations regarding their open space and recreational facilities. Civic events or meetings might potentially utilize private facilities for events.

INF 7. Administration and facilities

INF 7.1. Create a master plan for the Town Hall and associated operations, including identification of future expansion needs and opportunities. New facilities could lead by example in exhibiting high quality design standards.

INF 7.2. Identify and acquire areas for expansion of administrative and operational facilities.

INF 7.3. Upgrade public facilities and buildings according to current needs and capital improvement planning. Currently, this specifically includes the police department, upfit to the public works building and the Town Hall/Pitts Center complex.

INF 8. Civic gathering space

INF 8.1. Consider developing a public, civic gathering space that is accessible by automobile and non-automobile transportation networks.

INF 8.2. Expand the Pitts Center capabilities to accommodate more public events and activities.

INF 9. Minimize solid waste by encouraging waste reduction, reuse, and recycling.

INF 9.1. Continue enforcement and maintaining Town appearance by getting cans off the street and preventing overfilling.

INF 9.2. Continue to provide trash pickup, curbside recycling, large item pickup, and chipping programs.

Civic Association Parks

SOUTHERN SHORES CIVIC ASSOCIATION

- Sea Oats Park
- Soundview Park
- Triangle Park

CHICAHAUK PROPERTY OWNERS ASSOCIATION

- Trinitie Park
- Poteskeet Park

MB 1. Minimize the negative impacts on the community of traffic volume and congestion.

MB 1.1. Continue to support the Mid-Currituck Bridge or other similarly oriented efforts that will reduce thru-traffic in the Town.

MB 1.2. Maintain NC 12 as a two-lane highway, with no additional through lanes or two-way continuous turn lanes, except at key commercial areas.

MB 1.3. Continue to seek a solution to minimize the impacts of cut-thru traffic along residential streets and Dogwood Trail.

MB 1.4. Ensure an adequate system of roads, bridges and pathways to meet the transportation and pedestrian safety needs of the Town in a way that protects, preserves and where possible improves the environment and water quality.

MB 2. Enhance pedestrian connectivity, trails, and non-automobile mobility.

MB 2.1. Continue the expansion of the pedestrian trail network and bicycle route network. This may include public/private partnerships where appropriate.

MB 2.2. Connect multi-use paths to the Market Place and Southern Shores Crossing.

MB 2.3. Keep golf carts off of trails meant for pedestrians or bicycles.

MB 3. Maintain safe pedestrian facilities.

MB 3.1. Coordinate with NCDOT on pedestrian crossing enhancements along Highway 12.

MB 3.2. Continue efforts to expand multi-use paths, recreational trails, and sidewalks.

Pedestrian Priorities

Additional pedestrian connections should be prioritized, including the following:

1. NC 12 from Triangle to E. Dogwood Trail (east side of the street)
2. Hickory Trail from E. Dogwood Trail to the beach access
3. Hillcrest Drive from Hickory Trail to NC 12

Pedestrian Priorities