

Town of Oak Island: Comprehensive Land Use Plan



Adopted by the Oak Island Town Council: January 10, 2017

Certified by the Coastal Resources Commission: _____



The Town of
Oak Island
NORTH CAROLINA



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Matrix for Land Use Plan Elements - 15A NCAC 7B.0702	
	Page Reference(s)
Organization of the Plan	
<ul style="list-style-type: none"> Matrix that shows the location of the required elements as set forth in this Rule. 	vii - xii
Community Concerns and Aspirations	
<ul style="list-style-type: none"> Description of the dominant growth-related conditions that influence land use, development, water quality and other environmental conditions in the planning area. 	3-25 to 3-34
<ul style="list-style-type: none"> Description of the land use and development topics most important to the future of the planning area including: <ul style="list-style-type: none"> Public Access Land Use Compatibility Infrastructure Carrying Capacity Natural Hazard Areas Water Quality 	5-22 5-24 5-28 5-32 5-34
Community Vision	
<ul style="list-style-type: none"> Description of the general physical appearance and form that represents the local government's plan for the future. It shall include objectives to be achieved by the plan and identify changes that may be needed to achieve the planning vision. 	1-7
Existing and Emerging Conditions	
Population, Housing, and Economy	
Discussion of the following data and trends:	
<ul style="list-style-type: none"> Permanent population growth trends using data from the two most decennial Censuses. 	2-1 to 2-6
<ul style="list-style-type: none"> Current permanent and seasonal population estimates. 	2-3 to 2-4
<ul style="list-style-type: none"> Key population characteristics including age and income. 	2-5 and 2-15
<ul style="list-style-type: none"> Thirty-year projections of permanent and seasonal population in five-year increments. 	4-1 to 4-7
<ul style="list-style-type: none"> Estimate of current housing stock, including permanent and seasonal units, tenure, and types of units (single-family, multi-family, and manufactured). 	2-7 to 2-12
<ul style="list-style-type: none"> Description of employment by major sectors and community economic activity. 	2-13 to 2-16
Natural Systems	
Description of natural features in the planning jurisdiction to include:	
<ul style="list-style-type: none"> Areas of Environmental Concern (AECs) as set forth in Subchapter 15A NCAC 07H. 	3-15 to 3-24
<ul style="list-style-type: none"> Soil characteristics, including limitations for septic tanks, erodibility, and other factors related to development. 	3-9 to 3-10
<ul style="list-style-type: none"> Environmental Management Commission (EMC) water quality classifications and related use support designations. 	3-11 to 3-13

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● Non-coastal wetlands, including forested wetlands, shrub-scrub wetlands and freshwater wetlands.	3-20
● Water supply watersheds or wellhead protection areas.	3-11
● Primary nursery areas.	3-13 to 3-14
● Environmentally fragile areas, such as wetlands, natural heritage areas, areas containing endangered species, prime wildlife habitats, or maritime forests.	3-16 to 3-24
● Additional natural features or conditions identified by the local government.	3-1 to 3-24
Environmental Conditions Discussion of environmental conditions within the planning jurisdiction to include an assessment of the following conditions and features:	
● Status and changes of surface water quality, including: <ul style="list-style-type: none"> ○ Impaired streams from the most recent Division of Water Resources (DWR) Basin Planning Branch reports. ○ Clean Water Act 303 (d) list. ○ Other comparable data. 	3-13
● Current situation and trends on permanent and temporary closures of shellfishing waters as determined by the Report of Sanitary Survey by the Shellfish Sanitation and Recreational Water Quality Section of the DMF.	3-13
● Areas experiencing chronic wastewater treatment malfunctions.	3-47
● Areas with water quality or public health problems related to non-point source pollution.	3-13
● Areas subject to recurrent flooding, storm surges, and high winds.	3-3 to 3-8
● Areas experiencing significant shoreline erosion as evidenced by the presence of threatened structures or public facilities.	3-21
● Environmentally fragile areas (as defined in Part (c)(2)(A)(ix) of this Rule) or areas where resource functions are impacted as a result of development.	3-15 to 3-24
● Natural resource areas that are being impacted or lost as a result of incompatible development. These may include, but are not limited to the following: coastal wetlands, protected open space, and agricultural land.	3-16 to 3-20

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Existing Land Use and Development	
<ul style="list-style-type: none"> ● Map of existing land use patterns. <ul style="list-style-type: none"> ○ Description of the existing land use patterns. 3-27 ○ Estimates of the land area allocated to each land use category. 3-25 ○ Characteristics of each land use category. 3-26 	3-30 to 3-32
<ul style="list-style-type: none"> ● Map of historic, cultural, and scenic areas designated by a state or federal agency or by the local government. <ul style="list-style-type: none"> ○ Descriptions of the historic, cultural, and scenic areas. 3-48 	
Community Facilities	
Evaluation of existing and planned capacity, location and adequacy of community facilities to include:	
<ul style="list-style-type: none"> ● Map of existing and planned public and private water supply service areas. <ul style="list-style-type: none"> ○ Description of existing public and private water supply systems to include: <ul style="list-style-type: none"> – Existing condition. – Existing capacity. – Documented overflows, bypasses, or other problems that may degrade water quality or constitute a threat to public health as documented by the DWR. – Future water supply needs based on population projections. 	3-45 to 3-47 4-28 to 4-32
<ul style="list-style-type: none"> ● Map of existing and planned public and private wastewater service areas. <ul style="list-style-type: none"> ○ Description of existing public and private wastewater systems to include: <ul style="list-style-type: none"> – Existing condition. – Existing capacity. – Documented overflows, bypasses, or other problems that may degrade water quality or constitute a threat to public health as documented by the DWR. – Future wastewater system needs based on population projections. 	3-45 to 3-47 4-28 to 4-32

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<ul style="list-style-type: none"> ● Map of existing and planned multimodal transportation systems and port and airport facilities. <ul style="list-style-type: none"> ○ Description of any highway segments deemed by the NC Department of Transportation (NCDOT) as having unacceptable service as documented on the most recent NCDOT Transportation and/or Thoroughfare Plan. ○ Description of highway facilities on the current thoroughfare plan or current transportation improvement plan. ○ Description of the impact of existing transportation facilities on land use patterns. ○ Description of the existing public stormwater management system. ○ Identification of existing drainage problems and water quality issues related to point source discharges of stormwater runoff. 		3-35 to 3-44 4-34 to 4-41
	Policy Citation(s)	Page Reference(s)
Future Land Use		
Policies		
<ul style="list-style-type: none"> ● Policies that exceed the use standards and permitting requirements found in Subchapter 7H, State Guidelines for Areas of Environmental Concern. 	N/A	5-21
Policies that address the Coastal Resources Commission's (CRC's) management topics:		
Public Access Management Goal: <i>Maximize public access to the beaches and the public trust waters of the coastal region.</i>		
The planning objectives for public access are local government plan policies that:		
<ul style="list-style-type: none"> ● Address access needs and opportunities. 	I.1 to I.14	5-22 to 5-23
<ul style="list-style-type: none"> ● Identify strategies to develop public access. 	I.1, I.4, I.11, I.13	5-22 to 5-23
<ul style="list-style-type: none"> ● Address provisions for all segments of the community, including persons with disabilities. 	I.13, I.14	5-23
<ul style="list-style-type: none"> ● For oceanfront communities, establish access policies for beach areas targeted for nourishment. 	I.4	5-22

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Land Use Compatibility Management Goal: <i>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.</i>		
The planning objectives for land use compatibility are local government plan policies that:		
● Characterize future land use and development patterns.	I.15 to I.21	5-24 to 5-28
● Establish mitigation criteria and concepts to minimize conflicts.	I.15 to I.21	5-24 to 5-28
Infrastructure Carrying Capacity Management Goal: <i>Ensure that public infrastructure systems are sized, located, and managed so the quality and productivity of AECs and other fragile areas are protected or restored.</i>		
The planning objectives for infrastructure carrying capacity are local government plan policies that:		
● Establish service criteria.	I.22 to I.46	5-28 to 5-31
● Ensure improvements minimize impacts to AECs and other fragile areas.	I.22 to I.46	5-28 to 5-31
Natural Hazard Areas Management Goal: <i>Conserve and maintain barrier dunes, beaches, floodplains, and other coastal features for their natural storm protection functions and their natural resources giving recognition to public health, safety, and welfare issues.</i>		
The planning objectives for natural hazard areas are local government plan policies that:		
● Establish mitigation and adaptation concepts and criteria for development and redevelopment, including public facilities.	I.47 to I.65	5-32 to 5-34
● Minimize threats to life, property, and natural resources resulting from erosion, high winds, storm surge, flooding, or other natural hazards.	I.47 to I.65	5-32 to 5-34

Water Quality Management Goal: <i>Maintain, protect, and where possible, enhance water quality in all coastal wetlands, rivers, streams, and estuaries.</i>		
The planning objectives for water quality are local government plan policies that:		
<ul style="list-style-type: none"> Establish strategies and practices to prevent or control nonpoint source pollution. 	1.66 to 1.83	5-32 to 5-36
<ul style="list-style-type: none"> Establish strategies and practices to maintain or improve water quality 	1.66 to 1.83	5-32 to 5-36
Future Land Use Map	Page Reference(s)	
<ul style="list-style-type: none"> Map of future land uses that depicts the policies for growth and development and the desired future patterns of land use and development with consideration given to natural system constraints and infrastructure. <ul style="list-style-type: none"> Descriptions of land uses and development associated with the future land use map designations. 	5-11 to 5-18	
Tools for Managing Development		
<ul style="list-style-type: none"> Description of the role of plan policies, including the future land use map, in local decisions regarding land use and development. 	6-1 to 6-4	
<ul style="list-style-type: none"> Description of the community's development management program, including local ordinances, codes, and other plans and policies. 	6-1 to 6-4	
Action Plan and Implementation Schedule		
<ul style="list-style-type: none"> Description of actions that will be taken by the local government to implement policies that meet the CRC's management topic goals and objectives, specifying fiscal year(s) in which each action is anticipated to start and finish. 	5-21 to 5-40 6-1 to 6-4	
<ul style="list-style-type: none"> Identification of specific steps the local government plans to take to implement the policies, including adoption and amendment of local ordinances, other plans, and special projects. 	6-1 to 6-4	

Executive Summary

INTRODUCTION

The Town of Oak Island 2016 Comprehensive Land Use Plan was prepared as a guidebook to be utilized by the Town's government officials, staff, citizens, and visitors– not a typical reference document which occupies space on a shelf, but a “playbook” manual to be opened frequently, dog-eared, and worn well. While it contains details about the community's population, history, facilities, amenities, and other area characteristics and statistics, it also provides a strong foundation for future development regulations and offers a comprehensive listing of goals, policies, and strategies for implementing those goals and policies. Just as Oak Island's unique tree canopy envelops the Town with a natural protective barrier, the Comprehensive Plan provides a sound framework for managing growth and creating economic stability in a sensible, fiscally responsible manner.

The overriding message from this planning process is that the Town must achieve managed growth and such growth cannot be accomplished without following the principles embodied in this comprehensive plan.

PUBLIC INPUT

Central to the planning process for the comprehensive plan undertaking was public input. In addition to key stakeholder interviews, public information meetings, and Comprehensive Plan Advisory Committee (CPAC) and Town Council meetings, a survey was developed in order to obtain input regarding assets, issues, desires, and comments/suggestions from the public. During the 6-month period that the survey was made available – via online or hard copy – 1,921 survey results were collected, 834 of which were completed by full-time residents (both homeowners and renters). Other types of survey responders included second homeowners, property owners (residing outside of Oak Island), day visitors, and longer-term visitors.

It is hoped that the success of the public input process, demonstrated by the volume of survey results received, will be a harbinger of public “buy-in” and genuine interest in future planning decisions facing the Town. Recognizing the need for resource maintenance and protection of the natural environment is clear; identifying the financial costs involved and providing the tools for enforcement is challenging.

ASSETS AND ISSUES

The top three (3) assets selected by the survey responders were: beach (an overwhelming 93% selected “beach” as one of the top 3 assets); family atmosphere (54.6%); and established tree canopy (26.3%). Further information was gleaned from the top three (3) issues selected by the responders: sewer debt (with 59.3% selecting it as one of the top 3 issues); beach erosion (52.8%); and appearance of commercial areas (34.8%).

The assets and issues identified during the survey process point to awareness that protecting the environment – particularly the beach and the tree canopy – and preserving the cultural heritage is critical and that it must be accomplished and funded with a clear plan in place.

GOALS

The Comprehensive Plan Advisory Committee (CPAC) was comprised of thirteen (13) full-time residents of Oak Island with diversified backgrounds. Having participated in multiple planning sessions and providing guidance throughout the course of developing this document, the CPAC prioritized the following goals:

- Goal 1: In all decisions/actions, Oak Island will address the impact on its quality of life and maintenance of a “family beach” atmosphere.
- Goal 2: Oak Island will continuously support and pursue funding options for effective beach renourishment.
- Goal 3: Oak Island will protect the Town’s tree canopy in all pertinent deliberations.
- Goal 4: Oak Island will support improvements to its community appearance as an important tool for economic development and neighborhood preservation.
- Goal 5: Oak Island will consider the fiscal impact on the Town and its citizens in all deliberations.
- Goal 6: Oak Island will support fiscally responsible expansions of its recreational opportunities.
- Goal 7: Oak Island will support fiscally responsible increases in its multi-modal transportation opportunities.
- Goal 8: Oak Island will address, in all deliberations, any negative environmental impact on the Town.
- Goal 9: Oak Island will support robust enforcement and improve consistency in its code enforcement programs.
- Goal 10: Oak Island will strive to expand economic development within its jurisdiction.

STRATEGIES

The strategies which support the listed goals include the following:

- Managed growth;
- Improving/strengthening code enforcement;
- Updating codes and ordinances;
- Diversifying and stabilizing the economy;
- Protecting and maintaining the environment, including protecting water quality;
- Continuing to promote the family atmosphere of our community.

SUMMARY

While this document includes detailed presentation of data, the focus of the plan is to provide the foundation for protecting the environment of the island; managing growth both on the island and the mainland in a fiscally responsible manner; conducting persistent enforcement of codes and ordinances; and promoting commitment by civic leaders in planning for economic stability. As articulated in the “Tools for Managing Development” section of the plan, a committee should be created (composed of selected CPAC members) to assess and advise the Town on special planning issues and needs, including implementation of this plan. Without the provision of accountability, the plan will not serve as the viable document it was intended.

Citizens and government officials must be actively engaged in pursuing the identified strategies and vigorous in defending the cultural heritage of the island. Preserving Oak Island’s way of life is a central theme of the document. Change is inevitable, but it must be gradual, appropriate, and deliberately mindful of the family atmosphere of which Oak Island is most proud.

1. Introduction

PLAN PURPOSE

The Town of Oak Island has experienced dramatic change over its short history, originally incorporating in 1999 as a result of the merger of the Towns of Long Beach and Yaupon Beach. Since that time, the population and land holdings of the town have steadily grown. As of 2015, the Town has a substantial amount of land that is located on the mainland of Brunswick County (see Map 1). Balanced growth and density of development are primary concerns among residents. The purpose of this Comprehensive Plan is to provide data for the Town Council and Planning Board, and a community-based vision for growth and development.

WHAT IS A COMPREHENSIVE PLAN?

Specifically, this process will result in the adoption of a Comprehensive Plan for the Town of Oak Island. A Comprehensive Plan is a long-range policy document with a particular time horizon – twenty years in the case of Oak Island. The plan will include an assessment of existing conditions, a summary of public input, projection of future needs for topics relating to land use and development, and a comprehensive listing of goals, policies, and strategies. Because the Town of Oak Island is located in one of the twenty Coastal Area Management Act (CAMA) counties, the plan will also address issues relating specifically to coastal growth and development.

In North Carolina, a Comprehensive Plan is the legal foundation for development regulations. While the Comprehensive Plan is not a regulatory document, it does provide guidance relating to future land use and development changes. Specifically, the plan should be used whenever zoning decisions are made by the Planning Board and/or Town Council. More detail relating to these specifics is contained in the concluding section of the plan.

The following is included as part of the Comprehensive Planning process:

- Community and Demographic Profile
- Assessment of Existing Conditions
- Projection of Future Population and Supporting Infrastructure Needs
- Future Land Use and Transportation Needs
- Goals and Implementing Strategies
- Methods for Transition to a Unified Development Ordinance (UDO)

What is CAMA?

CAMA is the North Carolina Coastal Area Management Act (NCGS 113A-100, *et seq.*), which establishes a cooperative program of coastal area management between local and state governments. The Act, originally passed in 1974 and since amended, states that local governments shall have the initiative for planning, while the state government establishes areas of environmental concern. With regard to planning, the state government is directed to act primarily in a supportive, standard-setting, and review capacity, except in situations where local governments do not elect to exercise their initiative.

In addition, CAMA establishes the Coastal Resources Commission within the Department of Environment and Natural Resources, whose duties include approval of Coastal Habitat Protection Plans and designation of Areas of Environmental Concern (AEC). After designation of these areas, the Commission is responsible for issuing all permits.

Source: National Oceanic and Atmospheric Administration, Coastal Services Center.



Counties Covered by CAMA

DEVELOPMENT OF THE COMPREHENSIVE PLAN

The plan was developed through the guidance of the Comprehensive Plan Advisory Committee (CPAC). The CPAC members are listed below.

- Gary Anderson, Citizen At-Large
- John W. Bach, Citizen At-Large
- Charlie Blalock, Council Member
- Ted Bodenschatz, Citizen At-Large
- Neva Cardwell, Citizen At-Large
- Glenn Frazier, Citizen At-Large
- Kelley Germaine, Citizen At-Large
- Cindy Johnson, Citizen At-Large
- Lynn McDowell, Citizen At-Large
- Malcolm Morrison, Environmental Advisory Board Member
- Denise Pacula, Planning Board Member
- Jim E. Snakenberg, Jr., Citizen At-Large
- Jeff Winecoff, Council Member
- Jim Medlin, Council Alternate
- Clay Jenkins, Planning Board Alternate
- Jane Kulesza, Environmental Advisory Board Alternate

OAK ISLAND HISTORY



Fort Caswell, 1912
Image Source: ECU Digital Collections.

The Town of Oak Island was incorporated in 1999 as a consolidation of Yaupon Beach and Long Beach. Oak Island was first inhabited by Americans in the early 19th Century due to the construction of Fort Caswell.

Prior to that time, the island was used for hunting and fishing for Native Americans. Completion of Fort Caswell in 1836, on the east end of the island, resulted in the first permanent structures on the island.

Commercial and residential growth would not occur for nearly a century, when in 1938, a timber exporter from Charleston, South Carolina, purchased land with his development partners. Land was subdivided into small tracts, roughly 6,500 square feet. At the time, oceanfront lots were sold for \$350 apiece.

The island faced near complete destruction after facing Hurricane Hazel in 1954. The hurricane would destroy nearly all of the 300 plus structures on the island at the time. Following the hurricane, however, residents returned and rebuilt. In 1955, the Towns of Long Beach and Yaupon Beach were incorporated. Each town would remain until 1999, when they were consolidated to form the Town of Oak Island.



State Port Pilot Article detailing the damage in Brunswick County from Hurricane Hazel
Image Source: nccoast.org

Water skiers enjoy some of the world's best protected waters for their thrilling sport in this scene taken on the Intracoastal Waterway adjacent to Long Beach, N. C.

Wouldn't YOU like to own beach property at a seaside resort like this? Come see . .

LONG BEACH

on the sunny southern shores of North Carolina

We strongly urge you to personally investigate Long Beach before you decide on any resort or retirement location. Come see for yourself!

Surf and sun, with all the other good things that come with seaside living are yours to enjoy when you come to Long Beach . . . one of North Carolina's favorite year-round vacation and retirement retreats. You'll enjoy privacy on a wide, gently sloping east-west strand with gentle, safe surf.

Other recreational facilities are abundant. Water skiers and boating enthusiasts will find the ideal location for their sport on the Intracoastal Waterway. Three free concrete launching ramps provide quick, easy access to these calm, well-protected waters.

Golfers will appreciate one of the most beautiful 18-hole courses to be found on the coast—Oak Island Golf Course is located just one mile east, and boasts a modern club house.

Fishing? There's plenty of it—take your choice of deep sea, Gulf Stream, surf, bay, fresh water fishing and jigging. The island is literally surrounded by waters teeming with marine life.

All this and more is yours to enjoy when you join this happy community of contented people. Over 4,500 now own property here, and more than 1,200 have built homes. Some live here the year around, and no wonder—there's modern telephone and electric service, school bus service, motels, restaurants, a marina, supermarkets, church, beauty and barber shops, hardware and variety stores, a pastry shop and many other conveniences and services.

Development is now well into the Pinner's Point section, which is an integral part of Long Beach. Homesites here are beautifully situated on paved streets and are heavily wooded. Some of our more choice lots offer direct boat access to Big Davis Canal and the Atlantic, and purchasers can include a private pier in their plans.

\$695.00
FULL PRICE
BUYS A BIG 55-FT. X 120-FT.
LOT IN PINNER'S POINT SECTION,
HEAVILY WOODED, ON PAVED STREET
ONLY \$29.00 DOWN

Choice waterfront lots are priced according to location. For more information, clip and mail the coupon below.

National Development Corporation
Long Beach, N. C.
Mail address: P. O. Box 307, Southport, North Carolina
Please send me free folder and map of property available at Long Beach.
Name _____
Address _____
City _____ State _____ (SM)

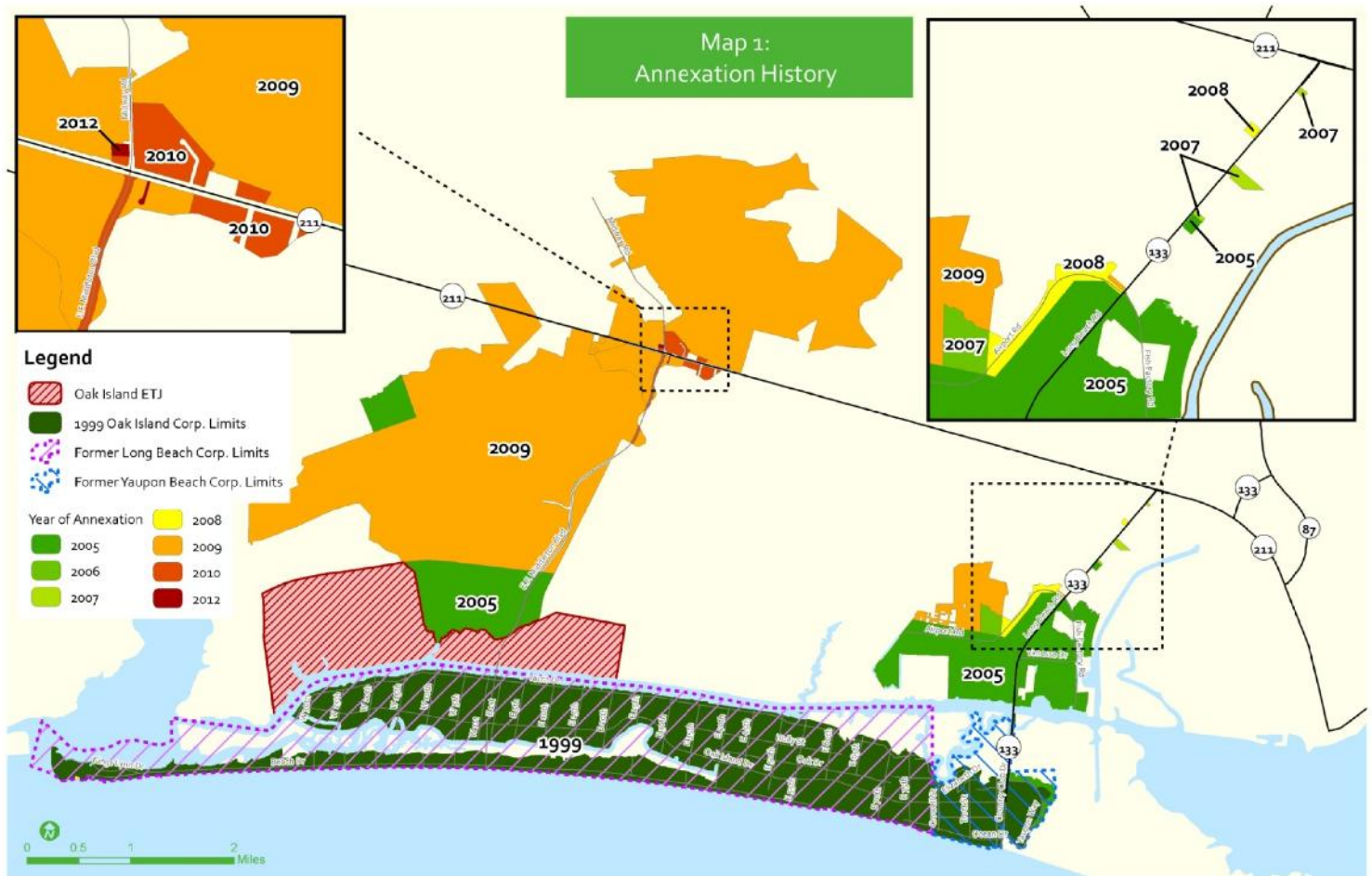
Drive down this week-end!
SALES OFFICE IS OPEN EVERY DAY INCLUDING SUNDAYS AND HOLIDAYS
OR MAIL COUPON AT RIGHT

By 1965, 6,600 sq ft lots were sold for \$695. Image Source: NC Digital Collections.

Over the past ten years, Oak Island has substantially increased in physical size. When the Town was incorporated in 1999, it was approximately 5,180 acres in size. By 2012, Oak Island had nearly tripled its acreage, increasing to 14,335 acres due to various annexations of land. See Map 1 for a display of the annexation history.



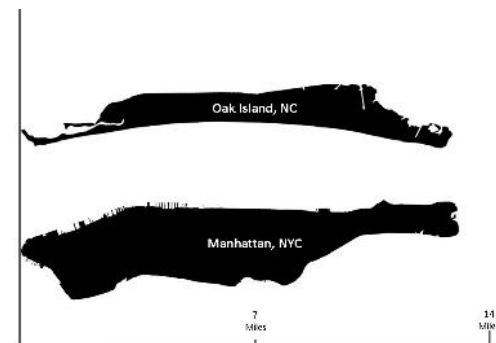
Yaupon Beach Pier, formerly of the Town of Yaupon Beach
Image Source: Oak Island Pier.



REGIONAL SETTING & CONTEXT

The Town of Oak Island is located in Brunswick County in a region described as Southeastern North Carolina. Oak Island is one of six barrier island communities in Brunswick County. Residents and visitors access the town via one of two bridges. Prior to construction of a second bridge, on the western end of the island in 2010, access was limited to the NC 133 bridge on the east end of the island. Oak Island is located just south of US 17 and is approximately 30 miles east of the South Carolina state line. See Map 2: Regional Location for more information.

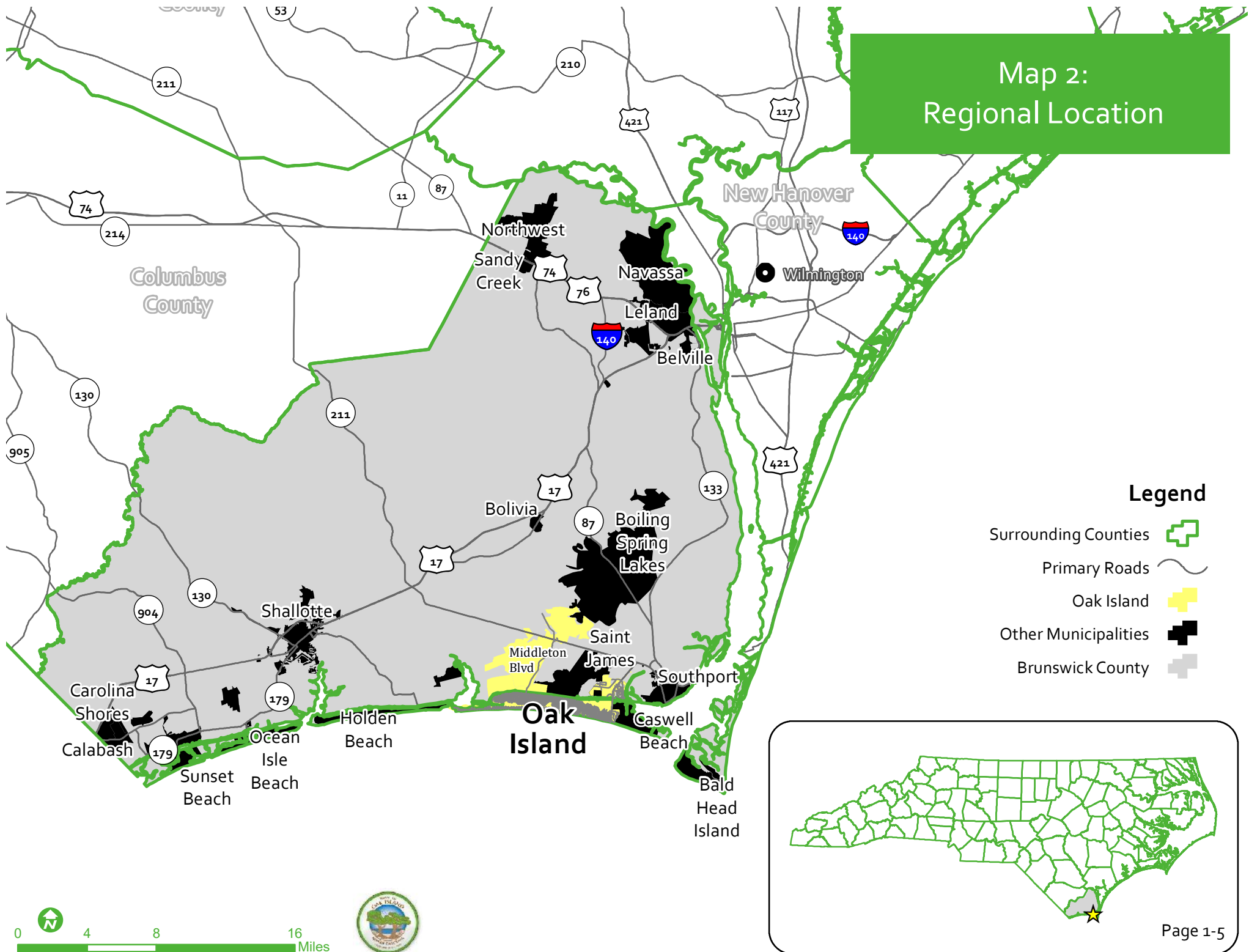
As mentioned previously, a portion of Oak Island was once called Long Beach. The name precedes itself, as the island itself is nearly 14 miles long, including the Town of Caswell Beach. For comparative purposes, the island of Manhattan in New York City is roughly the size of the entirety of Oak Island (not including the mainland).



Length of the island compared to the island of Manhattan in New York City.

Image Source: HCP, Inc.

Map 2: Regional Location



PAST PLANNING EFFORTS

As part of the planning process, past policy documents, capital improvements plans, and CAMA Land Use Plans were analyzed for significant findings relating to Oak Island's future. These past planning efforts help to provide a broader sense of understanding for the issues facing Oak Island today. The following planning projects were utilized to gather information, research past public input priorities, and understand growth and development that has occurred over the past two decades.

- Oak Island Capital Improvement Plan (2012)
- Ocean and Estuarine Access Plan (2012)
- Parks & Recreation Comprehensive Master Plan (2011)
- Oak Island Commercial Corridor Assessment – East Oak Island Drive (2011)
- Oak Island Commercial Corridor Assessment (2011)
- Golf Cart Transportation Plan (2009)
- Urban and Community Forestry Management Plan (2009)
- CAMA Land Use Plan Update – Town of Oak Island, NC (2009)
- Oak Island Bicycle Transportation Plan (2006)
- CAMA Land Use Plan (2006)
- Thoroughfare Plan for Oak Island, NC – NCDOT (1998)
- The Town Zoning Code
- The Town Building Code (NC State Building Code)
- The Town Subdivision Code
- The Town Stormwater Ordinance

PLAN OVERVIEW

The Oak Island Comprehensive Plan is divided into six independent components that focus on various aspects of the community. The following provides a brief synopsis of what will be addressed within each plan element:

Section 1. Introduction

This plan element provides a general overview of the plan, planning process, and enabling legislation regarding the establishment and use of Comprehensive/Land Use Plan in local government decision making.

Section 2. Community Profile

This plan element provides a general overview of existing conditions throughout the Town of Oak Island in regards to population, housing age and condition, and economic indicators. This section serves as a basic overview of the Town's current state of affairs and serves as a baseline for discussion regarding growth, development, and public policy.

While the plan serves many purposes, it is important to distinguish what the plan is, and what it is not. Specifically, the Town of Oak Island Comprehensive Plan is:

- A collaborative community vision
- A collection of goals and policies to achieve that vision
- A tool for decision makers, developers, businesses, and citizens
- A framework for general planning

The Oak Island Comprehensive Plan is not:

- A mandate for or against development
- A zoning ordinance
- A Capital Improvements Plan
- An unchangeable plan, or a law

Section 3. Existing Conditions

This plan element focuses on existing environmental and land use conditions throughout Oak Island's planning jurisdiction including environmental factors, facilities and services, transportation, land use/suitability, and neighborhoods. This information provides the data and analysis necessary to make sound decisions regarding development of the Town's Future Land Use map.

Section 4. Oak Island's Future

This section of the plan focuses on future growth and demand which may have an impact on land use and transportation. Forecasts of growth and demand are, at best, difficult. Constantly changing local, regional, national, and international factors significantly influence the Town of Oak Island and the surrounding region.

Section 5. Goals and Implementing Actions

The discussion of goals and implementing actions will serve as a guide for the integration of the Comprehensive Plan into the Town's day-to-day decision making process. The Future Land Use plan element defines the framework for future growth and development throughout the Town of Oak Island. Citizen input garnered as a result of the plan is also summarized in this section. Additionally, the goals and implementing actions defined within this plan element will establish an organized and thorough listing of implementation strategies intended to provide for sound principles relating to future growth, economic development, modifications of service delivery, and infrastructure expansion. Refer to Section 6 for definitions of Goals and Implementing Actions.

Section 6. Tools for Managing Development

This section of the plan provides narrative and tools for implementing the strategies outlined in Section 5 of the plan. It is intended that this document be an integral part of the Oak Island decision-making process concerning future land use.

Vision Statement

Oak Island will be a community which preserves, protects, and enhances its natural and cultural environment including shoreline access, waterway, beaches, dunes, water access, residential areas, and recreational opportunities for all ages and abilities. The Town's unique scale and character will continue to provide a desirable place in which to live, work, and vacation. Multi-modal transportation options including efficient sidewalks, bikeways, and roadway systems will provide for an accessible community. Economic development will be coordinated with preservation of the Town's residential areas.

2. Community Profile

INTRODUCTION

The community profile section outlines various demographic information, including population, housing, and economic indicators. The North Carolina beach towns of Sunset Beach and Emerald Isle are utilized for comparison purposes throughout this section. These two municipalities have similar characteristics to Oak Island, making them ideal candidates for comparison. For the purposes of this plan, and for the sake of consistency, demographic data are sourced primarily from the US Census Bureau. It should be noted that unless expressly mentioned, all data and figures reference permanent residents. Detailed demographic information is not available for seasonal residents through the US Census.

POPULATION

Regional and County Population Growth

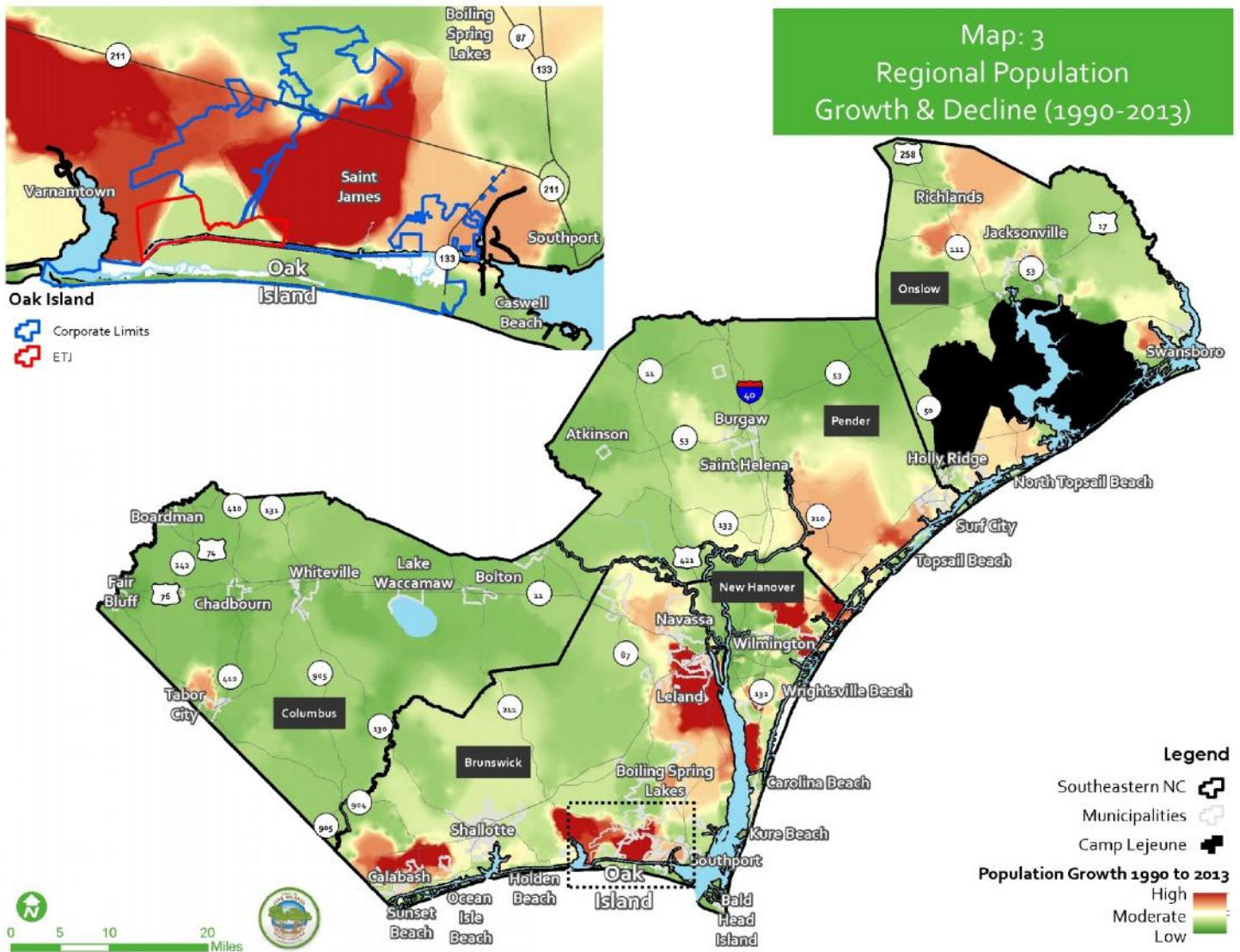
Brunswick County, NC, in which Oak Island is located, has experienced substantial growth over the last thirty years. The county has consistently ranked in the top 10 in the state for county population growth over the last decade. Municipalities such as Leland and Saint James have experienced tremendous growth in retirees and residents relocating from the northeast and east coast. From a regional perspective, both New Hanover County and Pender County have experienced population growth as well (See Map 3 for more information).

Population growth in permanent residents has also been experienced in all but one of Brunswick County's barrier island communities. From 2000 to 2013, Ocean Isle Beach experienced the greatest percentage increase in population, while Sunset Beach had the greatest addition in the number of permanent residents. During that time, Oak Island increased its population by nearly 400 residents or just over six percent.

**Table 2-1. Brunswick County Barrier Island Municipalities
Permanent Population, 2000-2013**

Municipality	2000 Population	2013 Population	% Growth/Decline
			2000-13
Oak Island	6,571	6,970	6.07%
Ocean Isle Beach	523	821	56.98%
Holden Beach	819	871	6.35%
Sunset Beach	2,393	3,629	51.65%
Caswell Beach	392	503	28.32%
Bald Head Island	184	132	-28.26%

Source: US Census Bureau.



Permanent Population

Coastal beach towns in North Carolina have experienced tremendous growth in their permanent populations over the last thirty years, many of which have doubled or tripled their populations since 1980. In Oak Island, while not incorporated until 1999, the population base in the former towns of Long Beach and Yaupon Beach was 2,413. By 2013, that number had increased to 6,970, equating to a 188% increase in population. For comparison, the Towns of Sunset Beach and Emerald Isle also experienced significant growth during that time.

Table 2-2. Comparison Municipalities – Population Growth, 1980-2013

Population 1980 - 2013	Oak Island, NC		Emerald Isle, NC		Sunset Beach, NC	
1980 Population	2,413	% Change	1,069	% Change	894	% Change
1990 Population	4,580	89.8%	2,462	130.31%	1,480	65.55%
2000 Population	6,571	43.47%	3,488	41.67%	2,393	61.69%
2010 Population	6,783	3.23%	3,655	4.79%	3,645	52.32%
2013 Population	6,970	2.76%	3,669	0.38%	3,629	-0.44%
Population Change 1980 -2013	188.85%		243.21%		305.93%	

Source: US Census Bureau.

Seasonal Population

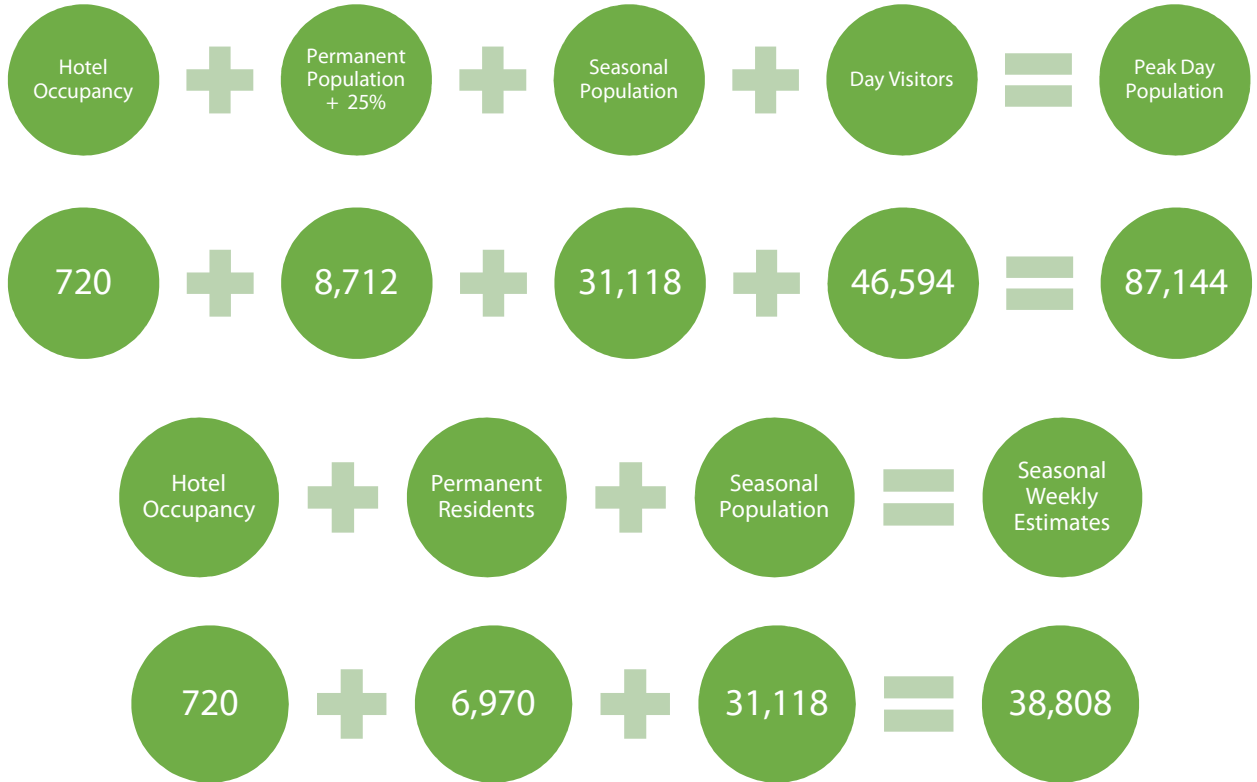
Because demographic data is collected only for permanent residents, it can be difficult to determine the precise number of seasonal and peak day visitors that are located in a given jurisdiction and at any given time. Additionally, seasonal figures fluctuate due to major holidays such as Memorial Day, the Fourth of July, and Labor Day. For that reason, two seasonal population estimates are provided: 1) a peak day estimate to include hotel occupancy, permanent population (+25%), seasonal population, and day visitors; and 2) a seasonal-weekly estimate (Memorial Day to Labor Day) to include hotel occupancy, seasonal population, and permanent residents. The seasonal weekly estimate is intended to capture the number of overnight visitors in Oak Island during the peak summer months.

The number of day visitors is calculated by multiplying the traffic counts on the NC 133 and Middleton/Swains Cut Bridge by a factor of four persons per car. Currently, no peak day traffic counts are available for either bridge entering the island. Therefore, NCDOT Annual Average Daily Traffic (AADT) counts are used. Based upon these figures, it is assumed that half the vehicle count traversing the bridges is entering the island (11,648.5 vehicles). This vehicle/traffic count is then multiplied by a factor of four to account for passengers. The AADT figures do not account for peak traffic, however, we can assume that a percentage of the peak day increase is captured within the multiplier of four persons per vehicle.

To account for the occupants in seasonal units, the total number of bedrooms in such units (15,559) is multiplied by a factor of two. According to local real estate agencies, on average, there are two persons per bedroom per seasonal unit. Hotel occupancy is accounted for by obtaining data from local hotels which suggests that on average there are 3.75 persons per occupied hotel unit. Lastly, on peak days, summer

visitors and family often stay with permanent residents. To account for this added population, the permanent population is increased by 25%.

Oak Island Seasonal Population Estimates (2013)



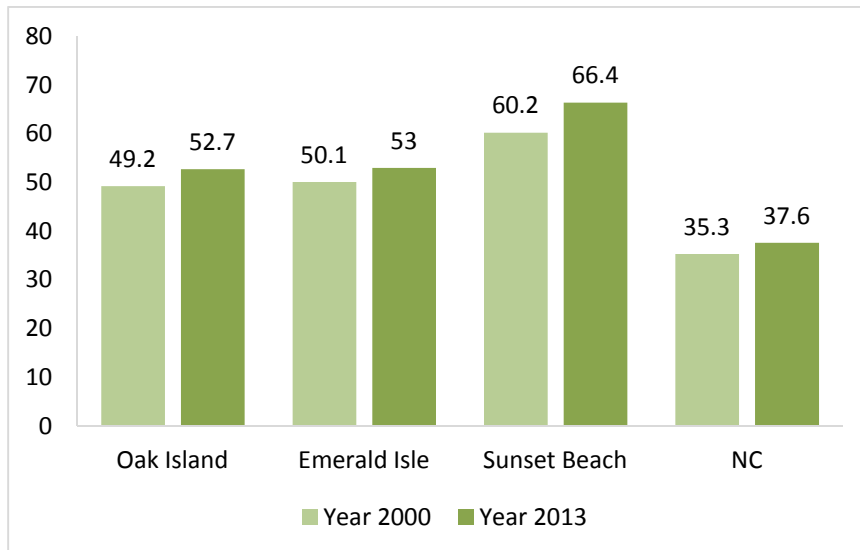
Sources:

- Hotel Occupancy = 192 units x 3.75 persons per unit
- Permanent Population + 25% = 6,970 + 1,742 = 8,712
- Seasonal Population = Total Number of Seasonal Bedrooms x 2 persons per bedroom
- Day Visitors = NCDOT Annual Average Daily Traffic Counts (south/beach bound) on bridges X 4 persons per car

Population by Age

Typically, beach communities have a higher median age than mainland communities. This occurrence is, of course, due to the large retirement age population that resides year-round in coastal municipalities. Compared to the state's median age, Oak Island and the comparison municipalities have a much older resident base. In mainland communities a higher median age is indicative of a declining population base, while in a coastal community it can be attributed to the retirement population. Oak Island's median age is significantly lower than that of neighboring Sunset Beach, however, representing the presence of a non-retiree population base.

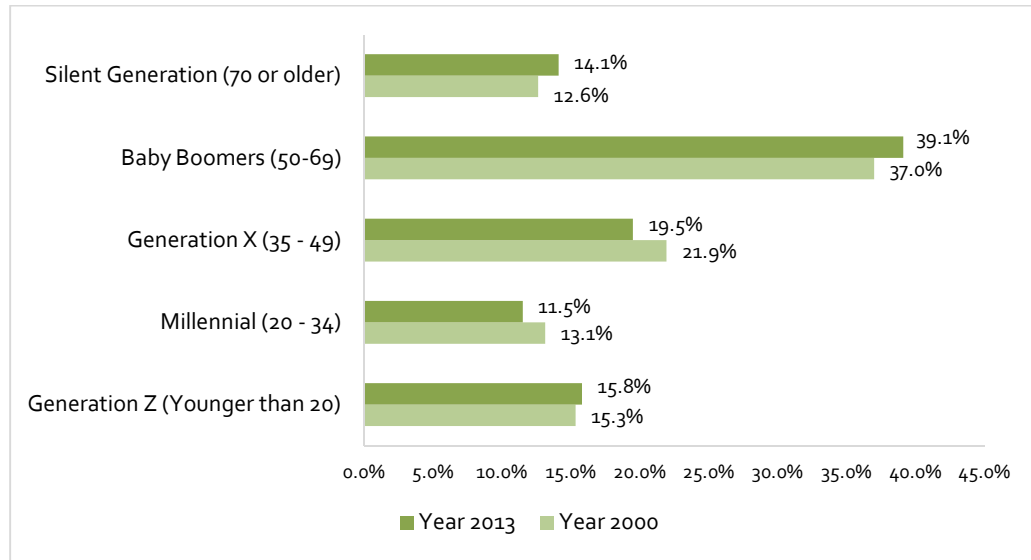
Figure 2-1: Median Age, Year 2000 and 2013



Source: US Census Bureau.

According to the US Census Bureau, the “Baby Boomer” age cohort accounts for the largest percentage of Oak Island’s population. This age cohort is typically comprised of older working adults nearing the end of their career or retirees. Many of these individuals may be “empty nesters” who do not have children living at home, so their leisure activities may be more focused on socializing and being active. This factor differs dramatically from North Carolina’s age distribution as a whole, whose Baby Boomers age cohort only accounts for twenty percent of the population. Between 2000 and 2013, Oak Island’s age distribution stayed roughly the same and was consistent with demographic trends nationwide. Changes in the age distribution in Oak Island from 2000 to 2013 are similar to smaller North Carolina municipalities that tend to increase in age and lose their younger age cohorts, particularly the “Millennial” age group who move away for college or job prospects.

Figure 2-2: Oak Island Age Distribution, Year 2000 and 2013

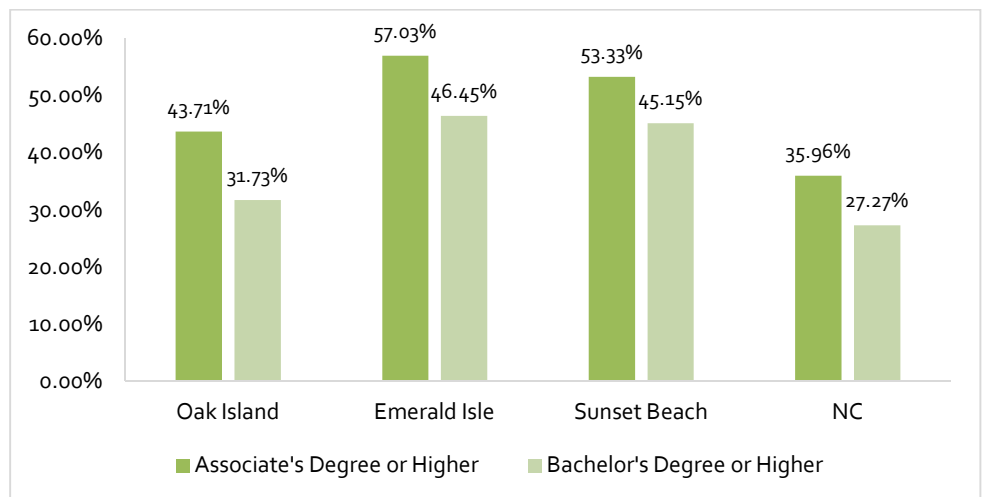


Source: US Census Bureau.

Educational Attainment

The overall educational attainment of a given community can be a significant indicator in health concerns, economic mobility, and socioeconomic status. In Oak Island, as in other beach communities across the state, the residents tend to be more educated and hold more advanced degrees than the average North Carolina citizen. In fact, according to the US Census, nearly 45% of Oak Island's residents have an Associate's Degree or higher compared to just 36% of the state's population.

Figure 2-3: Educational Attainment, 2013



Source: US Census Bureau.

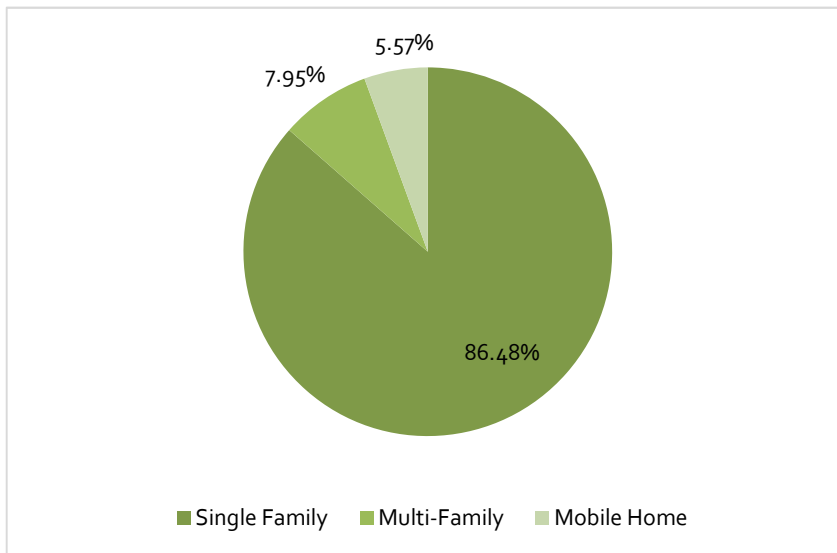
HOUSING

The discussion of housing includes a description of unit types, occupancy status, and year built. In Oak Island, as in other coastal municipalities, it is important to include discussion of vacant housing units that may be seasonally occupied, giving a greater understanding of the conditions facing the community during the peak summer months.

Housing Unit by Type

As of 2013, more than 85% of Oak Island's housing stock was comprised of single-family units. This statistic has remained roughly the same dating back prior to Oak Island's incorporation in 1999. According to the 1990 Census, the percentage of single-family units in the Towns of Long Beach and Yaupon Beach were 82% and 84%, respectively. These figures are also in keeping with the preference for single-family development on the island – public opinions and support for such development choice date back several decades.

Figure 2-4: Oak Island Housing Unit Type, 2013



Source: US Census Bureau.

Comparatively, Oak Island has a much greater percentage of single-family units than Emerald Isle, Sunset Beach, or North Carolina as a whole. Although Oak Island still maintains its preference for single-family development, there has been a noted increase in the number of multi-family units and a significant reduction in mobile homes. The number of mobile home units decreased by 36% from 2000 to 2013, while the number of multi-family units increased by more than 200%.

Table 2-3. Housing Unit by Type, 2000 & 2013

	Oak Island		Emerald Isle		Sunset Beach		North Carolina	
Year	2000	2013	2000	2013	2000	2013	2000	2013
Total Units	6,662	8,768	5,968	6,706	3,072	5,010	3,523,944	4,349,023
SFR Units	5,631	7,583	3,689	4,505	1,756	2,896	2,373,956	3,006,419
% SFR	84.52%	86.48%	61.81%	67.18%	57.16%	57.80%	67.37%	69.13%
MFR Units	231	697	1,275	1,176	693	1,453	566,798	747,684
% MFR	3.47%	7.95%	21.36%	17.54%	22.56%	29.00%	16.08%	17.19%
Mobile Home Units	764	488	994	1,025	623	661	577,323	593,510
% Mobile Homes	11.47%	5.57%	16.66%	15.28%	20.28%	13.19%	16.38%	13.65%

NOTE: SFR = Single-Family Residential; MFR = Multi-Family Residential.

Source: US Census Bureau.

Housing Unit by Age

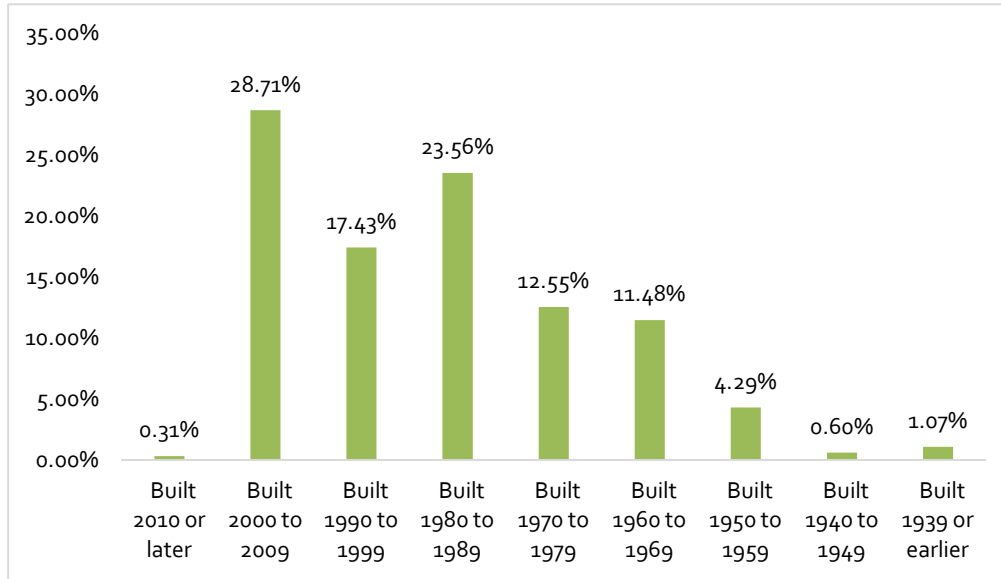
In Oak Island, the vast majority of housing units (70%) were built after 1980. This statistic is indicative of both a growing residential market and a housing stock with a small percentage of aging and/or dilapidated units. Compared to North Carolina, Oak Island saw a much greater percentage of its housing units constructed from 2000 to 2009.

Neighboring Sunset Beach also experienced an increase in residential construction during the housing boom of the early 2000s. During that time, more than 40% of its current housing stock was built. This growth in the number of residential housing units also coincided with the growth experienced by Brunswick County as a whole.

Table 2-4. Housing Unit by Age, 2013

	Oak Island		Emerald Isle		Sunset Beach		North Carolina	
Year	8,768	%	6,706	%	5,010	%	4,349,023	%
Built 2010 or later	27	0.31%	19	0.28%	36	0.72%	36,494	0.84%
Built 2000 to 2009	2,517	28.71%	765	11.41%	2,024	40.40%	890,525	20.48%
Built 1990 to 1999	1,528	17.43%	2,029	30.26%	971	19.38%	899,015	20.67%
Built 1980 to 1989	2,066	23.56%	2,452	36.56%	1,505	30.04%	708,491	16.29%
Built 1970 to 1979	1,100	12.55%	1,131	16.87%	287	5.73%	635,227	14.61%
Built 1960 to 1969	1,007	11.48%	156	2.33%	96	1.92%	425,833	9.79%
Built 1950 to 1959	376	4.29%	136	2.03%	29	0.58%	333,893	7.68%
Built 1950 to 1949	53	0.60%	9	0.13%	46	0.92%	173,097	3.98%
Built 1939 or earlier	94	1.07%	9	0.13%	16	0.32%	246,448	5.67%

Source: US Census Bureau.

Figure 2-5. Oak Island Year Structure Built, 2013

Source: US Census Bureau.

Housing Unit by Occupancy Status

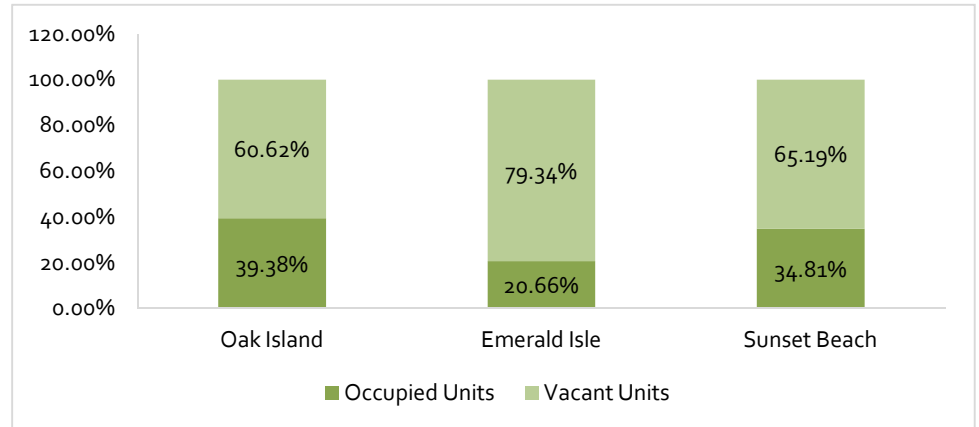
Of the approximately 8,800 housing units in Oak Island's corporate limits, more than half are considered vacant and are primarily used as second homes or vacation rental units. Compared with Emerald Isle and Sunset Beach, Oak Island has a higher percentage of occupied housing – with close to 40% of the total housing units occupied full-time. Accordingly, of the 5,315 vacant housing units, close to 90% are utilized as seasonal homes or rental units.

Table 2-5: Occupancy Status, 2013

Municipality	Occupied Units		Vacant Units		Total Units
Oak Island	3,453	39.38%	5,315	60.62%	8,768
Emerald Isle	1,276	20.66%	4,901	79.34%	6,177
Sunset Beach	1,697	34.81%	3,178	65.19%	4,875

Source: US Census Bureau.

Figure 2-6. Occupancy Status, 2013

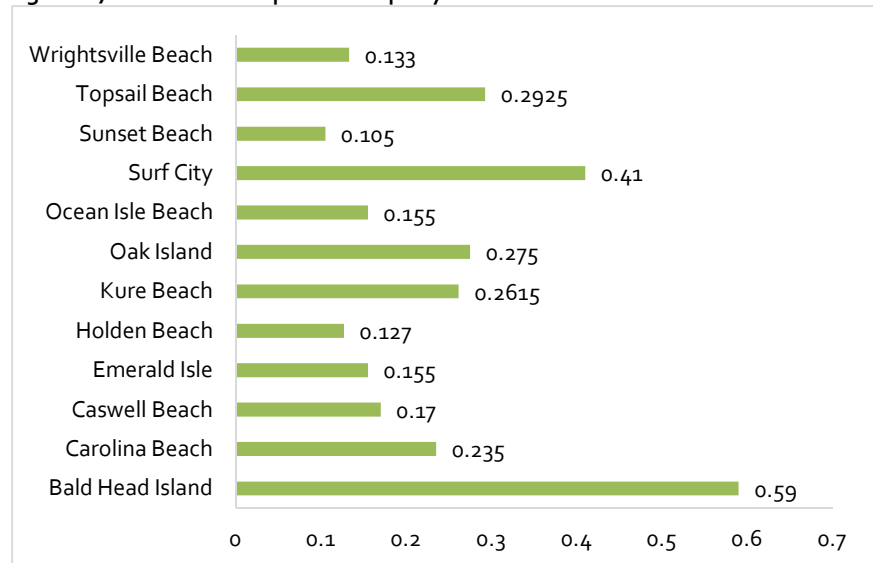


Source: US Census Bureau.

Property Tax Rates

For second home owners, property tax rates can be a deterrent to investment, purchase, or construction of vacation units. Property tax rates are based on the total appraised value of land and buildings per \$100 of value. For incorporated municipalities, the property tax rate includes the base county rate for which the town or city is located. The average property tax rate for coastal municipalities within Brunswick, New Hanover, and Pender counties is approximately 0.25 cents per \$100 of valuation. According to the Brunswick County Tax Department, the property tax rate in Oak Island is roughly equivalent to the average rate of the region overall (see Figure 2-7 for more information).

Figure 2-7. Coastal Municipalities Property Tax Rate

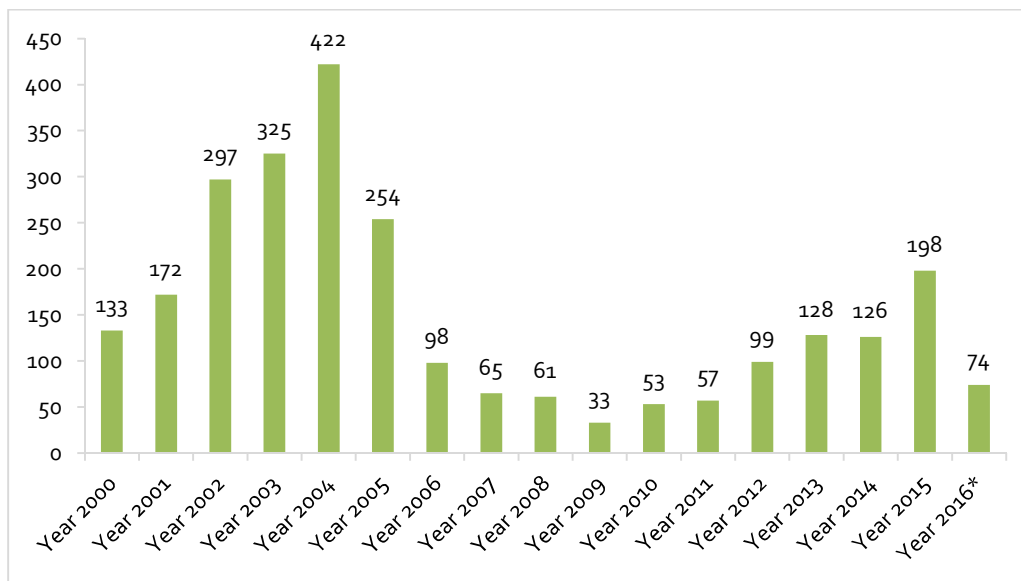


Source: Brunswick County Tax Department, New Hanover County Tax Department, Pender County Tax Department, and Town of Emerald Isle.

Residential Building Permit Activity

New construction permits for residential structures in Oak Island reached a high point in 2004 when more than 400 units were permitted. Since that time, permits for new residential construction have declined dramatically. In 2009, only 33 units were permitted for construction – whereas in 2004 there were more than 12 times that number permitted. As of 2014, 126 units were permitted for construction, which is a substantial increase from the recession low of 33 units. More importantly, the data suggests that residential permits for new construction have stabilized.

Figure 2-8. Residential Building Permit Activity



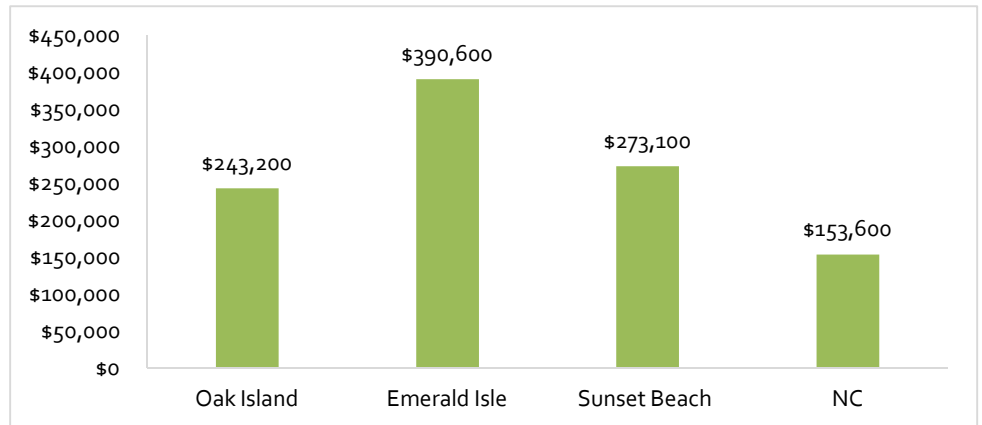
Note: The data above contains both manufactured and stick-built homes. In addition, a structure may not necessarily result in construction just because a permit is executed.

*Indicates permits issued through April 2016.

Source: Town of Oak Island.

Median Home Value

In 2013, the median home value in Oak Island was \$243,200. This median home value is approximately 60% higher than that of the state overall. Sunset Beach, another Brunswick County barrier island community, also has a similar median home value to that of Oak Island. Home values are typically higher in coastal communities than in mainland communities due to the presence of large vacation homes. For example, in Brunswick County as a whole, the median home value is \$186,600.

Figure 2-9. Median Home Value, 2013

Source: US Census Bureau.

Housing Costs

Housing affordability is an increasing concern nationwide. For retirees, cost of living may be a key component in a decision to locate in a particular community. For analysis purposes, it is difficult to obtain a precise picture of housing affordability in any jurisdiction. However, most measures of housing affordability consider 30% of gross income an allowable/ affordable expenditure for housing. For homeowners, the cost includes mortgage payments, taxes, insurance, and utilities. For renters, housing cost includes rent and utilities. From 2000 to 2013, the incidence of cost-burdened homeowners and renters increased statewide as well as in Oak Island, Emerald Isle, and Sunset Beach. As of 2013, in Oak Island, nearly 35% of homeowners and more than half of all renters had housing costs in excess of 30% of income.

Table 2-6. Cost Burdened Homeowners & Renters – Housing Costs in Excess of 30% of Income, 2013

Ownership Status	Oak Island		Emerald Isle		Sunset Beach		North Carolina	
	2000	2013	2000	2013	2000	2013	2000	2013
Owner	24.65%	34.79%	24.82%	28.92%	23.65%	31.53%	20.71%	25.71%
Renter	34.26%	52.58%	24.77%	41.40%	19.27%	34.81%	33.33%	45.98%

Source: US Census Bureau.

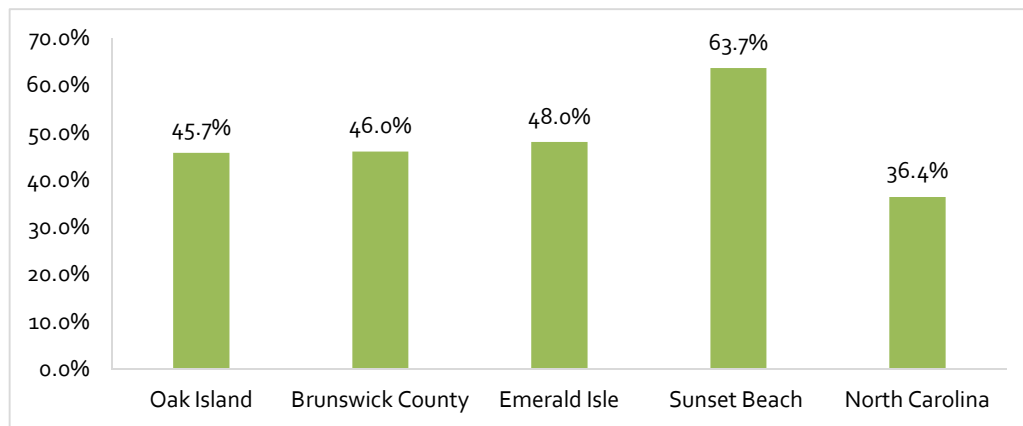
ECONOMIC DATA

Data related to the Oak Island's local economy is included on the following pages. Information detailing the labor force, employment by industry, and income is provided.

Labor Force

According to Census data, more than 45% of Oak Island's year-round residents are not considered part of the labor force. This category consists mainly of students, homemakers, retired workers, seasonal workers, institutionalized people, and people performing incidental unpaid family work (less than 15 a week). Oak Island has a higher percentage of individuals not considered part of the labor force than does North Carolina, but has a lower rate than the comparison beach communities of Emerald Isle and Sunset Beach. This finding suggests that Oak Island has a greater percentage of full-time employed persons than Sunset Beach and Emerald Isle.

Figure 2-10: Percent of Population 'Not in Labor Force' (2013)



Source: US Census Bureau.

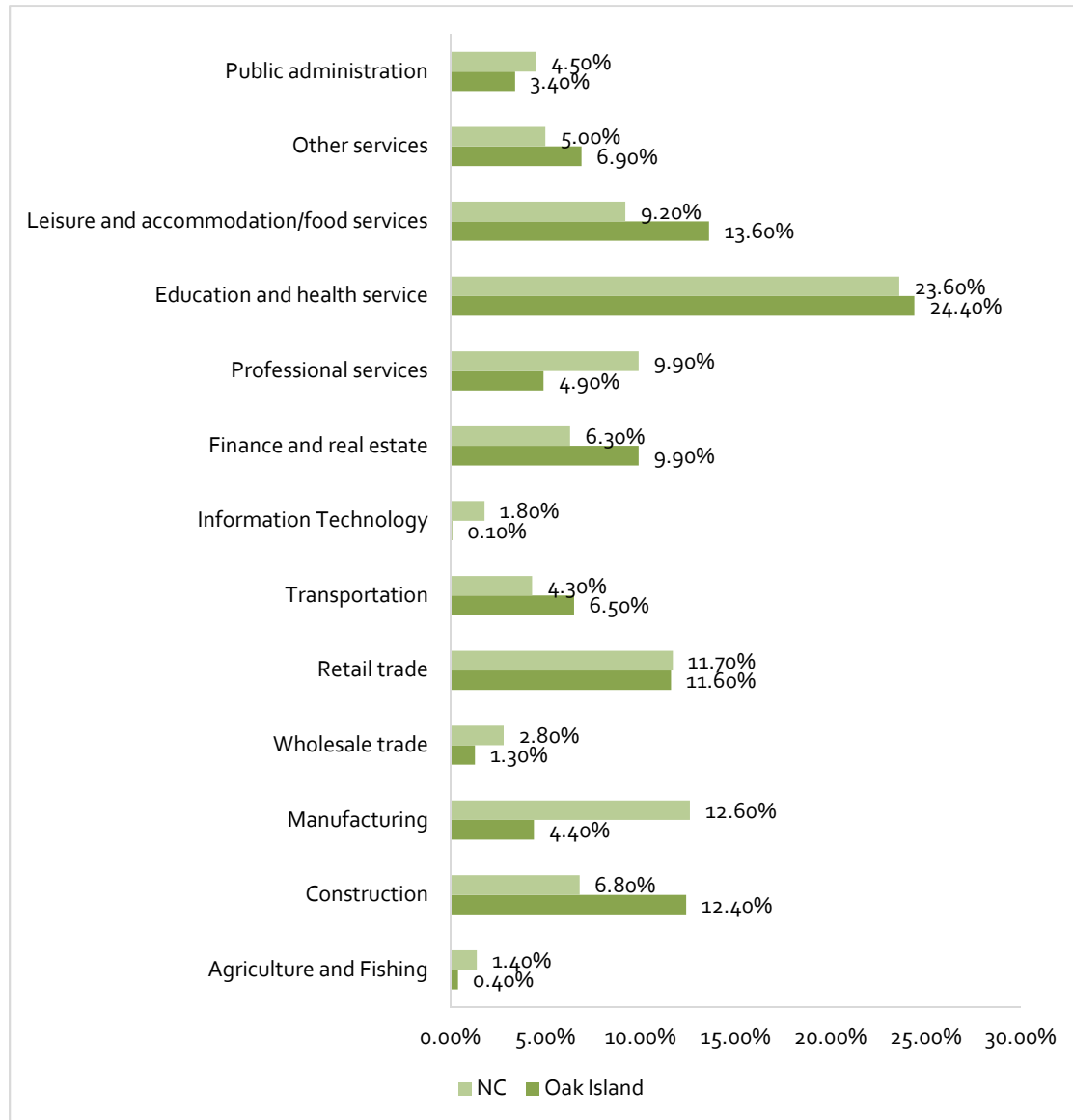
As discussed on pages 2-5 and 2-6, in 2013, Oak Island's retirement age population accounted for approximately 53% of the Town's total population. This figure accounts for the high percentage of people not in the labor force.

Employment by Industry

In Oak Island, the Education and Health Services industry provides the greatest percentage of employment to residents. Nearly 25% of employed year-round residents work in the Education and Health Services industry. Across the state, the Education and Health Services industry accounts for a similar percentage of the employed persons – with 23.6% of the total. Accordingly, as with the higher labor force participation rate, Oak Island

also exhibits similar economic characteristics to that of the state overall. Where Oak Island differs significantly from the state, in terms of employment by industry, is in the Manufacturing, Professional Services, Construction, and Leisure and Accommodation/Food Services industries.

Figure 2-11. Employment by Industry, 2013



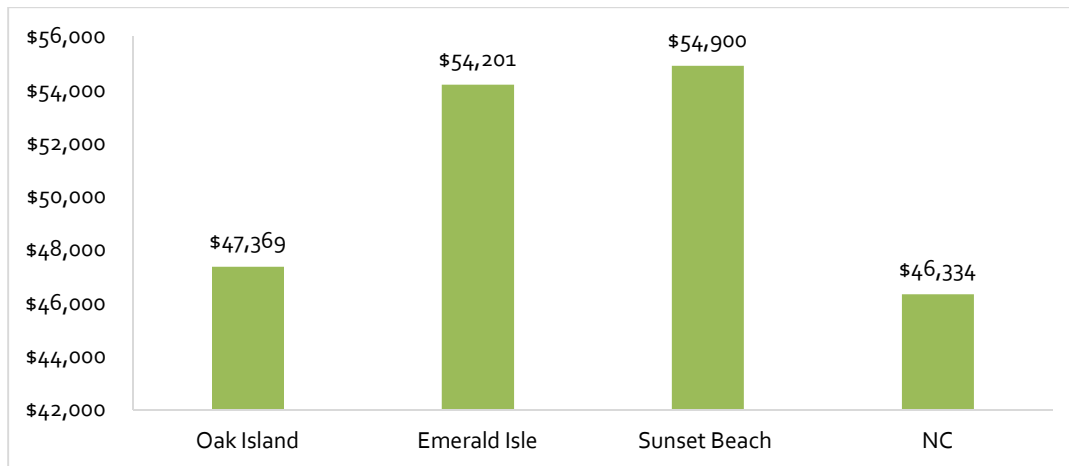
Source: US Census Bureau.

In Oak Island from 2000 to 2013, the share of employment in the Construction industry decreased by 25%, while the Leisure and Accommodation/Food Services and Education and Health Services industries share of employment increased by 62% and 47%, respectively.

Income

For demographic purposes, income figures are calculated per household by the Census Bureau. This figure includes the combined incomes of all people sharing a particular household or place of residence. Median household income in Oak Island is comparable to that of Brunswick County (\$46,438) and the state of North Carolina overall. Median household income figures are slightly higher in Emerald Isle and Sunset Beach than in Oak Island. According to the US Census, 8.9% of the town's population lived below the poverty line in 2013.

Figure 2-12. Median Household Income, 2013



Source: US Census Bureau.

Cost of Living

Many demographic factors affect the attractiveness of a given location as a future home. For many, the cost of living can be a deciding factor when choosing a community in which to live. The United States Bureau of Labor Statistics defines a cost of living index as a measure of the differences in the price of goods and services for different geographic areas, such as municipalities. According to the cost of living index prepared by Bert Sperling and BestPlaces.net, Oak Island is an attractive location for current and future residents based on affordability. The cost of living index below measures food, housing, utilities, transportation, and health costs. Miscellaneous items include the cost of clothing, restaurants, repairs, entertainment, and other services.

The cost of living in Oak Island is slightly higher than the nationwide average, but remains lower than many other coastal municipalities in North Carolina. Compared with the towns of Sunset Beach and Emerald Isle, Oak Island offers a lower cost of living overall.

Table 2-7. Cost of Living Table

City	Overall	Food	Housing	Utilities	Transp.	Health	Misc.
Oak Island, NC	106.8	108.4	111.2	112.3	103.3	100.6	103
Sunset Beach, NC	110.5	108.4	122.7	112.3	103.3	100.6	103
Emerald Isle, NC	131.5	104.3	196.8	95.8	98.5	99.6	101.5
Raleigh, NC	100.5	101	105.5	106.4	97.7	99.6	94.6
Los Angeles, CA	163.5	110	280	110.6	110.7	110.9	105.3
New York, NY	168	120.5	274.5	130.6	111.6	109.1	120.3
United States	100	100	100	100	100	100	100

Cost of living indices are based on a US average of 100. An amount below 100 means the cost of living is cheaper than the US average. A cost of living index above 100 means the cost of living is more expensive.

Source: <http://www.bestplaces.net/cost-of-living/> (8/26/2015).

The 2014 North Carolina Regional Travel Summary provides a summary of the impact of visitors on North Carolina's Coastal Region:

- Overnight visitors to the Coastal Region spent an average of 2.9 nights in the region in 2014, down from 3.3 in 2013.
- Twenty-nine percent of Coastal Region visitors stayed in a private home while thirty-six percent lodged at a hotel/motel. Nineteen percent stayed in a rental home and six percent stayed in a rental condo. Just over eight percent stayed in a personal second home or condo.
- Eighty-seven percent of overnight travelers to the Coastal Region drove, while seven percent traveled by air.
- The average household trip expenditure for overnight visitors to the Coastal Region was \$1,027. Daytrip parties to the Coastal Region spent approximately \$117 per visit.
- In 2014, the top state of origin of overnight visitors to the Coastal Region were North Carolina (49.2%).

Local Economic Drivers

Tourism is a significant driver of the local economy in Oak Island – particularly during the summer months. However, according to a retail study conducted for Brunswick County, the impacts of tourism spending can be difficult to track in specific areas such as Oak Island. Nevertheless, the impacts of tourism within Brunswick County as a whole are substantial, and account for more than 5,000 jobs and more than \$470 million in tourism-related expenditures.

As mentioned previously, the vacation rental market supports overnight visitation for tourists to the town. A recent study, sponsored by the NC Department of Commerce, noted that the average spending from an overnight visitor party in North Carolina is approximately \$517 per visit. The average length of stay is 2.7 nights and the average visitor party size is 1.9 people. Supporting industries such as food accommodations, hotels, and local shopping destinations are among the most popular for visitors to the island.

Oak Island also offers a diverse array of industry on the mainland. The Cape Fear Regional Jetport supports air travel, particularly for personal use. General aviation is available through Spirit Airlines and a flight school and rental vehicles are available. A commercial mining (sand) operation, food accommodations, and a marina are available to residents and visitors of the Oak Island mainland.

COMMUNITY PROFILE SUMMARY

- The Town of Oak Island exhibits demographic characteristics of both a beach community and of mainland Brunswick County. Such a finding confirms the need to balance the interests of the retired population, summer visitors, and also that of the labor force.

Population

- Oak Island's permanent population increased by more than 6% between 2000 and 2013.
- The peak day population in Oak Island is estimated to be more than 45,000 individuals.
- Nearly 40% of Oak Island's residents are categorized as "Baby Boomers" or aged 50 to 69.
- More than 30% of Oak Island's residents received a Bachelor's degree to higher.

Housing

- As of 2013, more than 85% of Oak Island's housing stock was composed of single-family units. This statistic has remained roughly the same dating back prior to Oak Island's incorporation in 1999.
- The number of mobile home units decreased by 36% from 2000 to 2013, while the number of multi-family units increased by more than 200%.
- Compared to North Carolina, Oak Island saw a much greater percentage of its housing units constructed from 2000 to 2009.
- Of the approximately 8,800 housing units in Oak Island's corporate limits, more than half are considered vacant and are primarily used as second homes or vacation rental units.
- In 2013, the median home value in Oak Island was \$243,200. This median home value is approximately 60% higher than that of the state overall.
- As of 2013, in Oak Island, nearly 35% of homeowners and more than half of all renters had housing costs in excess of 30% of income.

Economic Data

- Oak Island has a higher percentage of individuals not considered part of the labor force than does North Carolina, but has a lower rate than comparison beach communities of Emerald Isle and Sunset Beach. This finding suggests that Oak Island has a greater percentage of full-time employed persons than Sunset Beach and Emerald Isle.
- In Oak Island, the Education and Health Services industry provides the greatest percentage of employment to residents.
- From 2000 to 2013, the share of employment in the Construction industry decreased by 25%, while the Leisure and Accommodation/Food Services and Education and Health Services industries share of employment increased by 62% and 47%, respectively.
- Median household income in Oak Island is comparable to that of Brunswick County (\$46,438) and the state of North Carolina overall.
- Tourism is a significant economic driver in Brunswick County, accounting for more than \$470 million in related expenditures.

3. Existing Conditions

INTRODUCTION

Sound land development policies require a thorough understanding of the existing natural systems, land use patterns, transportation networks, and supporting community facilities and services. The following existing conditions section provides information and details pertaining to each of these topics for the Town of Oak Island.

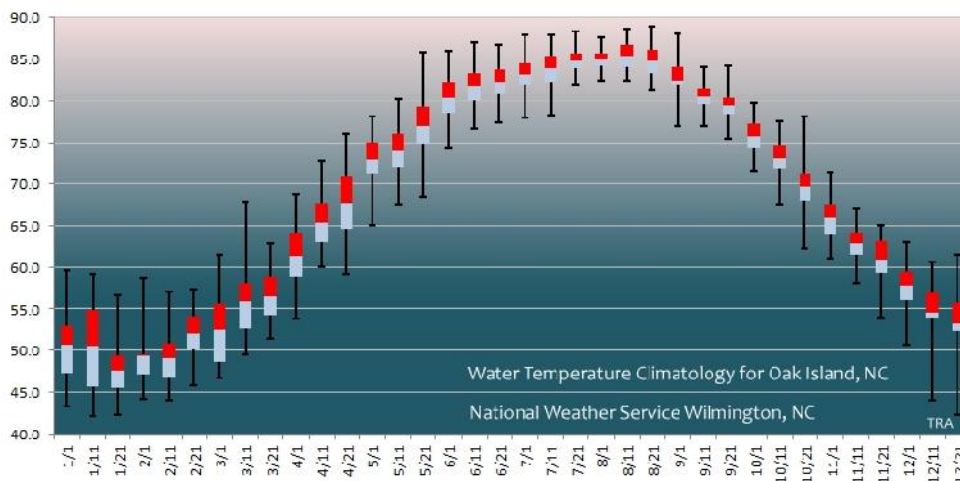
NATURAL SYSTEMS

Climate

The climate in Oak Island is a major factor for families and individuals choosing to live in the area. Climate was identified during stakeholder interviews as one of the most important considerations for the decision to move to Oak Island. The town has a temperate coastal environment with a year-round temperature average of 70 degrees Fahrenheit (F). Over the course of a typical year the temperature ranges from 37 degrees Fahrenheit to 87 degrees Fahrenheit. Other climate statistics include the following:

- Spring temperature averages 71 degrees F.
- Summer temperature averages 83 degrees F.
- Fall temperature averages 74 degrees F.
- Winter temperature averages 54 degrees F.
- Record low = -3 degrees F. (Dec 1989)
- Record high = 103 degrees F. (Jun 1952)
- The town averages 60.99 inches of precipitation per year.

According to the National Weather Service, the water temperatures for Oak Island range from an average of 48 degrees in January to 85 degrees in August (see graphic below).



Water Temperature Climatology Image Source: National Weather Service.

Geography & Topography



North Carolina Land Regions *Image Source: HCP, Inc.*

Oak Island is located in North Carolina's "Tidewater" land region. Communities located in this region of the state are united by their proximity to the Atlantic Ocean and its riverine estuaries. Lands within the Tidewater region are among the earliest settled in the state¹. Oak Island is composed of three unique ecosystems including the barrier island ecosystem, estuary ecosystem, and the upland surface ecosystem, characterized by a mix of poor and well drained conditions.

Overall, Oak Island offers residents and visitors all three different ecosystem typologies. Typically, beach communities only have barrier island and estuary ecosystems, whereas the town also has an upland ecosystem.



Barrier Island Ecosystem *Image Source: Google Maps.*



Estuary Ecosystem *Image Source: Google Maps.*



Upland Surface Ecosystem *Image Source: Google Maps.*

¹ North Carolina: People and Environments, 2nd Edition
<http://geo.appstate.edu/departement-resources/nc-people-and-environments>

Flood Zones

Approximately 35% of Oak Island's corporate limits area is impacted by a Special Flood Hazard Area (SFHA). A SFHA is defined as a land area with a greater than 1% chance per year of flooding and is also known as a "floodplain." Special Flood Hazard Areas are indicated on Flood Insurance Rate Maps (FIRMs), which are considered the most reliable and consistent source for delineating SFHAs and are the source used to determine whether or not the purchase of flood insurance is mandatory for developed properties with a mortgage.

SFHAs are broken into "AE" zones and "VE" zones. "AE" zones, formerly known as the 100-year floodplain, are areas subject to risk of flooding by standing or relatively static flood waters, while "VE" zones are areas subject to wave action. "Shaded X" is a supplemental flood hazard area in which there is a 0.2% annual chance of flooding, also known as the "500-year floodplain." Land bordering the Atlantic Ocean is most susceptible to wave inundation, whereas land bordering the Intracoastal Waterway and other estuarine areas are most susceptible to flooding/rising waters.

Approximately 23% of the Town's planning jurisdiction is impacted by the AE zone, while only 5.9% is impacted by the VE zone. The geographic location of each flood hazard area is displayed on Map 4. Digital FEMA Flood Insurance Rate Maps are available for review at www.ncfloodmaps.com.




Table 3-1. Special Flood Hazard Areas

Special Flood Hazard Area	Total Acres	% Planning Jurisdiction
Shaded X (0.02 % Annual Chance)	939.53	6.56%
AE	3,313.36	23.15%
VE	848.94	5.93%
TOTAL	5,101.82	35.65%




Source: National Flood Insurance Program.

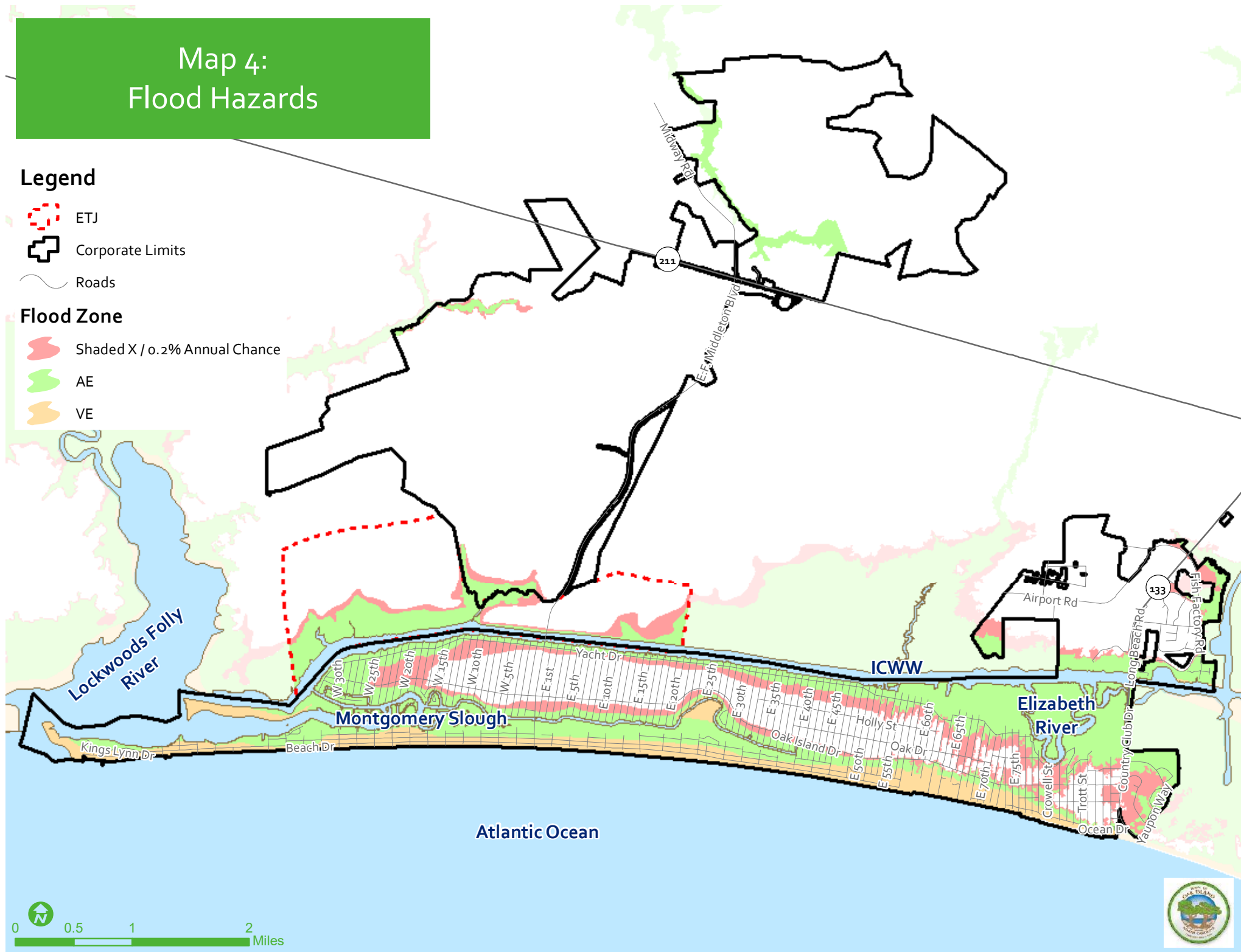
Map 4: Flood Hazards

Legend

-  ETJ
-  Corporate Limits
-  Roads

Flood Zone

-  Shaded X / 0.2% Annual Chance
-  AE
-  VE



Maps 5 and 6 display areas of Oak Island that may be impacted by a hurricane-generated storm surge based on the SLOSH (Sea, Land, and Overland Surges from Hurricanes) model developed by the National Oceanic and Atmospheric Administration (NOAA), which computes storm surge heights from tropical cyclones, such as hurricanes. The SLOSH model estimates the extent of storm surge inundation for “fast-moving” storms (forward velocity greater than 15 miles per hour) and for “slow-moving” storms (forward velocity less than 15 miles per hour).

Storm surge inundation from a “Fast” moving storm would result in the greatest potential damage to property in Oak Island. Nearly 50% of the town would be impacted by a fast-moving Category 5 hurricane, including almost all of the island portion of the town.

Table 3-2. Storm Surge Inundation “Fast” Moving Storm

FAST Moving Storm	Island Acres	Mainland Acres	Total Acres	% of Planning Jurisdiction
Category 1 & 2	2,765.8	466.4	3,232.2	22.6%
Category 3	3,702.7	1,066.5	4,769.2	33.3%
Category 4 & 5	4,537.4	2,529.8	7,067.2	49.4%

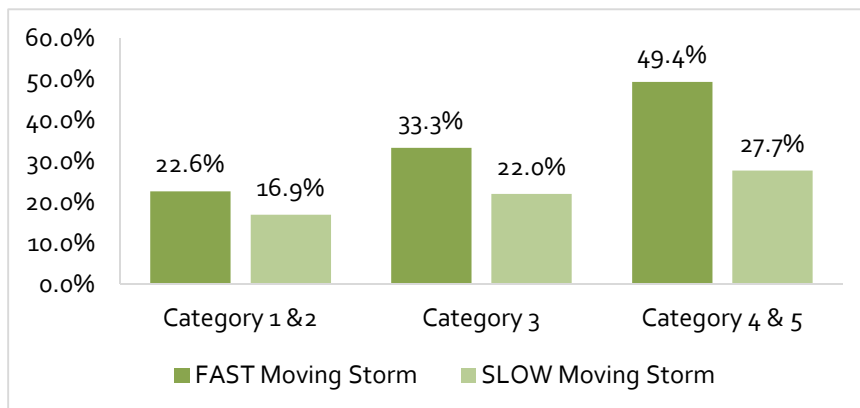
Source: National Oceanic and Atmospheric Administration.

Table 3-3. Storm Surge Inundation “Slow” Moving Storm

SLOW Moving Storm	Island Acres	Mainland Acres	Total Acres	% of Planning Jurisdiction
Category 1 & 2	2,135.1	284.5	2,419.6	16.9%
Category 3	2,660.7	494.7	3,155.4	22.0%
Category 4 & 5	3,082.7	886.7	3,969.4	27.7%

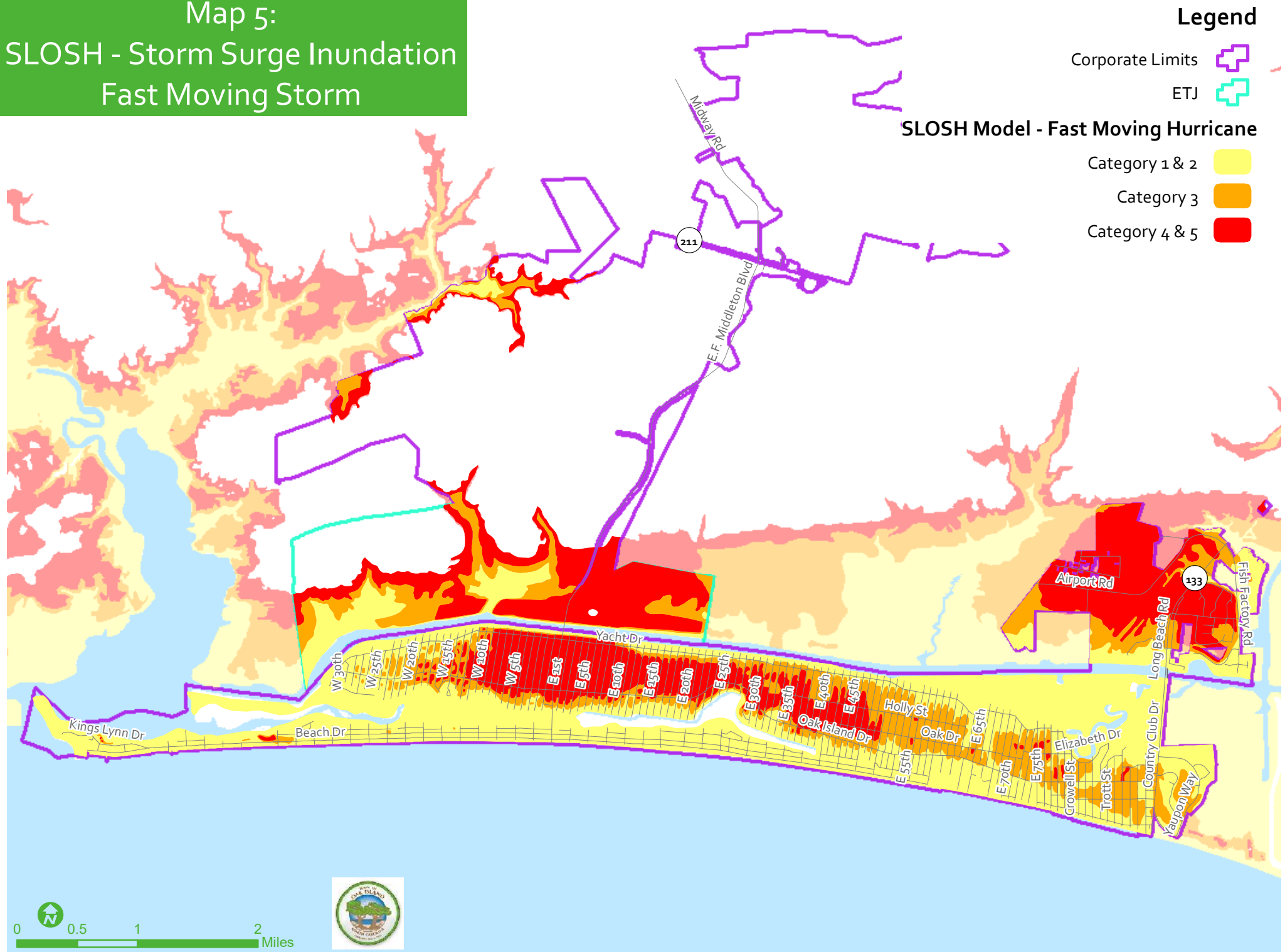
Source: National Oceanic and Atmospheric Administration.

Figure 3-1: Storm Surge Inundation – Percent of Planning Jurisdiction

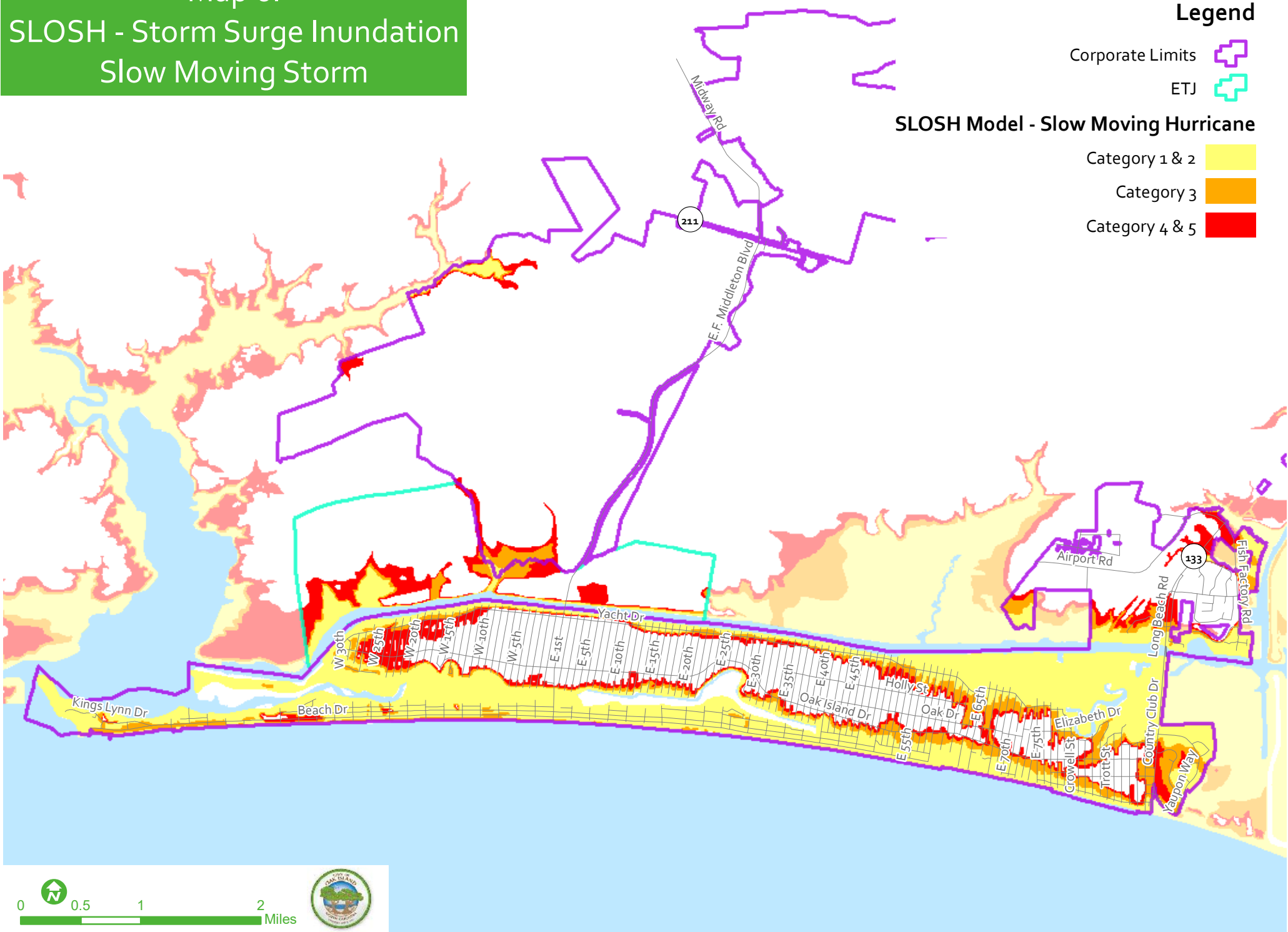


Source: National Oceanic and Atmospheric Administration.

Map 5:
SLOSH - Storm Surge Inundation
Fast Moving Storm



Map 6: SLOSH - Storm Surge Inundation Slow Moving Storm



The following provides a listing of all hurricane events that have impacted Oak Island since 1996. A more comprehensive overview of storm history is available in the Southeastern NC Regional Hazard Mitigation Plan which was adopted by the Town on April 12, 2016.

- Hurricane Bertha (July 12, 1996)
- Hurricane Fran (September 5, 1996)
- Hurricane Bonnie (August 27, 1998)
- Hurricane/Tropical Storm Dennis (September 7, 1999)
- Hurricane Floyd (September 14, 1999)
- Hurricane Isabel (September 18, 2003)
- Hurricane/Tropical Storm Charley (August 14, 2004)
- Hurricane Ophelia (September 13, 2005)
- Tropical Storm Ernesto (August 31, 2006)
- Hurricane Irene (August 27, 2011)
- Tropical Storm Andrea (June 7, 2013)
- Hurricane/Tropical Storm Arthur (July 3, 2014)



Several homes along the beach in Oak island were damaged by hurricane-force winds and storm-surge inundation in October 1999. *Image Source: Dave Saville/FEMA.*

Soils

According to the Brunswick County Soil Survey, there are 29 different soil types within Oak Island's planning jurisdiction. The most prominent soil types are various fine sands. Fine sands account for more than 80% of the soil in Oak Island. In addition, nearly 100% of the soil types within the planning jurisdiction are very limited in their ability to safely house septic tank systems. However, the construction of a town-wide wastewater system has largely alleviated the need for septic systems in Oak Island. Very poorly drained or "hydric" soils account for just over 20% of the total soil types and are shown on Map 7. These soil types are often found in flood hazard and wetland areas.

Table 3-4. Soil Types

Soil Type	Slope Gradient	Drainage Class	Septic Tank Absorption	Acres	% of total
Baymeade and Marvyn soils, 6 to 12 percent slopes	9	Well drained	Very limited	44.21	0.31%
Baymeade fine sand, 1 to 6 percent slopes	3	Well drained	Very limited	63.96	0.45%
Bohicket silty clay loam	1	Very poorly drained	Very limited	388.87	2.72%
Carteret loamy fine sand	1	Very poorly drained	Very limited	47.74	0.33%
Corolla fine sand	2	Moderately well drained	Very limited	193.32	1.35%
Croatan muck	1	Very poorly drained	Very limited	24.94	0.17%
Dorovan muck	1	Very poorly drained	Very limited	0.49	0.00%
Duckston fine sand	1	Poorly drained	Very limited	117.79	0.82%
Foreston loamy fine sand	1	Moderately well drained	Very limited	526.14	3.68%
Grifton fine sandy loam	1	Poorly drained	Very limited	10.37	0.07%
Kureb fine sand, 1 to 8 percent slopes	4	Excessively drained	Very limited	2,240.75	15.66%
Leon fine sand	1	Poorly drained	Very limited	2,966.26	20.73%
Longshoal muck	1	Very poorly drained	Very limited	341.86	2.39%
Lynchburg fine sandy loam	1	Somewhat poorly drained	Very limited	76.39	0.53%
Mandarin fine sand	1	Somewhat poorly drained	Very limited	413.02	2.89%
Miscellaneous water	0	Not rated	Not rated	1.82	0.01%
Muckalee loam	1	Poorly drained	Very limited	238.20	1.66%
Murville mucky fine sand	1	Very poorly drained	Very limited	1,935.08	13.52%

Section 3. Existing Conditions

Soil Type	Slope Gradient	Drainage Class	Septic Tank Absorption	Acres	% of total
Newhan fine sand, 2 to 30 percent slopes	16	Excessively drained	Very limited	569.26	3.98%
Newhan fine sand, dredged, 2 to 30 percent slopes	16	Excessively drained	Very limited	476.98	3.33%
Norfolk loamy fine sand, 2 to 6 percent slopes	4	Well drained	Somewhat limited	43.15	0.30%
Pactolus fine sand, 0 to 2 percent slopes	1	Moderately well drained	Very limited	102.82	0.72%
Pantego mucky loam	1	Very poorly drained	Very limited	120.03	0.84%
Rains fine sandy loam	1	Poorly drained	Very limited	104.15	0.73%
Tomahawk loamy fine sand	2	Moderately well drained	Very limited	59.48	0.42%
Torhunta mucky fine sandy loam	1	Very poorly drained	Very limited	151.35	1.06%
Wando fine sand, 0 to 6 percent slopes	3	Well drained	Very limited	1,747.52	12.21%
Water	0	Not rated	Not rated	839.71	5.87%
Woodington fine sandy loam	1	Poorly drained	Very limited	335.87	2.35%
Yaupon silty clay loam, 0 to 3 percent slopes	2	Somewhat poorly drained	Very limited	130.60	0.91%
Total				14,312.13	100.00%

Source: Soil Survey of Brunswick County.

Surface Waters

Each stream mile of water in North Carolina is evaluated and rated by the NC Division of Water Resources (formerly the Division of Water Quality). The classifications are based upon the existing or contemplated best usage of the various streams and segments of streams within a basin, as determined through studies, evaluations, and comments received at public hearings. The state water classification system is summarized in Table 3-5.

Table 3-5. NC Division of Water Resources Water Body Classifications

PRIMARY FRESHWATER AND SALTWATER CLASSIFICATIONS*	
<u>Class</u>	<u>Best Uses</u>
C and SC	Aquatic life propagation/protection and secondary recreation
B and SB	Primary recreation and Class C uses
SA	Waters classified for commercial shellfish harvesting
WS	<i>Water Supply Watershed</i> . There are five WS classes ranging from WS-I through WS-V. WS classifications are assigned to watersheds based on land use characteristics of the area. Each water supply classification has a set of management strategies to protect the surface water supply. WS-I provides the highest level of protection and WS-V provides the least protection. A Critical Area (CA) designation is also listed for watershed areas within a half-mile and draining to the water supply intake or reservoir where an intake is located.
SUPPLEMENTAL CLASSIFICATIONS	
Sw	<i>Swamp Waters</i> : Recognizes waters that will naturally be more acidic (have lower pH values) and have lower levels of dissolved oxygen.
Tr	<i>Trout Waters</i> : Provides protection to freshwaters for natural trout propagation and survival of stocked trout.
HQW	<i>High Quality Waters</i> : Waters possessing special qualities including excellent water quality, Native or Special Native Trout Waters, Critical habitat areas, or WS-I and WS-II water supplies
ORW	<i>Outstanding Resource Waters</i> : Unique and special surface waters that are unimpacted by pollution and have some outstanding resource values.
NSW	<i>Nutrient Sensitive Waters</i> : Areas with water quality problems associated with excessive plant growth resulting from nutrient enrichment.

*Primary classifications beginning with an "S" are assigned to saltwaters. Source: NC Department of Environmental Quality.

The waters surrounding the island are classified as "HQW" or "high quality water". This is a supplemental classification intended to protect waters by a standard that exceeds those of the state overall. This classification is due to the presence of active shellfish saltwater areas that are conducive to commercial fishing, which are classified "SA". These waters are also suitable for all recreational uses, such as boating or swimming. See Map 7 for their approximate location. There are no water supply watersheds in Oak Island.

North Carolina Water Quality Basics

What Are Surface Water Classifications?

Surface Water Classifications are designations applied to surface water bodies, such as water streams, rivers and lakes, which define the best uses to be protected within these waters (for example swimming, fishing, drinking water supply) and carry with them an associated set of water quality standards to protect those uses. Surface water classifications are one tool that state and federal agencies use to manage and protect all streams, rivers, lakes, and other surface waters in North Carolina. Classifications and their associated protection rules may be designed to protect water quality, fish and wildlife, the free flowing nature of a stream or river, or other special characteristics.

How Do They Affect Me?





Before you buy property, plan a new development project, construct a new road or undertake other land use activities, you should check with local, state, and federal agencies about the assigned surface water classification for the waterbody on your property. Many of the newer classifications, especially those designed to protect drinking water supplies and certain high quality waters, have protection rules which regulate some land or disturbance and other human activities.

Why Do They Sometimes Overlay?





Many streams, rivers, and lakes may have several classifications applied to the same area. This is because surface waters are classified to protect different uses or special characteristics of the waterbody. For example, a stream or specific stream segment may be classified as Class WS-III Tr HWQ by the NC Division of Water Resources (DWR). This protects it as a drinking water supply (WS-III), as Trout Waters (Tr), and as High Quality Waters (HQW). The stream segments upstream or downstream may have different classifications based on other water uses or stream characteristics.

Map 7: Surface Waters, River Basins & Hydric Soils

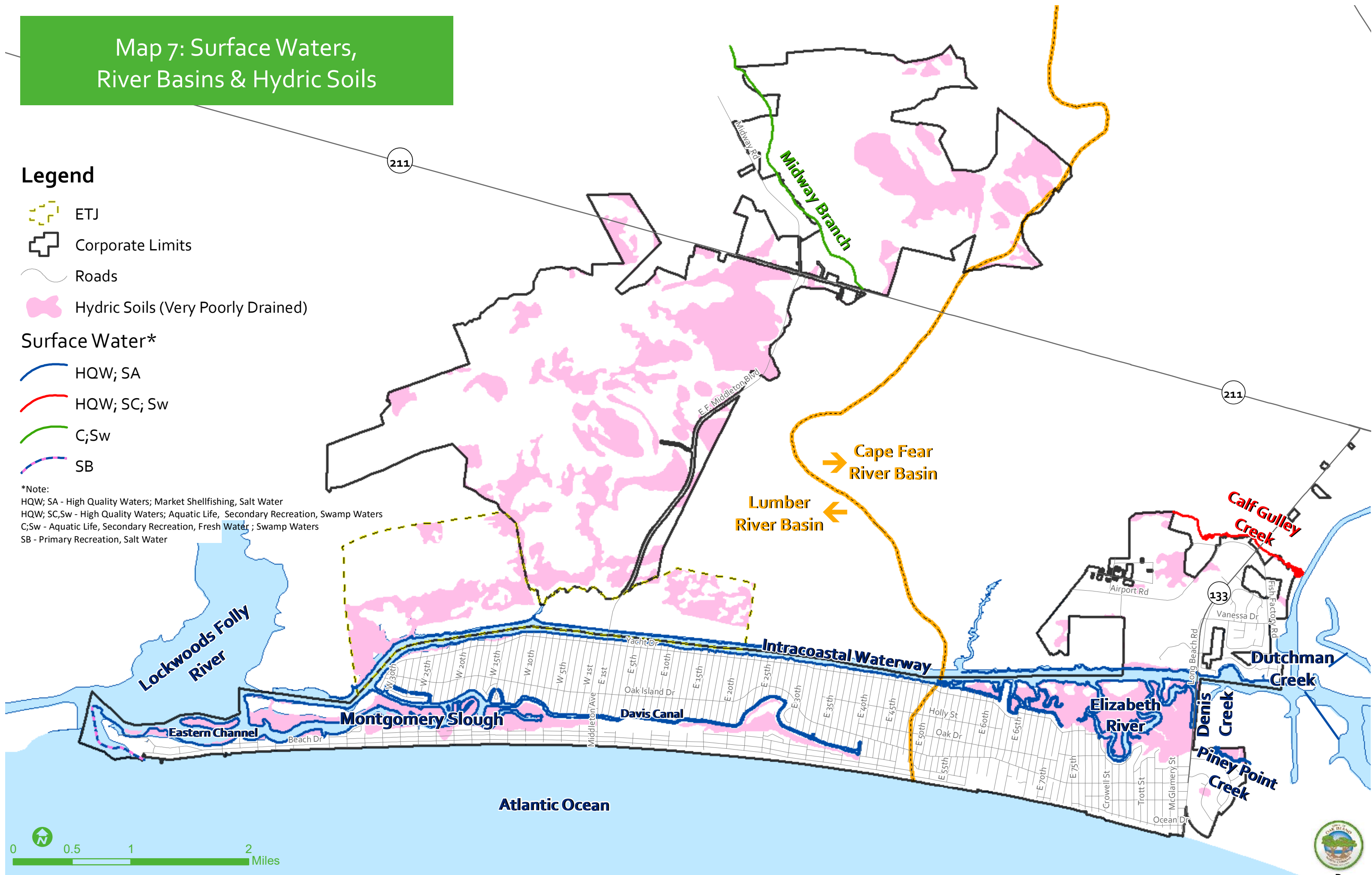
Legend

-  ETJ
-  Corporate Limits
-  Roads
-  Hydric Soils (Very Poorly Drained)

Surface Water*

-  HQW; SA
-  HQW; SC; Sw
-  C;Sw
-  SB

*Note:
 HQW; SA - High Quality Waters; Market Shellfishing, Salt Water
 HQW; SC,Sw - High Quality Waters; Aquatic Life, Secondary Recreation, Swamp Waters
 C;Sw - Aquatic Life, Secondary Recreation, Fresh Water ; Swamp Waters
 SB - Primary Recreation, Salt Water



Much of the “SA” waters along the estuarine shoreline are classified as impaired and do not support commercial shellfishing. Map 8 displays impaired and supporting waters in and around Oak Island. The exact locations must be field verified and are subject to change. Water bodies that are considered Impaired are displayed as red, while those in blue are classified as Supporting and meet standard criteria. Each impaired water body is also listed by size and location on Table 3-6.

Table 3-6. 2014 Impaired Waters

Water Body	Location	Size	Parameter of Interest
Elizabeth River	Section exclusive of the Elizabeth River Shellfishing Area	83.5 acres	Shellfish growing area prohibited – Fecal Coliform
ICWW	From Channel Marker F1, R. “22” to Dutchmans Creek	222.6 acres	Shellfish growing area prohibited – Fecal Coliform
ICWW	From a line across the ICWW 2030 meters west of NC 133 bridge to a line crossing the ICWW south of SR 1112	274.5 acres	Shellfish growing area conditionally approved closed – Fecal Coliform
ICWW	From a line crossing the ICWW south of SR 1112 to Cape Fear River Basin	403.5 acres	Shellfish growing area prohibited – Fecal Coliform
Montgomery Slough	From the ICWW west of Lockwoods Folly inlet extending eastward for 2.4 miles	14.2 acres	Shellfish growing area prohibited – Fecal Coliform
Piney Point Creek	From source to Denis Creek	11.5 acres	Shellfish growing area prohibited – Fecal Coliform

Source: NCDENR – 2014 303(d) List.

In 2012 through 2015, a water quality study was conducted for Montgomery Slough and Big Davis Canal. The purpose of this study was to determine the primary sources of fecal pollution. The water quality standard for the harvesting of shellfish is a geometric mean of 14 Fecal Coliform Colonies/100 mL of water. The standard for recreational boating is 200 Colonies/100 mL of water. All monitoring stations were above acceptable levels for shellfish harvesting.

Primary Nursery Areas

Primary Nursery Areas, as defined by the Marine Fisheries Commission, are those areas in the estuarine system where initial post-larval development takes place. These areas are usually located in the uppermost sections of a system where populations are uniformly very early juveniles. The Division of Marine Fisheries is responsible for preserving, protecting and developing Primary Nursery Areas for commercially important finfish and shellfish. There are Primary and Permanent Secondary Nursery Areas within Oak Island’s planning jurisdiction. See Map 8: Impaired Waters & Nursery Areas for more information. These areas are also classified as coastal wetlands and Areas of Environmental Concern.

North Carolina Water Quality Basics (continued)

Stream’s Classification?

DWR classifies all surface waters. A waterbody’s classification may change at the request of a local government or citizen. DWR reviews each request for a reclassification and conducts an assessment of the waterbody to determine the appropriateness of the reclassification. DWR also conducts periodic waterbody assessments which may result in a recommendation to reclassify the waterbody. In order for a waterbody to be reclassified it must proceed through the rule-making process.

Nursery Areas

Areas that for reasons such as food, cover, bottom type, salinity, temperature, and other factors, young finfish and crustaceans spend the major portion of their initial growing season. *Primary nursery areas* are those areas in the estuarine system where initial post-larval development takes place. These are areas where populations are uniformly early juveniles. *Secondary nursery areas* are those areas in the estuarine system where later juvenile development takes place. Populations are composed of developing sub-adults of similar size that have migrated from an upstream primary nursery area to the secondary nursery area located in the middle portion of the estuarine system.

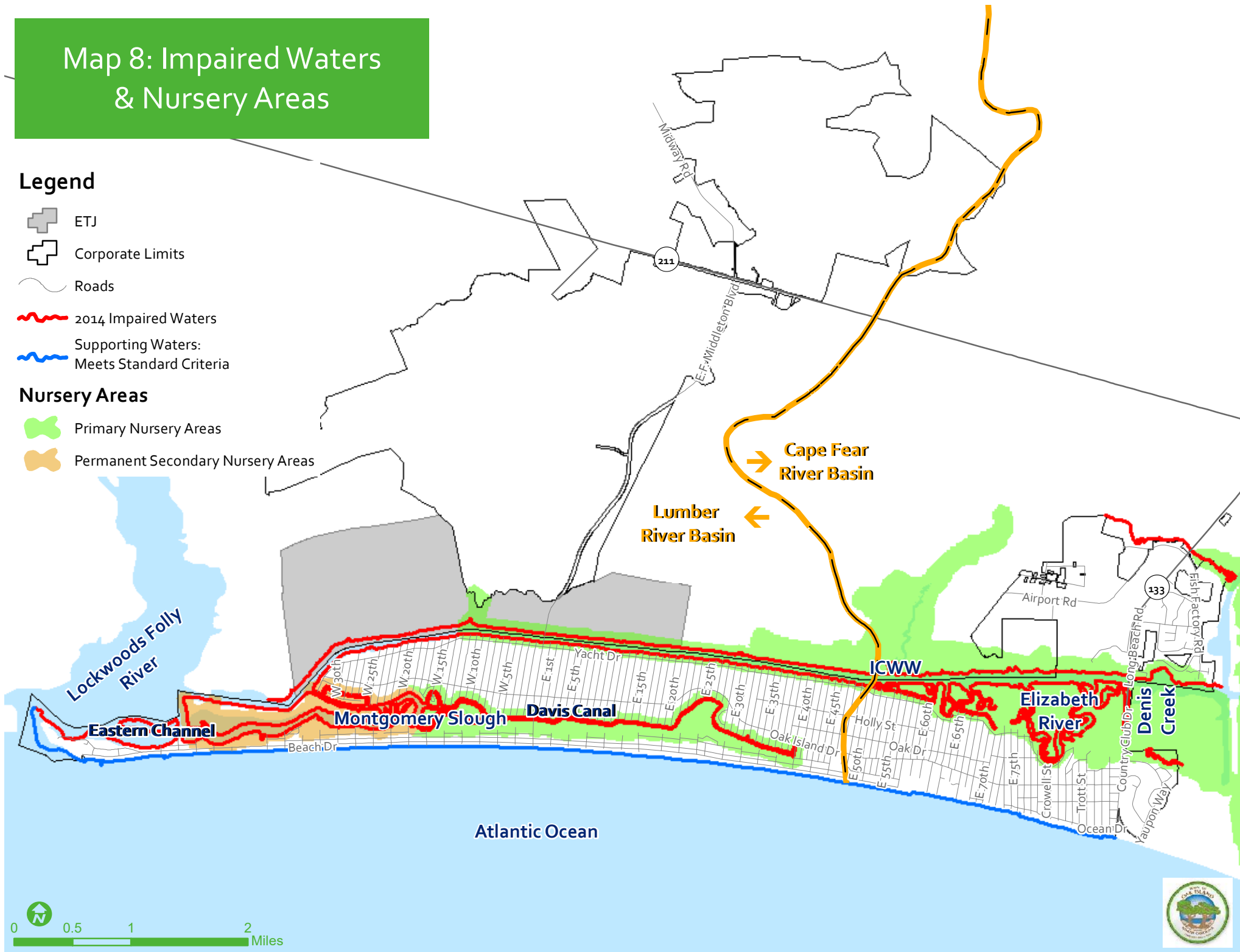
Map 8: Impaired Waters & Nursery Areas

Legend

- ETJ
- Corporate Limits
- Roads
- 2014 Impaired Waters
- Supporting Waters:
Meets Standard Criteria

Nursery Areas

- Primary Nursery Areas
- Permanent Secondary Nursery Areas



Areas of Environmental Concern

The shorelines within the Town of Oak Island fall under the jurisdiction of the North Carolina Coastal Area Management Act (CAMA). CAMA establishes "Areas of Environmental Concern" (AECs) as the foundation of the Coastal Resources Commission's permitting program for coastal development. An AEC is an area of natural importance; it may be easily destroyed by erosion or flooding, or it may have environmental, social, economic, or aesthetic values that make it valuable.

The Coastal Resources Commission designates areas as AECs to protect them from uncontrolled development that may cause irreversible damage to property, public health or the environment, thereby diminishing their value to the entire state. Statewide, AECs cover almost all coastal waters and less than 3% of the land in the 20 coastal counties.

Fragile areas are those areas that are not explicitly defined as AECs but that could cause significant environmental damage or other diminution of quality of life if not managed. These include wetlands, natural heritage areas, areas containing endangered species, prime wildlife habitats, or maritime forests.

Estuarine Waters and Estuarine Shorelines (AEC)

An "estuary" can be defined as "a semi-enclosed coastal body of water which has a free connection to the open sea and within which sea water is measurably diluted with fresh water derived from land drainage." Estuaries basically serve as transition zones between fresh and salt water and are protected from the full force of ocean wind and waves by barrier islands, mudflats, and/or sand. As illustrated in the text box, estuaries provide significant environmental, recreational, and economic benefits to the Town of Oak Island.

For regulatory purposes, the inland, or upstream, boundary of estuarine waters is the same line used to separate the jurisdictions of the Division of Marine Fisheries and the Wildlife Resources Commission. However, many of the fish and shellfish that spend parts of their lives in estuaries move between the "official" estuarine and inland waters.

Estuarine shorelines are land areas leeward of mean high tide that are immediately adjacent to or bordering estuarine waters. These areas support the ecological function of estuaries and are highly vulnerable to erosion caused by wind or water and to damage caused by boat wake and development.

Why are Estuaries Important?

The lands and waters of the estuarine system are home to fish nursery areas, spawning areas, shellfish beds, and other habitats essential to North Carolina's commercial and recreational fishing industries.

More than 90% of North Carolina's commercial and recreational seafood species (such as shrimp, flounder, oysters, and crabs) depend on the protective habitat and nutrients found in coastal wetlands and estuarine waters for much of their lives.

The stems, roots, and seeds of many coastal wetland plants provide food and nesting materials for waterfowl and other wildlife. Marsh plants guard against erosion and flood damage: Their leaves and stems dissipate wave energy, and their root systems bind soil. The nutrients and decayed plant material the marsh plants produce also contribute to the productivity of the estuarine system.

Estuarine plants trap debris and excess nutrients and help regulate the flow of fresh water into the estuary, maintaining the system's balance. Estuarine shorelines act as natural barriers to erosion and flooding. Certain soil formations and plant communities along estuarine shorelines also help slow erosion. Natural buffers along the shoreline protect the water from excess sediment and pollutants, and they protect nearby developments from flooding and erosion.

Estuarine waters and public trust areas are important because they support commercial and recreational fishing, boating, swimming, and other recreational activities.

Under CAMA rules, all lands 75 feet leeward from the mean high tide are classified as estuarine shorelines and are subject to CAMA development regulations. No domestic discharges are permitted in these waters. Boats are also not allowed to discharge in these waters.

Public Trust Areas

The North Carolina Division of Coastal Management (DCM) defines “Public Trust Areas” as the coastal waters and submerged lands that every North Carolinian has the right to use for activities such as boating, swimming, or fishing. These areas often overlap with estuarine waters, but they also include many inland fishing waters. The following lands and waters are considered public trust areas:

- all waters of the Atlantic Ocean and the lands underneath, from the normal high water mark on shore to the state’s official boundary three miles offshore;
- all navigable natural water bodies and the lands underneath, to the normal high watermark on shore (a body of water is considered navigable if you can float a canoe in it). This does not include privately owned lakes where the public does not have access rights;
- all waters in artificially created water bodies that have significant public fishing resources and are accessible to the public from other waters; and
- all waters in artificially created water bodies where the public has acquired rights by prescription, custom, usage, dedication or any other means.

Although public trust areas must be delineated by on-site analysis, all submerged lands adjacent to Oak Island along the Intracoastal Waterway and the Atlantic Ocean should be considered public trust areas.

Under CAMA regulations, all lands 30 feet leeward of public trust areas are subject to the restrictions for estuarine shoreline areas.

Coastal Wetlands

The Coastal Resources Commission rules define “Coastal Wetlands” as any marsh in the 20 coastal counties (including Brunswick County and therefore, Oak Island) that regularly or occasionally floods by lunar or wind tides, and that includes one or more of the following ten (10) plant species:

- *Spartina alterniflora*: Salt Marsh (Smooth) Cordgrass
- *Juncus roemerianus*: Black Needlerush
- *Salicornia* spp.: Glasswort
- *Distichlis spicata*: Salt (or Spike) Grass

- Limonium spp.: Sea Lavender
- Scirpus spp.: Bulrush
- Cladium jamaicense: Sawgrass
- Typha spp.: Cattail
- Spartina patens: Salt Meadow Grass
- Spartina cynosuroides: Salt Reed or Giant Cordgrass

Coastal wetlands provide significant environmental and economic benefits to Oak Island. They protect against flooding, help maintain water quality, provide habitat to wildlife, and serve as part of the estuarine system.

In 2003, the Division of Coastal Management classified and mapped coastal wetlands based on an analysis of several existing data sets, including aerial photographs and satellite images of coastal areas in North Carolina, including Oak Island. Even though the presence of wetlands must be established by an on-site delineation and investigation of plants, DCM produced an excellent representation of wetlands in the Town, and throughout coastal North Carolina.

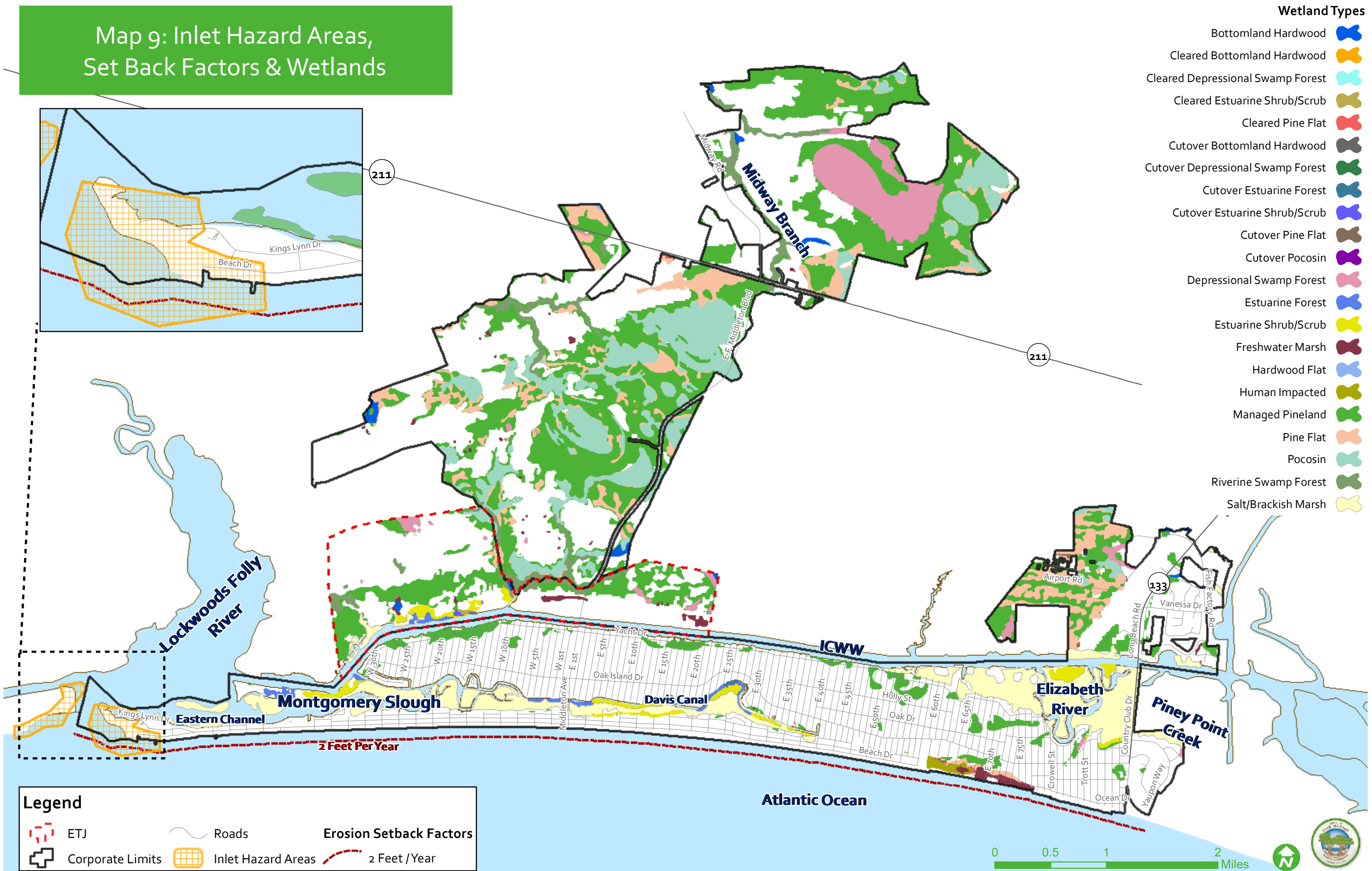
According to the Coastal Wetlands Inventory, approximately 20% of the Town's planning jurisdiction, or 6,379.55 acres, are coastal wetlands (see Table 3-7). Managed Pinelands comprise the largest category of wetlands in the planning jurisdiction, the majority of which are located on the mainland.

Table 3-7. Town of Oak Island Coastal Wetlands by Type and Extent

Wetland Type	Acres	% of Total
Bottomland Hardwood	45.05	0.7%
Depressional Swamp Forest	418.28	6.6%
Estuarine Forest	47.82	0.7%
Estuarine Shrub/Scrub	133.52	2.1%
Freshwater Marsh	62.37	1.0%
Hardwood Flat	1.25	0.0%
Human Impacted	17.53	0.3%
Managed Pineland	2,837.14	44.5%
Pine Flat	700.26	11.0%
Pocosin	1,008.15	15.8%
Riverine Swamp Forest	281.60	4.4%
Salt/Brackish Marsh	826.58	13.0%
Total	6,379.55	100.0%

Source: NCDWM Wetlands Inventory, 2015.

Map 9: Inlet Hazard Areas, Set Back Factors & Wetlands



The following provides the DCM descriptions of the various wetland areas found in the Town of Oak Island's planning jurisdiction:

- **Bottomland Hardwood and Riverine Swamp Forest.** Riverine forested or occasionally scrub/shrub communities usually occurring in floodplains, that are semi-permanently to seasonally flooded. In bottomland hardwood systems, typical species include oaks (overcup, water, laurel, swamp chestnut), sweet gum, green ash, cottonwoods, willows, river birch, and occasionally pines. In swamp forest systems, typical species include cypress, black gum, water tupelo, green ash and red maple.
- **Depressional Swamp Forest.** Very poorly drained non-riverine forested or occasionally scrub/shrub communities that are semi-permanently or temporarily flooded. Typical species include cypress, black gum, water tupelo, green ash and red maple. These are distinguished from riverine swamp forests in the data by having a hydrogeomorphic (hgm) class of flat (f).
- **Estuarine Forested.** A forested wetland community subject to occasional flooding by tides, including wind tides (whether or not the tidewaters reach these areas through natural or artificial watercourses). Examples include pine-dominated communities with rushes in the understory or fringe swamp communities such as those that occur along the Albemarle and Pamlico Sounds.
- **Estuarine Shrub/Scrub.** Any shrub/scrub dominated community subject to occasional flooding by tides, including wind tides (whether or not the tidewaters reach these areas through natural or artificial watercourses). Typical species include wax myrtle and eastern red cedar.
- **Freshwater Marsh.** Herbaceous areas that are flooded for extended periods during the growing season. Included are marshes within lacustrine systems, managed impoundments, some Carolina Bays, and other non-tidal marshes (i.e., marshes which do not fall into the Salt/Brackish Marsh category). Typical communities include species of sedges, millets, rushes and grasses that are not specified in the coastal wetland regulations. Also included are giant cane, arrowhead, pickerelweed, arrow arum, smartweed, and cattail.
- **Hardwood Flat.** Poorly drained interstream flats not associated with rivers or estuaries. Seasonally saturated by a high water table or poor drainage. Species vary greatly but often include sweet gum and red maple.
- **Human Impacted Area.** Areas of human impact have physically disturbed the wetland, but the area is still a wetland. Impoundments and some cutovers are included in this category, as well as other disturbed areas, such as power lines.

- **Managed Pineland.** Seasonally saturated, managed pine forests (usually loblolly pine) occurring on hydric soils. This wetland category may also contain non-managed pine forests occurring on hydric soils. Generally these are areas that were not shown on National Wetlands Inventory maps. These areas may or may not be jurisdictional wetlands. Since this category is based primarily on soils data and 30 meter resolution satellite imagery, it is less accurate than the other wetland categories. The primary criteria for mapping these areas are hydric soils and a satellite imagery classification of 'pine forest'.
- **Pine Flat.** Palustrine, seasonally saturated pine communities on hydric soils that may become quite dry for part of the year. Generally occur in flat or nearly flat areas that are not associated with a river or stream system. Usually dominated by loblolly pine. This category does not include managed pine systems.
- **Pocosin.** Palustrine scrub/shrub communities (i.e., non-Estuarine Scrub/Shrub) dominated by evergreen shrubs, often mixed with pond or loblolly pines. Typically occur on saturated, acid, nutrient poor, sandy or peaty soils; usually removed from large streams; and subject to periodic burning.
- **Salt/Brackish Marsh.** Any salt marsh or other marsh subject to regular or occasional flooding by tides, including wind tides (whether or not the tidewaters reach the marshland areas through natural or artificial watercourses), as long as this flooding does not include hurricane or tropical storm waters. Coastal wetland plant species include: smooth cordgrass, black needlerush, glasswort, salt grass, sea lavender, salt marsh bulrush, sawgrass, cattail, salt meadow cordgrass, and big cordgrass.

Freshwater swamps and inland, non-tidal wetlands are not in the CAMA permit jurisdiction, unless the Coastal Resources Commission specifically designates them as AECs. However, these wetlands are protected by Section 404 of the Federal Clean Water Act. Section 404 of the Clean Water Act establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including freshwater wetlands. 404 wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

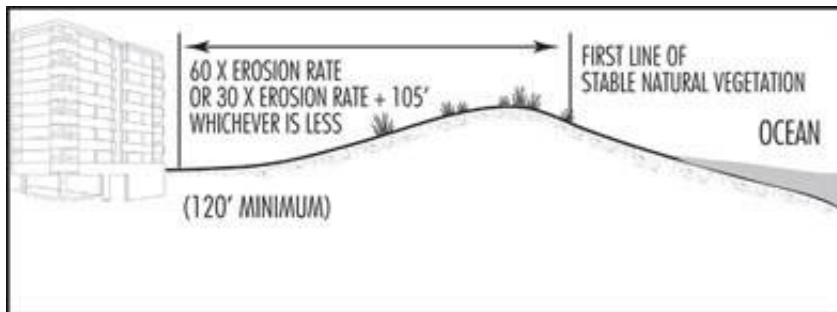
Ocean Beaches/Shorelines and Areas of Excessive Erosion

Ocean beaches and shorelines are lands consisting of unconsolidated soil materials (i.e., sand) that extend from the mean low water line landward to a point where either: (a) the growth of vegetation occurs; or (b) a distinct change in slope or elevation alters the configuration of the land form, whichever is farther landward.

The entire southern boundary of the Town of Oak Island - approximately 9 miles of shoreline - is an ocean beach. This entire area constitutes an Ocean Hazard AEC as defined by CAMA. The Ocean Hazard AEC covers North Carolina's beaches and any other oceanfront lands that are subject to long-term erosion and significant shoreline changes. The seaward boundary of this AEC is the mean low water line.

The landward limit of the AEC is measured from the first line of stable natural vegetation and is determined by adding a distance equal to 60 times the long-term, average annual erosion rate for that stretch of shoreline to the distance of erosion expected during a major storm.

Whereas the NC Coastal Resources Commission (CRC) has determined the average annual erosion rate in the Town of Oak Island to be 2.0 feet per year, the approximate width of the AEC in Oak Island is about 120 feet from the first line of stable, natural vegetation leeward of the shoreline. The specific location of the Ocean Hazard AEC must be determined by a CAMA permitting official.



Ocean Hazard AEC Setback Requirement Schematic Image Source: NCDCM, "CAMA Handbook for Development in Coastal North Carolina," 2002.

The CRC updates long-term erosion rates about every five years, using aerial photographs to examine shoreline changes. General maps of erosion rates are available free from the Division of Coastal Management (<https://deq.nc.gov/about/divisions/coastal-management/coastal-management-oceanfront-shorelines/oceanfront-construction-setback-erosion-rate>); detailed erosion rate maps are available for inspection at all Coastal Management field and local permitting offices.



Oak Island's beach area is defined as an Ocean Hazard AEC by CAMA. Image Source: HCP, Inc.

Why Should We Protect Ocean Beaches and Shorelines?

At the edge of the ocean, ocean hazard AECs get the full force of any storm. Waves, wind, and water can quickly change the shape of a shoreline, creating or filling inlets, flattening nearby dunes, eroding beaches and battering nearby structures. No oceanfront development can be absolutely safe from destructive natural forces, but development in ocean hazard areas can be carefully designed and located to minimize the risk to life and property, as well as to reduce the cost of relief aid.

Oceanfront beaches and dunes help protect buildings and environments behind them by absorbing the force of wind and waves, while the dense root networks of dune plants trap and anchor sand. Left uncontrolled, development can destroy these dunes and their vegetation, increasing the risk of damage to structures from erosion, flooding, and waves.

The Town is actively committed to preserving and protecting the dunes.

Protected Lands and Natural Heritage Natural Areas

Protected Lands are areas dedicated to conservation and open space uses that are protected from development by regulation or by ownership by governments or non-profit organizations. The North Carolina Division of Coastal Management has identified these areas through the assistance of the NC Center for Geographic Information and Analysis (NCGIA). Four of these areas were identified by the state and are shown on Map 10. The largest protected area – the Elizabeth River Conservation Area located just west on the NC 133 bridge – is owned and managed by the state of North Carolina. It should be noted that other facilities, such as the CAMA Public Access locations and town parks may also constitute protected lands.

Table 3-8. Protected Lands

Conservation Area	Owner	Management	Public Access	Acres	% of Planning Jurisdiction
Davis Creek Conservation Area	State of NC	NC Dept of Administration	Yes	204.04	1.4%
Piney Creek Conservation Area	NC Coastal Land Trust	NC Coastal Land Trust	No	24.33	0.17%
Lockwoods Folly Conservation Area	Oak Island	Oak Island	Yes	36.09	0.25%
Elizabeth River Conservation Area	State of NC	NC Dept of Administration	Yes	240.91	1.68%
Total				505.37	3.53%

Source: NC Department of Environment and Natural Resources.

Natural Heritage Natural Areas (NHNA) are areas containing ecologically significant natural communities or rare species. The North Carolina Natural Heritage Program of the NC Department of Environmental Quality identifies and helps facilitate the protection of these areas. More than 45% of the town's planning jurisdiction is occupied by a NHNA, the largest of which is the Boiling Spring Lakes Wetland Complex. A considerable part of the ETJ, the Williamson and the Pine Forest Tracts, are comprised of the southern portion of this NHNA. The wetland complex is rated by the Natural Heritage Program as "Exceptional" (the highest rating) for its biodiversity and rarity of species and the condition of the globally imperiled species on the site. According to the 1995, Inventory of the Natural Areas and Rare Species of Brunswick County, the site contains an outstanding assemblage of natural community types and supports a federally and State Endangered animal species, the red-cockaded woodpecker, six federally designated rare plant species, and provides habitat for nine plant species designated as rare by the NC Natural Heritage Program. The longleaf pine ecosystem on the site and the wildlife that depend upon it has been reduced to five percent of the

historic range. According to the NC Wildlife Resources Commission, the site appears to be one of the best examples of part of this ecosystem in the world. The site contains many Carolina bays and relict dune ridges. Rare species and natural communities (habitats) documented onsite by the NC Natural Heritage Program are in Appendix A. See Map 10: Natural Heritage Natural Areas & Outstanding Resource Waters for more information.




Table 3-9. Natural Heritage Natural Areas

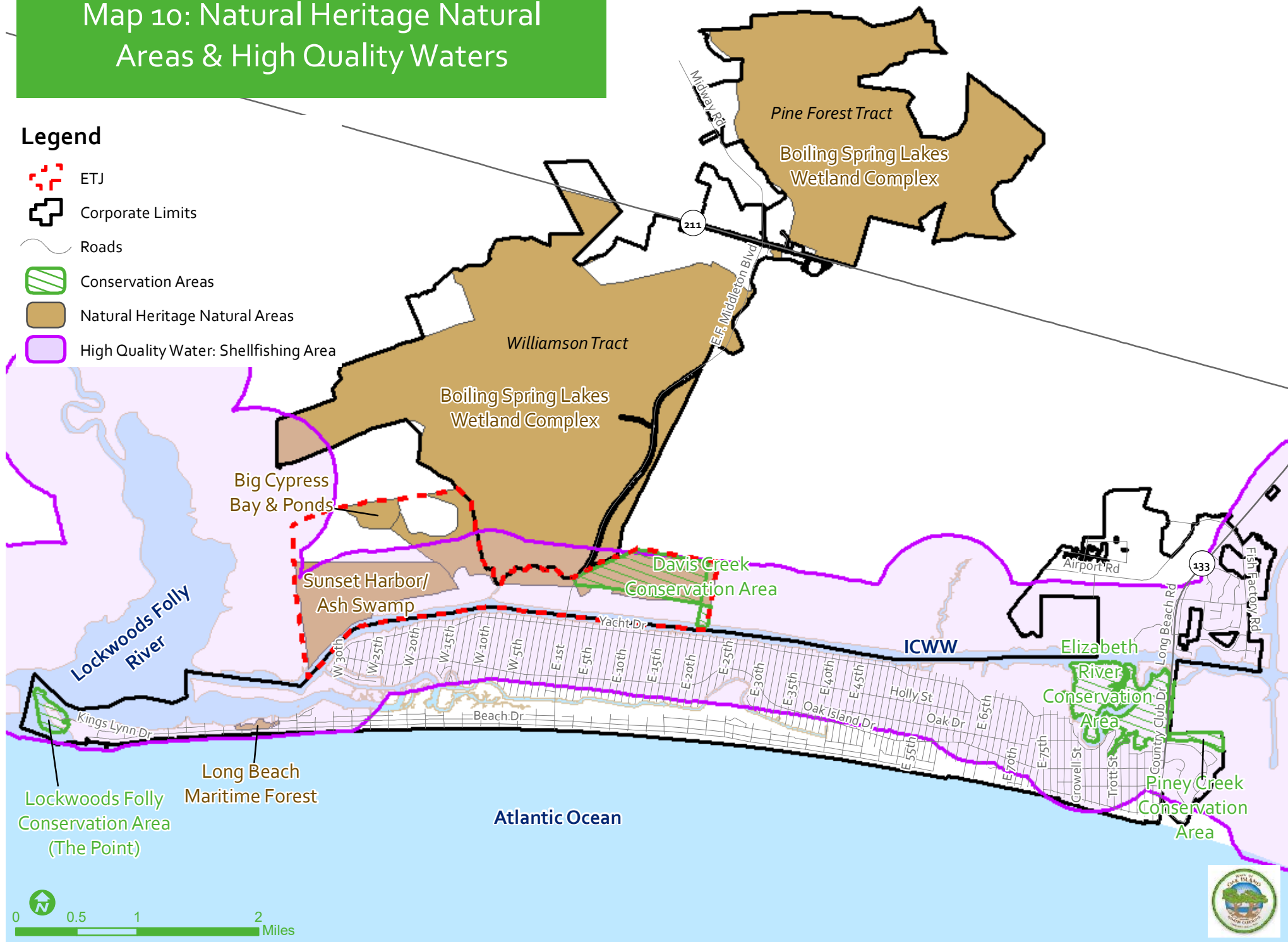
Natural Heritage Natural Area	Acres	% of Planning Jurisdiction
Big Cypress Bay and Ponds	51.31	0.4%
Boiling Spring Lakes Wetland Complex	6,119.54	42.76%
Long Beach Maritime Forest	10.79	0.08%
Sunset Harbor/Ash Swamp	365.89	2.56%
Total	6,547.53	45.75%

Source: NC Natural Heritage Program.

Map 10: Natural Heritage Natural Areas & High Quality Waters

Legend

-  ETJ
-  Corporate Limits
-  Roads
-  Conservation Areas
-  Natural Heritage Natural Areas
-  High Quality Water: Shellfishing Area



EXISTING LAND USE

Introduction

The following discussion includes the existing land use analysis for Oak Island's planning jurisdiction. Simply put, the existing land use analysis details what is "on the ground" today. This categorization differs from zoning, which specifies which land uses are permitted to be built currently or in the future. Existing land use conditions are classified by building types/uses and include seven categories: commercial, office and institutional, mixed use, multi-family residential, single-family residential, recreational, and vacant/unimproved. In addition, different land use types yield higher per acre values based upon land utilization, location, and proximity to services. Discussion of appraised value per acre by land use classification is also provided.

Existing Land Use Conditions

Of the developed land in Oak Island, the primary use is for residential purposes. Much of the land that exists on the island proper has been subdivided for single-family housing units and has subsequently been developed as such. Four primary commercial areas exist within Oak Island's planning jurisdiction: the East 58th Street area, Old Yaupon Beach area, the NC 133 entry corridor, and the NC 211 and Midway Road area. Limited smaller commercial and non-residential developments are dispersed throughout the planning jurisdiction.

A detailed existing land use survey was conducted involving several available data resources. A comprehensive analysis involving Brunswick County tax parcel data, aerial photography, and field observations resulted in the development of a parcel-by-parcel account of existing conditions throughout the Oak Island planning jurisdiction. Each piece of property was classified by the current use classification as follows:

1. Commercial (retail, service, and shopping establishments)
2. Office and Institutional (government offices, medical facilities, airport, churches, and offices)
3. Mixed Use (retail and residential uses occupying the same structure)
4. Multi-Family Residential (two or more units within the same structure)
5. Single-Family Residential (single-family residential development)
6. Recreational
7. Vacant/Unimproved



Single-family residential land use accounts for more than 80% of the developed land in Oak Island. *Image Source: HCP, Inc.*

Oak Island's existing land use is depicted on Map 11 and the acreage percentages are provided in Table 3-10. Vacant/unimproved lands account for the largest percentage of acreage in Oak Island's planning jurisdiction, accounting for more than 70% of the total acreage. However, this acreage consists primarily of the two mainland parcel tracts annexed in 2009, one of which is currently slated for development. Oak Island's Extra-Territorial Jurisdiction (ETJ) also consists of unimproved and vacant lands. The major Office & Institutional (O&I) use is the Cape Fear Regional Jetport on NC 133. Other O&I uses include churches, offices, and town buildings.

There is very little multi-family residential development within the town, particularly when compared with the large amount of single-family residential development. Multi-family residential development accounts for 2.5% of the developed land, whereas single-family residential uses account for nearly 80% of the developed land.


Table 3-10. Existing Land Use Acreage: Categorized by Jurisdiction

Land Use Category	Corporate Limits (Island)	Corporate Limits (Mainland)	ETJ (Mainland)	Planning Jurisdiction	% of Total
Commercial	55.78	33.41	0.00	89.19	0.62%
Office and Institutional	27.44	262.55	0.00	289.99	2.03%
Multi-Family Residential	32.96	27.24	0.00	60.20	0.42%
Single-Family Residential	1,748.37	155.98	0.00	1,904.35	13.31%
Mixed Use	1.09	0.70	0.00	1.79	0.01%
Recreational	15.83	24.41	0.00	40.24	0.28%
Vacant / Unimproved	1,749.96	6,892.07	1,426.30	10,068.33	70.35%
Water	689.51	56.94	120.61	867.06	6.06%
Right-of-way	861.88	108.09	20.77	990.74	6.92%
Total	5,182.82	7,561.39	1,567.68	14,311.89	100.00%








Source: HCP, Inc.

Map 11: Existing Land Use

Legend

-  ETJ
 Corporate Limits
 Roads

Existing Land Use

-  Commercial
-  Mixed Use
-  Office & Institutional
-  Multi-Family Residential
-  Single-Family Residential
-  Recreation
-  Vacant / Unimproved

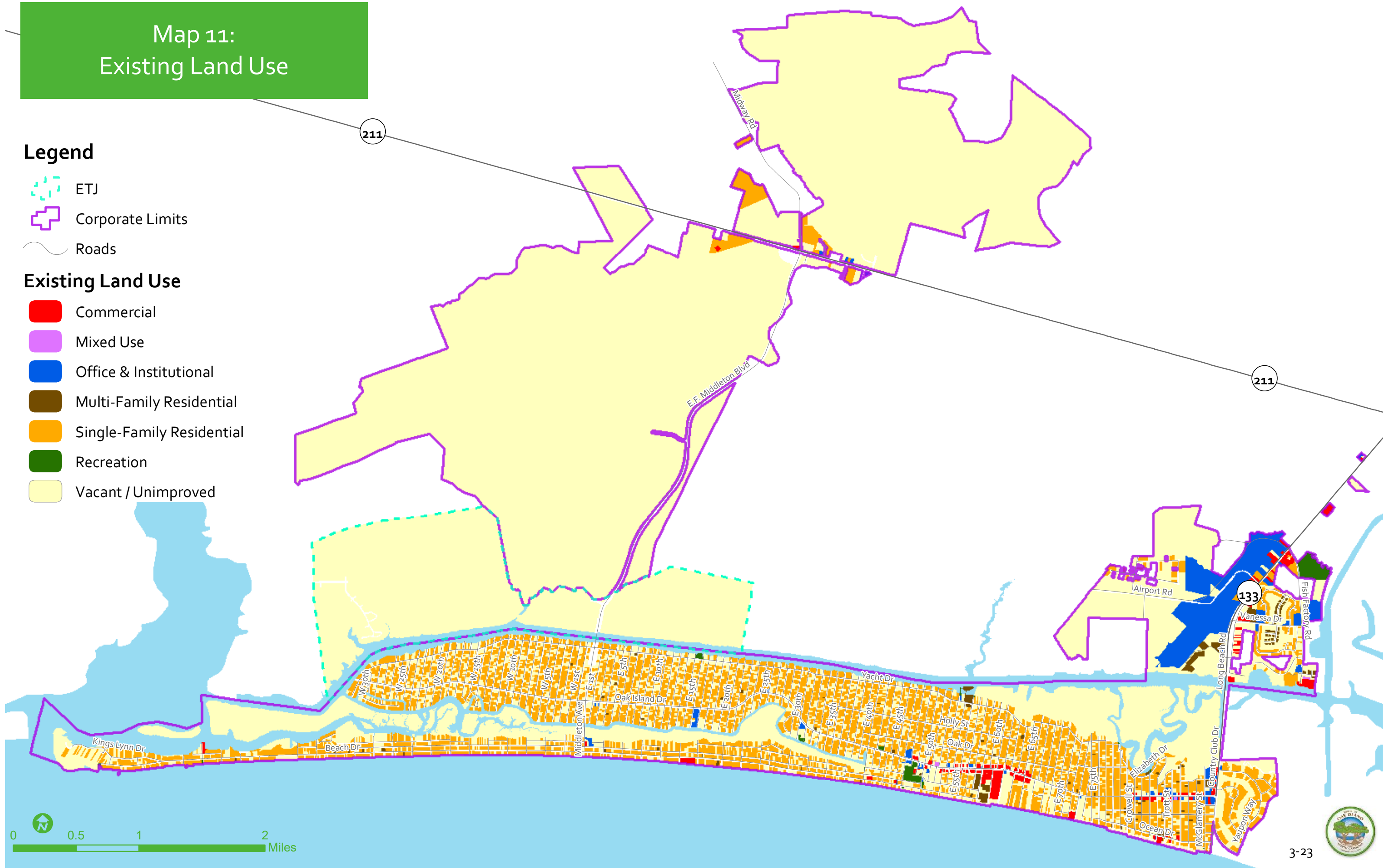
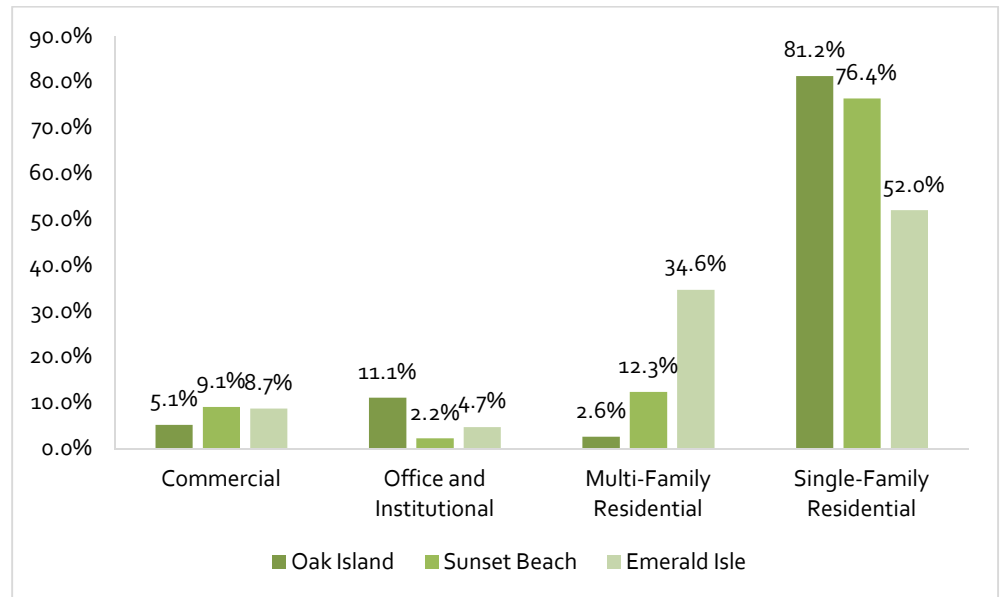


Figure 3-2: Existing Development Percentage by Land Use









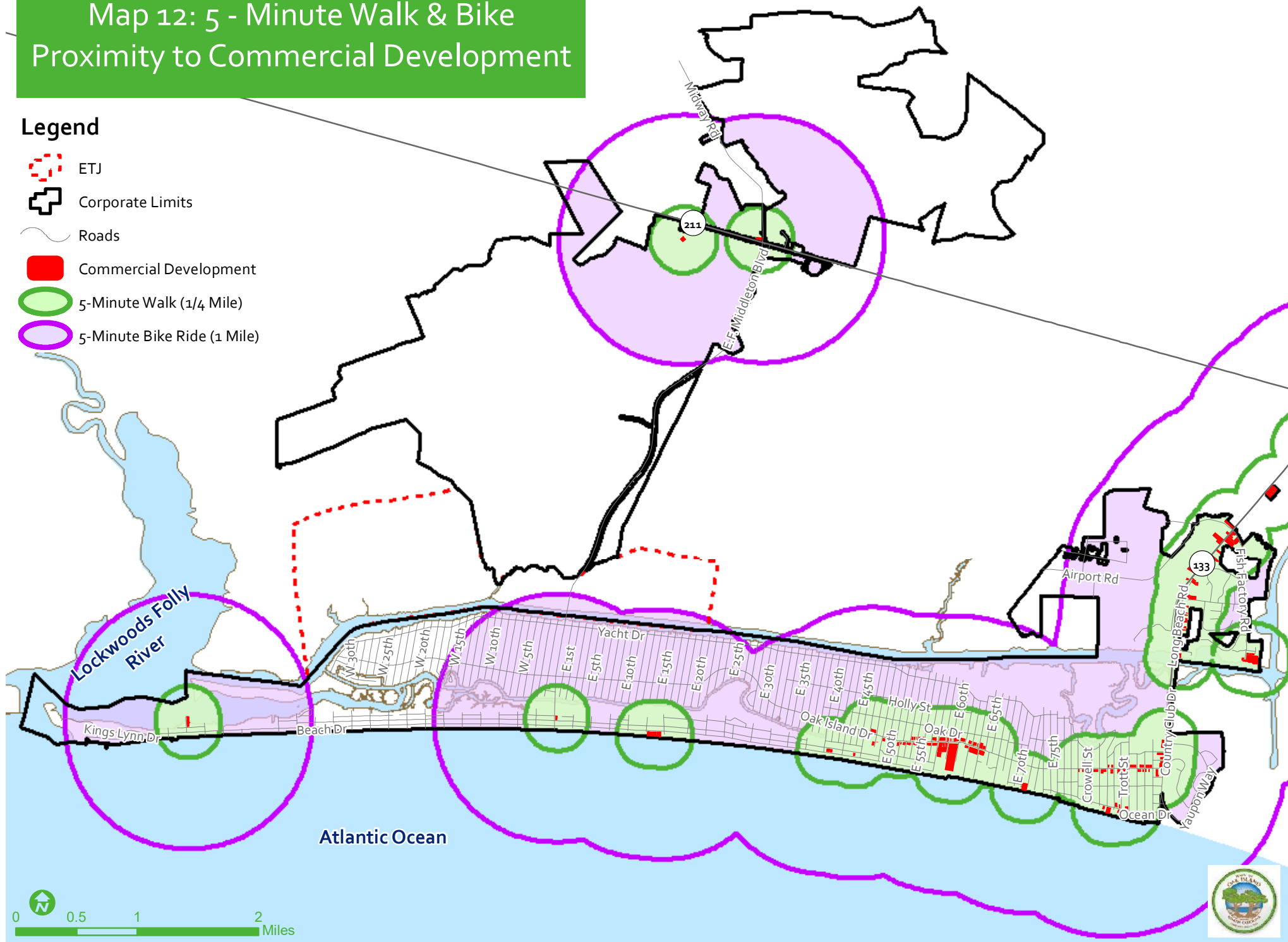
Source: HCP, Inc.

Compared with the coastal municipalities of Emerald Isle and Sunset Beach, from a percent of land usage, Oak Island has a much smaller amount of commercial and multi-family residential development. However, as stated prior, there is a long history of a preference for single-family development in Oak Island, and in Long Beach and Yaupon Beach before the towns were consolidated. The larger allocation of Office and Institutional land use in Oak Island is attributed to the Cape Fear Regional Jetport. Additionally, commercial establishments only account for 5% of the total developed acreage in Oak Island. In fact, only 34% of all residential housing units are within a five-minute walk of a commercial establishment, thus encouraging greater vehicle use on the island. However, just over 90% of residential units are located within a five-minute bicycle trip (1 mile radius) of a commercial establishment. See Map 12: Five-Minute Walk and Bicycle Proximity to Commercial Development for more information.

Map 12: 5 - Minute Walk & Bike Proximity to Commercial Development

Legend

-  ETJ
-  Corporate Limits
-  Roads
-  Commercial Development
-  5-Minute Walk (1/4 Mile)
-  5-Minute Bike Ride (1 Mile)



To better understand land use types and structures, images are provided on the following pages depicting each land use type.

Commercial



Mixed Use



Section 3. Existing Conditions

Office & Institutional



Multi-Family Residential (Average Density: 11.5 dwelling units per acre)



Single-Family Residential (Average density: 4.25 dwelling units per acre)



Recreational



Island Build-Out

Based on the figures below, between 70-75% of the parcels on the island have been built upon. Of the 3,367 total undeveloped/vacant parcels, only 2,789 are not impacted by wetlands. In addition, more than 800 acres of the undeveloped land located on the island is impacted by wetlands. Approximately 935 acres of the undeveloped/vacant land is considered most suitable for future development.

Table 3-11. Developed and Undeveloped Land: Island Portion of Corporate Limits

Status	Parcel Count	% of Total	Acres	% of Total
Developed	8,109	70.66%	1,881.47	51.81%
Undeveloped/Vacant	3,367	29.34%	1,749.96	48.19%
Total	11,476	100.00%	3,631.43	100.00%
Undeveloped/Vacant Not Impacted by Wetlands*	2,789	24.30%	935.57	25.76%

**These are parcels not impacted by coastal wetlands and/or conservation easements. These properties are most suitable for development due to limited environmental constraints.*

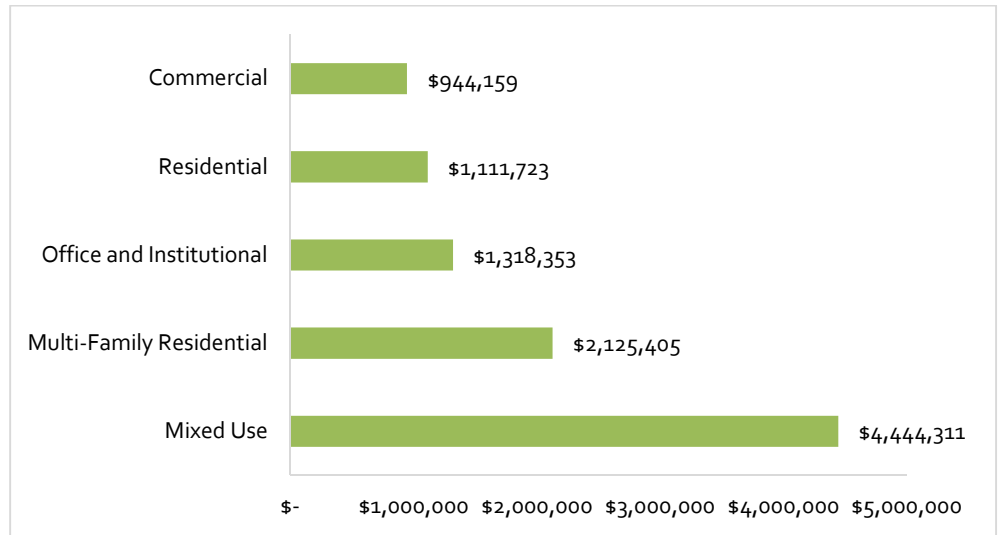
NOTE: The figures above do not include right-of-way or hydrology.

Source: Brunswick County Tax Records & GIS.

Appraised Value Per Acre

Understanding the financial impacts of particular types of development can help a community become more fiscally sound. Specifically, it is important to understand the value of all land use classes from a proportional standpoint. Calculating the per acre appraised value of each different land use reveals development types that may be most beneficial to the town from a revenue perspective. Of the existing developed land use categories, the mixed use category yields the greatest average appraised value per acre. In fact, on average, mixed use development is more than double the average appraised value of multi-family residential development. However, these development types yield higher tax revenues per acre primarily due to their increased density (number of units per acre).

Figure 3-3: Average Appraised Value Per Acre (2015)



Source: Brunswick County Tax Assessor; HCP, Inc.

Based on community input, the areas of concern relating to the existing land use and development pattern for the town include the following:

- Walkability of commercial oriented areas
- Appearance of NC 133/Long Beach Road entry corridor
- The lack of diversity and prevalence of non-residential development encourages automobile dependence
- Connectivity between residential housing units and commercial areas
- Low appraised value of commercial development
- Limited east-west travel routes
- Retain small town atmosphere
- Improve overall town appearance

TRANSPORTATION

A major component of any comprehensive plan is an assessment of the existing transportation system. In Oak Island, this system includes automobiles, bicycle, pedestrian, and air travel. These systems must be evaluated based on their ability to serve the community's existing and future needs.

The existing transportation system is assessed in the Brunswick County Comprehensive Transportation Plan (CTP). The plan was adopted by Oak Island in January of 2008. It provides a long-range multi-modal transportation plan that addresses travel needs through the year 2035. Unfortunately, the plan does not include an assessment of recommendations for pedestrian travel. This Comprehensive Plan will leverage the transportation system assessment and the recommendations made in the Transportation Plan in an effort to provide a sound foundation for land use policy decisions that will transpire as recommended improvements are accomplished. Recommended improvements and future concerns are addressed in Section 4 of the comprehensive plan.

Roadway & Vehicular Travel

Vehicular access to Oak Island is provided through NC 133, NC 211, and Middleton Boulevard via Swain's Cut Bridge. Prior to 2012, residents and visitors only had one access point to the island, which was the NC 133/Long Beach Road bridge. NC 211 and Middleton Boulevard provide access to the mainland acreage of Oak Island's planning jurisdiction, whereas Oak Island Drive serves as the primary roadway for east to west travel on the island proper.

According to 2013 NCDOT Annual Average Daily Traffic (AADT) counts, the highest volume of vehicular travel in the town occurs on the eastern portion of the island on Country Club Drive and East Oak Island Drive. It should be noted that seasonal traffic counts are not currently available for the town. Efforts should be made to partner with NCDOT to capture seasonal counts during the summer months. These counts would provide a greater understanding of peak traffic volume needs. Summer traffic survey data is also needed for the Middleton Boulevard corridor as no NCDOT traffic data is currently available. This data is necessary in order to update disaster emergency evacuation plans (e.g., nuclear plant event); help design the NC 211-Middleton Boulevard interchange; and obtain summer (seasonal) traffic data to more accurately calculate Day Visitor contribution to Peak Day population estimates.

See Map 13: Existing Roadway Conditions & 2013 Annual Average Daily Traffic (AADT).



Swain's Cut Bridge Image Source: Margaret Rudd & Associates, Inc.

Map 13: Existing Roadway Conditions & 2013 Annual Average Daily Traffic (AADT)

Legend



Corporate Limits



ETJ



Local Roads

NCDOT Boulevards



Needs Improvement



Existing

NCDOT Major Thoroughfares



Needs Improvement

NCDOT Minor Thoroughfare



Minor Thoroughfare Existing

AADT (2013)



400 - 2100



2101 - 5000



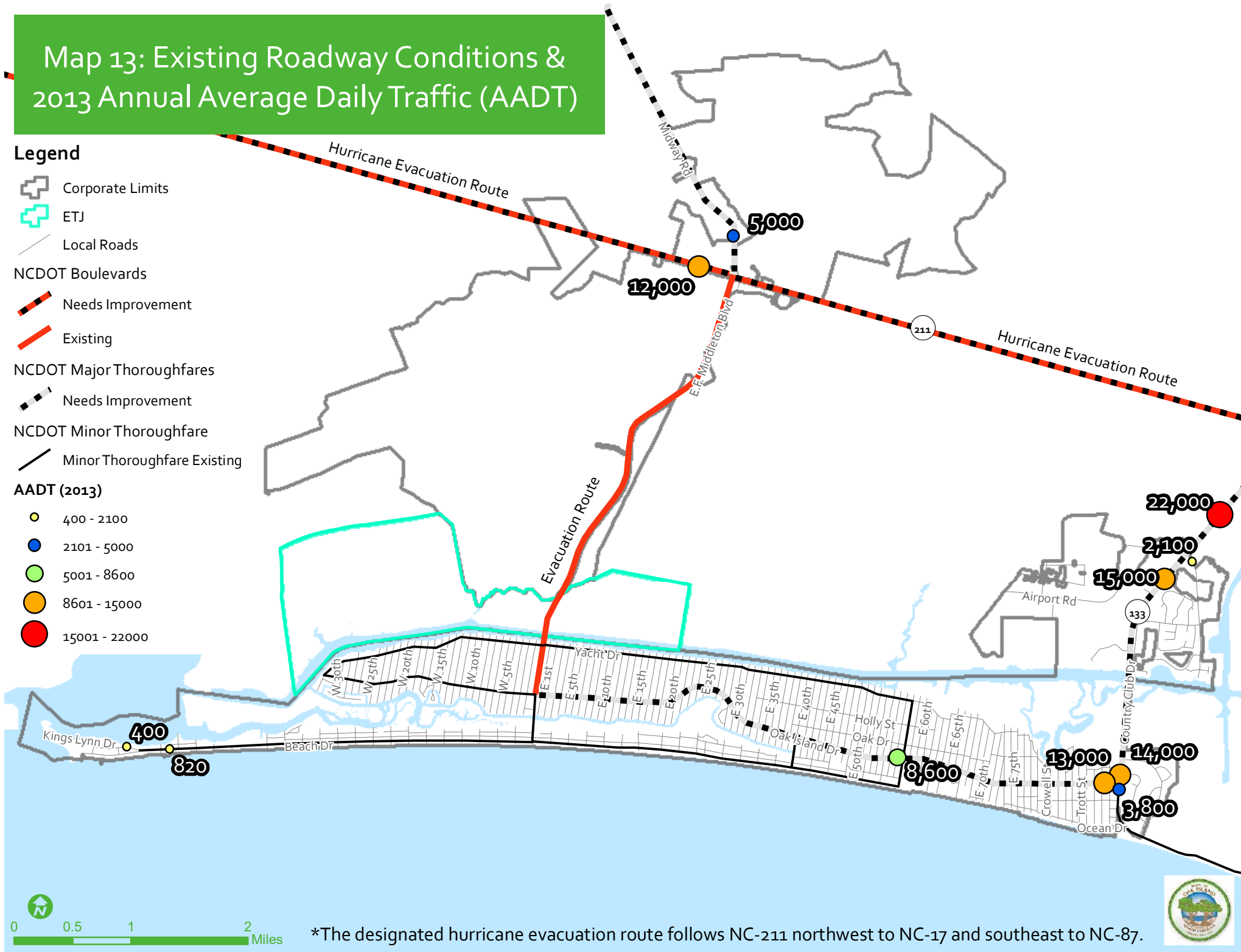
5001 - 8600



8601 - 15000



15001 - 22000



*The designated hurricane evacuation route follows NC-211 northwest to NC-17 and southeast to NC-87.



Roadways that are owned and maintained by NCDOT are given classifications as shown on Map 13. Roads not given a classification are owned and maintained by the town. There are approximately 108 miles of local streets and roadways maintained by the town. NCDOT's description of the roadways in Oak Island is provided below:

Boulevards

- Functional purpose – moderate mobility, moderate access, moderate volume, medium speed
- Posted speed – 30 to 55 mph
- Cross section – two or more lanes with median (median breaks allowed for U-turns per current NCDOT Driveway Manual)
- Multi-modal elements – bus stops, bike lanes (urban) or wide paved shoulders (rural), sidewalks (urban – local government option)
- Type of access control – limited control of access, partial control of access, or no control of access
- Access management – two-lane facilities may have medians with crossovers, medians with turning pockets or turning lanes; use of acceleration/deceleration or right turning lanes is optional; for abutting properties, use of shared driveways, internal out-parcel access and cross-connectivity between adjacent properties is strongly encouraged
- Intersecting facilities – at-grade intersections and driveways; interchanges at special locations with high volumes
- Driveways – primarily right-in/right-out, some right-in/right-out combination with median leftovers; major driveways may be full movement when access is not possible using an alternate roadway



NC 211 is classified as a boulevard in need of improvement. *Image Source: HCP, Inc.*

Other Major Thoroughfares

- Functional purpose – balanced mobility and access, moderate volume, low to medium speed
- Posted speed – 25 to 55 mph
- Cross section – four or more lanes without median (US and NC routes may have fewer than four lanes)
- Multi-modal elements Dale – bus stops, bike lanes/wide outer lane (urban) or wide paved shoulder (rural), sidewalks (urban)
- Type of access control – no control of access
- Access management – continuous left turn lanes; for abutting properties, use of shared driveways, internal out-parcel access and cross-connectivity between adjacent properties is strongly encouraged
- Intersecting facilities – intersections and driveways
- Driveways – full movement on two-lane roadway with center turn lane as permitted by the current NCDOT Driveway Manual



East Oak Island Drive is classified as a NCDOT major thoroughfare. *Image Source: HCP, Inc.*

Minor Thoroughfares

- Functional purpose – balanced mobility and access, moderate volume, low to medium speed
- Posted speed – 25 to 55 mph
- Cross section – ultimately three lanes (no more than one lane per direction) or less without median
- Multi-modal elements – bus stops, bike lanes/wide outer lane (urban) or wide paved shoulder (rural), and sidewalks (urban)
- ROW – no control of access
- Access management – continuous left turn lanes; for abutting properties, use of shared driveways, internal out-parcel access and cross-connectivity between adjacent properties is strongly encouraged
- Intersecting facilities – intersections and driveways
- Driveways – full movement on two lane with center turn lane as permitted by the current NCDOT Driveway Manual



The intersection of East Oak Island Drive and NC 133/Country Club Drive is currently operating over capacity according to the 2010 CTP. Image Source: HCP, Inc.

As part of the 2010 Brunswick County Comprehensive Transportation Plan, roadways were analyzed for existing capacity deficiencies. Capacity is the maximum number of vehicles which have a “reasonable expectation” of passing over a given section of roadway, during a given time period under prevailing roadway and traffic conditions. Many factors contribute to the capacity of a roadway including the following:

- Geometry of the road (including number of lanes), horizontal and vertical alignment, and proximity of perceived obstructions to safe travel along the road;
- Typical users of the road, such as commuters, recreational travelers, and truck traffic;
- Access control, including streets and driveways, or lack thereof, along the roadway;
- Development along the road, including residential, commercial, agricultural, and industrial developments;
- Number of traffic signals along the route;
- Peaking characteristics of the traffic on the road;
- Characteristics of side-roads feeding into the road; and
- Directional split of traffic or the percentages of vehicles traveling in each direction along a road at any given time.

Capacity deficiencies occur when the traffic volume of a roadway exceeds the roadway’s capacity. Roadways are considered near capacity when the traffic volume is at least eighty percent of the capacity. Capacity deficiencies are displayed on Map 14: Existing Roadway Capacity Deficiencies. Recommended improvements for these roadways are contained in Section 4 of the Comprehensive Plan.

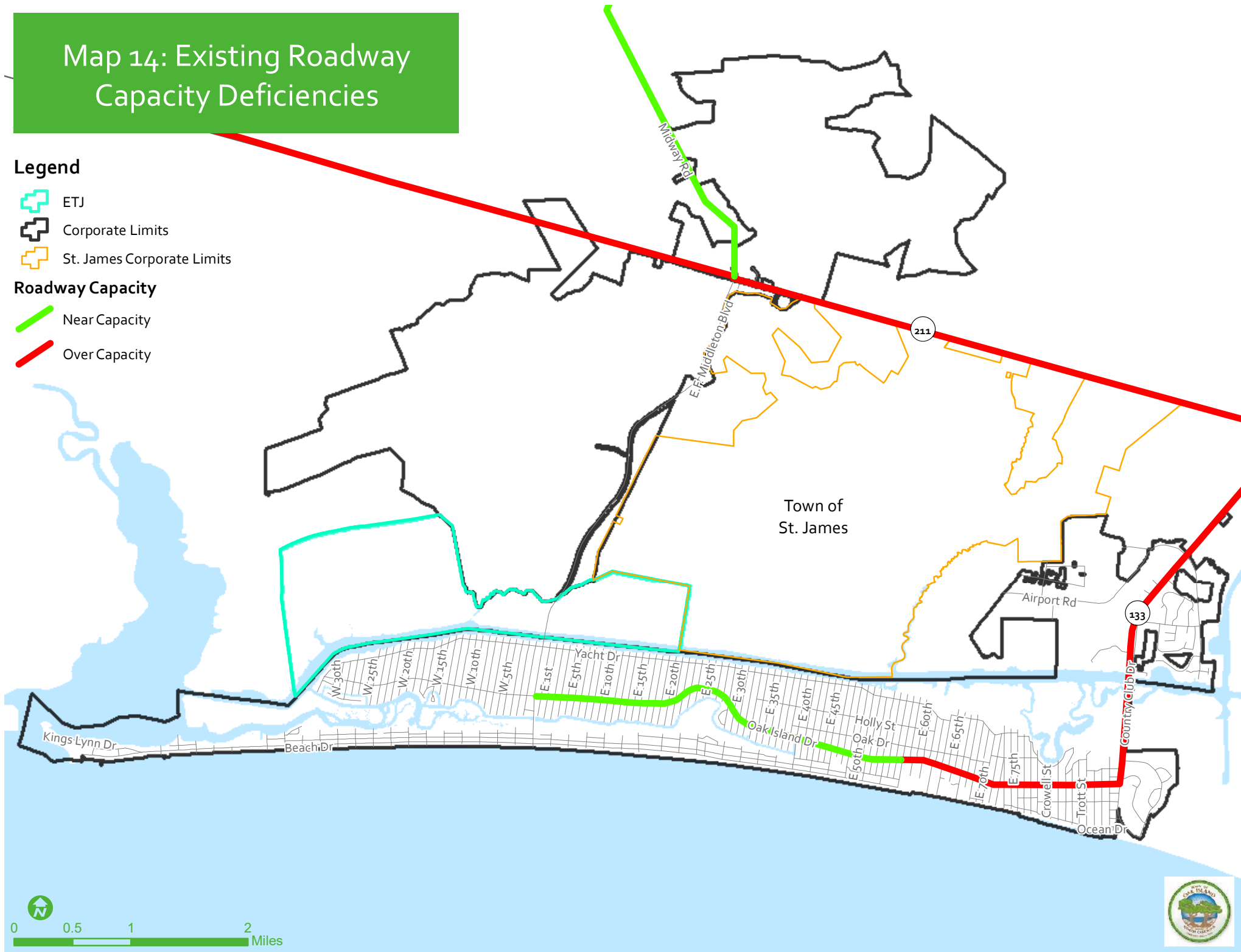
Map 14: Existing Roadway Capacity Deficiencies

Legend

- ETJ
- Corporate Limits
- St. James Corporate Limits

Roadway Capacity

- Near Capacity
- Over Capacity



Public Transportation

There are no existing or planned fixed public transportation routes for Brunswick County or within Oak Island's planning jurisdiction. Brunswick Transit System, Inc. (BTS) is a nonprofit community transportation system that coordinates general public and human service transportation services for the residents of Brunswick County. The transit system operates a fleet of 16 vehicles, including ADA-equipped vehicles to assist persons with special needs. BTS serves all of Brunswick County, with out-of-county services into New Hanover County. All trips are provided by reservation.

Bicycle and Pedestrian Travel

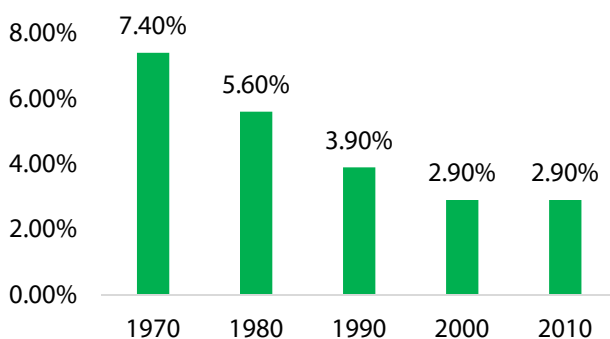


Bicyclists in Oak Island. Image Source: HCP, Inc.

In the last hundred years, travel modes have shifted dramatically. Unfortunately over the last forty years, less emphasis has been placed on non-motorized forms of movement, often to the detriment of cyclists and pedestrians. Walking trips have experienced a dramatic decline in recent decades. From 1970 to 2010, the U.S. experienced more than a 50% decrease in the number of individuals walking to work. During that same time, obesity rates for children and adolescents has nearly tripled².

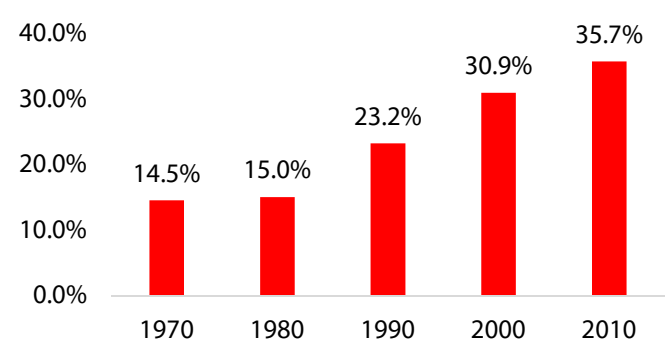
In fact, it was not until 1998 that the Federal Highway Administration authored a guidance manual addressing the design of bicycle and pedestrian facilities³. More recently, walking and cycling have begun to emerge again as more popular options for both travel and health. Meeting the recommended daily exercise guidelines can be easily accomplished by such trips. Throughout the state, citizens increasingly desire to travel by foot or wheel for utilitarian and recreation purposes, particularly in communities such as Oak Island where a large retirement age population exists.

Figure 3-4: US Means of Transportation to Work -Walking



Source: NHHTS.

Figure 3-5: US Adult Obesity Rates



Source: CDC.

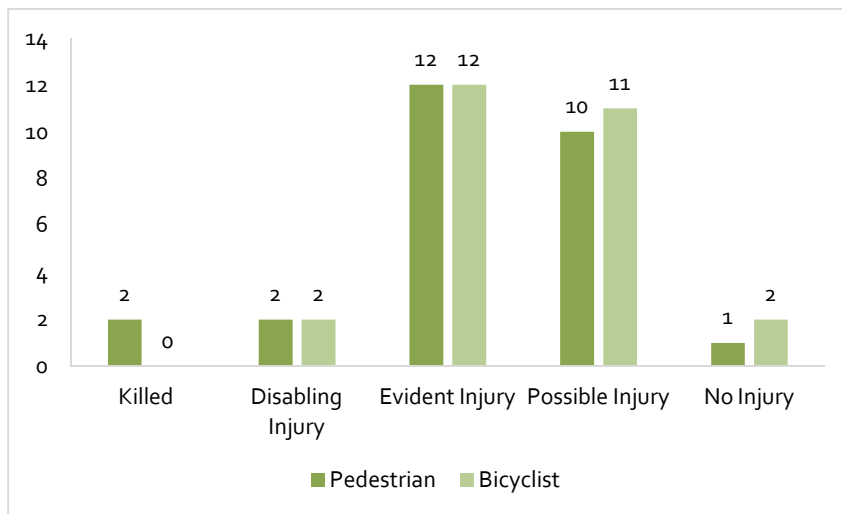
²High Body Mass Index for Age among US Children and Adolescents, 2003 - 2006. Ogden, C, Carroll, M and Flegal, K. 2008, Journal of the American Medical Association, pp. 2401 - 2405.

³FHWA. Improving Conditions for Bicyclists and Pedestrians. Washington, D.C.: s.n., 1998.

Because Oak Island is a beach vacation destination there is an increased demand for bicycle and pedestrian travel. Destinations such as the beach, ICWW, parks, and commercial areas all attract bicyclists and pedestrians. In 2006, a Bicycle Transportation Plan was completed for Oak Island. The plan outlines a number of improvements and concerns related to bicycle travel. There is currently no pedestrian transportation plan for the town, though planning grants are available through the NCDOT Division of Bicycle and Pedestrian Transportation to complete such a plan.

From 2002 to 2012, there were 55 reported bicyclist and pedestrian crashes. Of the 55 crashes, nearly 95% resulted in injury. This finding is consistent with concerns raised by the Police Department regarding bicycle and pedestrian travel.

Figure 3-6: Bicyclist and Pedestrian Crashes by Injury: 2002-2012



Source: NC Department of Transportation.

There are approximately 9.11 miles of sidewalks/boardwalks available to Oak Island residents and visitors. See Map 15: Pedestrian and Bicycle Facilities. The primary sidewalk route runs east to west adjacent to Oak Island Drive. This sidewalk facility is well used year-round and experiences a high number of both bicyclists and pedestrians in the summer months. However, the current width of the sidewalk is not conducive to use by both bicyclists and pedestrians and should be widened in accordance with the recommendations outlined in the 2006 Bicycle Transportation Plan.

On-road bicycle facilities currently exist on Beach Drive in the form of bicycle lanes. There are approximately 7.08 miles of lanes available to cyclists on Beach Drive. Concerns relating to maintenance and debris removal were identified in the 2006 Bicycle Transportation Plan.



Existing Oak Island Drive sidewalk provides excellent east to west access for pedestrians, but should be widened to a minimum of 8' to account for joint use by cyclists. Image Source: HCP, Inc.



Debris, sand, and landscape material is encroaching upon cyclists traveling along the existing Beach Drive bicycle lane. Image Source: HCP, Inc.

Approximately 45 miles of proposed bicycle improvements are proposed for the town. See Map 15: Pedestrian and Bicycle Facilities. Further discussion relating to bicycle and pedestrian improvements is contained in Section 4 of this plan.

Air Travel

The Cape Fear Regional Jetport provides general aviation service to Brunswick County residents and visitors via more than 5,500 linear feet of runway length. Over the course of a year, more than 72,000 arrivals and departures are conducted at the airport, with approximately 70% of the arrivals visiting Oak Island. The number of operations (arrivals/departures) has steadily increased over the past decade with the trend expected to continue. Multi-million dollar jets are a regular sitting at the facility, which the Department of Homeland Security Transportation Security Authority (TSA) has identified as the busiest General Aviation (GA) airport in the state. According to a 2013 study by the North Carolina State Institute for Transportation Research and Education, the airport provides a \$61.7 million impact to the region.



Cape Fear Regional Jetport Terminal. *Image Source: HCP, Inc.*

Currently, the airport supports 13 businesses with 35 employees and two maintenance shops. Sewer service is provided by SE Sanitary Sewer District. Within the next two years, plans are in place to construct a new terminal and parking lot. Assuming continued economic success and market demand, the airport may pursue construction of a 65 room hotel. The airport strives to provide a welcome and hospitable environment for customers. Ensuring that guests are met with a great impression of the local community is a significant goal of the airport staff. Aesthetically pleasing and welcoming corridors are desired to ensure such an impression for airport users.




The airport does not have a current Noise Impact Analysis (noise footprint). However, the majority of aircraft operations do not create a noise impact beyond the runway ends. Occasional corporate jet aircraft and small military aircraft do create some unmeasured noise impact.



Cape Fear Regional Jetport Runway 5/23. *Image Source: Cape Fear Regional Jetport.*

Map 15: Pedestrian & Bicycle Facilities

Legend

- ETJ
-  Corporate Limits
-  Roads
-  Existing Sidewalk

Bicycle Facilities

On - Road (Bike Lane)

- Existing
Needs Improvement
Recommended

Off - Road (Greenway)

- 
- Recommended



Golf Cart and Low Speed Vehicle Transportation

Travel by golf carts and low speed vehicles are transportation options not typically found in mainland municipalities. These travel modes are often utilized in Oak Island to travel back and forth to the beach. However, certain restrictions are in place which regulate their use. In 2009, the North Carolina General Assembly approved a law to allow all units of local government to regulate golf carts. This law precipitated the creation of the Town's golf cart ordinance, which also addresses the use of low speed vehicles. Within Oak Island, golf carts and low speed vehicles are defined according to the following specifications:

- **Golf Cart:** A vehicle designed and manufactured for operation on a golf course for sporting or recreational purposes and that is not capable of exceeding speeds of 20 miles per hour.
- **Low Speed Vehicle:** A four-wheeled vehicle whose top speed is greater than 20 miles per hour but less than 25 miles per hour.

A Golf Cart Transportation Plan was created for the Town in 2009. The plan was accepted by the Town Council, but not formally adopted due to the unfavorable recommendations contained in the plan. The plan outlined a number of design recommendations for the inclusion of golf carts in the transportation system. However, there are no plans to implement the recommendations and policies contained within the 2009 document.

In October of 2014, an ordinance was adopted to regulate the use of golf carts within the Oak Island corporate limits. According to the ordinance, the use of golf carts, as defined above, is only permitted by persons with a mobility impairment defined in conjunction with the NC legislative specifications for the "handicapped."

Individuals that qualify to operate and use a golf cart may use the vehicle only under certain conditions outlined in the ordinance. In particular, golf carts shall not be operated at speeds greater than 20 miles per hour or alongside a public road or street with a posted speed limit greater than 35 miles per hour and shall not be operated on Oak Island Drive, Beach Drive, or Ocean Drive. Currently, there are 40 registered mobility impairment golf carts in Oak Island.

The North Carolina Division of Motor Vehicles requires low speed vehicles to be registered and to operate according to the following: "Low speed vehicles may be operated only on streets and highways where the posted speed limit is 35 miles per hour or less. It may cross a road or street at an intersection with a posted speed higher than 35 mph. The low-speed vehicle must be equipped with headlamps, stop lamps, turn signal lamps, tail lamps, reflex reflectors, parking brakes, rearview mirrors, windshields, windshield wipers, speedometer, seat belts and a vehicle identification number. It must be insured."

COMMUNITY FACILITIES

Each municipality in the state of North Carolina offers a varying degree of community facilities and services to its residents and visitors (see Map 16). In beach communities, these facilities and services must be able to withstand the influx of seasonal visitors. For the purposes of this plan, a summary of public works, public utilities, parks and recreation, police, fire, and development services is included.

Public Works

The Town of Oak Island Public Works Department performs many important functions for residents and visitors. The following are just a few of the services performed by the Public Works staff: facilities maintenance, fleet maintenance, stormwater systems management, street maintenance, street sign maintenance, yard waste collection, household hazardous waste collection, beach trash collection, and mosquito control.

Departmental areas of concern include stormwater flooding hotspots, yard waste collection, staff shortages, code enforcement issues, bridge access maintenance, and beach cleanup staffing. Stormwater hotspots have been identified at SE 70th Street and SE 15th Street. The clearing of formerly wooded lots has also increased the stormwater issues around the island. Stormwater runoff is an important management issue.

Yard waste collection was also identified as a concern due to the ability of residents to place limitless amounts of debris for collection. At present, there is no restriction on the amount of yard waste that may be collected. According to department staff, this situation creates delays in the pickup schedule. Also, the summer months often create staff shortages due to obligations for mosquito spraying, beach trash collection, and ancillary tasks that are attributed to the increase in seasonal population.

Public Utilities














The Oak Island Public Utilities Department provides wastewater collection and treatment, and water service for all residents. The town initiated the engineering design and installation of a wastewater system in 2005, with completion of the two-phase project in 2012. Prior to the installation of the sewer system, the majority of housing units were served by septic systems. The wastewater system is served by two treatment facilities. The primary reclamation facility is located at 4600 Fish Factory Road, with a satellite reclamation facility located at 5208 East Yacht Drive. Approximately 900 to 1,000 houses remain on the island which are not connected to the system. The town is exercising what options are available to require hookup.



The Public Works Department is responsible for the maintenance of all the Beach Access locations and associated parking within the corporate limits. In Oak Island, there are a total of 67 accesses. Image Source: HCP, Inc.

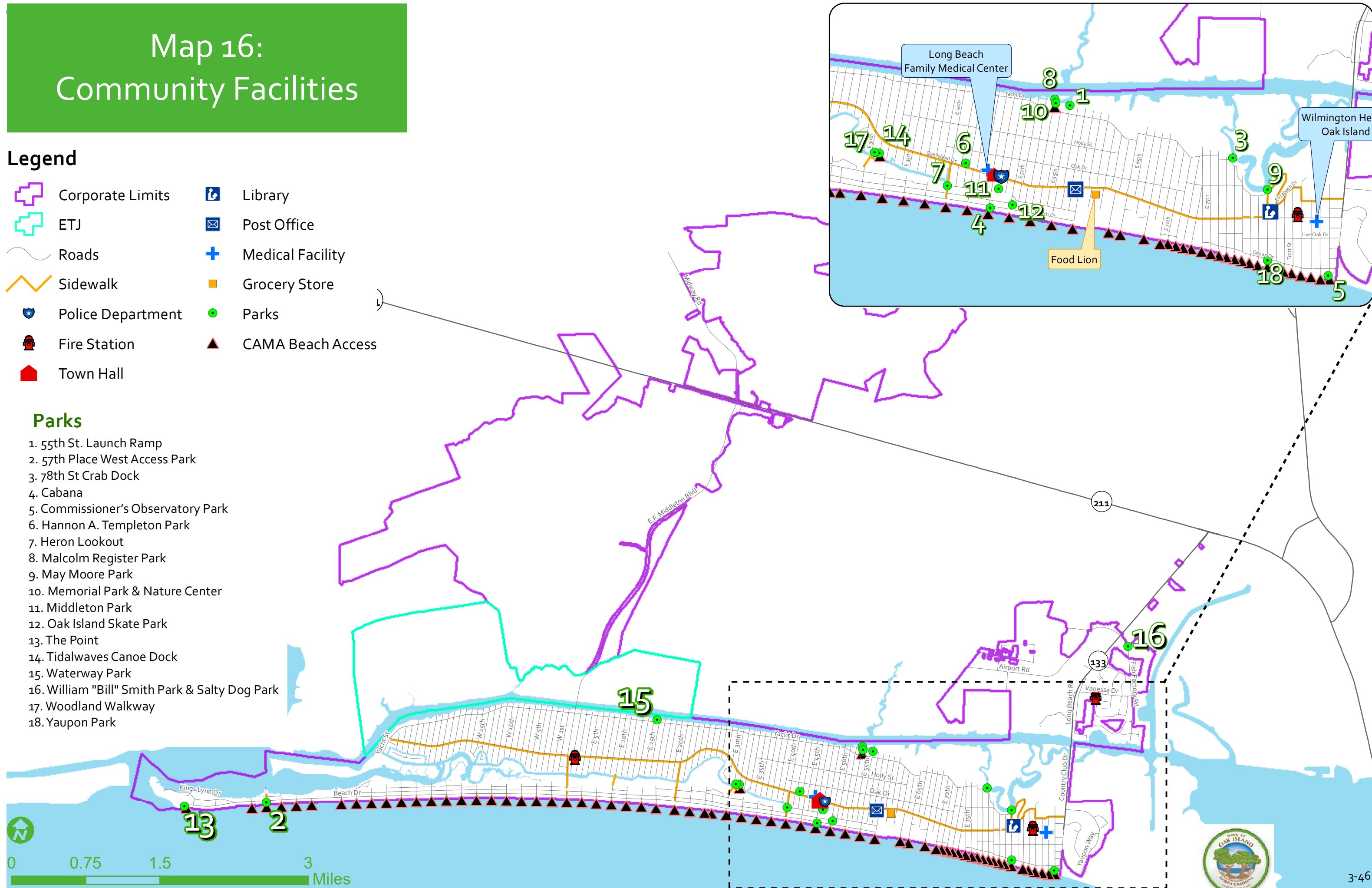
Map 16: Community Facilities

Legend

	Corporate Limits		Library
	ETJ		Post Office
	Roads		Medical Facility
	Sidewalk		Grocery Store
	Police Department		Parks
	Fire Station		CAMA Beach Access
	Town Hall		

Parks

1. 55th St. Launch Ramp
2. 57th Place West Access Park
3. 78th St Crab Dock
4. Cabana
5. Commissioner's Observatory Park
6. Hannon A. Templeton Park
7. Heron Lookout
8. Malcolm Register Park
9. May Moore Park
10. Memorial Park & Nature Center
11. Middleton Park
12. Oak Island Skate Park
13. The Point
14. Tidalwaves Canoe Dock
15. Waterway Park
16. William "Bill" Smith Park & Salty Dog Park
17. Woodland Walkway
18. Yaupon Park



0 0.75 1.5 3 Miles



The town's collection system for the Fish Factory Plant Treatment Facility is located in two sections within the town limits: 79th Street eastward to Oak Island Drive on the golf course, and from 46th Street to 65th Street along East Oak Island Drive (Commercial Corridor). The collection system contains gravity lines from 6" to 15", force mains from 2" to 6" and service lines ranging from 4" and 6" in diameter. There are 16 duplex grinder pump lift stations within this system; each one is equipped with a telemetry alarm system. The Town of Caswell Beach has a connection point located at the intersection of Hwy 133 and Yaupon Way to send wastewater to be treated at the Fish Factory treatment facility.

The remainder of the collection system is primarily the Vacuum System. The Vacuum System consists of 9 vacuum stations, 17 duplex grinder pump stations, 17 dual buffer tanks, 2 single buffer tanks, 3,819 vacuum pits, vacuum mains sizing from 4" to 10" and force mains from 6" to 24" in diameter. The town has a main lift station located at 103 East Oak Island Drive which pumps the collected sewer to the county's West Brunswick Regional Wastewater Plant for treatment and disposal. On July 5, 2015, the wastewater system received its highest total usage so far at 1.7 mgd. There are no known system overflows, bypasses, or other problems that may degrade water quality or constitute a threat to public health as documented by the NC Division of Water Resources.

The town's water source comes from a purchase agreement with Brunswick County. The treatment facility is located on NC Highway 211. The water source is treated ground water from the Castle Hayne Aquifer, which is the most productive in the state. The aquifer is primarily limestone and sand and is noted for its thickness and the ease of water movement within it. According to the 2012 Local Water Supply Plan, there are approximately 120 miles of distribution lines ranging in size from 2" to 14" in diameter. In addition, more than 360 water meters have been added since 2012. The purchase agreement with Brunswick County provides the amount of water necessary for the Town to meet its projected 2040 year-round demand without exceeding 80% of supply.

The Town's back-up source is surface water from Northeast Cape Fear River above Lock and Dam #1 at King's Bluff Pumping Station. In addition, there are two wells for emergency back-up that pump from the Pee Dee Aquifer.

Electric service is provided to Oak Island by the Brunswick Electric Membership Cooperation (BEMC). Cooperatives are voluntary organizations, open to all persons able to use their services and willing to accept the responsibilities of membership. The Brunswick Electric Membership Cooperation has been in operation since 1937.

The department has a five-year capital improvement plan that is reviewed annually by staff. Current departmental needs include a complete automatic meter system and a new water tower for the west end of the island.



Middleton Lift Station located at 103 East Oak Island Drive. Image Source: HCP, Inc.



Oak Island Recreation Center – 3003 East Oak Island Drive. *Image Source: HCP, Inc.*



Middleton Park is among the most utilized facilities in the town. *Image Source: HCP, Inc.*

Parks and Recreation

The town operates a robust Parks and Recreation Department, offering an array of programs, leagues, and activities to residents and visitors. In addition to the programming offered, there is a diverse set of parks and recreation facilities in Oak Island. The parks range from active facilities, such as Middleton Park, to more passive offerings similar to Waterway Park on East Yacht Drive. In all there are approximately 25 facilities available for use. See Map 16: Community Facilities for the location of Oak Island's parks as well as CAMA beach access sites.

The department is in the process of preparing a current Parks and Recreation Master Plan. The results of the plan update will provide recommendations for the department for the next decade or more.

Current needs identified by the parks and recreation staff include the following:

- New Future Park
 - Playground
 - Kayak/Canoe Launch
 - Splash Pad
- Recreation Center Expansion
 - Gymnasium
 - Fitness Center
 - Aerobics Room
 - Office Space
 - Storage
- Greenways/Bike Paths throughout the Town
- Additional Mainland Park Facility
- Beach and Marsh as Public Trust Areas

While Brunswick County is rich in historic sites, there are no historic properties located within the corporate limits of the Town.

Police

The Oak Island Police Department serves an area of approximately 18.52 square miles, including 223 business establishments, and more than 8,000 housing units. The department has a total of 25 full-time paid employees, including 1 Chief of Police, 1 Major/Assistant Chief of Police, 2 Lieutenants, 4 Sergeants, 3 Investigators, 12 Patrol Officers, and 2 Records Specialists. According to the year-end report, there were 10,530 calls for service in 2014, which is an increase of 1.68% from 2013. July was the busiest month of the 2014 year, with a total of 1,218 calls for service. Of the calls for service in 2014, only 305 resulted in arrest, which is an increase of 7.4% from 2013. Brunswick County handles all dispatch for the department.



Oak Island Police Department. *Image Source: HCP, Inc.*

According to the department, many of the staff, training, and vehicle needs are currently met. As part of departmental policy, vehicles are removed from the fleet once they reach 150,000 miles. Other areas of concern include parking enforcement, bicycle and pedestrian safety, and traffic issues. With regard to parking, only 1,200 total public spaces are currently available for residents and visitors. As a result, the number of parking citations issued has steadily increased over the past few years. In fact, from 2013 to 2014, the number of parking citations increased from 146 to 177, or by approximately 21%.

Bicycle and pedestrian safety is an increasing concern for the department. Several locations are in need of dedicated pedestrian signals and high visibility crosswalk markings.

Additionally, parking areas for several business establishments are not properly separated from the roadway from curbs/ access management. Without proper separation from the roadway, potential conflicts emerge with pedestrians, bicyclists, vehicular traffic, and vehicles moving in and out of a parking stall.

Fire and Rescue

The Oak Island Fire and Rescue Department is a combination department that includes dedicated volunteers and career personnel. The department's responsibilities include: fire suppression, technical rescue, water rescue, hazardous material response, response to medical emergencies at the advanced life support level, and response to other public health, safety and welfare conditions that threaten the Oak Island community. The department is also active in fire prevention and public education activities.

In 2014, Oak Island responded to 1,273 emergency requests with an average response time of 6 minutes and 2 seconds. In 2015, the average response time improved to 4.95 minutes. The Department operates three stations within the corporate limits (see Map 16: Community Facilities).

Station 1: Located 101 E. Oak Island Dr.

- 1 Fire Engine (Paramedic Level)
- 1 85' Platform Tower Ladder
- 1 Heavy Rescue Engine
- 1 Ambulance
- Staffed with 1 Captain plus 2 Firefighters 24 hours a day



The intersection of 58th Street and East Oak Island Drive does not provide adequate crossing facilities for bicyclists or pedestrians. *Image Source: HCP, Inc.*



Business establishments along East Oak Island Drive without vertical separation from the roadway. Several areas were identified by the Police Department as traffic concerns. *Image Source: HCP, Inc.*



Oak Island Fire-EMS Station 1. *Image Source: Town of Oak Island.*



Oak Island Fire-EMS Station 2.
Image Source: HCP, Inc.

Station 2: Located 8510 E. Oak Island Dr.

- 1 Fire Engine
- Staffed with 1 Fire Chief, 1 Assistant Fire Chief, 1 Fire Marshal, and 1 Full-Time Administrative Support Specialist from 8:00 am to 4:30 pm Monday through Friday



Oak Island Fire-EMS Station 3.
Image Source: HCP, Inc.

Station 3: Located 4151 Vanessa Dr.

- 1 Fire Engine (Paramedic Level)
- 1 95' Platform Tower Ladder
- 1 Brunswick County EMS Paramedic Ambulance 24 hours a day (2 BCEMS Staff)
- Staffed with 1 Lieutenant plus 2 firefighters 24 hours a day

In the future, the Fire and Rescue Department hopes to partner with the Public Works Department to develop a training grounds facility next to the existing maintenance yard north of the airport. The department will also need to ensure adequate service is provided to future residents of The Pine Forest development located on Highway 211. An agreement for service to the development will need to be arranged. Land for a station within The Pine Forest development and funding for construction of a building is necessary to provide adequate fire service in the area. Another concern is the location of Station 2 on East Oak Island Drive. Geographically, the station is located too far east to provide timely support for emergencies on the western end of the island. The department also lacks specialized equipment to provide fire suppression to the Cape Fear Regional Jetport.

Within the next ten years, the department expects that it will need to add a designated training officer, a second administrative assistant, a full-time mechanic, and a full-time fire inspector.

Development Services

The Development Services Department is responsible for ensuring that all development, including residential and nonresidential, complies with the State Building Codes, CAMA requirements, FEMA requirements, fire codes, zoning and all other local ordinances. The department has a two permit specialists, five inspectors, and a zoning/planning administrator.

EXISTING CONDITIONS SUMMARY

- Oak Island's location on the coast of southeastern North Carolina generates an incredible draw for residents and tourists. From an ecological standpoint, the pristine coastal environment that attracts so many people also poses many constraints to development and future land use conflicts. Much of the land on the island proper has been developed or subdivided for future development, whereas large undeveloped tracts currently exist on the mainland. Increased development will also foster transportation concerns, particularly for roadways that are currently at or near capacity.
- Residents and visitors of Oak Island are served by an extensive array of community facilities and services. Regarding infrastructure, the recent installation of wastewater lines has alleviated septic tank concerns of the past. The diverse offering of recreation facilities provides opportunities for both active and passive recreation.

Natural Systems

- Over the course of a typical year, the temperature ranges from 37 degrees Fahrenheit to 87 degrees Fahrenheit.
- Oak Island is located in North Carolina's "Tidewater" land region. Communities located in this region of the state are united by their proximity to the Atlantic Ocean and its riverine estuaries. Lands within the Tidewater region are among the earliest settled in the state.
- Approximately 35% of Oak Island's corporate limits are impacted by a Special Flood Hazard Area (SFHA).
- Fine sands account for more than 80% of the soil in Oak Island. In addition, nearly 100% of the soil types within the planning jurisdiction are very limited in their ability to safely accommodate septic tank systems.
- The entire southern boundary of the Town of Oak Island - approximately 9 miles of shoreline - is an ocean beach. This entire area constitutes an Ocean Hazard Area of Environmental Concern as defined by CAMA.
- More than 45% of the town's planning jurisdiction is occupied by a Natural Heritage Natural Area (NHNA), the largest of which is the Boiling Spring Lakes Wetland Complex. The wetland complex is rated by the Natural Heritage Program as "Exceptional" (the highest rating) for its biodiversity and rarity of species and the

Existing Land Use

- Of the developed land in Oak Island, the primary use is for residential purposes. Much of the land that exists on the island proper has been subdivided for single-family housing units and have subsequently been developed for such use.
- Vacant/unimproved lands account for the largest percentage of acreage in Oak Island's planning jurisdiction, accounting for more than 70% of the total acreage. However, this acreage consists primarily of the two mainland parcel tracts annexed in 2009, one of which is currently slated for development.
- Compared with the coastal municipalities of Emerald Isle and Sunset Beach, from a percent of land usage, Oak Island has a much smaller amount of commercial and multi-family residential development.
- Commercial establishments account for only 5% of the total developed acreage in Oak Island. In fact, only 34% of all residential housing units are within a five-minute walk of a commercial establishment, thus encouraging greater vehicle use on the island.
- Of the developed existing land use categories, the mixed use category yields the greatest average appraised value per acre. In fact, on average, mixed use development is more than double the average appraised value of multi-family residential development.

Transportation

- According to 2013 Annual Average Daily Traffic (AADT) counts, the highest volume of vehicular travel in the town occurs on the eastern portion of the island on Country Club Drive and East Oak Island Drive. It should be noted that seasonal traffic counts are not currently available for the town.
- There are approximately 108 miles of local streets and roadways maintained by the town.
- Because Oak Island is a beach vacation destination, there is an increased demand for bicycle and pedestrian travel. Destinations such as the beach, ICWW, parks, and commercial areas all attract bicyclists and pedestrians.
- From 2002 to 2012, there were 55 reported bicyclist and pedestrian crashes. Of the 55 crashes, nearly 95% resulted in injury.
- There are approximately 9.11 miles of sidewalks/boardwalks available to Oak Island residents and visitors.

Transportation (continued)

- On-road bicycle facilities currently exist on Beach Drive in the form of bicycle lanes. There are approximately 7.08 miles of lanes available to cyclists on Beach Drive. Concerns relating to maintenance and debris removal were identified in the 2006 Bicycle Transportation Plan.
- The Cape Fear Regional Jetport provides general aviation service to Brunswick County residents and visitors via runway length totaling more than 5,500 linear feet. Over the course of a year, more than 72,000 arrivals and departures are conducted through the airport, with approximately 70% of the arrivals visiting Oak Island.
- According to a 2013 study by the NC State Institute for Transportation Research and Education, the Cape Fear Regional Jetport has a \$61.7 million impact to the region.

Community Facilities

- The Town of Oak Island Public Works Department performs many important functions for residents and visitors. Departmental areas of concern include stormwater hotspots, yard waste collection, and staff shortages. Stormwater hotspots have been identified at SE 70th Street and SE 15th Street.
- The town's water source comes from a purchase agreement with Brunswick County. The treatment facility is located on NC 211. The water source is treated groundwater from the Castle Hayne Aquifer, which is the most productive in the state.
- The Parks and Recreation Department offers an array of programs, leagues, and activities to residents and visitors. There are approximately 25 parks and recreation facilities available.
- The Oak Island Police Department serves an area of approximately 18.52 square miles, including 223 business establishments and more than 8,000 housing units. Bicycle and pedestrian safety is an increasing concern for the department.
- In 2014, the Oak Island Fire and Rescue Department responded to 1,273 emergency requests with an average response time of 6 minutes and 2 seconds. The department operates three stations within the corporate limits. In the future, the department hopes to partner with the Public Works Department to develop a training grounds facility next to the existing maintenance yard north of the airport. The department will also need to ensure adequate service is provided to future residents of The Pine Forest development located on NC 211.

4. Oak Island's Future

INTRODUCTION

Many factors have an impact on the land use, infrastructure, and transportation systems within a given jurisdiction. For Oak Island, the primary impacts are related to a growing population, the development of vast mainland acreage, and the need to preserve the town's number one asset – the beach. Supportive infrastructure and community services such as utilities, police, fire, and recreation will all be affected by the projected growth and development. Projected needs that will result from future development and changes to the land use pattern are discussed within this section. In addition to impacts on infrastructure and services, discussion includes recommendations for enhancing the built environment through regulatory change and capital improvements.

POPULATION PROJECTIONS

Establishing an estimate of the year 2035 population for the Town of Oak Island is essential to determining impacts to infrastructure and community services. Calculating population projections is a difficult task and is at best an imperfect science. Nonetheless, projecting population growth is a vital component of future land use, development, and infrastructure needs. Many factors have an impact on the growth or loss of residents within a given jurisdiction. In the Town of Oak Island, the presence of more than 8,000 acres of vacant mainland property has the potential to fundamentally alter the population dynamics that exist today. Currently, the mainland portion of Oak Island is sparsely populated and largely vacant, whereas the island portion of the Town accounts for the majority of the developed property and permanent and seasonal population.

The two most significant development opportunities within Oak Island's corporate limits, the Pine Forest and Williamson tracts located on the mainland, could add more than 20,000 permanent residents to the Town of Oak Island by the year 2035 (see Map 17). Both mainland developments are expected to be completed in phases over a number of years. Other development interest will continue to occur. The Town has received requests for other mainland development that is expected to occur at a smaller scale. Market factors will dictate the pace and extent of each development over the next twenty years – making it difficult to provide precise projections. In addition, both development tracts contain Natural Heritage Natural Areas (NHNA) and a longleaf pine ecosystem, which according to the NC Wildlife Resources Commission, is one of the best examples of this ecosystem type in the world. For more information, please see page 3-19 of the Existing Conditions section.

Map 17: Future Growth Considerations and Impacts

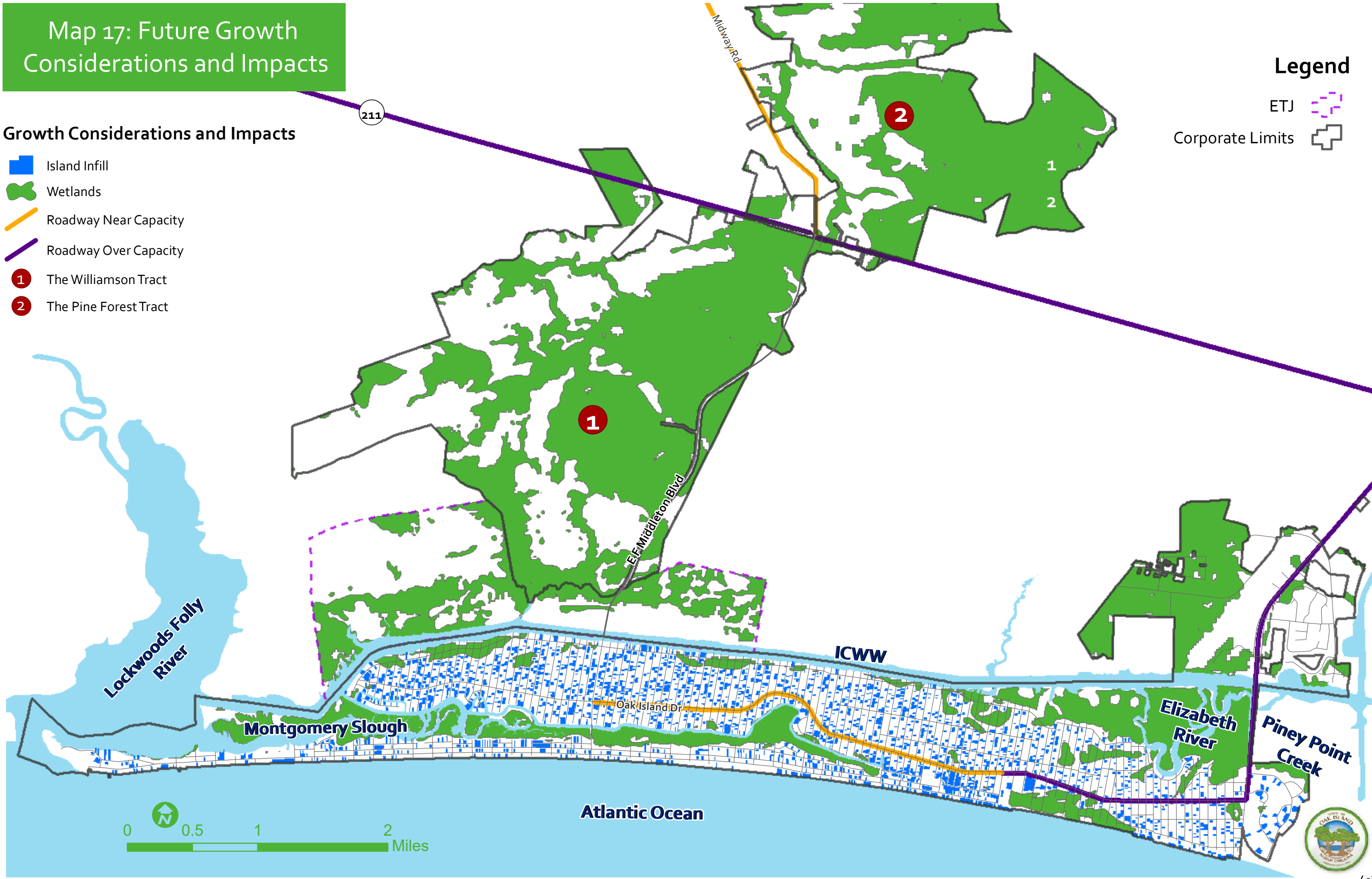
Growth Considerations and Impacts

- Island Infill
- Wetlands
- Roadway Near Capacity
- Roadway Over Capacity
- 1 The Williamson Tract
- 2 The Pine Forest Tract

Legend

ETJ

Corporate Limits



The majority of the land that exists on the island has been developed, leaving approximately 2,789 parcels (25% of total) as infill sites open for development. These 2,789 parcels are considered as candidates for development as they are not protected for conservation purposes and do not contain coastal wetlands. The Williamston Tract (see Map 17) is under a development agreement with the Town. A development proposal has been submitted to the Town for the Pine Forest Tract (see Map 17) but there is not specific development agreement. There are no other pre-approved developments containing 500 or more proposed parcels and/or dwelling units.

Population growth trends are typically used to calculate population projections. Yet for Oak Island, this baseline trend is not adequate for the Town's population projections as future development of the large mainland tracts would not be properly addressed through such a calculation. The 2035 population projections are provided for the permanent population, seasonal weekly estimates, and the peak day population. The factors below are used to calculate the 2035 population projections; data sources and supporting information are provided at the end of the section:

1. Development of Mainland Vacant Lots - The Pine Forest (2,250 units) and Williamson (7,700 units) tractsⁱ
2. Island Infill Development (2,789 lots – assume one housing unit per lot)ⁱⁱ
3. Average Number of Bedrooms per Housing Unit (2.9)ⁱⁱⁱ
4. Average Number of Persons per Bedroom for Seasonal Units/Peak Day (2.0)^{iv}
5. Average Persons per Household (Permanent Population = 2.02/Seasonal Population = 5.8)^v
6. Housing Unit Occupancy Rate for the Town of Oak Island (39.38% Occupied/60.62% Vacant) and Brunswick County mainland municipalities (83.4% Occupied/16.6% Vacant)^{vi}
7. 2035 Annual Average Daily Traffic Counts (AADT) = 5,950 additional traffic counts to the island proper^{vii}

A high and low population projection is based on the development of The Pine Forest, the Williamson Tract, and the remaining lots on the island proper. The "high" estimate assumes complete build-out of each mainland development and the remaining island vacant lots by 2035, while the "low" estimate assumes only half such development will occur. As stated previously, market forces will dictate the rate at which

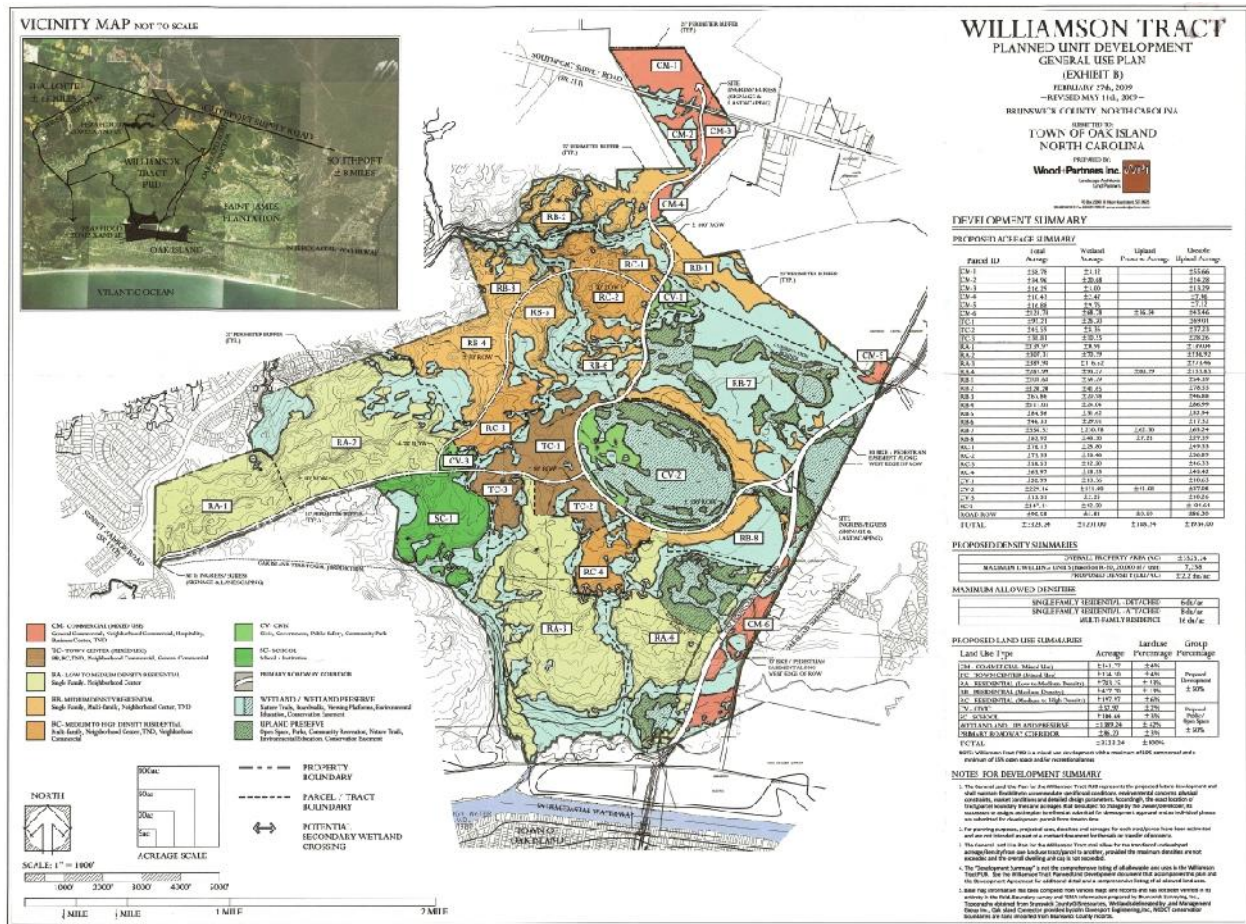
The Williamson Tract Planned Unit Development (PUD)

It is anticipated that the Williamson Tract will be developed over a period of twenty to thirty years. There will be an overall density cap of 7,700 residential units which is based on an average density of 2.3 units per acre. Overall residential density shall include both single-family and multi-family development. The site plan outlines areas for commercial, mixed use, residential, civic, school, community preserves (wetland and upland preserves), and primary roadway corridors.

The Pine Forest Development

Final plans for The Pine Forest Development may accommodate as many as 2,250 living units, comprised of single- and multi-family homes, and assisted living facilities. The commercial healthcare and retail campus, with frontage along NC 211, will include a skilled care facility, an acute healthcare facility, occupational and physical therapists, in-home healthcare, and medical equipment providers. Large tracts within the project will be deeded to the State of North Carolina, facilitated by the North American Land Trust, assuring natural areas remain intact for conservation and passive recreation.

development occurs both on the mainland and island proper. It is realistic to project the complete build-out of the remaining island lots over the next twenty years; however, this is certainly considered a "high" estimate. From 2000 to 2010, approximately 1,860 residential building permits were issued in the Town, the majority of which were issued for the island proper. If development occurs at a similar pace over the next twenty years, it is possible that the majority of vacant lots will be built upon.



percentage of permanent residents compared to seasonal residents and thus a greater occupancy rate.

Table 4-1. Population Growth/Projections

2035 Mainland Population Growth Estimate					
2035 Mainland Population Projections	Number of Additional Housing Units ¹	Additional Permanent Residents ²	Additional Seasonal Visitors ³	Additional Seasonal Weekly Estimate Population ⁴	Additional Peak Day Population ⁵
High Estimate	9,950	16,763	9,580	26,343	N/A
Low Estimate	4,975	8,381	4,790	13,171	N/A
2035 Island Population Growth Estimate					
2035 Island Population Projections	Number of Additional Housing Units ¹	Additional Permanent Residents ²	Additional Seasonal Visitors ³	Additional Seasonal Weekly Estimate Population ⁴	Additional Peak Day Population ⁶
High Estimate	2,789	2,220	9,803	12,023	24,355
Low Estimate	1,395	1,110	4,903	6,013	24,077
2035 Town-wide Population Growth Estimate					
2035 Town wide Population Projections	Number of Additional Housing Units ¹	Additional Permanent Residents ²	Additional Seasonal Visitors ³	Additional Seasonal Weekly Estimate Population ⁴	Additional Peak Day Population
High Estimate	12,739	18,983	19,383	38,366	24,355
Low Estimate	6,370	9,491	9,693	19,184	24,077
2035 Population Projections					
2035 Total Population Figures	2035 Total Number of Housing Units	2035 Total Permanent Residents	2035 Total Seasonal Visitors	2035 Total Seasonal Weekly Estimate Population	2035 Total Peak Day Population ⁷
High Estimate	21,507	25,953	51,221	77,174	148,123
Average Estimate ⁸	18,322	21,207	46,376	67,583	138,393
Low Estimate	15,138	16,461	41,531	57,992	128,663

¹Number of Additional Housing Units = Estimate number of housing units constructed by 2035

²Additional Permanent Residents = Number of Additional Permanent Housing Units x 2.02 Persons per Household

³Additional Seasonal Visitors = Number of Additional Seasonal Housing Units x 5.8 Persons per Household

⁴Additional Seasonal Weekly Estimate Population = Additional Permanent Residents + Additional Seasonal Weekly Estimate

⁵Additional Peak Day Population for Mainland = Not applicable, peak day visitors are not calculated as part of mainland development.

⁶Additional Peak Day Population for Island = 25% Increase in Permanent Population + 2035 Annual Daily Traffic (AADT) count increase multiplied by four persons per vehicle.

⁷**2035 Total Peak Day Population:**

High Estimate: 148,123 = 25,953 (permanent residents) + 51,221 (seasonal overnight visitors) + 46,594 (2013 day visitors) + 24,355 (high additional day visitors)

Average Estimate: 138,393 = 21,207 (permanent residents) + 46,376 (seasonal overnight visitors) + 46,594 (2013 day visitors) + 24,216 (average additional day visitors)

Low Estimate: 128,663 = 16,461 (permanent residents)

⁸Average estimate is derived by calculating the average of the high and low estimates.

Sources: Holland Consulting Planners, US Census Bureau, Brunswick County Tax Records, Oak Island Realtors, and Oak Island Development Services.

Based on the population projection estimates, the permanent population is projected to increase from a range of 136.18% to 272.34%. This percent increase is dramatic, but should be understood in its context. For example, the majority of this population growth is projected to take place on the mainland, where little residential development currently exists. Fewer than 2,300 additional permanent residents are expected to inhabit the island portion of the corporate limits by 2035. In North Carolina, the population is projected to increase by more than 20% by the year 2035. In Oak Island, seasonal and day visitation numbers are also expected to increase by 2035, but at a much lower rate the permanent population. Again, this is due to the residential development projected to occur on the mainland – the makeup of which is slated to be primarily permanent rather than seasonal residential housing units.

Table 4-2. Existing Population Figures

2013 Population Figures					
2013 Population Figures	Number Housing Units	Permanent Residents	Seasonal Visitors	Seasonal Weekly Estimate Population	Peak Day Population
Existing	8,768	6,970	31,838	38,808	87,144
2035 Population Projections					
2035 Total Population Figures	2035 Total Number of Housing Units	2035 Total Permanent Residents	2035 Total Seasonal Visitors	2035 Total Seasonal Weekly Estimate Population	2035 Total Peak Day Population ¹
High Estimate	21,507	25,953	51,221	77,173	148,123
Average Estimate	18,322	21,207	46,376	67,583	138,393
Low Estimate	15,138	16,462	41,531	57,993	128,663
Percent Change - Town of Oak Island Population Figures (2013 to 2035)					
Percent Change Population Figures	Percent Change Total Number of Housing Units	Percent Change Total Permanent Residents	Percent Change Total Seasonal Visitors	Percent Change Total Seasonal Weekly Estimate Population	Percent Change Total Peak Day Population
High Estimate	145.29%	272.34%	60.88%	98.86%	69.97%
Average Estimate	108.96%	204.26%	45.66%	74.15%	58.81%
Low Estimate	72.65%	136.18%	30.44%	49.44%	47.65%

¹2035 Total Peak Day Population:

High Estimate: 148,123 = 25,953 (permanent residents) + 51,221 (seasonal overnight visitors) + 46,594 (2013 day visitors) + 24,355 (high additional day visitors)

Average Estimate: 138,393 = 21,207 (permanent residents) + 46,376 (seasonal overnight visitors) + 46,594 (2013 day visitors) + 24,216 (average additional day visitors)

Low Estimate: 128,663 = 16,461 (permanent residents)

Sources: Holland Consulting Planners, US Census Bureau, Brunswick County Tax Records, Oak Island Realtors, and Oak Island Development Services.

BUILD-OUT ANALYSIS

Build-out analyses are done to estimate the potential impacts of development and projections for infrastructure. The build-out analysis for Oak Island includes all of the vacant/unimproved land as classified by zoning district in order to determine the maximum amount of development that could occur based on existing regulations. The build-out analysis differs from a population projection because it is merely a calculation based upon vacant buildable land and zoning. Fewer assumptions are used in the calculation. Only the vacant buildable land and the zoning classification are used in the build-out analysis (NOTE: There are 530 unbuildable lots on the island portion of the Town). Consideration of time and environmental constraints are not included. Descriptions of each respective zoning district included in the build-out analysis are provided. In addition, Map 18 depicts vacant land by zoning district throughout the planning jurisdiction. Each zoning district's permitted uses, minimum lot size, and height restrictions can be found on the Town's Development Services webpage (www.oakislandnc.com/Departments/Development-Services.aspx).

Zoning Districts with Vacant Land

The following zoning district descriptions are taken directly from the Town of Oak Island Zoning Ordinance.

R-20 Low Density Residential District. The R-20 district is established to provide areas for the preservation and development of quiet residential neighborhoods and for lower density residential development. The predominant use of the land in the R-20 district is for low density, single-family dwellings and their customary accessory uses. In promoting the general purposes of this article, the specific intent of this section is as follows:












- (1) To encourage the construction of and the continued use of the land for low density residences;
- (2) To prohibit uses of the land that are incompatible with low density residences;
- (3) To encourage the discontinuation of existing uses that would not be permitted as new uses under the provisions of this subsection; and
- (4) To discourage any use that would generate traffic volumes on minor streets that would adversely impact residences on those streets.

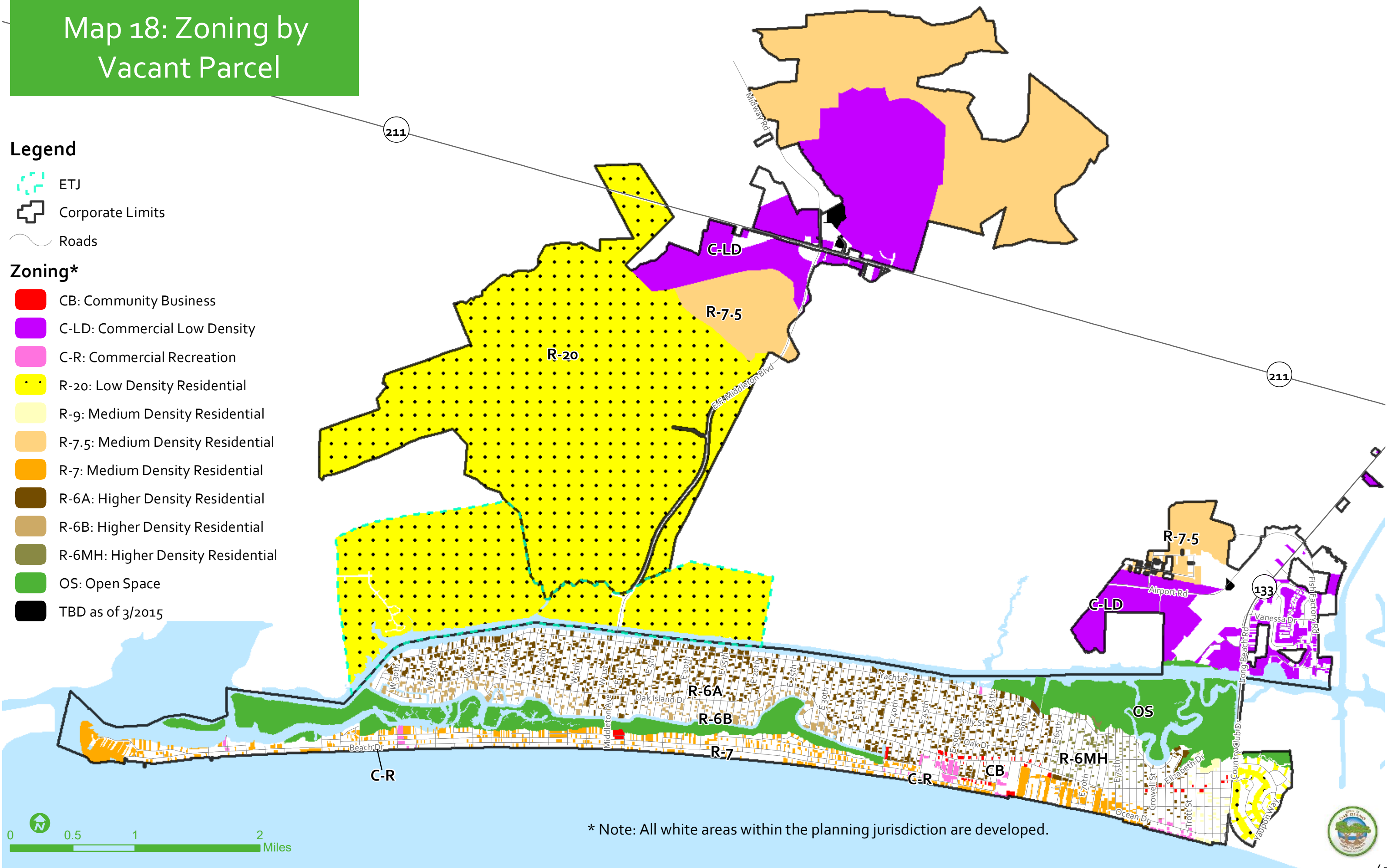
Map 18: Zoning by Vacant Parcel

Legend

-  ETJ
-  Corporate Limits
-  Roads

Zoning*

-  CB: Community Business
-  C-LD: Commercial Low Density
-  C-R: Commercial Recreation
-  R-20: Low Density Residential
-  R-9: Medium Density Residential
-  R-7.5: Medium Density Residential
-  R-7: Medium Density Residential
-  R-6A: Higher Density Residential
-  R-6B: Higher Density Residential
-  R-6MH: Higher Density Residential
-  OS: Open Space
-  TBD as of 3/2015



R-9 Medium Density Residential District. The R-9 district is established to provide areas for the preservation and development of quiet residential neighborhoods and for medium density residential development. The predominant use of the land in the R-9 district is for medium density, single-family dwellings and their customary accessory uses. In promoting the general purposes of this article, the specific intent of this section is as follows:

- (1) To encourage the construction of and the continued use of the land for medium density residences;
- (2) To prohibit uses of the land that are incompatible with medium density residences;
- (3) To encourage the discontinuation of existing uses that would not be permitted as new uses under the provisions of this section; and
- (4) To discourage any use that would generate traffic volumes on minor streets that would adversely impact residences on those streets.

R-7.5 Medium Density Residential District. The R-7.5 district is established to provide medium density single-family residential areas, their customary accessory structures and other required attributes of a neighborhood.

R-7 Medium Density Residential District. The R-7 district is established to provide areas for the preservation and development of quiet residential neighborhoods and for medium density residential development. The predominant use of the land in the R-7 district is for medium density, single-family dwellings, two-family dwellings and their customary accessory uses. In promoting the general purposes of this article, the specific intent of this section is as follows:

- (1) To encourage the construction of and the continued use of the land for medium density residences;
- (2) To prohibit uses of the land that are incompatible with medium density residences;
- (3) To encourage the discontinuation of existing uses that would not be permitted as new uses under the provisions of this section; and
- (4) To discourage any use that would generate traffic volumes on minor streets that would adversely impact residences on those streets.

R-6A Residential District. The R-6A district is established to provide areas for the preservation and development of quiet residential neighborhoods and for higher density residential development. The principal uses in the R-6A district include modest sized single-family residences and their customary accessory uses. In promoting the general purposes of this article, the specific intent of this section is as follows:

- (1) To encourage the construction of and the continued use of the land for higher density residences with a mixture of housing types;
- (2) To prohibit uses of the land that are incompatible with higher density residences;
- (3) To encourage the discontinuation of existing uses that would not be permitted as new uses under the provisions of this section; and
- (4) To discourage any use that would generate traffic volumes on minor streets that would adversely impact residences on those streets.

R-6B Residential District. The R-6B district is established to provide areas for the preservation and development of quiet residential neighborhoods and for higher density residential development. The principal uses in the R-6B district include moderate sized single-family residences and their customary accessory uses. In promoting the general purposes of this article, the specific intent of this section is as follows:

- (1) To encourage the construction of and the continued use of the land for higher density residences;
- (2) To prohibit uses of the land that are incompatible with higher density residences;
- (3) To encourage the discontinuation of existing uses that would not be permitted as new uses under the provisions of this section; and
- (4) To discourage any use that would generate traffic volumes on minor streets that would adversely impact residences on those streets.

R-6MH Higher Density Residential District. The R-6MH district is established to provide areas for the preservation and development of quiet residential neighborhoods and for higher density residential development with a range of housing types. The principal uses in the R-6MH district include modest sized one-, two-, and three-family residences, manufactured housing, and their customary accessory uses. In promoting

the general purposes of this article, the specific intent of this section is as follows:

- (1) To encourage the construction of and continued use of the land for higher density residential purposes providing for a wider range of housing types than other higher density districts.
- (2) To prohibit commercial and industrial use of the land and to prohibit any other use which would substantially interfere with the development or continuation of dwellings in the district.
- (3) To encourage the discontinuation of existing uses that would not be permitted as new uses under the provisions of this section.
- (4) To discourage any use which would generate traffic on minor streets other than normal traffic to serve the residences on those streets.

CB Community Business District. The CB district is established as a zone in which the use of the land is for commercial and service uses for the surrounding urban market area. In promoting the general purposes of this article, the specific intent of this section is as follows:

- (1) To encourage the construction of and the continued use of the land for commercial and service uses.
- (2) To provide for the orderly expansion of such uses within the CB district, as designated on the zoning map.
- (3) To prohibit heavier commercial and industrial use of land and to prohibit uses which would substantially interfere with the continuation of the uses presently in the district or with the orderly growth of the district to meet the needs of increased population in the market area.
- (4) To encourage the discontinuance of existing uses that would not be permitted as new uses under the provisions of this section.
- (5) To permit a concentrated, intensive development of the permitted uses while maintaining a substantial relationship between the intensity of land use and the capacity of utilities and streets.

CR Commercial Recreation District. The purpose of the CR district shall be to provide for, protect, and encourage a grouping of beachfront enterprises providing accommodations and recreation to persons wishing to lodge near the strand or participate in the various water sports available to them.

C-LD Commercial Low Density District. Districts in the C-LD category are intended primarily to be located in outlying areas, adjacent to a major

thoroughfare, with yards and other provisions for reducing conflicts with adjacent residential uses, and with substantial setbacks to reduce marginal friction on adjacent major thoroughfares. The C-LD district will serve requirements of residential neighborhoods for commercial facilities and the requirements of highway-oriented tourist businesses.

AD Airport District. The county airport is a significant resource for the town. The purpose of the provisions contained in this section is to ensure that the airport is protected from incompatible uses and that uses surrounding the facility are compatible with expansion of airport operations.

OS Open Space District. The purpose of the OS open space district is to preserve and protect the areas of environmental concern as identified by General Statutes and other environmentally sensitive areas as may be identified by the town council. The OS district is intended not to allow any uses by right but to allow them conditionally according to an approval by the town council.

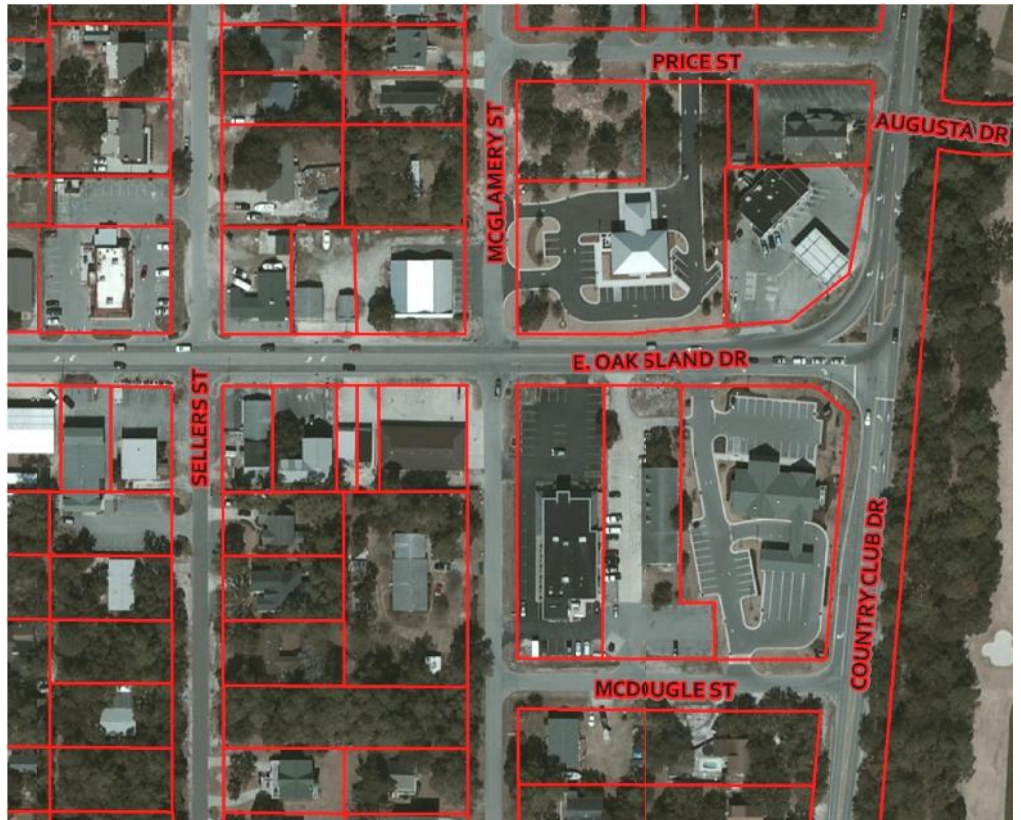
Throughout Oak Island's planning jurisdiction, there are a total of 3,784 vacant parcels consisting of more than 10,000 acres of land. As stated previously, the majority of the vacant land is located on the mainland. The R-20: Low Density Residential zoning district accounts for the greatest percentage of vacant land in the town's planning jurisdiction, followed by R-7.5: Medium Density Residential and C-LD: Commercial Low Density. More than 900 acres are located in Open Space zoning which generally restricts development.

Table 4-3. Town of Oak Island Vacant Land Classified by Zoning District

Zoning District	Parcels	Acres
CB: Community Business	93	21.05
C-LD: Commercial Low Density	200	1,500.37
CR: Commercial Recreation	141	34.86
OS: Open Space	15	906.03
R-20: Low Density Residential	178	4,934.10
R-6A: Higher Density Residential	1,816	389.10
R-6B: Higher Density Residential	354	77.59
R-6MH: Higher Density Residential	158	29.75
R-7: Medium Density Residential	685	223.67
R-7.5: Medium Density Residential	70	1,910.51
R-9: Medium Density Residential	69	21.24
Acreage in TBD Area	5	20.06
Total	3,784	10,068.32

Source: HCP, Inc., and Town of Oak Island

On the mainland, R-20 Low Density Residential also accounts for the greatest percentage of vacant acreage. Large tracts of land remain to be subdivided for non-residential and residential development. Based on the available acreage, not the number of parcels, the following figure depicts the potential build-out scenario for Oak Island's mainland. It should be noted that this calculation is based only on the underlying zoning district and does not account for approved planned unit developments.



Non-residential development occurs at varying densities in Oak Island's commercial areas.

In Oak Island, non-residential development is constructed at various densities. Some parcels are constructed with nearly 40% of the site consisting of usable square footage, while others have less than 10%. However, on average, approximately 25% of a non-residentially developed parcel is occupied by building square footage.

Mainland Build-Out Calculations

Table 4-4. Mainland Portion of Corporate Limits (including ETJ)

Zoning District	Parcels	Acres	Potential Square Footage/ Number of Housing Units
C-LD: Commercial Low Density	200	1,500.37	11,437,320 square feet of non-residential development
OS: Open Space	2	9.78	N/A
R-20: Low Density Residential	140	4,877.65	10,623 housing units
R-7.5: Medium Density Residential	70	1,910.51	11,096 housing units
Acreage in TBD Area	5	20.06	N/A
Total	417	8,318.37	

Notes: (1) Square footage of non-residential development is calculated with the assumption that 30% of land area will be occupied by roadway/utility right-of-way. Based on existing non-residential development sites, on average, approximately 25% of the site is occupied with building square footage; the remaining land area is occupied by stormwater treatment, parking, and other site improvements. The estimate includes only first-floor non-residential development. For reference, the average grocery store is approximately 45,000 square feet. (2) The number of housing units is calculated by dividing the square footage of vacant land by the minimum lot size. Source: Brunswick County Tax Records/GIS, Town of Oak Island Land Use and Development Ordinance.

Mainland Build-out Potential:

- Non-Residential Development: 11,437,320 square feet
- Residential Development: 21,719 units

Mainland Build-out Potential Population:

- 21,719 units = 36,590 permanent population
20,909 seasonal population

Source: Refer to population projections on page 4-3 for methodology.

Island Build-out Calculations

Based on Table 4-5, between 70-75% of the parcels on the island have been built upon. A parcel may be a single lot or composed of multiple lots unified for development. Tax parcels are mapped by Brunswick County and are used as part of the build-out analysis. On the island portion of the corporate limits, the majority of vacant land has been subdivided to accommodate the minimum lot size for the underlying zoning district. There are very few vacant parcels left on the island which contain the square footage to allow for further subdivision. As such, the build-out calculations are based primarily on the parcel count and not the available vacant acreage. In the case where enough square footage is available to accommodate the minimum lot size for two-family and three-family units in permitted zoning districts (R-7 and R-6 MH), they are accounted for and added to the total housing unit count.

Of the 3,367 total undeveloped/vacant parcels, only 2,789 are not impacted by wetlands. In addition, more than 800 acres of the undeveloped land located on the island is impacted by wetlands (and also located in the Open Space zoning district which restricts most development).

Table 4-5. Developed and Undeveloped Land: Island Portion of Corporate Limits

Status	Parcel	% of Total	Acres	% of Total
Developed	8,109	70.66%	1,881.47	51.81%
Undeveloped/Vacant	3,367	29.34%	1,749.96	48.19%
Total	11,476	100.00%	3,631.43	100.00%
Undeveloped/Vacant Not Impacted by Wetlands*	2,789	24.30%	935.57	25.76%

**These are parcels not impacted by coastal wetlands and/or conservation easements.*

NOTE: The figures above do not include right-of-way or hydrology.

Source: Brunswick County Tax Records & GIS.

Table 4-6. Island Portion of Corporate Limits

Zoning District	Parcels	Acres	Potential Square Footage/ Number of Housing Units
CB: Community Business	93	21.05	160,496 square feet
CR: Commercial Recreation	141	34.86	265,703 square feet
OS: Open Space	13	896.26	N/A
R-20: Low Density Residential	38	56.46	38 units
R-6A: Higher Density Residential	1,816	389.10	2,098 units
R-6B: Higher Density Residential	354	77.59	354 units
R-6MH: Higher Density Residential	158	29.75	293 units
R-7: Medium Density Residential	685	223.67	950 units
R-9: Medium Density Residential	69	21.24	69 units
Total	3,367	1,749.96	

Notes: (1) Square footage of non-residential development is calculated with the assumption that 30% of land area will be occupied by roadway/utility right-of-way. Based on existing non-residential development sites, on average, approximately 25% of the site is occupied with building square footage; the remaining land area is occupied by stormwater treatment, parking, and other site improvements. The estimate includes only first-floor non-residential development. For reference, the average grocery store is approximately 30-45,000 square feet. (2) The number of housing units is calculated based on the number of parcels and corresponding lot size. Where applicable, two-family and three-family dwelling units are included based on required lot size.

Source: Brunswick County Tax Records/GIS, Town of Oak Island Land Use and Development Ordinance.

Island Build-out Potential:

- Non-Residential Development: 265,703 square feet
- Residential Development: 3,802 units

Island Build-out Potential Population:

- 3,802 units = 3,024 permanent population
13,369 seasonal population

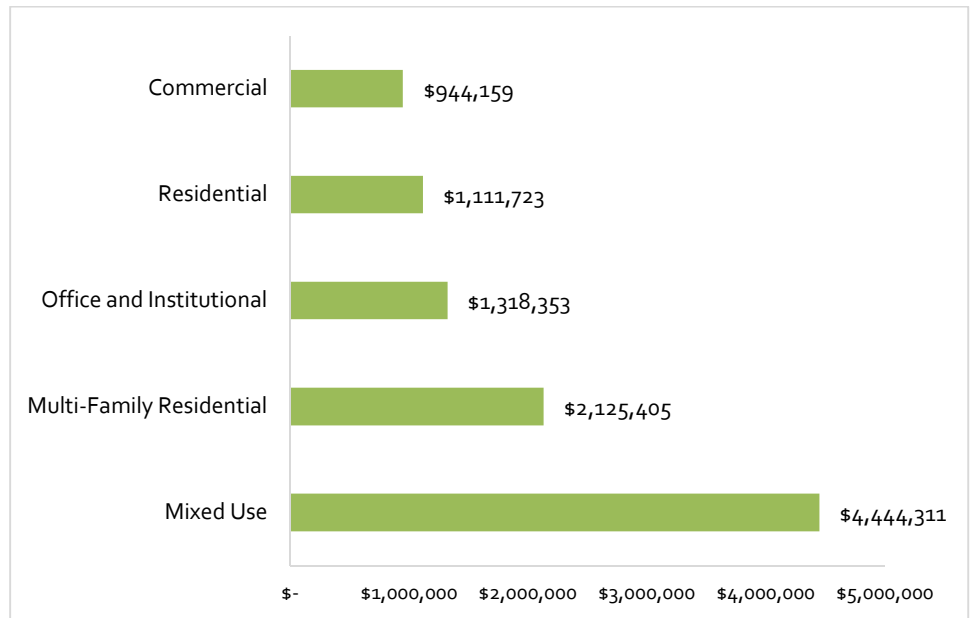
Source: Refer to population projections on page 4-3 for methodology.

Within Oak Island's planning jurisdiction, at build-out, more than 11 million square feet of non-residential development would exist based on current zoning regulations. This development would be supported by the addition of approximately 25,521 residential housing units.

RETURN ON INVESTMENT

Municipal revenues are generated by property tax, sales tax (retail), fees, and the lease or sale of assets. One way to increase municipal revenues is through the development of land use types that yield a higher property tax rate. Throughout North Carolina, and in Oak Island, the development type that typically yields the highest property tax is vertical mixed use (see the figure below, also found on page 3-29).

Figure 4-1: Average Appraised Value Per Acre – Oak Island (2015)

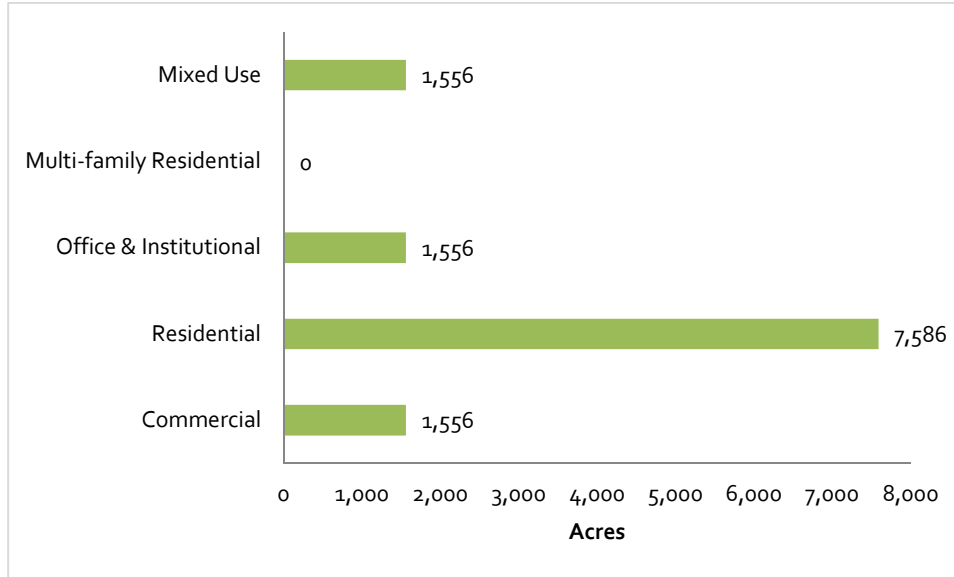


Source: Brunswick County Tax Assessor; HCP, Inc.

Mixed use development is limited in Oak Island, but opportunities exist for such development within the planning jurisdiction. In fact, there are more than 1,500 acres of vacant land that permits mixed use development. As for multi-family development, the land use type that provides the second highest appraised value per acre, there is currently no land available for this type of use on the island. Nevertheless, multi-family and mixed use development must be developed at densities in excess of ten dwelling units per acre in order to yield the per acre tax values displayed in Figure 4-1. The average density for mixed use and multi-family development in Oak Island is 11.5 dwelling units per acre. Put simply, compact development of quality design and construction maximizes revenue while minimizing land consumption.

According to calculations provided by the town, a residential unit must have a minimum tax value of \$264,601.00 to pay for the community facilities and services it is being provided. These provisions include police and fire protection, parks/recreation, public works, and waste management. This figure does not account for water/sewer service costs or beach renourishment. As of July 2015, approximately 29% of the town's residential housing stock had a tax value of at least \$264,401.

Figure 4-2: Vacant/Unimproved Acreage by Permitted Use



Source: HCP, Inc. and Town of Oak Island

Incentivizing and structuring development to provide a positive return for the tax base is but one option for increasing municipal revenues. Investment in existing commercial areas will also help to increase property taxes as commercial land uses currently yield the lowest tax revenues on a per acre basis. It is imperative that the Town increase its revenues while maintaining a stable low tax rate. The current revenue system may not be sufficient to sustain the Town.

AESTHETIC ENHANCEMENTS

Many areas of Oak Island have an exceptional aesthetic character and provide an inviting atmosphere for residents, visitors, and tourists. Throughout much of Oak Island, and particularly on the island portion of town, an abundant tree canopy is present, parks are situated within walking distance, with gridded streets lending to walkability. All of these elements enhance the human scale features of Oak Island's built environment. The presence of these elements not only creates a more pleasing aesthetic environment, but also yields benefits in the form of higher property tax revenues. Investing in public realm improvements that encourage walkability and enhance the visual interest of the built environment are hallmarks of desirable communities across the state. The following depicts places within Oak Island that exhibit principle elements of the human scale built environment.



Human Scale: A built environment more tailored to the needs of pedestrians and cyclists versus the automobile.

Unfortunately, much of the development that has occurred throughout the country over the last sixty years has been tailored to the automobile. In fact, when Oak Island (Long Beach/Yaupon Beach) was just coming of age, so too was our fascination with the automobile. As a result, few considerations were given to ensuring the built environment favored walkability. Elements of the automobile scale built environment can be found in nearly every community in North Carolina and the nation as a whole. This form of the built environment is characterized by

development that is designed to cater to the automobile. Large signage, expansive off-street parking, and a lack of facilities for alternative forms of transportation are all symptoms of an automobile oriented built environment. In many communities, prescriptions for improving these areas is through the addition of landscape material, the reduction of parking requirements, and changes to signage requirements. Landscape material tends to soften the built environment, while the reduction in parking limits the amount of impervious surface.



Automobile Scale: A built environment designed to accommodate the vehicle. The automobile scale built environment is characterized by dispersed destinations, a lack of bicycle and pedestrian facilities, vast parking areas, extensive signage, and commercial strip development.

Recommendations for Enhancement

Regulatory requirements can be utilized by a jurisdiction to improve the overall look and feel of the built environment. Many cities and towns require landscape and vegetative improvements to coincide with non-residential or multi-family development. This is particularly true on high volume commercial corridors. These high volume commercial corridors are often in need of aesthetic enhancement due to their design to accommodate the automobile. Requirements for off-street parking create vast pavement expanses that diminish the quality of the built environment from both an environmental and aesthetic standpoint. In many communities, the most undesirable locations are commercial corridors. In fact, "Appearance of Commercial Areas" was identified as one of the top three issues in Oak Island.

BENEFITS OF STREET TREES

For a planting cost of \$250-600 (includes first 3 years of maintenance), a single street tree returns over \$90,000 of direct benefits (not including aesthetic, social, and natural) in the lifetime of the tree. Additional benefits include:

1. Reduced and more appropriate urban traffic speeds. Urban street trees create vertical walls framing streets, and a defined edge, helping motorists guide their movement and assess their speed (leading to overall speed reductions). Street safety comparisons show a reduction of run-off-the-road crashes and overall crash severity when street tree sections are compared with equivalent treeless streets.

2. Create safer walking environments, by forming and framing visual walls and providing distinct edges to sidewalks so that motorists better distinguish between their environment and one shared with people. If a motorist were to significantly err in his urban driving task, street trees can deflect or fully stop a motorist from taking another human life.

3. Increased security. Trees create more pleasant walking environments, bringing about increased walking, talking, pride, care of place, association and therefore, actual ownership and surveillance of homes, blocks, neighborhoods plazas, businesses, and other civic spaces.

4. Improved business. Businesses on treescaped streets show 20% higher income streams, which is often the essential competitive edge needed for main street store success versus competition from plaza discount store prices.

5. Less drainage infrastructure. Trees absorb the first 30% of most precipitation through their leaf system, allowing evaporation back into the atmosphere. This moisture never hits the ground. Another percentage (up to 30%) of precipitation is absorbed back into the ground and taken in and held onto by the root structure, then absorbed and transpired back to the air.

(Source: 22 Benefits of Urban Street Trees by Dan Burden)

Currently, Oak Island does not require landscape material to be installed as non-residential development occurs (except in instances where a parking lot is provided that includes ten or more spaces). A vegetation plan is required, but is limited to the replacement and preservation of specimen trees. No requirements are in place that necessitate the installation of trees or vegetation along the street right-of-way line of non-residential development. The street right-of-way line is the primary location from which visitors, residents, and tourists examine the aesthetics of a given community or commercial district. If the town is truly interested in improving its visual appeal, particularly along areas of commercial use, then an expanded landscape section should be provided in the proposed Unified Development Ordinance. Specific items and/or considerations to be included as part of an enhanced landscape ordinance are listed below:

- Street yard requirements for non-residential and multi-family residential development to include screening options. The primary component of the street yard would be the screening of the parking facility and visual enhancement of the development. Street trees would be included as part of the street yard requirement. See the narrative to the right regarding benefits of street trees for more information.
- Enhance bufferyard requirements between non-residential and residential development (responsibility of non-residential development). A menu of bufferyard types should be provided as part of the ordinance.
- Plant listing categorized by shrub and tree sizes. Due to Oak Island's location on the coast, it is important to install plant species that are salt and drought tolerant. Thus, the plant list should also identify salt and drought tolerant species.
- Should the town wish to enhance only the commercial areas, such as Oak Island Drive, Long Beach Road, Middleton Road, and NC 211, then an overlay district can be applied to improve aesthetics in those key areas.

Signage

Regulating signage is one of the most difficult tasks for a local government's planning, inspections, and enforcement department. Signage is a necessary component of the built environment, but when regulated without regard for design can lead to an unappealing aesthetic. Large freestanding signs throughout Oak Island disrupt the landscape and are in obvious conflict with the surrounding natural resources. Signs should be constructed to blend with their surroundings and should be in proportion to the structure for which they are supporting. Where possible, landscaping should be provided with freestanding signage to soften the visual impact.

Height and size are other components of sign regulation. Size and height regulations should be based upon the extent of the development rather than a one-size-fits-all approach. Non-residential signage should be proportional to the structure/development for which it is accompanying.

Signage for residential development, such as for major subdivisions, should also be sized in proportion to the total number of homes located therein.

Sign Ordinance considerations:

- Base size and height of signage upon the commercial square footage and/or the number of housing units the sign is associated with.
- Require that signage be designed to blend with the natural surroundings and be complementary to the related building. Limit reflective and fluorescent sign colors.
- Discourage internally laminated signage where possible.
- Limit the height of free standing signs to twelve feet or less. Base the height of the sign on the size. Require landscaping to be incorporated into freestanding signage.



Example Freestanding Sign

Conceptual Renderings

In order to grasp the importance of aesthetic enhancements to the success of any built environment, visualizations and conceptual renderings can be utilized to depict potential improvements. Within Oak Island, the Oak Island Drive corridor was chosen to depict potential aesthetic enhancements. Conceptual renderings are provided to convey the intent of both landscape requirements and public realm improvements. Public realm improvements include enhancements within the existing public right-of-way, such as roadways, streets, and sidewalks.





Public Realm Enhancements:

- Thermoplastic crosswalk markings
- Pedestrian Countdown signals
- Mast Arm Traffic Signal Pole with underground utilities
- ADA Curb Ramps

Proposed Ordinance Changes:

- Street trees required as part of street yard landscaping for non-residential development
- Freestanding signs limited in size and height
- Sidewalks required as part of non-residential development



TREE PRESERVATION

Retaining Oak Island's tree canopy is extremely important to the residents of the town. In fact, the established tree canopy was identified as one of the top three assets that exist in Oak Island. Various mechanisms can be utilized to retain tree canopy on undeveloped lands in with the town's planning jurisdiction. New tree growth can also be encouraged or required through landscape ordinances.

Oak Island is also a member of Tree City USA and is one of more than 3,400 communities across the USA that earned the designation of being a Tree City USA. Oak Island has been designated as a Tree City USA for 18 years, longer than any other barrier island along the NC coast. The island itself has a larger forested area than any other barrier island in Brunswick County.

The Tree City USA program has been "greening up" cities and towns across America since 1976. It is a nationwide movement that provides the framework necessary for communities to manage and expand their public trees.

In Oak Island, a "Vegetation Management Program" currently exists within the Town Ordinances. The purpose of the tree and vegetation preservation program is to provide a means to preserve and manage natural areas and specimen trees in the community.

The objectives of the program are as follows:

- Maintain and enhance property values;
- Preserve and enhance the visual appearance of the town;
- Preserve unique and productive coastal habitats;
- Reduce the impacts of development on the town's stormwater system;
- Assist the town in preserving and enhancing the quality of its estuarine waters; and
- Help create and protect the protective dune systems.

A vegetation plan is to be submitted for the issuance of a development or building permit, in which the species and location of all trees five inches caliper at breast height and greater must be noted.



Residential Parcel Prepared for Construction

Based on the tremendous public support for tree preservation, the ordinance requirement should be refined to provide a more clear and enforceable mechanism for maintaining natural vegetation in Oak Island. The following items are suggested to enhance the "Vegetation Management Program":

Specimen Tree.

Any perennial woody plant, such as a live oak or pine tree, which usually has one main stem or trunk and the following caliper measurements taken at breast height: a hardwood tree, six inches; a conifer other than species of southern pine, six inches; southern pine, 14 inches; and any small flowering tree, such as crepe myrtle, five inches.

- Require tree protection standards for preserved trees.
- Create a tree removal permit process.
- Place greater emphasis on tree preservation. Incentivize the preservation of trees through a more stringent replacement schedule.
- Clarify replacement schedule for removed trees.
- Define and provide clarity regarding "essential site improvements".
- Increase the civil penalty for unauthorized tree removal.
- Provide a tree replacement species list.

In addition, grant funds are available through the NC Forestry Service – Urban & Community Forestry Program to assist the town in crafting a tree preservation ordinance that is tailored specifically to the needs of Oak Island. More information can be found on the following website: http://ncforestservice.gov/Urban/urban_grant_overview.htm

COMMUNITY FACILITIES

A previous discussion of community facilities and services was detailed in the Existing Conditions section of the plan, beginning on page 3-39. Discussion contained in this section refers to future needs and concerns of community facilities identified by Oak Island staff, department heads, the Comprehensive Plan Advisory Committee (CPAC), and the general public. Future studies, budgetary discussions, and priorities for identified concerns must take place prior to an implementation of improvements.

Public Works

As mentioned previously, the Town of Oak Island Public Works Department performs many important functions for the Town of Oak Island. The following are just a few of the services performed by the Public Works staff: facilities maintenance, fleet maintenance, stormwater systems management, street maintenance, street sign maintenance, public right-of-way mowing, yard waste collection, household hazardous waste collection, beach trash collection, and mosquito control.

The following needs have been identified by the Department:

- Stormwater mitigation and drainage concerns at SE 70th Street and SE 17th Street
- Yard waste collection delays and backlog
- Staff shortages during summer months

Public Utilities

Wastewater System Capacity

On July 5, 2015, Oak Island's municipal sewer system received its highest peak usage to date at 1.7 million gallons. The wastewater system has a total capacity of 3.6 million gallons per day (gpd), of which 200,000 gallons per day are allocated for use by Caswell Beach. Based on this peak usage, approximately 1.7 million gallons of capacity remain in the system for use by Oak Island residents and businesses. To calculate future wastewater demand, the number of additional users (population) must be multiplied by a per capita consumption rate. The island build-out analysis, seasonal population estimates, and population projection methodologies are used to calculate the number of additional persons that will be using the system. NCDEQ standard per capita design flow rates for residential and non-residential development are used to calculate the future wastewater demand. Sewer service provided by the Town of Oak Island is available primarily on the island (see Map 19). There are no plans to provide sewer service for land located on the mainland. Thus, calculations for wastewater demand are based on use attributed to the island.

Residential and Non-Residential Wastewater Design Flow Rates:

- Residential Design Flow .
 - Peak Day – July 5th, 2015 = 43.8 gallons per person were used based on an estimated seasonal overnight population of 38,808.
 - NCDENR Recommended Design Standard: 60 gallons per person per day (gpcd) when occupancy of a dwelling unit exceeds two persons per bedroom.
- Non-Residential Design Flow
 - NCDENR bases design flow rates for non-residential development on the type of establishment that will be served by the system.
 - Retail and office uses are the primary non-residential establishment type on the island.
 - An average design flow rate of 100 gallons per 100 square feet of floor space is used.

Residential Wastewater Demand at Build-Out on the Island:

- 3,802 additional housing units.
 - 2,305 seasonal housing units x 5.8 persons per household = 13,369 seasonal population.
 - 1,497 permanent housing units x 2.02 persons per household = 3,024 permanent population.
 - Peak day population increase = 3,780 (3,024 permanent population plus a 25% increase).
 - Estimated additional users at build-out on the island = 17,149 persons.
 - 17,149 persons x 60 gpcd = 1,028,940 gallons per day.

Non-residential Wastewater Demand at Build-Out on the Island:

- 265,703 square feet of non-residential development.
 - 265,703 gallons per day.

Estimated Additional Peak Day Demand for Wastewater on the Island at Build-out:

- 1,294,643 gallons per day.


Total Peak Day Demand for Wastewater on the Island at Build-out:

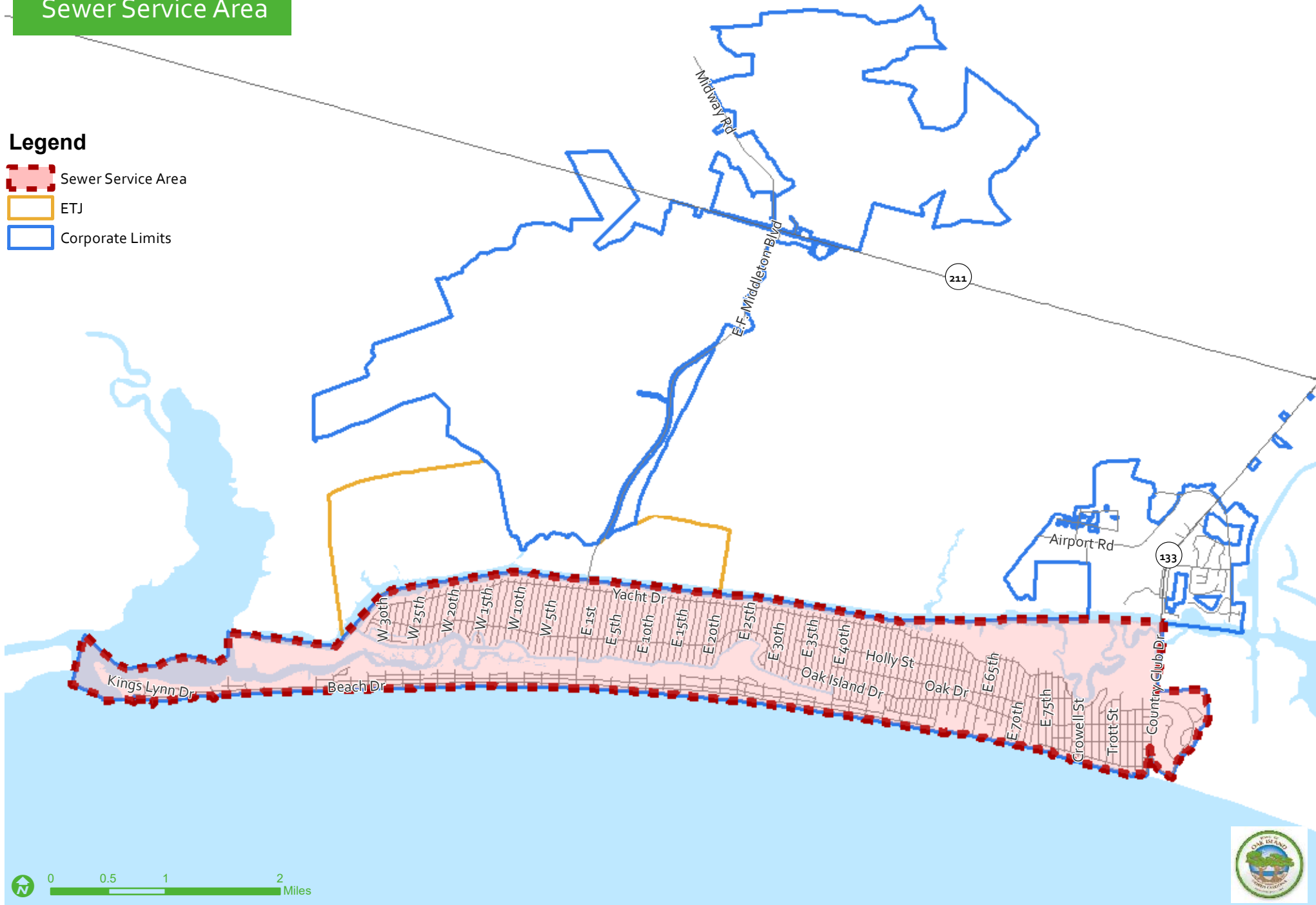
- 1,700,000 gpd peak day current + 1,294,643 gpd peak day future demand = 2,994,643 gpd.
 - At build-out on a peak day, the system is estimated to operate at 88% of capacity.
 - Estimated excess capacity at build-out on the island = 405,357 gpd (excluding 200,000 committed to Caswell Beach).

The calculations above do not account for potential non-residential development such as resorts or hotels. The build-out calculations are based upon existing zoning development regulations and available vacant land.

Map 19: Town of Oak Island Sewer Service Area

Legend

-  Sewer Service Area
-  ETJ
-  Corporate Limits



Water Service

As noted in previous sections, the town's water source comes from a purchase agreement with Brunswick County. The purchase agreement provides the amount of water necessary for the town to meet its projected 2040 year-round demand without exceeding supply. By 2040, the demand for water is projected to account for 76% of the capacity. For more information on water supply, please see the Local Water Supply Plan on the town's website. The Town's identified needs include the following:

- Automatic meter system
- New water tower on west end of island

Parks and Recreation

As stated previously, the Parks and Recreation Department is in the process of updating the parks and recreation master plan. Recommendations for future improvements will be included in the updated Parks and Recreation Master Plan. Needs identified by the CPAC and recreation department staff are provided below.

- New Island Future Park
 - Playground
 - Kayak/Canoe Launch
 - Splash Pad
- Recreation Center Expansion
 - Gymnasium
 - Fitness Center
 - Aerobics Room
 - Office Space
 - Storage
- Greenways/bike paths throughout the Town
- Additional mainland park facility
- Maintain beach and marsh as public trust areas
- Provide ICWW access via the NC 133 bridge and the EF Middleton Boulevard bridge.

Police

According to the department, many of the staff, training, and vehicle needs are currently met. Future needs identified by the CPAC are provided below.

- Increase staff and patrols during summer months, holidays, and peak crime periods (use of cameras at various locations may reduce this need).

- Improve enforcement of regulations (i.e., parking on streets and golf carts).
- Increase year-round staff.
- Provide non-police interaction with community, especially on patrols.

Fire

In the future, the Fire and Rescue Department hopes to partner with the Public Works Department to develop a training grounds facility next to the existing maintenance yard north of the airport. The department will also need to ensure adequate service is provided to future residents of The Pine Forest development located on Highway 211. An agreement for service to the development will need to be arranged. Land for a station within The Pine Forest development and funding for construction of a building is necessary to provide adequate fire service in the area. The department would benefit from specialized equipment to provide fire suppression to the Cape Fear Regional Jetport.

Within the next ten years, the department expects that it will need to add a designated training officer, a second administrative assistant, a full-time mechanic, and a full-time fire inspector.

Development Services

The Development Services Department will continue to provide the following:

- Review, approve, and issue building, CAMA, and zoning permits.
- Provide inspections of all permits issued including maintenance of all files associated with the permits and permitting process.
- Provide Code Enforcement to enforce the requirements of the local Zoning Ordinances and other codes for the Town.
- Review and make recommendations for citizens' requests and/or text amendments to the Zoning Ordinance.
- Manage the Hurricane Response Team, which serves to assess damage incurred by the Town following a hurricane. The Department then collates the data, analyzes the information, and creates a report for the Town and Federal Government agencies.
- Operate the Community Rating System for the Town, which ensures that the Town complies with federal requirements for Hurricane and Flood Protection in order for the property owners to receive discounts on their insurance rates.

- Provide periodical articles and brochures concerning hurricane preparedness, building requirements, flood damage, and zoning requirements for the community.
- Work with Planning Board and Board of Adjustment.

The Town will consider its options for more robust code enforcement and continuously monitor the need for additional enforcement staff.

TRANSPORTATION

Understanding the relationship between transportation systems and land use planning is vital to fostering successful urban environments. Planning for where we live, work, and play should coincide with the design of transportation networks. Land use patterns are largely a result of the dominant transportation systems in a given community. In addition, planning that considers not just the automobile, but also the pedestrian and cyclist, will result in better urban form and more attractive places to live.

As stated previously, the 2010 Brunswick County Comprehensive Transportation Plan provides discussion of existing and future needs for Oak Island's transportation system. The plan outlines roadway and bicycle facility improvements. In 2006, a Comprehensive Bicycle Transportation Plan was created for the town. And in 2009, a Golf Cart Transportation Plan was created for the town. Items presented in each respective plan will be addressed in this section. At the time of preparation of this document, the Cape Fear Council of Governments was beginning preparation of a regional bicycle plan for the Cape Fear Region (Brunswick, Columbus, New Hanover, and Pender Counties, and parts of Bladen, Onslow, and Sampson Counties).

Roadways and Vehicular Travel

Descriptions of recommended roadway projects that will impact the Town of Oak Island, included in the 2010 Brunswick County Transportation Improvement Plan (TIP), are provided. The project status is provided from the Cape Fear Area Rural Planning Organization, which develops and prioritizes suggestions for transportation projects in the region. Refer to figure below and Appendix B for level of service (LOS) examples.

LOS	Automobile	Bicycle	Pedestrian	Bus
A/B				 >4 buses/hour
C/D				 2 to 4 buses/hour
E/F				 ≤ 1 bus/hour

Examples of LOS by Mode for Urban Roadways *Image Source: FDOT Quality/Level of Service Handbook 2013.*

NC 133, Local ID: BRUN0009-H

NC 133 (Country Club Drive/Long Beach Road) currently exceeds capacity from NC 211 to Oak Island Drive. Improvements are needed to relieve congestion on the existing facility in order achieve a LOS D on the facility.

NC 133 is currently a two- to three-lane major thoroughfare with 12-foot lanes. The 2005 AADT along this facility ranges from 16,000 to 22,000 vehicles per day (vpd). By 2035, projected traffic volumes along this facility will range from 38,800 to 53,400 vpd, compared to a LOS D capacity of 15,000 vpd.

The NCDOT proposed project includes widening the existing major thoroughfare to a multi-lane facility from NC 211 to Oak Island Drive. In conjunction with the implementation of the Midway Road (2nd Bridge to Oak Island – TIP R-2245), the proposed improvement to NC 133 will address the capacity deficiency along this facility.

The 1998 Oak Island Thoroughfare Plan recommended widening this section of NC 133 to five lanes.

Project Status: Unfunded, not a priority at this time.

NC 211, TIP No. R-5021

NC 211 is currently over capacity from Midway Road (SR 1500) to NC 87. The 2012 –2018 TIP includes project R-5021 that is intended to address this problem. The project includes widening the existing major thoroughfare to a multi-lane boulevard. This project is currently in the planning and design phase.

Project Status: Funded and ongoing.

NC 211, Local ID: BRUN0012-H

NC 211 is currently approaching capacity from Stone Chimney Road (SR 1115) to Fodale Avenue in Southport. By 2035, NC 211 is projected to be over capacity from Big Macedonia Road (SR 1342) to Moore Street in Southport. Improvements are needed to relieve congestion on the existing facility and to accommodate projected traffic volumes in order to achieve a LOS D on the facility.

NC 211 is currently a two- to three-lane facility with 12-foot lanes. The 2005 AADT along this facility ranged from 3,300 to 18,000 vpd. By 2035, projected traffic volumes along this facility will range from 10,200 to 43,700 vpd, compared to a LOS D capacity of 11,000 to 15,000 vpd. Additionally, between July 1, 2003, and June 30, 2006, four intersections along this corridor were identified as having 15 or more crashes.

TIP project R-5021 addresses the deficiency along this corridor from Midway Road (SR 1500) to NC 87. The proposed project is to widen the existing facility to a multi-lane major thoroughfare from the proposed I-74/I-140 Connector to US 17 and a multi-lane boulevard from US 17 to Midway Road (SR 1500) and from NC 87 to Moore Street in Southport.

The 1998 Oak Island Thoroughfare Plan recommended widening NC 211 to four lanes from Midway Road (SR 1500) to NC 133. The 2001 Brunswick County Thoroughfare Plan recommended widening NC 211 to five lanes from US 17 to NC 87.

Project Status: Funded and ongoing.

Long Beach Road Extension, TIP No. R-3324

The 2012 – 2018 TIP includes project R-3324 which includes constructing a two-lane major thoroughfare on new location from NC 211 to NC 87 at Bethel Road (SR 1525). This project is currently in the right-of-way phase with construction scheduled in 2013.

Project Status: Funded and ongoing. Slated for completion early 2016.

Midway Road (2nd Bridge to Oak Island), TIP No. R-2245

TIP Project R-2245 has been completed since the adoption of the Comprehensive Transportation Plan (CTP). The project involved constructing a new multi-lane boulevard from NC 211 to Beach Drive (SR 1124) in Oak Island.

Project Status: Complete.

Midway Road/Galloway Road (SR 1500/SR 1401), TIP No. R-3434

By 2035, Midway Road (SR 1500) is projected to be near capacity from NC 211 to US 17 Bypass. The 2012 – 2018 TIP includes project R-3434 that is intended to address this problem. The project includes widening the existing major thoroughfare to multi-lanes, part on new location. This project is currently in the planning and design phase.

Project Status: Unfunded, but will be completed in sections. Roadway has been upgraded to a NC route (NC 906).

Oak Island Drive, Local ID: BRUN0016-H

Oak Island Drive is currently near or exceeding capacity from Middleton Avenue (SR 1105) to Country Club Drive (NC 133). By 2035, this section of Oak Island Drive is projected to be over capacity. Improvements are needed to relieve congestion on the existing facility and to accommodate projected traffic volumes in order achieve a LOS D on the facility.

Oak Island Drive is currently a three-lane facility with 12-foot lanes. The 2005 Average Annual Daily Traffic (AADT) count along this facility ranges from 13,000 to 15,000 vpd. By 2035, projected traffic volumes along this facility will range from 31,600 to 36,400 vpd, compared to a LOS D capacity of 15,000 vpd.

The proposed project includes widening the existing facility to a multi-lane major thoroughfare from Middleton Avenue (SR 1105) to Country Club Drive (NC 133).

Project Status: Unfunded. Project should be reassessed with up-to-date traffic counts due to construction of second bridge. Right-of-way constraints are a concern.

See Map 20 for future roadway facilities for the Town.

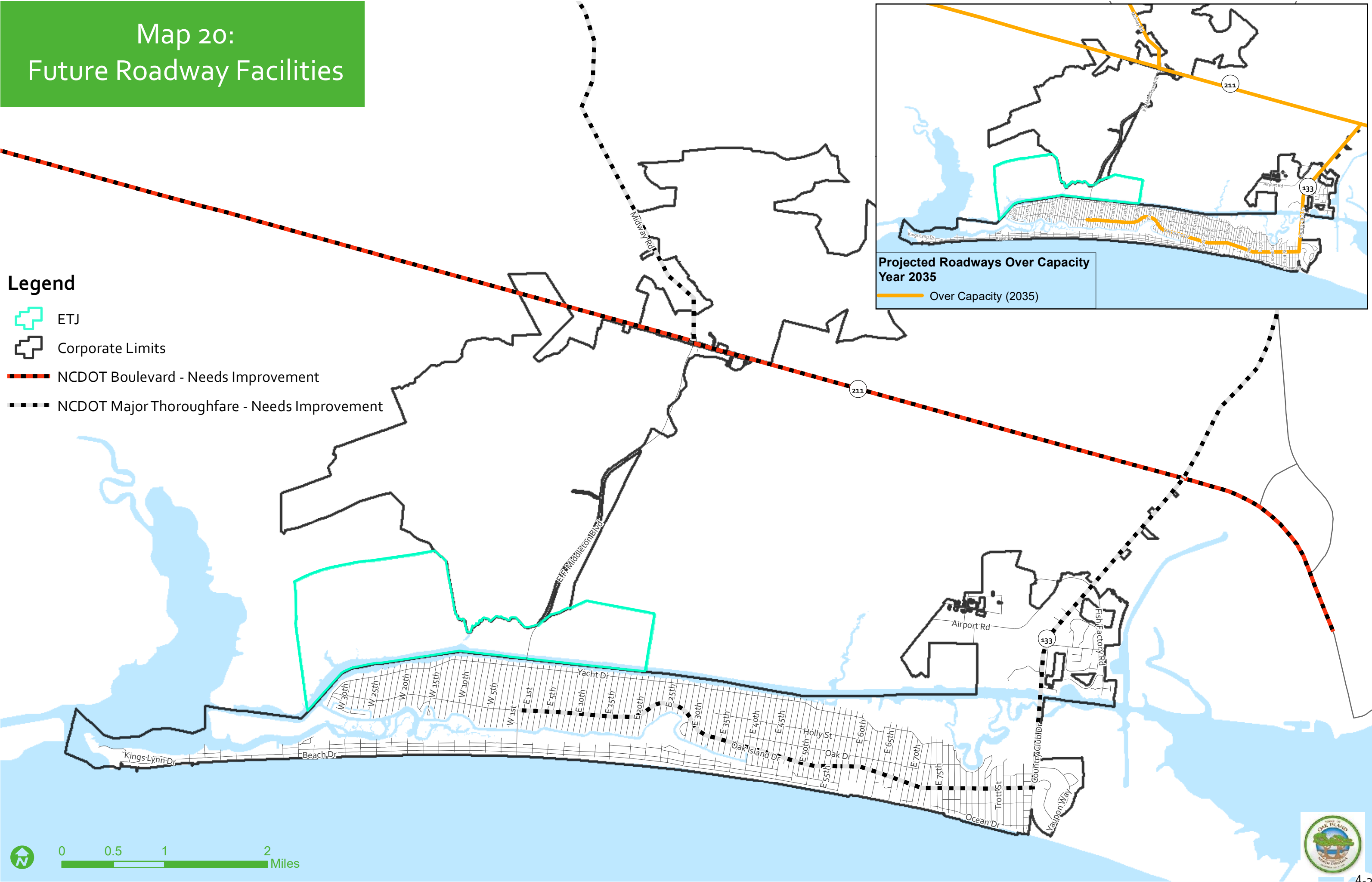
Map 20: Future Roadway Facilities

Legend

- ETJ
- Corporate Limits
- NCDOT Boulevard - Needs Improvement
- NCDOT Major Thoroughfare - Needs Improvement

Projected Roadways Over Capacity
Year 2035

Over Capacity (2035)



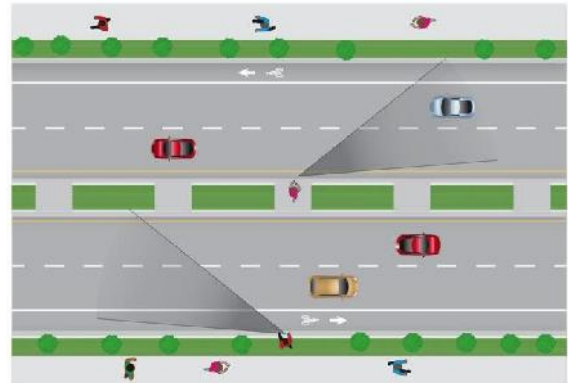
Additional roadway concerns have been identified by the CPAC and public:

- Access management concerns are present along EF Middleton Boulevard. A proposed second entrance to St. James has some residents concerned. Emergency evacuation along EF Middleton Boulevard is also a concern. An access management plan should be created for EF Middleton Boulevard in concert with the town and NCDOT. Additional growth may exceed the capacity of Middleton Boulevard, impeding traffic flow.
- There is limited right-of-way on Oak Island Drive to allow for widening. However, capacity issues may be less of an issue in the future due to the addition of the second bridge.
- The speed limit on Oak Island Drive and other major arteries should be evaluated. A request should be made to NCDOT to conduct a speed limit study.
- The feasibility of a roundabout at the intersection of Oak Island Drive and NC 133 should be assessed.
- The need for additional crosswalks on Oak Island Drive needs to be assessed.

Pedestrian and Bicycle Travel

Town residents have expressed a desire to increase the availability of non-motorized facilities within the town. As mentioned previously, a Comprehensive Bicycle Plan was created for the town in 2006. Currently, no pedestrian plan exists for the town. However, planning grants are available through NCDOT to create a Comprehensive Pedestrian Plan. There is a demonstrated need for pedestrian facility enhancements within the corporate limits, particularly on the island, including pedestrian control lights. One of the primary concerns identified by the public is the danger associated with crossing Oak Island Drive. No dedicated crossing facilities currently exist for pedestrians. It should be noted that pedestrian countdown signals can be installed only at signalized intersections such as NE 58th and Oak Island Drive (see page 4-27). However, to reduce safety concerns and crossing distances, medians can be installed intermittently throughout the business district to allow pedestrians to cross Oak Island Drive in two stages.

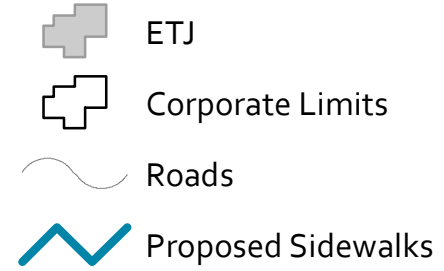
Recommendations from the 2006 Bicycle Plan are included on Map 21, in addition to proposed pedestrian facilities such as crosswalks and sidewalks. The existing bike paths should be maintained.



Medians and crossing islands allow pedestrians to complete the crossing in two stages. *Image Source: Michele Wiesbart.*

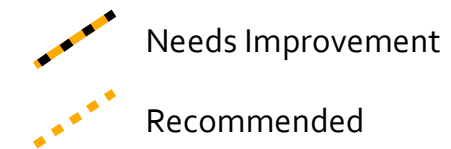
Map 21: Future Pedestrian & Bicycle Facilities

Legend

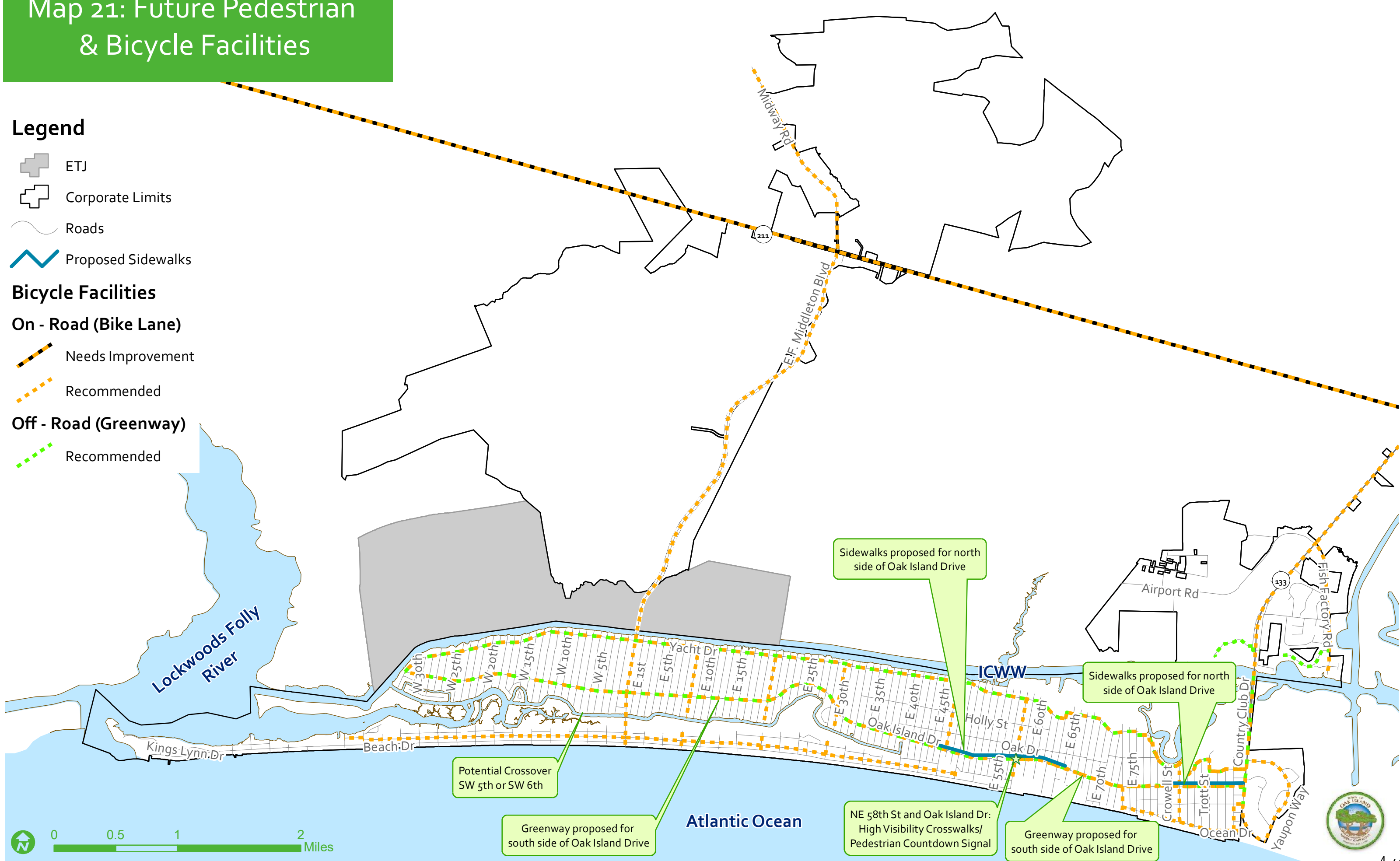


Bicycle Facilities

On - Road (Bike Lane)



Off - Road (Greenway)



Detailed below is a cost estimate of all costs for proposed bicycle and pedestrian facilities in Oak Island, provided by the North Carolina Department of Transportation.

Table 4-7. Proposed Bicycle & Pedestrian Facilities

<u>Facility Type</u>	<u>Length/Number</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Sidewalk	8,552.26 ft	\$32 per foot	\$273,672
Greenway	16.92 mi	\$481,400 per mile	\$8,144,818
Pedestrian Countdown Signal	4	\$15,000	\$60,000
High Visibility Crosswalk	4	\$1,000	\$4,000
Total Cost			\$8,482,490

Source: NCDOT.

Golf Carts and Low Speed Vehicle Transportation

As stated previously, a Golf Cart Transportation Plan was created for the Town in 2009. The plan was accepted by the Town Council, but not formally adopted. Safety concerns and cost weighed heavily in not adopting the plan. The plan recommended creating off-street paths for golf cart travel and outlined a number of design recommendations for the inclusion of golf carts in the transportation system. However, there are no plans to implement the recommendations and policies contained in the 2009 document.

BEACH RENOURISHMENT & MAINTENANCE

According to public input received during the comprehensive planning process, identifying funding and continuing to nourish and maintain the beach are among the most important issues facing Oak Island's future. From March until June 2015, a dredging and sand placement project took place on the western end of the island. The project enhanced the navigability of the eastern channel while also replenishing sand on the ocean side where erosion threatened several homes and infrastructure. The project was funded by a combination of town accommodation tax funds, NC Department of Environmental Quality (NCDEQ) matching funds, and Brunswick County funds.



Lockwood Folly Habitat Restoration Project – Dredging of Eastern Channel. *Image Source: Moffat & Nichol.*

A Shoreline Management Plan is currently being prepared for the Town by Moffat & Nichol. A summary of findings will be added upon completion of the plan.

Funding formulas for beach renourishment projects are being evaluated by the Beach and Inlet Committee. In any formula, the town needs to have a significant and recurring source of town funding for beach nourishment to preserve the town's number one asset – the beach and its associated protective dune structure. In the future, the Town hopes to establish a 30-year renourishment program, with a recurring replenishment every five years. Grant funds for beach renourishment must be continuously pursued.

OCEAN AND ESTUARINE ACCESS

In 2012, an Ocean and Estuarine Access Plan was prepared to identify additional locations for accessing public trust waters. It should be noted that the plan was accepted by the Town Council, but not formally endorsed through adoption. The plan is included as a reference but not as specific recommendation(s). Parking, beach and waterway access, and non-motorized access points were all inventoried as part of the process. Primary access issues and recommendations from the plan are provided below. Area sites should be increased/standardized and the 2012 plan updated. The updated plan should be prepared using the following recommendations for reference.

Access Issues

- Request NCDOT to permit use of areas:
 - Under Swain's Cut Bridge (shoreline and lot)
 - Old bridge roadbed adjacent to State 133
- Additional parking at NE 55th Street boat ramp
- No improved water access facility on mainland (Bill Smith Park)
 - kayak launch/fishing pier
- Bill Smith Park
 - No signs with hours of use posted on piers, fishing Ts, or walkovers for all recreational areas as required per Town ordinance.
- Identify funding for beach renourishment
 - Accommodations tax
 - Additional ad valorem tax
 - Paid parking
- Establish process for increasing access sites
- Selected CAMA Land Use Plan projects
 - Yacht Drive Sidewalk Project (proposed)
 - Walkover west of Middleton (proposed)

Recommendations – Ocean Access (OAR)

- OAR 1. It is recommended that the Town provide the necessary funding to maintain in good repair all existing ocean access sites, their associated existing parking facilities, and existing amenities.
- OAR 2. As a general management principle, it is further recommended that the Town neither acquire new ocean and estuarine access sites nor expand existing beach facilities unless all existing facilities are in good repair.
- OAR 3. It is recommended that the Town temporarily increase from 2% to 3% the amount of revenue received from the 6%

Accommodations Tax (Brunswick County receives 1% and Oak Island receives 5%) that is restricted to beach renourishment.

- OAR 4. It is recommended that the Town evaluate the cost and benefits of constructing a Cabana at The Point on Town-owned property at the ocean-side access site.
- OAR 5. Only six ocean access sites have one or more reserved handicapped parking spaces. It is recommended that the Parks and Recreation and Public Works Departments reevaluate the number and distribution of ocean access handicapped parking.

Recommendations – Estuarine Access (EAR)

- EAR 1. It is recommended that demand for capital expenditures for ocean and estuarine access site improvements be determined through:
 - A survey mailed to every household in Oak Island and to non-resident property owners; and
 - A voter survey/referendum every two years on capital spending that includes cost data for potential improvements in ocean and estuarine access sites.
- EAR 2. It is recommended that the construction of walkovers across Davis Canal west of Middleton be withdrawn from the Town's CAMA Land Use Plan:
 - It could impair navigation in the deeper waters of Davis Canal;
 - It could violate the right of navigational in public trust waters rights; and
 - Its construction would affect the appurtenant easement rights of property owners along the access street.
- EAR 3. It is recommended that when funds become available, a single pier with a floating dock at the unimproved access site in Bill Smith Park be given a high priority for funding.
- EAR 4. It is recommended that the Town increase the amount of parking for vehicles with attached trailers in the immediate proximity of the NE 55th Street boat ramp. The limited parking at the site has resulted in underutilization of the boat ramp.
- EAR 5. It is recommended that the Town provide the necessary funding to maintain its boat ramps in good repair.
- EAR 6. It is recommended that the Waterway Park's multi-use concept of a small park with a boat ramp be abandoned. A more compatible option is a recreational park with a scenic vista and with an enhanced fishing potential through the ongoing construction of a "living shoreline" using bagged oyster shells and marl.
- EAR 7. It is recommended that an agreement with NCDOT be negotiated to allow improvements to the old Oak Island Bridge

roadbed adjacent to State Road 133 and Swain's Cut Bridge so fishermen can access these areas for bait casting, crabbing, and fishing.

- EAR 8. It is recommended that the Town comply with its ordinance controlling the hours of use for parks and recreational areas and facilities.

Recommendations – Ocean Site Selection (OSSR)

- OSSR 1. It is recommended that when unbuildable oceanfront lots become available, the Town will follow the recommended procedures for acquiring new access sites.
 - Establish need for additional access and parking.
 - Investigate funding assistance from federal and state sources to determine affordability.
- OSSR 2. If an unbuildable oceanfront lot becomes available and is considered for purchase, the loss of the discounted lifetime revenue stream from property taxes will be considered in the cost of acquisition.

Recommendations – Estuarine Site Selection (ESSR)

- ESSR 1. It is recommended that the Town's estuarine and ICW access policy give priority to street-end access improvements at locations where adjacent property owners consider the project as an improvement to their quality of life.
 - The majority of property owners along the street-end should be in agreement, as increased traffic on their street-end would affect their quality of life and appurtenant easement rights.
- ESSR 2. It is recommended the highest priority for selection of estuarine access sites should be State or Town-owned property adjacent to the ICW or creek/waterways.
 - Second in priority are access locations where both property owners at the street-end and residents along the street-end would welcome the building of a pier with floating dock or a fishing T.
 - Where property owners do not welcome construction of a pier with floating dock, fishing T, or other structure, the following priorities are recommended when selecting an access site and exercising the power of eminent domain to legally acquire the street-end property:
 - Waterfront lots on street-ends that have vacant lots on both sides of the street.
 - Waterfront lots on street-ends that have one vacant lot and one house adjacent to the street-end.

- Last in preference and priority, street-ends that have houses on both sides of the street-end.
- ESSR 3. When seeking to improve or acquire new public access to ocean, ICW, and estuarine waters:
 - First, establish the need for more improved access sites.
 - Identify candidate access sites.
 - Determine affordability and adverse consequences if not funded.
 - Perform cost-benefit analyses of the proposed candidate projects.
 - Rank and order/sort the candidate projects based on their cost effectiveness.
- ESSR 4. Analyze unimproved candidate estuarine access sites for:
 - Spatial separation to avoid access redundancy
 - Population density (cost effectiveness)
 - Environmental impact
 - Topography (slope) suitability
 - Stormwater runoff and erosion, and
 - Estuary suitability (right of navigation in public trust waters)
- ESSR 5. It is recommended that Fishing Ts that are more suitable for handicap access by their design (as opposed to piers with ramps to floating docks whose slope is subject to the tide) be alternated with piers with floating docks.
- ESSR 6. To improve the water quality of Public Trust waters, it is recommended, that where possible in choosing among candidate access improvement project locations, preference will be given to selecting streets with the most severe stormwater runoff problem and the worst street-end bank erosion so that the improvement can fix the stormwater issues at these sites.
- ESSR 7. It is recommended that any improvements made to an access site will:
 - Correct and stabilize the existing street erosion along the street;
 - Stabilize the bank of the creek or waterway and marsh at the street-end;
 - Further the Town's compliance with the requirements of its stormwater permit.
- ESSR 8. It is recommended that the Town's Stormwater Director maintain a list of ICW and estuarine street-ends and adjacent lots with the most severe erosion. This list will also include a list of street-end access sites where improvements (bulkheads, piers, etc.) contribute to stormwater runoff and erosion problems for public trust waters.

LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

Many of the development practices and concepts contained in the Leadership in Energy and Environmental Design (LEED) program can be incorporated into Planning and Zoning ordinances, or into an UDO for Oak Island. Many of these practices are logical or common sense and encompass Low Impact Development practices that many municipalities, agencies, and developers embrace, but coding these into an ordinance positions the municipality on the leading edge of sustainability, provides positive identity, and sets up a positive policy environment.

Most of the general practices in the bullets below cost little to nothing in terms of relative dollars; the impact is more about design choices than any marginally more expensive practical application. In cases where certain items might result in higher up front hard costs, the municipality can offer credits, incentives, reduced fees, tax breaks, etc. Some examples of these practices are:

- Site selection of previously developed sites over virgin undeveloped sites. Infill projects are incentivized (applies most notably in the CB, CLD, and CR districts as well as in R6-MF multi-family).
- Incorporation of open/green space buffers in the site design, with targeted percentages designed to meet LEED requirements (specific buffers and setbacks would apply).
- Restoration of pre-development habitat (specific percentages can be applied).
- Minimize impervious surfaces/utilize pervious materials where possible. Design targets, and/or combination of on-site capture/treatment methods, with runoff reduction targets. Employ pervious pavement rather than typical pavement. Provide on-grade wooden decking for congregational spaces rather than impervious, etc.
- Parking requirements can be designed to meet, but not exceed local zoning requirements, i.e., developer should design for typical and/or code targets as opposed to worst-case targets (some designers of retail shops, for example, consider parking capacity on holidays rather than for typical days).
- Encourage carpooling and/or provide spaces for alternative fuel vehicles.
- Provide parking for bicycles, with certain targets to be achieved.
- Reduce water usage on site and in the building – multiple methods (site reduction is much less expensive, meaning that use of indigenous species of plant material containing native/adaptive cultivars can significantly minimize the need for

irrigation – as opposed to the use of low- and ultra-low flow fixtures inside of a building).

- Energy reduction methods on the site (many possibilities here...from color and material selection on roof to implementation of green roof technology to installation of control technologies for energy use...this can also range from inexpensive to expensive and could trigger sliding scale fee reductions, electric rate incentives, etc.).

HABITAT CONSERVATION RECOMMENDATIONS

In consideration of the extensive valuable wildlife habitat areas located in Oak Island's jurisdiction, the NC Wildlife Resources Commission recommends the following considerations for future development:

- Crafting conservation development standards or incentives.
- Density bonuses and other incentives to protect riparian and wetland forest buffers and habitat corridors.
- Establish a 100 foot protection buffer outside of conservation areas on the mainland on each side of perennial streams in order to conserve aquatic life and water quality.
- Require major development (100 parcels or larger) to employ Low Impact Development techniques to treat stormwater onsite using the natural topography and vegetation.
- Utilize the NCWRC Green Growth Toolbox as a guide for future development.

ECONOMIC CONSIDERATIONS

As part of the community survey, respondents were asked, "What was the most important factor in your decision to live where you currently reside?". The top two results were "natural amenities" and "employment". However, when filtering the results by age, the results were different. More specifically, for respondents aged 50 years or younger, "employment" was the most important factor in their decision to live in Oak Island. Alternately, respondents above the age of 50 reported "natural amenities" as the most important factor in their decision to live in Oak Island. If the town wishes to support younger families, then economic development and the pursuit of a diversified set of supporting businesses should be pursued over the long-term. Economic development strategies recommended are supporting an enhanced business district on the island, a diversified industry base on the mainland, and a natural resource-based economy that supports tourism and the preservation of the island's natural amenities.

In recent years, three different economic development reports were authored for Oak Island. The significant findings from each report are included in this section.

Retail Strategies, LLC, was commissioned by the Brunswick County Economic Development Commission in April 2014 to assess the retail and restaurant expansion potential for four focus areas in Brunswick County. Midway Commons, located at the intersection of NC 211 and Middleton Blvd/Midway Rd was identified as one of the four focus areas. The following excerpt was included in the report:

"211 MIDWAY COMMONS

Currently Long Beach Road [NC133] is the feeder road to St. James and Oak Island. Within Brunswick County, St. James ranks among the top census tracts in housing density, income, age over 55, and retail expenditures. The existing tenant mix at the intersection of NC211 and NC133 does not properly cater to the consumer spending habits of the population existing in close proximity to the retail development node.

To answer this demand, sitework began on a new shopping center in July of 2013 with estimated completion in 2016. 211 Midway Commons, being developed by Wakefield & Associates based in Raleigh, will be a 90,000 - 110,000-square-foot shopping center at Midway Road and N.C. 211 at the entrance to the Swain's Cut Bridge to Oak Island. Anchoring the new shopping center will be a 44,000-square-foot Lowes Foods, which will have an accompanying fuel station. Approximately nine outparcels, ranging from 2,500 – 6,000 square feet, are included in the master plan. A new Holiday Inn Express opened in summer of 2014 near the site. Suggestions for this area would be to build a high-end tenant mix with a strong combination of local businesses that will serve as a community center to the St. James and Oak Island residents. Categories for the tenant mix should include pharmacy, sporting goods, hardware, home décor, coffee, yogurt, spa, fitness, casual dining, fast food restaurant, health & wellness, specialty foods, and family clothing.

Overall, the intersection [NC211 and NC133] has some of the highest traffic counts, the most tourists, and closest proximity to the wealth and density in the county. The existing retail development does not fully capitalize on the highest and best use of the land. Power lines to the west of Lowe's prevent perhaps the best property from being developed on a large scale. The new 211 Midway Commons development will create a challenge to fully develop this intersection to its maximum potential. Relocations of existing retail will also prove to be a challenge. Given the current retail landscape, it is best to continue to focus on value, convenience, and service oriented retail. Several build-to-suit opportunities ideal for quick service restaurants, casual dining, convenience stores, and hotels exist. Should relocations cause vacancies, backfilling existing space could be fitness, churches, medical uses, veterinarian, vacation rentals and events, and other service oriented uses.

CONCLUSION

Brunswick County is underserved in certain retail categories; therefore, it can support additional retail stores and restaurants. The tourist and retiree population challenge the retail sales estimate projections conducted by the retailers. The retail real estate industry is on the upswing, as many retailers are announcing expansion plans. With the proper contacts and research, Brunswick County should aggressively market its opportunities in order to remain competitive in the retail arena. Brunswick County should market the four intersections addressed in this report to local and regional developers to make them aware of these potential regional shopping center development locations."

In 2011, a Business and Development Plan was prepared for the Town by the NC Department of Commerce. The plan provided observations related to the retail trade statistics, residential uses, real estate redevelopment, and physical/environmental improvements within Oak Island's two business districts. Observations and recommendations of note are provided below:

Observations: Retail

- Oak Island Business Districts provide goods and services to a primary trade area of 6 miles
- Office/Institutional (OI) Business District captures \$33 Million or 33% of the \$100 million in non-auto retail sales within the six-mile radius trade area
- Remaining \$81.4 million in potential sales within the six-mile radius needs to be captured. Lost to strip shopping and other towns:
 - Primarily in Food Service (restaurants) \$ 9.8 million
 - General (department store) Merchandise \$12.8 million
 - Furniture/Appliances \$8 million
 - Hardware/Building Materials \$4.8 million
 - Health and Personal Care \$ 8 million
 - Apparel \$4 million
 - Food and Beverage (Groceries) \$16 million
 - Gasoline \$18 million
 - Could potentially support up to 50,000 square feet of additional retail space at 10% capture of lost sales.

Recommendations: Retail

- Capture a portion of the \$85+ million in potential sales within the six-mile radius.
- Increase the availability and/or marketing of the identified businesses
- Expand the offerings of existing businesses downtown

- Add stores offering items listed above as being lost to other strip shopping areas/towns

Observations: Residential

- Population growth under 3% 2000-2010
- Residential Building Permits 2006 – 136
- Residential Building Permits 2010 – 39
- Future market improvement could limit residential land for development

Recommendations: Residential

- Residential uses should be permitted in the Central Business (CB) District above street level (Mixed Use).
- The residential areas adjacent to CB District should remain as residential zoning. Primarily single-family.
- Property owners in CB with vacant upper floor space should be encouraged to develop upper floor housing where feasible.
- New developments should incorporate upper floor residential/lodging.

Observations: Lodging

- Survey response inconclusive
- 186 hotel/motel rooms
- 1,000 other/condo/residences
- Importance of lodging facilities
- Importance of hotel/motel – daily rentals
- Economic impact on retail
- Impact on town budget/property taxes
- Local option sales taxes 2010 - \$1.6 million
- Local occupancy taxes: 2009 - \$930,000; 2010 - \$887,000
(NOTE: NC Department of Commerce survey)

Recommendations: Lodging

- Develop market data to support local lodging operators.
- Support development of additional hotel/lodging facilities where feasible.
- Cross marketing with lodging and local businesses.

Observations: Real Estate (Commercial)

- 300 commercial operations on 3,100 commercial acres.
- Vacant parcels used for parking in core CB area.
- Little building vacancy observed.
- Average rents around \$9-12 per square foot.
- Estimated \$100-125 renovation cost per square foot (depending upon condition).
- Estimated new construction cost \$150-200 per square foot.
- Estimated selling price \$173 per square foot.
- Reasonable development feasibility.
- With existing vacancy, there is potential for redevelopment in the core business district, including some upper floor development.
- There is some vacant land for future infill development.

Recommendations: Real Estate (Commercial)

- Identify appropriate potential tenants and/or buyers and match them with suitable available properties.
- Educate property owners and businesses regarding the relationship between development costs, retail sales, and rent.
- Identify potential for new development sites in the CB business district.
- Encourage compatible design.
- Develop physical and visual linkage between new development sites and existing downtown properties.
- Assess impact of new commercial development outside the CB core business district (new bridge area).

Observations: Physical Environment and Amenities

- The physical environment in which a business must function is critical to its success.
- Even the best businesses will not be successful if the surrounding environment is run down, with few amenities, and difficult to access.
- E. Oak Island Drive offers a reasonably attractive business environment.
- Additional streetscape and building improvements are needed to enhance the business district.
- There are available buildings and development opportunities.
- Lack of connectivity.
- Not pedestrian friendly.

- Building setbacks/away from street.
- Parking in front of buildings.
- Lack of design/maintenance standards.

Recommendations: Physical Environment and Amenities

- On-street parallel parking.
- Off-street parking options.
- Contiguous buildings.
- Reduced setbacks/buildings to sidewalks.
- Shady places/gathering spots.
- Design charrette.
- Each employer should see that employees are aware of off-street parking availability and park off-street.
- Additional parking may be needed for the future and should be planned now.

Observations: Capital and Financing

- There is no specific loan program for the CB District offered by local banks.
- No special local grant programs.

Recommendations: Capital and Financing

- A special loan program should be explored with the local financial institutions.
- Local loan/grant programs should be established.
- Tie incentives to design, uses, density, etc. (should be considered as part of the preparation of the Town's UDO).
- Design assistance/design standards.
- Other possible incentives:
 - Façade improvement grants
 - Rental assistance grants
 - Upper-floor residential development loans
 - Commercial renovation loans
 - Possible sources
 - Local financial institutions
 - Fundraisers
 - Town

Observations: Business Development and Assistance

- No downtown committee
- No business association

Recommendations: Business Development and Assistance

- Form downtown/merchants committee
- Coordinate through Town planning

Also in 2011, the Oak Island Commercial Corridor Assessment was prepared for East Oak Island Drive. This report is a companion document to the 2011 Business and Development Plan and prepared by the NC Department of Commerce. Key findings are provided.

Road Corridor Analysis and Concerns

- Sprawled low density development pattern
- Mixed use permitted
- Limited sidewalks
- Suburban higher onsite (off-street) parking requirements
- Uncontrolled parking in front of buildings
- Multiple curb cuts for cars
- Large signage size
- Some landscaping
- Retail drain – off-island big box and large retail

Ideas - Recommendations

- Smaller signs
- Permit higher development density (i.e. subdivision of property)
- Future building placement that abuts sidewalks
- More sidewalks
- Enhanced landscaping
- Improve and controlled parallel street parking
- Reduce off-street parking amount requirements

INFILL REDEVELOPMENT

Infill redevelopment is development or redevelopment of land that has remained vacant and/or is underutilized as a result of the continuing urban development process. These sites are usually served by or are readily accessible to infrastructure (services and facilities) provided by the applicable local government entity. Use of such lands for new housing and/or other urban development is considered a more desirable alternative to continuing to extend the outer development pattern horizontally, thus necessitating a higher expenditure for community facilities and services than would be required for infill development. The use of infill development promotes the best use of resources and, in turn, will tend to have a positive impact upon the tax base. Infill development will also be a positive influence on return on investment (ROI) for the Town.

ⁱ The total number of planned housing units for The Pine Forest Development and the Williamson Tract.

ⁱⁱ The total number of vacant lots on the island proper not impacted by coastal wetlands or conservation easements.

ⁱⁱⁱ 2013 Average Number of Bedrooms per Housing Units (25,551 bedrooms / 8,768 housing units = 2.9). Source: US Census Bureau.

^{iv} According to Oak Island realtors, the average number of persons per bedroom per seasonal/rental unit is 2.0.

^v According to the 2013 Census data, the Average Persons per Household is 2.02 for permanent residents. To establish the Average Persons per Household for Seasonal Units, the average number of bedrooms per housing unit (2.9) is multiplied by the average number of persons per seasonal/rental unit (2.0).

^{vi} Percentages used to calculate permanent versus seasonal residents. Brunswick County mainland municipalities used for comparison include Belville, Boiling Spring Lakes, Leland, Northwest, and St. James. Source: US Census Bureau.

^{vii} Additional traffic counts on NC 133. Existing traffic count data estimates that 11,648.5 vehicles traverse the bridges entering the island/beach area. According to the Brunswick County Comprehensive Transportation Plan (CTP), traffic is expected to dramatically increase on NC 133. At the time the CTP was adopted, the Middleton/Swains Cut Bridge was not complete; therefore, future traffic counts were not provided in the plan. By 2035, the AADT for NC 133 is expected to increase from 15,000 to 38,800 vehicles per day. This occurrence equates to an increase of 23,800 day visitors or an additional 5,950 beach-bound vehicles multiplied by four persons per car.

5. Goals & Implementing Actions

INTRODUCTION

This plan establishes goals and implementing actions for the land use/quality of life issues that will affect Oak Island's future. This section also responds to the NCAC 7B requirements for CAMA certified land use plans. The stated actions are designed to address issues which have been identified by the Advisory Committee, staff, elected officials, and citizens of the Oak Island planning area. The goals and implementing actions are to be applied equally regardless of the cultural, economic, or ethnic composition of the area.

Guidelines are provided for daily planning functions such as rezoning requests, site plan review, subdivision plat review, development agreements, zoning text amendments, conditional use permits, and variance requests. The goals and implementing actions will also assist Town officials in making long-range decisions in such areas as economic development, provision of community services and facilities, transportation planning, community preservation, environmental management, and CAMA regulatory requirements.

This section of the plan includes specific implementing actions for each of the following areas of concern:

- Land Use Compatibility
- Public Access
- Infrastructure Carrying Capacity
- Natural Hazard Areas
- Water Quality
- Local Concerns

The responsibility for implementing the recommendations included in this plan belongs to the Oak Island elected officials. The adoption of this plan is not the end but rather the beginning of a continuous pragmatic process. Opportunity exists for the Town to provide positive direction to development as it continues to occur. How well this plan serves depends on the quality of the plan and how Oak Island officials administer local land use ordinances and capital spending programs. Local administration is often the weakest feature of a Town's planning efforts. The creation of a plan, workable conditions, and capital spending programs is not overly difficult. The true test will come in putting this plan, ordinances, and programs into action on a day-to-day basis. Some of the actions stated in this plan may be implemented in months while others may require years to effectively accomplish. Planning is only as good as the commitment and abilities of the people responsible for implementing the plan. Oak Island has been blessed with involved citizens, dedicated elected officials, and competent staff. It is expected that this will continue into future years.

Goal: A goal is a desired result that a person, system, or organization envisions, plans, and commits to achieve. It is a desired endpoint of some sort of assumed development.

Implementing Action: A specific action which supports the accomplishment of the desired goals.

The goals and implementing actions frequently utilize the following words: should, continue, encourage, enhance, identify, implement, maintain, prevent, promote, protect, provide, support. The intent of these words is defined in Appendix C.

PUBLIC INPUT

A successful planning process must have comprehensive, inclusive, and constructive input from the public. The plan will serve the needs of Oak Island's citizenry and should therefore be written on their behalf.

Throughout the planning process, a multitude of methods was used to solicit public input. A Comprehensive Plan Advisory Committee (CPAC), made up of key community representatives and citizens, was tasked with steering the consultant through the process. To supplement input received from this committee, a public input survey was distributed throughout the Town and posted continuously on a dedicated project website.

Town-wide meetings were also used to gather citizen input. The results of both the survey and public meetings are summarized in this section. See Appendix D to view the community survey results in their entirety.

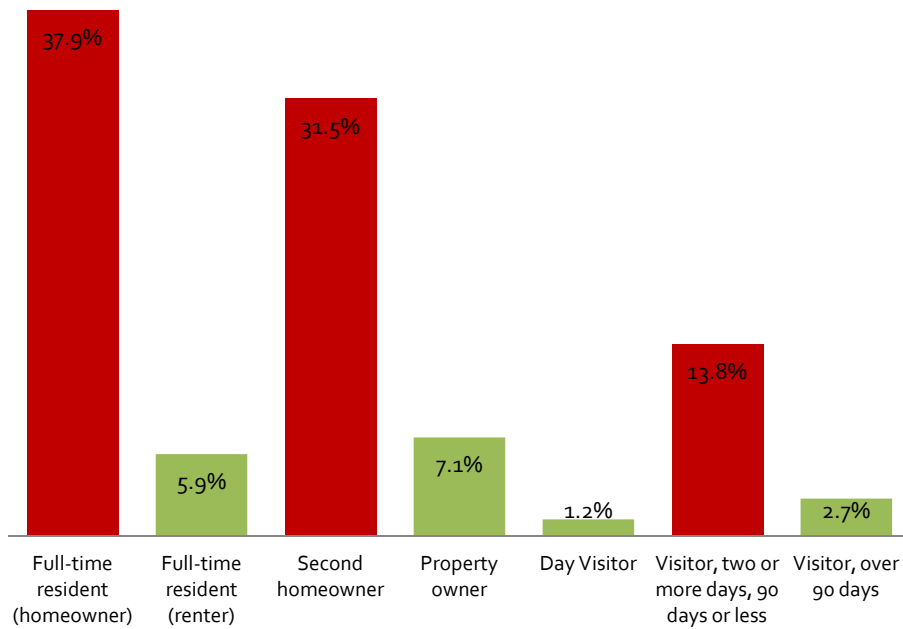
Project Website

At the outset of the project, a dedicated website was established (<http://www.planoakislandnc.net/>). Through December, 15, 2015, there had been 4,995 "hits" on the website. All information concerning plan development was posted on the website. The website provided continuous access for the public to obtain information and provide input.

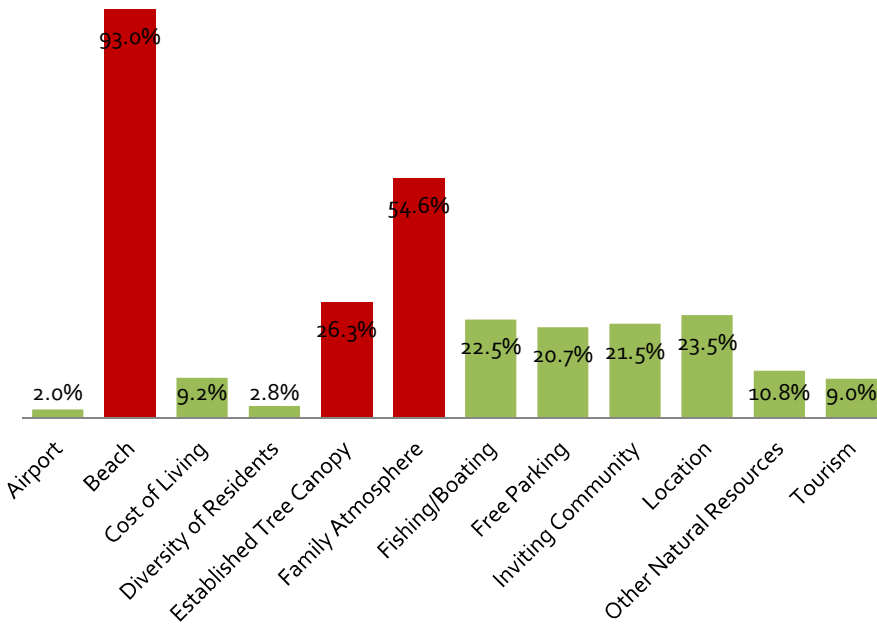
Community Survey Results

At the onset of the planning process, a community survey was created. The survey questions were drafted based upon stakeholder interviews conducted during project initiation. These interviews were conducted with various citizens, Town staff, and elected leaders. From May 12, 2015, to November 1, 2015, 1,921 survey responses were collected (834, or 43.41%, were full-time residents). The survey was made available to residents online and via hard copy. The CPAC members were instrumental in distributing and collecting hard copies of the survey at various institutional and vendor locations within the Town. The survey efforts would not have been nearly as successful without the Committee's efforts. All input from citizens was provided to the CPAC for review. The following summarizes the survey results:

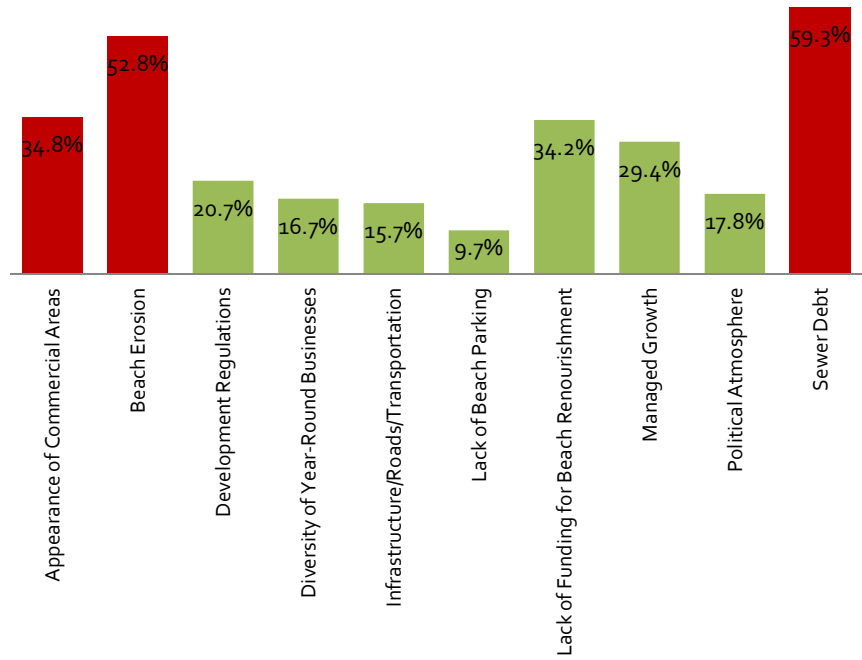
Are you a full-time resident, second homeowner, or visitor?



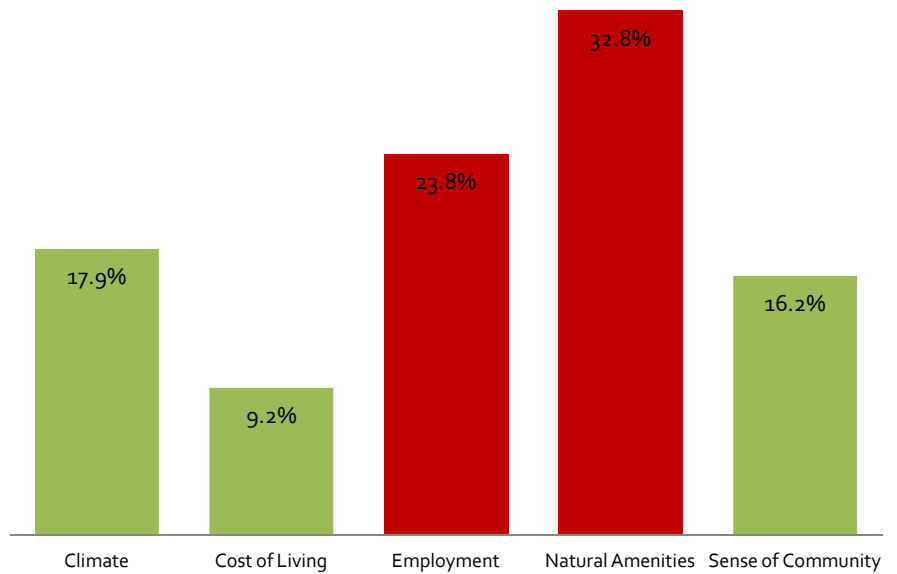
What are Oak Island's top THREE (3) assets?



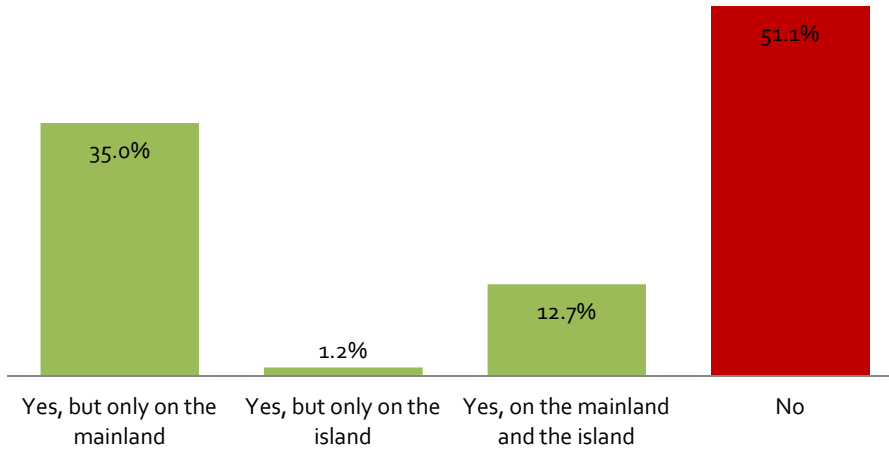
What are Oak Island's top THREE (3) issues?



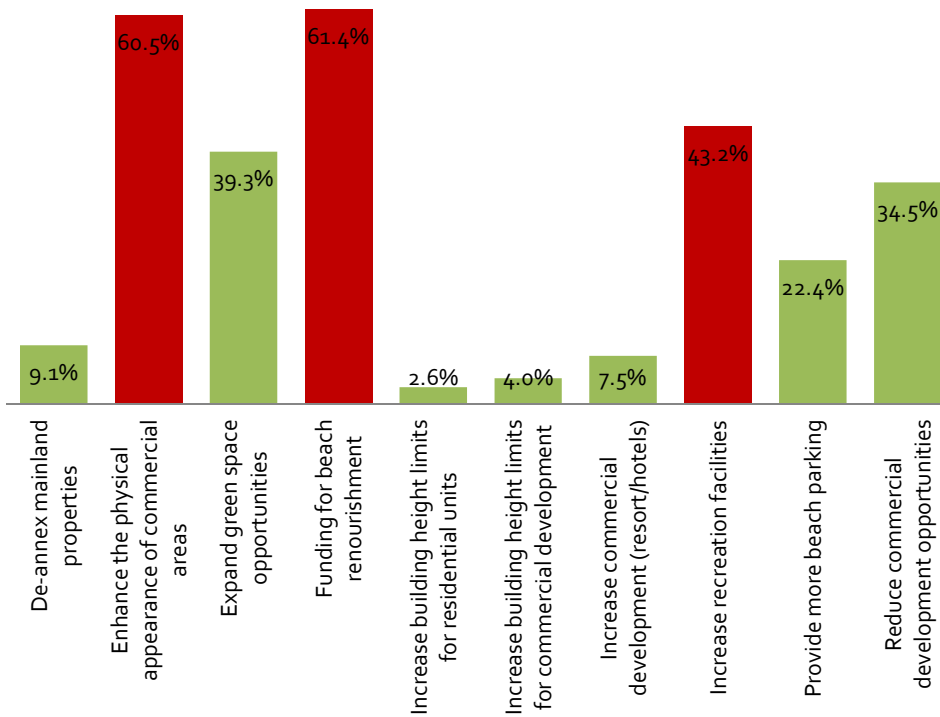
What is the most important factor in your decision to live where you currently reside?



Do you support the future development of resort/hotel(s) in the Town of Oak Island?



If you could change THREE things about Oak Island, what would they be?



Town-Wide Meeting Results

In addition to the Comprehensive Plan Advisory Committee (CPAC) input and outreach survey, two Town-wide input meetings were conducted on November 5, 2015, and November 12, 2015, to better understand the desires of residents. Both meetings were advertised online, in the paper, and through posting of notices in public places.

Approximately 50 people attended the November 5th meeting. This first meeting focused on the identification of future Town concerns/needs which were prioritized by those in attendance. The following provides a summary of the major concerns/needs identified:

1. Managed Growth
2. Beach Renourishment and Maintenance
3. Community Facilities and Services
4. Transportation System
5. Beach Rules and Regulations
6. Code Enforcement
7. Tree Canopy Preservation
8. Parking
9. Environmental Protection
10. Community Appearance
11. Tourism
12. Beach and Water Access
13. Offshore Drilling and Wind Farms
14. Water and Sewer
15. Fiscal Responsibility

Approximately 44 people attended the November 12th meeting. At this second meeting, attendees were asked to participate in a map exercise to identify future land use concerns. Map 22 provides a composite map which summarizes the map input (the data on this map was not analyzed). The attendees were also asked to participate in a visual preference survey to prioritize preferred future appearance images for Oak Island. The survey indicated a preference for: low profile buildings (4 stories or less), increased landscaping in commercial/non-residential areas, tree preservation, and open space preservation. The preferred images for each visual category are as follows:



Buildings



Landscape Material



Streets – Thru-Zone



Streets – Pedestrian/Bicyclist Zone



Open Spaces

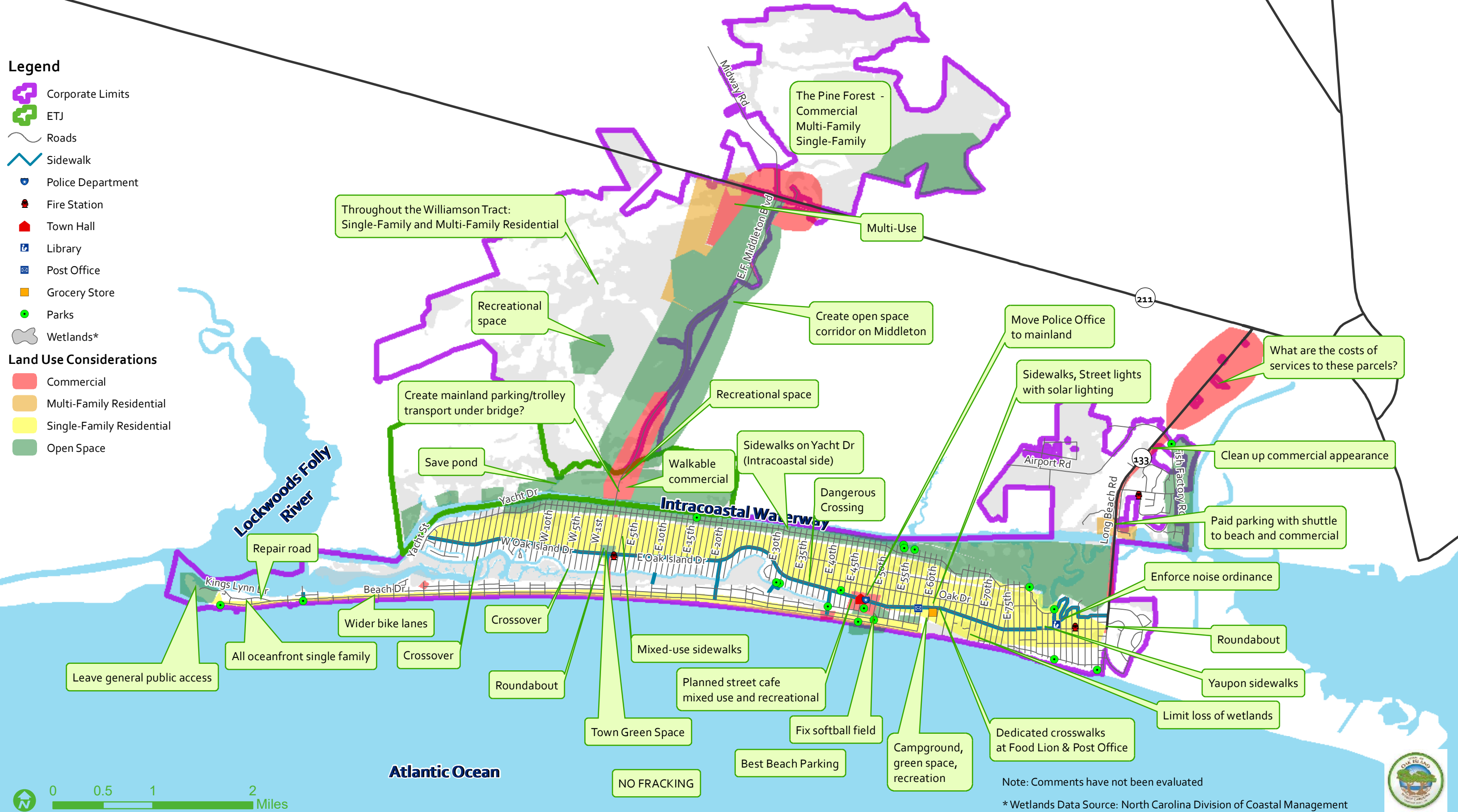


Parking



Map 22:
Public Input Map - 11/12/15

- Legend**
- Corporate Limits
 - ETJ
 - Roads
 - Sidewalk
 - Police Department
 - Fire Station
 - Town Hall
 - Library
 - Post Office
 - Grocery Store
 - Parks
 - Wetlands*
- Land Use Considerations**
- Commercial
 - Multi-Family Residential
 - Single-Family Residential
 - Open Space



GOALS

The following ten (10) planning process goals have been heavily influenced by public input/opinion received during the planning process and the input of the CPAC. An annual review of these goals should be conducted by the Town Council and Planning Board, and adjusted, if necessary, as implementation is accomplished. These goals support carefully managed growth and have been prioritized by the CPAC.

- Goal 1: In all decisions/actions, Oak Island will address the impact on its quality of life and maintenance of a “family beach” atmosphere.
- Goal 2: Oak Island will continuously support and pursue funding options for effective beach renourishment.
- Goal 3: Oak Island will protect the Town’s tree canopy in all pertinent deliberations.
- Goal 4: Oak Island will support improvements to its community appearance as an important tool for economic development and neighborhood preservation.
- Goal 5: Oak Island will consider the fiscal impact on the Town and its citizens in all deliberations.
- Goal 6: Oak Island will support fiscally responsible expansions of its recreational opportunities.
- Goal 7: Oak Island will support fiscally responsible increases in its multi-modal transportation opportunities.
- Goal 8: Oak Island will address, in all deliberations, any negative environmental impact on the Town.
- Goal 9: Oak Island will support robust enforcement and improve consistency in its code enforcement programs.
- Goal 10: Oak Island will strive to expand economic development within its jurisdiction.

These goals are intended to support the specific CAMA Management Goals and Planning Objectives which are stated in the implementing actions section of this plan beginning on page 5-22.

FUTURE LAND USE

The Town of Oak Island's vision for future land use is embodied in the future land use map (Map 23). The map is an objective and cannot always be used as a precise guideline. For example, the map delineates the major areas of coastal, 401, and 404 wetland areas. However, clear and specific delineations of wetland areas must be confirmed through in-field surveys by licensed qualified individuals.

The future land use map should be used as a foundational guide for decisions concerning the zoning/rezoning of property. NCGS 160A-383 requires the following consistency statement:

"Zoning regulations shall be made in accordance with a comprehensive plan. When adopting or rejecting any zoning amendment, the governing board shall also approve a statement describing whether its action is consistent with an adopted comprehensive plan and any other officially adopted plan that is applicable, and briefly explaining why the board considers the action taken to be reasonable and in the public interest. That statement is not subject to judicial review.

"The Planning Board shall advise and comment on whether the proposed amendment is consistent with any comprehensive plan that has been adopted and any other officially adopted plan that is applicable. The Planning Board shall provide a written recommendation to the governing board that addresses plan consistency and other matters as deemed appropriate by the Planning Board, but a comment by the Planning Board that a proposed amendment is inconsistent with the comprehensive plan shall not preclude consideration or approval of the proposed amendment by the governing board."

The future land use analysis includes six (6) land use sectors with some subcategories of land uses. These sectors are based on: (1) current land use patterns, (2) development agreements, (3) physical and man-made limitations, (4) environmentally sensitive areas, (5) input received from the Advisory Committee, public, and Town staff during development of the plan, and (6) future land use goals and implementing strategies. All of the future land use sectors are connected to the Town zoning ordinance districts in effect in 2015/2016. Because a zoning district is connected to a land use sector does not mean that the rezoning of a property(ies) to a particular district is desirable. For example, the rezoning of a parcel which is included in the commercial land use category to highway commercial may not be desirable if the proposed parcel is serving a limited residential area or adjacent to residential development. Rezoning to the neighborhood service district may be more desirable. In addition, multi-modal transportation impacts should be carefully weighed in all zoning deliberations.

It is emphasized that the future land use map cannot be attained/ supported without substantial revisions to the Town's zoning regulations through preparation of a Town Unified Development Ordinance.

Future Land Use Sectors

Commercial

Commercial land uses in the Oak Island planning area are concentrated along the mainland portions of NC 133, in the vicinity of the Oak Island Drive/NC 133 intersection, and along Oak Island Drive from NC 133 to Crowell Street and between 46th to 65th Streets. The existing land uses are delineated on Map 11 and the future land uses on Map 23. Future emphasis should be placed on:

- Redevelopment and beautification of the commercial areas.
- Control of strip development. Strip development is a mix of development, usually commercial, extending along both sides of a major street. Such areas normally include poor access management and a broad range of unrelated commercial uses. Some excessive signage exists along the NC 133 and Oak Island Drive corridors.
- In-fill development in existing commercial locations, especially in the vicinity of the Oak Island Drive commercial areas.
- Prohibition of commercial encroachment on residential neighborhoods.
- Inclusion of some parks/open space to provide pedestrian-friendly and landscaped areas which will "break" the commercial landscape.
- Enhancement of transportation corridor appearance.
- Improvement of ingress/egress control along commercial corridors.

The commercial land use sector includes two subcategories: Thoroughfare Commercial and Neighborhood Commercial. There are approximately 106 acres of vacant commercial land depicted on the future land use map.

- Thoroughfare Commercial (TC). The TC land use sector is designed to accommodate the widest range of commercial activities, and is established to accommodate commercial activities that draw business primarily from, and provide services to, major thoroughfares within the Town's planning jurisdiction. There is no minimum lot size. This sector is consistent with the Community Business (CB) zoning district.

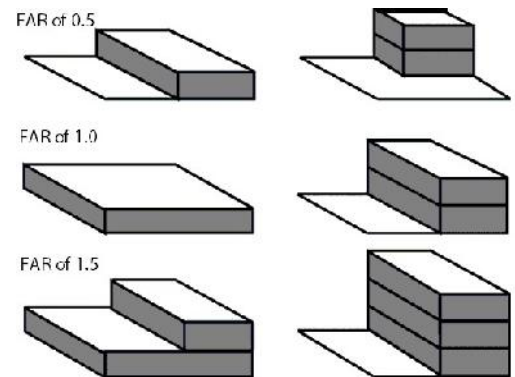
- **Neighborhood Commercial (NC).** The NC land use sector is established for those areas of the community where the principal use of land is to provide for the retailing of goods and services to the surrounding residential neighborhoods and low density commercial areas. The regulations of the sector should be designed to reduce traffic and parking congestion to a minimum in order to protect the surrounding residential area(s). A lesser intensity of development should be achieved through setback, height, and minimum lot size requirements that are more restrictive than those applicable to the CB district. The NC land use sector may provide a transition in some areas between a CB zoning district and residential zoning districts, or may provide for a smaller scale shopping center that primarily serves one neighborhood or area of the Town. The minimum lot size should be 7,500 square feet. This sector is consistent with the Low Density Commercial (C-LD) and Commercial Recreation (CR) zoning districts.

Office Institutional

The Office Institutional (OI) land use sector will provide for the development of office and community institutions that have similar development characteristics and require locations close to residential and commercial uses. This land use sector should prohibit commercial uses. It is intended to encourage the development of office and institutional uses that provide a step down in intensity between developed commercial districts and nearby neighborhoods and conservation areas. The OI land use sector also provides for the development of municipal services sites. The intent of this district is to regulate those municipal developments needed to serve the Town. The minimum lot size is 6,600 square feet. This land use sector corresponds to the Office and Institutional (O&I) zoning district. There are approximately 230 acres of vacant OI land.

Mixed Use

The Mixed Use land use sector is divided into the following subcategories: Residential Mixed Use and Commercial Mixed Use. The desired density within both mixed use land use sectors will be: Nonresidential – 1.0 maximum floor area ratio (FAR); multi-family residential – 1.0 maximum FAR or 12 dwelling units per acre; single-family residential – 0.3 maximum FAR or 6 dwelling units per acre. Floor area ratio (FAR) is determined by dividing the gross floor area of all buildings on a lot by the area of that lot (see image to the right). The FAR may provide a more refined and adaptable measure of intensity than building coverage. It expresses in one measure, instead of several, the mathematical relation between volume of building and unit of land, and



potentially allows greater flexibility for development. However, FAR cannot replace more traditional bulk controls entirely. The FAR is not a sufficient height control nor will it regulate the placement of the building on the site.

Mixed use development may stimulate both in-fill development and new development. There are no existing zoning districts which suitably provide for effective mixed use development. New zoning districts will have to be crafted.

- **Commercial Mixed Use.** This land use sector will allow for the concentration of commercial, service, and residential uses that serve the entire community and region. The district will encourage a mix of high intensity, pedestrian-oriented uses compatibly designed and arranged around a compact core(s). The provision of open space should be an important part of the development. Both vertical and horizontal mixed use should be allowed. Non-residential land use should occupy at least 60% of the developed area. Office and institutional usage is recommended as a buffer/transition between lower and higher density land uses. The commercial mixed use category includes approximately 265 acres of vacant land.
- **Residential Mixed Use.** This land use sector will accommodate both non-residential and residential uses with at least 70% of the developed area being residential. Multi-family development should require a conditional use permit. The non-residential development should serve a localized/limited area. Horizontal mixed use will be preferred. The development should be pedestrian-oriented with significant open space areas. The residential mixed use land use sector should have a minimum impact on adjacent areas. The transportation impacts should be less than the impact from a commercial mixed use development. The Residential Mixed Use land use sector should include non-residential uses which are intended to serve the development and portions of the Town. Non-residential facilities/vendors are not desirable. This land use sector includes approximately 685 acres of vacant land.

Residential

Residential land uses are divided into the following land use categories based on associated variable residential densities: High Density Residential, Medium Density Residential, and Low Density Residential. The location of residential land uses is based on existing residential development patterns and zoning, constraints to development (i.e.,

wetlands, etc.), and the location of infrastructure such as water, sewer, and the transportation network. Future parks/recreation areas and essential municipal facilities may be located in the residential categories.

- **High Density Residential.** This land use sector accommodates one to three unit dwellings and manufactured homes. The minimum lot size ranges from 6,600 square feet for a single-family dwelling to 15,000 square feet for a triplex. Full municipal services should be available to this land use category. Consistent zoning districts include: R-6MF, R-6A, and R-6B. The land use sector includes approximately 697 acres of vacant land.
- **Medium Density Residential.** This land use sector is established for medium density residential uses consisting of single-family and two-family dwellings, and public, municipal service uses. The sector shall be applied in areas currently or proposed to be served by public water and sewer facilities. The minimum lot size is 7,500 square feet with water and sewer. The consistent zoning districts include: R-9, R-7.5 and R-7. This land use sector includes approximately 1,170 acres of vacant land.
- **Low Density Residential.** This land use sector is established for very low density residential uses. The area may serve as a “holding” area pending more dense development. The regulations of this sector are designed for use in areas with a minimum of public services. The minimum lot size is 20,000 square feet. Areas of this category may not currently be provided with water and/or sewer service. The consistent zoning district is R-20. This land use sector includes approximately 2,665 acres of vacant land.

Open Space/Conservation

This land use category includes: Town-owned open space/recreation areas, protected lands (see Table 3-8), significant concentration of wetlands, portions of some natural heritage areas (see Map 10), and areas of environmental concern as defined by NCAC 7H (see pages 3-12 to 3-20).

Please note that because of map scale it is impossible to delineate all conservation areas on the future land use map. In-field verification is required to determine the exact location of conservation areas. This land use sector includes approximately 4,107 acres of vacant land. The sector is consistent with the Open Space (OS) zoning district.

Airport Height Overlay

The purpose of the overlay designation is to promote the safe conduct of aircraft in the vicinity of an airport, to prevent creation of conditions hazardous to aircraft operation, to prevent loss of life and property, and to encourage development which is compatible with airport characteristics. The airport height overlay district is detailed in the Town's Airport Height Control Ordinance. Inclusion in this plan also aids in notifying the public of the existence of the Height Control Ordinance. Generally, the Ordinance prohibits uses which are hazardous to aviation. The entire overlay area extends outward for a horizontal radius of 10,000 feet from runway 5-23. The most important height regulatory areas are the runway approach surfaces. The approach surfaces for runway 5-23 are delineated on the future land use map (Map 23). The approach surfaces slope upward from the runway ends. The runway 5 approach surface is 1,000' x 10,000' x 3,500' at a 34:1 slope. The runway 23 approach surface is 1,000' x 50,000' x 16,000' at a 40:1 slope.

Future Land Use Map

The future land use map (Map 23) is not intended to be an exact “mirror” of the Town zoning map. It should be stressed that although the future land use map indicates a desired pattern for future land use, it is not a regulatory map. The desired land uses portrayed can be changed.

It is recommended that as the need for changes in the land use map become apparent, the map be revised and approved by the Town Council. Table 5-1 provides a summary of the land use category acreages, with available vacant land for each category provided in Table 5-2.

Table 5-1. Total Future Land Use Acreage

Land Use Category	Island	% of Island	Mainland	% of Mainland	Total Town	% of Total Town
Thoroughfare Commercial	29.5	0.81%	127.8	1.43%	157.3	1.25%
Neighborhood Commercial	68.0	1.88%	0.0	0.00%	68.0	0.54%
Office Institutional	0.7	0.02%	361.6	3.55%	317.3	2.53%
Commercial Mixed Use	43.1	1.19%	290.3	3.26%	333.4	2.66%
Residential Mixed Use	0.0	0.00%	902.3	10.12%	902.3	7.19%
High Density Residential	1730.4	47.71%	203.5	2.28%	1933.9	15.42%
Medium Density Residential	672.1	18.53%	880.8	9.88%	1552.9	12.38%
Low Density Residential	132.8	3.66%	2714.2	30.44%	2847.0	22.69%
Open Space/ Conservation	950.5	26.21%	3482.2	39.05%	4432.7	35.34%
Total	3627.1	100.00%	8717.7	100.00%	12544.8	100.00%

Source: HCP, Inc.

Table 5-2. Total Future Land Use Acreage – Vacant Land

Land Use Category	Island	% of Island	Mainland	% of Mainland	Total Town	% of Total Town
Thoroughfare Commercial	4.5	0.26%	67.9	0.83%	72.4	0.73%
Neighborhood Commercial	33.9	1.94%	0.0	0.00%	33.9	0.34%
Office Institutional	0.0	0.00%	230.2	2.81%	230.2	2.32%
Commercial Mixed Use	8.4	0.48%	257.1	3.14%	265.5	2.67%
Residential Mixed Use	0.0	0.00%	684.9	8.37%	684.9	6.90%
High Density Residential	495.6	28.35%	201.1	2.46%	696.7	7.02%
Medium Density Residential	204.6	11.70%	965.7	11.81%	1170.3	11.79%
Low Density Residential	56.5	3.23%	2608.2	31.90%	2664.7	26.85%
Open Space/ Conservation	944.8	54.04%	3162.9	38.68%	4107.8	41.38%
Total	1748.3	100.00%	8178.0	100.00%	9926.3	100.00%

Source: HCP, Inc.

Map 23: Future Land Use

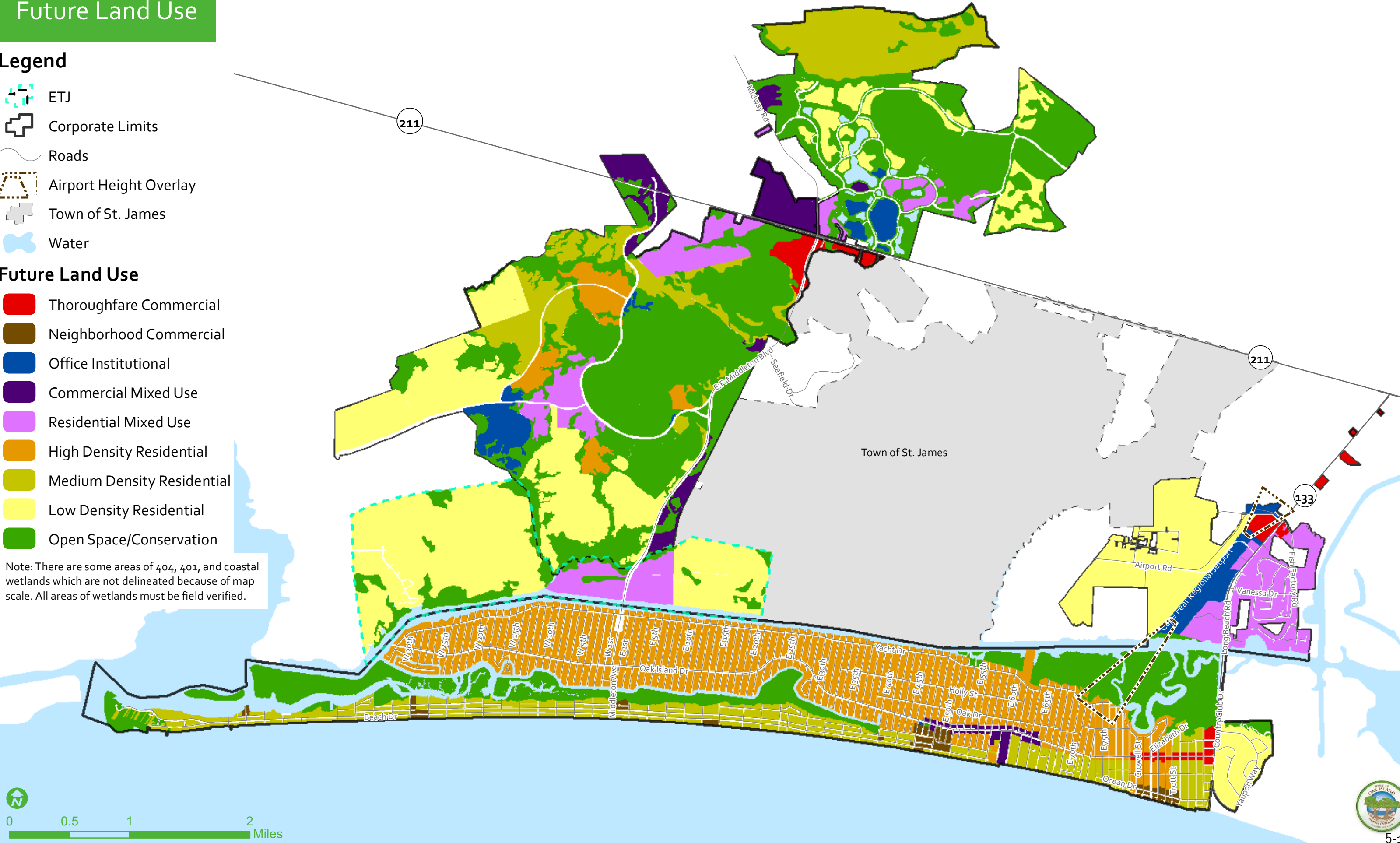
Legend

- ETJ
- Corporate Limits
- Roads
- Airport Height Overlay
- Town of St. James
- Water

Future Land Use

- Thoroughfare Commercial
- Neighborhood Commercial
- Office Institutional
- Commercial Mixed Use
- Residential Mixed Use
- High Density Residential
- Medium Density Residential
- Low Density Residential
- Open Space/Conservation

Note: There are some areas of 404, 401, and coastal wetlands which are not delineated because of map scale. All areas of wetlands must be field verified.



POLICIES REGARDING LAND USE AND DEVELOPMENT IN AEC'S

Oak Island accepts state and federal law regarding land uses and development in AEC's (Areas of Environmental Concern), including all NCAC 7H standards. By reference, all applicable state and federal regulations are incorporated into this document. No policies exceed the use standards and permitting requirements found in Subchapter 7H, State Guidelines for Areas of Environmental Concern. However, Oak Island does not consider the following issues to be relevant at this time within its planning jurisdiction:

- Outstanding Resource Waters
- Maritime Forests
- Peat or Phosphate Mining's Impact on any Resource
- Development of Sound and Estuarine System Islands

The Areas of Environmental Concern and Fragile Areas within Oak Island's planning jurisdiction include the following:

- Public trust areas as defined in 15A NCAC 7H.0207, Public Trust Areas.
- 404 wetlands jurisdiction determinations which can only be made by Corps of Engineers personnel through individual on-site analysis.

For the issuance of CAMA permits within areas of environmental concern, the state's minimum acceptable use standards are defined by 15A NCAC 7H. A local unit of government must adopt policies which are, at a minimum, equal to and consistent with the state's minimum use standards.

The second area of land use plan application is that of establishing policies to guide the jurisdiction's local planning. This process may apply both within areas of environmental concern where CAMA regulations apply and in non-CAMA regulated areas of the town's planning jurisdiction. Under North Carolina legislation, land use plans are not regulatory controls. Non-CAMA related recommendations must be implemented with local land use ordinances such as a Unified Development Ordinance. If this plan recommends that the average residential density should be three dwellings units per acre within a particular area, then that density must be achieved through local regulatory controls. (This should not be confused with the interaction of the land use plan with the CAMA regulations and 15A NCAC 7H use standards.)

The final area of application is that of “Consistency Review.” Proposals and applications for state and federal assistance, or requests for agency approval or projects, are normally reviewed against a jurisdiction’s land use plan to determine if the project is consistent with local policies. Inconsistencies of a project with local policies could serve as grounds for denial or revision of a project. For example, an individual or agency may request state or federal funding to construct a 30-unit assisted living housing project. If the proposed location of the project is within an area in which this land use plan states that the residential density should not exceed two dwelling units per acre, the project may be judged to be inconsistent with the local land use plan.

Note the following policy clarifications:

- No policy is subordinate to another.
- All management topics have equal status.
- The future land use map may show some areas in a developed category which may also include sensitive habitats or natural areas. The intent is that development should be designed/ permitted to protect these areas through utilization of concepts such as specific in-field verification and mapping, on-site plans, and subdivision plats. Development/project approval should be based on project design which avoids substantial loss of important habitat/environmentally sensitive areas.

LAND USE MANAGEMENT TOPICS

A key objective of any comprehensive plan is the creation of a robust and achievable set of goals, objectives, and implementing actions. These items should support implementation of the future land use map.

Implementation of these strategies is the responsibility of Oak Island elected officials, staff, and citizens. Decisions made as a result of this plan should serve to enhance the quality of life for residents, support long-term economic growth, and promote viable land use and development patterns. This plan serves as the town's overall comprehensive plan and also provides for compliance with the CAMA Land Use Plan requirements.

CAMA Land Use Plans must support the goals of CAMA, define the CRC's expectations for the land use policies, and provide a basis for land use plan review and certification. Goals, objectives, and implementing actions are provided for each of the following CAMA management topics: Public Access, Land Use Compatibility, Infrastructure Carrying Capacity, Natural Hazard Areas, and Water Quality, in addition to other local areas of concern. These strategies apply to the town's entire planning jurisdiction.

This plan is intended to support Oak Island's vision statement (page 1-7). No negative impacts are anticipated by the implementation of the goals, objectives, and implementing actions which are included in this plan. The implementing actions are numbered consecutively for ease of reference (i.e., I.1, I.2, I.3). All implementing actions are prioritized/scheduled by: high; medium; low; or continuing. The scheduling for these priorities following plan adoption is: high - within 2 fiscal years (FY2016-2017 to FY2017-2018); medium - 3 to 5 fiscal years (FY2019-2023); low - 6 to 8 fiscal years (FY2024-2026); continuing - a daily implementing action.

NOTE: It is intended that all goals, objectives, and implementing actions are consistent with applicable State and Federal requirements when State and Federal requirements apply. No policies exceed State or Federal requirements, including Subchapter 7H.

MANAGEMENT GOALS, PLANNING OBJECTIVES, AND IMPLEMENTING ACTIONS

Public Access

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

Planning Objectives: 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.

Implementing Actions:

- I.1 The Town will seek state and federal grants to offset the cost associated with acquiring, rehabilitating, and improving public access. Schedule: [Continuing](#).
- I.2 The Town will maintain traditional public recreational uses of "The Point." The Point is the westernmost end of Oak Island formed by the Lockwood Folly River Inlet, the Atlantic Ocean, and the Eastern Channel. Schedule: [Continuing](#).
- I.3 The Town will pursue programs and funding for the maintenance and improvement of publicly-owned T-shaped fishing piers. Schedule: [Continuing](#).
- I.4 The Town will provide public beach access and parking that meet the US Army Corps of Engineer standards for participation in beach renourishment projects. Schedule: [Continuing](#).
- I.5 Marina operators within the Town's jurisdiction will be encouraged to participate in Best Practice Operating Programs such as the "Clean Marina" program sponsored by the NC Division of Coastal Management and the NC Marine Trade Services organization and will be required to provide pump-out facilities. Schedule: [Continuing](#).
- I.6 The Town encourages the development of new upland marinas, and supports the rebuilding of existing marinas if damaged by storms. Upland marinas are marinas located on the landward side of an estuarine shoreline, requiring dredging, but no dredging/alteration of wetlands or estuarine habitat and providing flushing by tidal or wind generated water circulation. (For detailed definition, refer to 15A NCAC 7H.0208(b)(5)). Schedule: [Continuing](#).

- I.7 The Town encourages marina operators to apply for grants that may be available to help pay for pump-out facilities or other environmental improvements. Schedule: [Continuing](#).
- I.8 The Town will work in conjunction with state agencies focused on boating access efforts, e.g., North Carolina Wildlife Resources Commission. Schedule: [Continuing](#).
- I.9 The Town will investigate mechanisms, programs, and funding to maintain the ocean fishing pier, including UDO provisions that would protect existing uses, and prohibit major change in uses or expansion. Schedule: [High](#).
- I.10 The Town and Beach Preservation Society will conduct a "Beach User" survey during a summer season to determine problems and opportunities that may exist based on the experiences of "typical" beachgoers. The survey results will provide the basis for needed changes and improvements to existing and proposed shoreline access sites. Schedule: [High](#).
- I.11 The Town will prepare (with or without state and/or federal funding) an Ocean and Estuarine Access Plan to address, at a minimum, the following:
- Review of the law regarding Appurtenant Easement Rights.
 - Provision of a Cost Benefit analysis to prioritize projects on a Need basis.
 - Priorities for funding of existing and proposed public access facilities.
 - Additional facilities for recreational boating.
 - Standards for floating docks, boat ramps, and/or parking areas associated with public access sites that will address stormwater runoff, water quality, aesthetic concerns, and adequate water depth at low tide.
- Schedule: [High](#).
- I.12 The Town will develop an ordinance to regulate mooring fields and floating structures. The ordinance should prohibit floating homes, boats, or other watercraft used as a permanent or temporary residence for more than 30 days. Schedule: [Medium](#).
- I.13 The Town will review, evaluate, and improve existing ocean and estuarine waterway access for people with disabilities. Schedule: [Medium](#).
- I.14 The Town will develop a brochure that identifies accessible beach, and estuarine waterway access, and parks for people with disabilities. Schedule: [Medium](#).

Land Use Compatibility

Management Goal: Ensure that development and use of resources, or preservation of land balance protection of natural resources and fragile areas with economic development, avoid risks to public health, safety, and welfare, and are consistent with the capability of the land.

Planning Objectives: Policies that characterize future land use development patterns and establish mitigation criteria and concepts to minimize conflicts.

Implementing Actions:

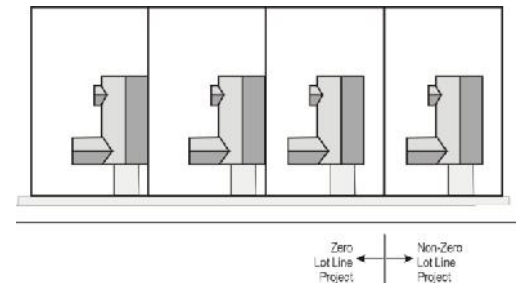
- I.15 The Town will maintain an average overall gross density of 2.5 dwelling units per acre on the island and 4 dwelling units per acre on the mainland. Schedule: [Continuing](#).
- I.16 The Town will encourage the NC Department of Transportation to establish adequate right-of-way vegetative buffering for properties in close proximity to the bridge ramps. Schedule: [Continuing](#).
- I.17 The Town will keep the residential zoning intact at the Middleton/Oak Island Drive intersections. Schedule: [Continuing](#).
- I.18 The Town will discourage further strip commercial development in all commercial zoning districts on both the mainland and the island. Schedule: [Continuing](#).
- I.19 The Town will maintain the zoning of open space areas, such as marshes and other environmentally sensitive lands, and expand where possible. The Town has an Open Space zoning district. Schedule: [Continuing](#).
- I.20 The Town will prepare a Unified Development Ordinance (UDO) to consolidate all Town land use regulatory documents including the following ordinances: Zoning, Subdivision, Flood, Sedimentation and Erosion Control, Stormwater, and Vegetation Management. Schedule: [High](#). The UDO should provide/accomplish, at a minimum, the following:
 - A simpler, more flexible, and more easily administered regulatory document.
 - Ability to insert amendments with ease.
 - Update of the Town's official zoning map.

- Provision of extensive graphics and illustrations depicting the requirements, recommendations, and concepts detailed in the land development regulations.
- Clear review procedures, development review, approval, and permit issuance.
- Increase in staff-level approvals.
- Consistency with current North Carolina State Statutes.
- Balance of the needs of new development and existing neighborhoods.
- Removal or amendment of outdated standards.
- More detailed and realistic sign regulations.
- Commercial design/architectural standards.
- Improvement in and increase of sidewalk requirements.
- Greater clarity for landscaping/tree/screening requirements (increase landscape requirements including: tree protection/preservation, reducing tree damage during construction, replacing trees lost during construction, planting trees on construction sites where trees do not exist, and long-term maintenance of trees); coordination with the NC Forestry Service grant.
- Identification and protection of 401, 404, and coastal wetlands during construction.
- Parking requirements including reduction of impervious parking areas, setting of maximum parking limits, and making parking requirements clearer and more contemporary.
- Expansion of the range of uses identified in the Table of Permitted Uses.
- Consideration of making PUDs a zoning district and clarifying requirements.
- Elimination of confusing and contradictory requirements.
- Revision, clarification, and broadening of the purpose of the Open Space zoning district.
- Clarification of quasi-judicial procedures.
- Making the CR district more compatible with adjacent residential neighborhoods.
- Addressing of standards for waterfront projects which protect and/or create public access.
- Requirement of interconnectivity of residential developments and interconnectivity of commercial developments (not interconnectivity between residential and commercial).

- Requirement of bike racks at all multi-family and commercial developments.
- Inclusion of maximum impervious coverage provisions for new developments to mitigate quantity and quality of stormwater runoff.
- Inclusion of low impact development and Leadership in Energy and Environmental Design concepts as part of the UDO.
- Consideration of UDO provisions to support sustaining and maintaining ocean piers.
- Requirement of the delineation of all wetlands, significant natural heritage areas, and protected trees on all site plans and preliminary subdivision plats by a qualified professional.
- Addition of regulations for food trucks.
- Inclusion of CAMA setback regulations including static vegetation line.
- Improvement/clarification of commercial fencing standards.
- Clarification of flag lot provisions.
- Consider regulation of floating homes.
- Through site plan requirements, limiting the number of curb cuts for businesses and, when possible, requirement of side street access.
- Revision of sign regulations to include, at a minimum, the following considerations:
 - Base size and height of signage upon the commercial square footage and/or the number of housing units with which the sign is associated.
 - Require that signage be designed to blend with the natural surroundings and be complementary to the related building. Limit reflective and fluorescent sign colors.
 - Discourage internally laminated signage where possible.
 - Limit the height of freestanding signs to twelve feet or less. Base the height of the sign on the size. Require landscaping to be incorporated into freestanding signage.
 - Require that signage be compatible with residential neighborhoods.
- Incorporation of Tree Preservation Ordinance to be crafted with assistance from the NC Forestry Service Urban and Community Forestry Program. This

ordinance will be the “backbone” of a vegetation management program which will:

- Require tree protection standards for preserved trees.
 - Create a tree removal permit process.
 - Place greater emphasis on tree preservation. Incentivize the preservation of trees through a more stringent replacement schedule.
 - Clarify replacement schedule for removed trees.
 - Define and provide clarity regarding “essential site improvements.”
 - Increase the civil penalty for unauthorized tree removal.
 - Provide a tree replacement species list.
 - Provide street yard requirements for non-residential and multi-family residential development to include screening options. The primary component of the street yard would be the screening of the parking facility and visual enhancement of the development. Street trees would be included as part of the street yard requirement.
 - Enhance bufferyard requirements between non-residential and residential development (responsibility of non-residential development). A menu of bufferyard types should be provided as part of the Ordinance.
 - Provide plant listing categorized by shrub and tree sizes. Due to Oak Island’s location on the coast, it is important to install plant species that are salt and drought tolerant. Thus, the plant list should also identify salt and drought tolerant species.
 - Consider expanded landscape requirements for the commercial areas, such as Oak Island Drive, Long Beach Road, Middleton Road, and NC 211, then an overlay district can be applied to improve aesthetics in those key areas.
- Addition of zero lot line provisions.
 - Inclusion of open space zoning district.
 - Require buffering of wetlands from proposed adjacent development in order to help insure the health and productivity of this natural resource.
 - Encourage incentives for rewarding developers that choose to set aside open and green space in perpetuity (e.g., conservation easement).



Zero Lot Line Example

- I.21 The Town should prepare a specific master plan for the island main commercial area (generally Oak Island Drive from East 45th Street to East 65th Street) to include, at a minimum, the following:
- Mission Statement
 - Economic Visions
 - Façade and Building Appearance/Rehabilitation
 - Example Building Renderings
 - Streetscape
 - Arts and Culture
 - Public Realm Improvements
 - Green Space/Open Space
 - Parking (On- and Off-Street)
 - Transportation, including Pedestrian/Bicycle Accessibility
 - Market Analysis
 - Financing of Improvements
 - Infrastructure
 - Specific Implementing Actions
- Schedule: **High.**

Infrastructure Carrying Capacity

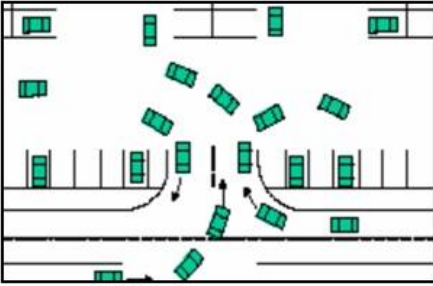
Management Goal: Ensure that public infrastructure systems are appropriately sized, located, and managed so that quality and productivity of AECs and other fragile areas are protected or restored.

Planning Objectives: Policies that establish service criteria and ensure improvements minimize impacts to AECs and other fragile areas.

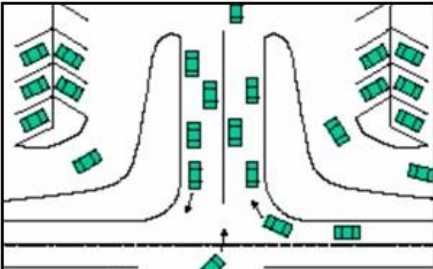
Implementing Actions:

- I.22 The Town will seek Federal, State, and County funding for community facilities and infrastructure needs. Schedule: **Continuing.**
- I.23 The Town supports a county policy of reviewing proposals for development of electric generating plants within Brunswick County on a case-by-case basis, judging the need for the facility by the county against all identified possible adverse impacts. The Town reserves the right to comment on the impacts of any energy facility proposed for location or expansion within Brunswick County. Schedule: **Continuing.**
- I.24 The Town will continue to maintain its water distribution system in good operating condition. Schedule: **Continuing.**

- I.25 The Town opposes the development of energy facilities which would increase the amount of manmade hazards within its jurisdiction, including the storage and/or trans-shipment of crude oil. Schedule: [Continuing](#).
- I.26 The Town is opposed to off-shore drilling for either exploration for or production of either oil or gas and the location of onshore support facilities for such activities. Schedule: [Continuing](#).
- I.27 The Town opposes the construction of off-shore wind farms within view of the Oak Island ocean shore line. Schedule: [Continuing](#).
- I.28 The Town will continue to rely on the Brunswick County Water System for its water supply pending transfer of the town's water system to the county. Schedule: [Continuing](#).
- I.29 The Town will continue to maintain a Capital Reserve Fund which will be based on an annually approved Capital Improvements Plan. Schedule: [Continuing](#).
- I.30 The Town will review and encourage implementation of the 2006 Oak Island Bicycle Transportation Plan and update the plan as NCDOT funding may become available. Schedule: [Continuing](#).
- I.31 As NC Department of Transportation enhancement grants become available, the Town will actively pursue these grant funds for the purpose of establishing or re-establishing bike paths along Town roadways such as Yacht Drive as well as vegetation along all state-maintained roads. Schedule: [Continuing](#).
- I.32 The Town supports the following roadway improvements which were identified by the CPAC:
- An access management plan should be created for EF Middleton Boulevard in concert with the Town and NCDOT.
 - The speed limit on E. Oak Island Drive should be evaluated. A request should be made to NCDOT to conduct a speed limit study of all state-maintained roads on the island.
 - The feasibility of a roundabout at the intersection of Oak Island Drive and NC 133 should be assessed.
 - The need for additional crosswalks on all state-maintained roads needs to be assessed.
- Schedule: [Continuing](#).



Driveway without throat treatment.



Driveway with throat pushed back.

I.33 The Town will implement the following commercial area access management strategies:

- Control/limit driveway spacing and reduce the number of driveways.
- On-site circulation, design for ease of vehicular circulation, create entrance/exit corridors.
- Cross access, parcel to parcel connectivity.
- Maximize driveway entrance separation from intersections.
- Where possible, provide roadway medians.

Schedule: [Continuing](#).

I.34 The Town will cooperate with the NCDOT, the North Carolina Division of Water Resources, and other state agencies in mitigating the impact of stormwater runoff within the Town's planning jurisdiction. The Town will support the Division of Water Resources stormwater runoff retention permitting process through the Town's stormwater management regulations.

Schedule: [Continuing](#).

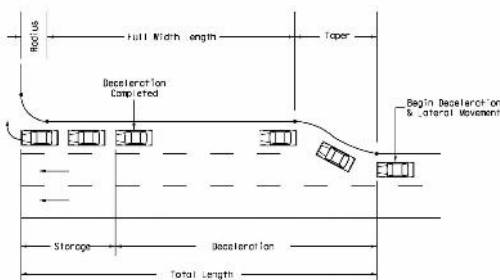
I.35 The Town recognizes the value of water quality maintenance for the protection of its previously described fragile areas and for the provision of clean water for fishing and recreational purposes. The Town will support existing local and state regulations relating to stormwater runoff resulting from development (Stormwater Disposal Policy 15A NCAC 2H.001-1003). Schedule: [Continuing](#).

I.36 The Town will conduct an analysis of infrastructure capacity and public services before rezoning parcels as part of the review process. The Development Services Department will provide written analysis along with a recommendation concerning each action. Schedule: **High**.

I.37 The Town will plan ahead for the timely and conservatively cost effective provision of major capital improvements and services on the basis of anticipated growth and demand. Schedule: **High**.

I.38 The Town will regulate the location of wind and solar energy facilities in its UDO (see I.15, page 5-24). Such facilities must not adversely affect the Town's fragile environment or adjacent properties. Schedule: **High**.

I.39 The Town will request NC Department of Transportation to investigate the feasibility of installing deceleration turn lanes in key locations along East Oak Island Drive. Schedule: **High**.



Deceleration Turn Lanes - Example.
Image Source: NCDOT.

- I.40 For pedestrian safety, the Town will support and request NCDOT to consider the following safety improvements at major intersections and mid-block crossovers:
- Thermoplastic crosswalk markings
 - Pedestrian countdown signals
 - Mast arm traffic signal pole with underground utilities
 - ADA curb ramps
 - Continue the sidewalk along E. Oak Island Drive from 79th Street to Country Club Drive (NC 133).
- Schedule: **High.**
- I.41 The Town will apply to NCDOT for funding to prepare a pedestrian access/transportation plan, including development of a system of sidewalks throughout the community. Schedule: **High.**
- I.42 The Town supports the implementation of the TIP roadway improvement projects which are described on pages 4-35 to 4-41. Schedule: **High.**
- I.43 The Town was preparing a Parks & Recreation Master Plan concurrently with the preparation of this plan. That plan should address the following:
- New future park: playground, kayak/canoe launch, splash pad.
 - Recreation center expansion: gymnasium, fitness center, aerobics room, office space, storage.
 - Greenways/bike paths throughout the Town.
 - Additional mainland park facility.
 - Maintain beach and marsh as public trust areas.
 - Provide ICWW access via the old bridge site.
- When adopted, the recreation plan will become a functional extension of this plan. Schedule: **High.**
- I.44 The Town supports widening Midway (SR1500) to a 4-lane divided median roadway from NC 211 to Highway 17. Schedule: **Medium.**
- I.45 The Town will provide bike racks at all municipal buildings. Schedule: **Medium.**
- I.46 The Town will encourage incentives for commercial development that provides pedestrian and bicycle amenities (e.g., sidewalks, bike racks) to improve access to and circulation within their site. Schedule: **Medium.**

Natural Hazard Areas

Management Goal: Conserve AECs and maintain barrier dunes, beaches, floodplains, and other coastal features for their natural storm protection functions and their natural resources giving recognition to public health, safety, and welfare issues.

Planning Objectives: Policies that establish mitigation and adaptation concepts and criteria for development and redevelopment, including public facilities, and that minimize threats to life, property, and natural resources resulting from erosion, high winds, storm surge, flooding, or other natural hazards.

Implementing Actions:

- I.47 The Town will annually review the ongoing activities and update the Southeastern NC Regional Hazard Mitigation Plan as required by the Disaster Mitigation Act of 2000. Schedule: [Continuing](#).
- I.48 The Town will enforce CAMA general and specific use standards for ocean and inlet hazard areas through the Local Permitting Officer Program. Schedule: [Continuing](#).
- I.49 The Town will support and participate in the Federal Hazard Mitigation grant program to elevate severe repetitive loss structures. Schedule: [Continuing](#).
- I.50 The Town may, as opportunities arise, strategically acquire properties in its coastal hazard area to protect resources and adjacent properties from significant storm damage. Schedule: [Continuing](#).
- I.51 The Town will maintain the current one (1) foot freeboard requirement in special flood hazard areas. Schedule: [Continuing](#).
- I.52 The Town will seek to educate those applying for building permits regarding the benefits of exceeding the minimum standards (e.g., increased freeboard may result in reduced flood insurance premiums on an annual basis). Schedule: [Continuing](#).
- I.53 The Town will regularly update and test its Emergency Response Plan so that Town Departments and services can respond effectively to emergencies related to natural hazards and other events in coordination with other municipalities and Brunswick County. Schedule: [Continuing](#).

- I.54 Due to the unique risks to life and property that exist within the area designated as the Ocean Hazard System AEC, the Town strongly supports the State policies that regulate the location and intensity of development in these areas. The Town will enforce local policies that bolster the State's programs. Schedule: [Continuing](#).
- I.55 The Town will support a beach conservation and nourishment program as part of a commitment to mitigate risks from coastal storm events. Schedule: [Continuing](#).
- I.56 The Town allows development and redevelopment within special flood hazard areas subject to the provisions and requirements of the National Flood Insurance Program, CAMA regulations and the local zoning ordinance (Flood Damage Prevention). Special flood hazard areas are those areas delineated on the Flood Insurance Rate Maps (FIRM) that have a 1% change of flooding in any one year. Schedule: [Continuing](#).
- I.57 The Town will maintain or improve its Community Rating System (CRS) score to make the community safer from flood risks and to reduce premiums for Federal Flood Insurance. Schedule: [Continuing](#).
- I.58 The Town will continue to provide flood damage prevention and retrofitting information to all property owners. Schedule: [Continuing](#), [High](#).
- I.59 The Town will avoid taking any action or approving any action that materially damages the frontal dune system or that hampers its recovery from storm damage. Schedule: [High](#).
- I.60 Due to the valuable role that vegetative cover plays in stabilizing soil and dune systems and increasing resistance to damage from storms, the Town strongly opposes excessive removal of vegetation for development or redevelopment. Schedule: [High](#).
- I.61 The Town will regulate the alteration of natural floodplains, stream channels, and natural protective barriers that accommodate and restrain floodwaters; regulate filling, grading, dredging, and other development that may increase erosion or flood damage. Schedule: [High](#).
- I.62 The Town will complete the Shoreline Management Plan currently being prepared for the Town by Moffat & Nichol. A summary of findings may be added as an appendix upon completion of the plan. Schedule: [High](#).

- I.63 The Town will continue to work with the NC Department of Transportation to eliminate flooding of hurricane evacuation routes (Long Beach Road). Schedule: **High**.
- I.64 The Development Services Department will update the assessment of flood hazards, including a public involvement activity. Schedule: **Medium**.
- I.65 The Town will update priorities for issuance of permits after a disaster, to reflect priorities such as life safety services, essential public utilities and services, and repair storm damage. Schedule: **Low**.

Water Quality

Management Goal: Maintain, protect, and where possible, enhance water quality in all coastal wetlands, rivers, streams, and estuaries.

Planning Objectives: Policies that establish strategies and practices to control nonpoint source pollution and maintain or improve water quality.

Implementing Actions:

- I.66 The Town will support South Brunswick High School's Aquaculture Program that annually restocks flounder into the estuary at SE 40th Street Heron Park. Such restocking supports recreational fishing in our estuaries and surrounding waters. Schedule: **Continuing**.
- I.67 The Town will continue to protect its potable well water supply through enforcement of the Town's development regulations. Schedule: **Continuing**.
- I.68 The Town supports retention of vegetated buffers along drainage ways where feasible. Schedule: **Continuing**.
- I.69 The Town will undertake tree and vegetation enhancement projects on public property. Schedule: **Continuing**.
- I.70 The Town will review current development requirements as a part of UDO preparation to identify opportunities to further reduce impervious surfaces. Schedule: **Continuing**.
- I.71 The Town will ensure that its land use and development policies support the goal of maintaining and enhancing water quality. Schedule: **Continuing, High**.

- I.72 The Town will support actions to reduce stormwater runoff and associated pollution to all public trust waters (ocean beaches, waterways, and estuaries) from all public areas (such as streets, parking lots, access areas, and ramps) and private properties (impervious surfaces). Schedule: **Continuing, High.**
- I.73 The Town must undertake a comprehensive stormwater management program that controls the amount and quality of stormwater runoff that is consistent with maintaining and enhancing water quality in the estuarine/public trust waters. Schedule: **Continuing, High.**
- I.74 The Town will undertake stormwater management studies and will consider the impact of revising its methods of conveyance, containment and disposal of stormwater. Schedule: **High.**
- I.75 The Town will maintain and support its estuarine water quality and testing program and seek to maintain or restore the water quality in its estuaries and waterways to State standards for safe recreational use and for protection and restoration of the water quality in its primary and secondary marine nursery areas, such as for the safe harvesting of shellfish. Schedule: **High.**
- I.76 The Town will use the knowledge from its estuarine water quality and testing program: (1) to guide grant requests for funding and (2) for working cooperatively with State agencies to expand their existing water quality monitoring program of our public trust waters (currently only our ocean beaches and one estuarine site under Middleton Bridge). Schedule: **High.**
- I.77 The Town will provide centralized wastewater collection and treatment to areas of the island currently served by on-site treatment systems. Emphasis will be placed on serving malfunctioning on-site systems, including elimination of odor. Schedule: **High.**
- I.78 The Town will apply for grant funds for projects that are designed to improve or prevent further degradation of water quality in Davis Creek/Montgomery Slough Complex, Eastern Channel, Elizabeth River, Intracoastal Waterway, the Atlantic Ocean, and the Lockwood Folly watershed. Schedule: **High.**
- I.79 The Town will apply for grant funds from the Division of Coastal Management and the Clean Water Management Trust Fund to identify key estuarine properties that if preserved, either through conservation easements or outright purchase, will

contribute to the protection and betterment of water quality in adjacent estuarine waters. Schedule: **High**.

- I.80 The Town will continue to enforce the provision that post development runoff rates and volumes shall not exceed predevelopment conditions for all non single- and two-family residential development. Schedule: **High**.
- I.81 To complement the existing CAMA 30-foot buffer rules adjacent to public trust waters, the Town will consider adopting a local buffering requirement for smaller stream and drainage segments that channel stormwater into larger receiving waters. Schedule: **Medium**.
- I.82 The Town will seek local legislation to regulate personal watercraft operation in the Davis Creek/Montgomery Slough Complex and Eastern Channel. Schedule: **Low**.
- I.83 In an effort to educate property owners and developers about the benefits of Low Impact Development, the Town will work cooperatively with Brunswick County and its Low Impact Development manual to create an outreach program that may include the following elements: a Town demonstration project showcasing the basic principles of Low Impact Development; an informational brochure explaining the costs and benefits of following this approach; and the creation of a link on the Town's website for additional information. Schedule: **Low**.

Local Concerns

In addition to the CRC Management Topics outlined above, CAMA guidelines also allow for the inclusion of policies to address local areas of concern.

Implementing Actions:

- I.84 The Town will continue to provide beach wheelchairs for people with disabilities. Schedule: **Continuing**.
- I.85 The Town will continue to support the educational and stewardship efforts of the Oak Island Parks & Recreation Department. Schedule: **Continuing**.
- I.86 The Town will actively pursue NC Department of Transportation Enhancement Grants and other grant opportunities to protect specimen trees and establish and/or re-establish trees along the main corridors of the Town. Schedule: **Continuing**.

- I.87 The Town will continue to support the volunteer efforts of the Tree City USA advisory board to pursue the annual Tree City USA designation and Growth Award. Schedule: [Continuing](#).
- I.88 The Town will encourage physical activity and wellness. Schedule: [Continuing](#).
- I.89 The Town will provide outlets for physical activity. Schedule: [Continuing](#).
- I.90 The Town will foster a tobacco free environment. Schedule: [Continuing](#).
- I.91 The Town will pursue programs and funding for the maintenance and improvement of the fishing areas with the inclusion of bait casting areas. Schedule: [Continuing](#).
- I.92 The Town will support non-regulatory actions and/or opportunities for the preservation of the ocean fishing piers. Schedule: [Continuing](#).
- I.93 The Town supports the Brunswick Shoreline Protection, which includes the towns of Caswell Beach, Holden Beach, Oak Island, Ocean Isle Beach, and Sunset Beach. The Town will support the Oak Island Beach Preservation Society, and will actively participate in the North Carolina Beach, Inlet and Waterway Association, and the American Shore and Beach Preservation Association. Schedule: [Continuing](#).
- I.94 The Town supports continued participation in the Wilmington Harbor Sand Management Plan. Schedule: [Continuing](#).
- I.95 The Town will use all available resources for the Town's beach preservation program. The Town will work with state and federal agencies to ensure that these resources are used in the most effective manner to further the Town's beach preservation goals. Alternative sand sources will be investigated. Schedule: [Continuing](#).
- I.96 The Town will improve enforcement of the beachfront lighting ordinance and make recommendations to minimize impacts to turtle nesting/hatching. The Town will review and update the existing applicable ordinances. Schedule: [Continuing](#).
- I.97 The Town will work to develop an education program for residents and visitors concerning the lighting impact on sea turtle nesting and shore birds. Schedule: [Continuing](#).

- I.98 The Town will continue the operation of the Greenhouse to provide sea oats and other native vegetation for dune stabilization. Schedule: [Continuing](#).
- I.99 The Town will support efforts to remove invasive plant species on the dunes in order to promote native vegetation. Schedule: [Continuing](#).
- I.100 The Town will continue to support and participate in Big Sweep Programs. Schedule: [Continuing](#).
- I.101 The Town will continue to encourage the US Army Corps of Engineers efforts to routinely dredge and maintain the authorized depths of local navigation channels and, if compatible, use material for possible beach renourishment. Schedule: [Continuing](#).
- I.102 The Town will support federal, state, and county funding for maintenance of inlets, waterways, and beaches. Schedule: [Continuing](#).
- I.103 The Town will support responsible managed residential growth, including both the mainland and island areas. Schedule: [Continuing](#).
- I.104 The Town will support mixed use development as the highest return on infrastructure investment for the Town. Schedule: [Continuing](#).
- I.105 The Town supports and promotes commercial infill development to reduce infrastructure costs, enhance economic development, and improve the Town's return on investment (see page 4-53). Schedule: [Continuing](#).
- I.106 The Town will support action(s) to improve the aesthetic appeal of the community. Emphasis of such action is included in the UDO preparation implementing action, I.15. Schedule: [Continuing](#).
- I.107 The Town continues to support development of the local retail and support services sector that provide a greater range of goods and services to both year-round residents and visitors. Schedule: [Continuing](#).
- I.108 The Town encourages commercial buildings that are consistent with Oak Island's small town atmosphere. Important characteristics include size, design, appropriate signage, and modest lighting. Schedule: [Continuing](#).

- I.109 The Town supports development of a more traditional primary commercial area that builds on development and redevelopment of the existing business areas. The Town will initiate a long-range planning program for the center. The plan will be consistent with our vision of preserving and enhancing our small town atmosphere, and it will include the following components:
- The town center will encourage mixed uses such as retail services, restaurants, entertainment, and residences.
 - It will take advantage of the ocean beach and strive to provide easy pedestrian and bike connections to surrounding neighborhoods.
 - It will encourage interconnections between businesses and shopping centers that minimize the need for trips on Oak Island Drive. Schedule: [Continuing](#).
- I.110 The Town will seek to create a partnership with the NC Department of Transportation, local private organizations, and residents and property owners to develop and implement a landscape and beautification program for public rights-of-way. Schedule: [Continuing](#).
- I.111 The Town opposes the construction of hotel or motel complexes which exceed current height limits. Schedule: [Continuing](#).
- I.112 The Town will continue to enforce the dune preservation ordinance (Chapter 14, Article III of the Town Code). Schedule: [Continuing](#), [High](#).
- I.113 The Town will provide routine maintenance of the beach by removal of garbage, trash and debris. Schedule: [Continuing](#), [High](#).
- I.114 The Town will maintain and repair post and rope fence and sand fence(s). Schedule: [Continuing](#), [High](#).
- I.115 The Town will educate the public through sign postings and town newsletter/internet on dune, pet, and litter ordinances. Schedule: [Continuing](#), [High](#).
- I.116 The Town strongly encourages overall land use and development patterns that support retention of the Oak Island small town character, its existing quality of development, and its family atmosphere, including limited mixed use. Schedule: [Continuing](#), [High](#).

- I.117 The Town will inventory open space, actively pursue grants and funding opportunities, develop, and implement a plan to acquire and preserve open space and environmentally fragile areas throughout the Town. Schedule: **Continuing, High.**

- I.118 The Town will continue to update, maintain, and seek additional recreational facilities appropriate to the present and future populations. This includes but is not limited to – recreational buildings, playing fields, tennis courts, pool, golf course, basketball courts, playgrounds, and walking/jogging/biking paths. This task will be reflected/supported in the Town’s Recreation Master Plan. Schedule: **High.**

- I.119 The Town will continue efforts to remove rocks from the beach. Schedule: **High.**

- I.120 The Town mandates development practices that preserve important environmental features, provide a high quality living environment, address transportation needs, and emphasize compatibility with neighboring residential areas. Schedule: **High.**

- I.121 The Town will maintain its current building height limits on the island. Schedule: **High.**

- I.122 The Town will preserve its tree canopy and coordinate with the NC Forestry Service Urban and Community Forestry Program on the preparation of a tree preservation plan and update of its tree preservation requirements in the preparation of the town’s UDO. Schedule: **High.**

- I.123 The Town will support/address the community facility needs which are stated on pages 4-28 to 4-34. Schedule: **High.**

- I.124 The Town will re-evaluate its golf cart and low speed vehicle regulations in regards to needed infrastructure. Schedule: **Medium.**

- I.125 The Town will consider the construction of welcoming signs at both Town entrances. Schedule: **Medium.**

- I.126 The Town will consider conducting a branding study. Schedule: **Medium.**

6. Tools for Managing Development

GUIDE FOR LAND USE DECISION MAKING

It is intended that this document be an integral part of the Oak Island decision making process concerning future land use. This document should be consulted prior to any decision being made by the Oak Island staff, Planning Board, and/or Town Council concerning land use and development.

EXISTING DEVELOPMENT PROGRAM

The existing management program includes the following plans/ordinances: Zoning Ordinance, Subdivision Regulations, Flood Damage Prevention Ordinance, Stormwater Management Ordinance, Illicit Stormwater Discharge Ordinance, 2009 CAMA Core Land Use Plan Update, Parks and Recreation Comprehensive Master Plan, and the Southeastern NC Regional Hazard Mitigation Plan.

CONTINUING PLANNING PROCESS

This plan provides the framework upon which zoning and subdivision regulations (or UDO, see I.20, page 5-24) and the capital improvements plan should be based. In fact, the preparation of a land use plan and map is mandated by North Carolina legislation as a prerequisite for zoning for both cities and counties.

Specifically, in implementing this plan, the following should serve as guiding land use/planning principles:

- Consider the future land use map as part of the policies included in this plan.
- Consult this plan, including the future land use map, during the deliberation of all rezoning requests and proposed text amendments.
- Consider the following in deliberation of all zoning petitions:
 - All deliberations should consider this plan's goals, implementing strategies, and future land use map.
 - All uses that are allowed in a zoning district must be considered. A decision to rezone or not to rezone a parcel or parcels of property cannot be based on consideration of only one use or a partial list of the uses allowed within a zoning district.
 - Requests for zoning changes should not be approved if the requested change will result in spot zoning. Spot zoning is a form of discriminatory zoning whose sole purpose is to serve the private interests of one or more landowners instead of furthering the welfare of the entire

community as part of an overall zoning plan. Spot zoning is based on the arbitrary and inappropriate nature of a rezoning change rather than, as is commonly believed, on the size of the area being rezoned.

- Zoning which will result in strip development should be discouraged. Strip development is a mélange of development, usually commercial, extending along both sides of a major street. Strip development is often a mixture of auto-oriented enterprises (e.g., gas stations, motels, and food stands), and truck-dependent wholesale and light industrial enterprises. Strip development may severely reduce traffic-carrying capacity and disrupt traffic flow of abutting streets by allowing for excessive and conflicting curb cuts.
- Access management should be considered in all land use/zoning decisions.
- The concept of uniformity should be supported in all zoning deliberations. Uniformity is a basic premise of zoning which holds that all land in similar circumstances should be zoned alike; any different circumstances should be carefully balanced with a demonstrated need for such different treatment.
- Specifically, the Planning Board and Town Council should ask the following questions:
 - Is the request in accordance with this plan? Zoning regulations shall be made in accordance with the Town's Comprehensive Plan (NCGS 160A-383). When adopting or rejecting any zoning amendment, the Town Council shall also approve a statement describing whether its action is consistent with the Town's Comprehensive Plan and any other officially adopted plan that is applicable, and briefly explaining why the Town Council considers the action taken to be responsible and in the best public interest.
 - Will the request have a serious adverse impact on traffic circulation and other infrastructure?
 - Will the request have an adverse impact on other Town services, including police protection, fire protection, or public works?
 - Will the request have an adverse impact on the Brunswick County Schools?
 - Is there a good possibility that the request, as proposed, will result in lessening the enjoyment or use of adjacent properties?

- Will the request, as proposed, cause serious noise, odors, light, activity, or unusual disturbances?
- Does the request raise legal questions such as spot zoning, hardship, or violation of precedents?
- Does the request adversely impact water quality or other natural resources?
- Will the request adversely impact beach maintenance or access?

Following adoption of this plan, the Town may implement the following to ensure effective citizen participation:

- Encourage diverse public participation and citizen input in all land use decisions and procedure development processes and encourage citizen input.
- Publicize all meetings of the Planning Board and Board of Adjustment through newspaper advertisements, public service announcements, internet notices, and on the Town's website.
- Utilize broad-based advisory committees to assess and advise the Town on special planning issues/needs, including implementation of this plan.
- All Planning Department activities will be available on the Town's website.
- At a minimum, update this plan every five to seven years.

LAND USE PLAN AMENDMENTS

At which time the Town of Oak Island Comprehensive Plan needs to be amended, the Town will apply the guidelines for Land Use Plan Amendments under Subchapter 7B, Section 0901 of the North Carolina Administrative Code. A brief summary of those guidelines is provided below.

- The Land Use Plan may be amended as a whole by a single resolution or in parts by successive resolutions. The successive resolutions may address geographical sections, county divisions, or functional units of subject matter.
- The Town must hold a public hearing of which the public has been properly notified.
- Copies of the proposed amendment(s) must be available for review at the Town Municipal Building during designated hours.

- The executive secretary or a designated agent of the Coastal Resources Commission shall be given notice of the public hearing, a copy of the proposed amendment(s), and a reason for the amendment(s).
- Amendments must be consistent with the Coastal Resources Commission's Land Use Planning Guidelines (15A NCAC 7B) and, if possible, with the Land Use Plans of adjacent jurisdictions.
- If possible, the Town shall adopt the plan amendments expeditiously following the close of the public hearing.
- The Town will provide the executive secretary of the Coastal Resources Commission with a copy of the amended text or maps, and certification of adoption within 7 days of adoption.

CITIZEN PARTICIPATION

For the preparation of this plan, the Oak Island Town Council adopted a citizen participation plan. A copy of that plan is included as Appendix E. Following adoption of this plan, Oak Island will implement the following to ensure adequate citizen participation:

- The Town will encourage public participation in all land use decisions and procedural development processes while encouraging citizen input via its boards and commissions.
- Oak Island will advertise all meetings of the Town's Planning Board and Board of Adjustment through newspaper advertisements, public service announcements, internet notices, and on the Town's website.
- The Town will, at least annually, conduct a joint meeting of the Town Council and the Town's Planning Board to identify planning issues/needs.
- Ensure that the membership of all planning related and ad hoc advisory committees has a cross section of Oak Island's citizenry.

APPENDIX A. NATURAL HERITAGE ELEMENT OCCURENCES - PINE FOREST AND WILLIAMSON TRACTS

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Intersecting the Project Area

Pine Forest Charles tract Oak Island

April 12, 2016

NCNHDE-1481

Element Occurrences Documented Within Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Status	Accuracy	Federal Status	State Status	Global Rank	State Rank
Natural Community	10208	High Pocosin (Evergreen Subtype)	---	2008-05-30	Current	2-High	---	---	G3	S3S4
Natural Community	12390	Pond Pine Woodland (Typic Subtype)	---	2013-09-16	Current	3-Medium	---	---	G3	S3
Natural Community	2428	Sandy Pine Savanna (Rush Featherling Subtype)	---	2010-05-06	Current	3-Medium	---	---	G1	S1
Natural Community	30411	Wet Pine Flatwoods (Sand Myrtle Subtype)	---	2012-09-20	Current	3-Medium	---	---	G2?	S1
Natural Community	13502	Wet Pine Flatwoods (Typic Subtype)	---	2010-05-06	Current	3-Medium	---	---	G3	S3
Vascular Plant	345	Asclepias pedicellata	Savanna Milkweed	1997-09-13	Current	3-Medium	---	Special Concern Vulnerable	G4	S3
Vascular Plant	11592	Dionaea muscipula	Venus Flytrap	2013-06-04	Current	3-Medium	Species of Concern	Special Concern Vulnerable	G3	S2
Vascular Plant	1808	Dionaea muscipula	Venus Flytrap	2002-SUM	Current	3-Medium	Species of Concern	Special Concern Vulnerable	G3	S2
Vascular Plant	16627	Peltandra sagittifolia	Spoonflower	2013-09-16	Current	2-High	---	Significantly Rare Peripheral	G3G4	S2S3
Vascular Plant	14483	Rhynchospora galeana	Short-bristled Beaksedge	1993-08-22	Current	3-Medium	---	Significantly Rare Peripheral	G3G4	S2S3

Natural Areas Documented Within Project Area

Site Name	Representational Rating	Collective Rating
Boiling Spring Lakes Wetland Complex	R1 (Exceptional)	C1 (Exceptional)

Mailing Address: N.C. Wildlife Resources Commission • 1701 Mail Service Center • Raleigh NC 27699-1701

Telephone: (919) 707-0010

Managed Areas Documented Within Project Area*

Managed Area Name	Owner	Owner Type
Boiling Spring Lakes Plant Conservation Preserve	NC Department of Agriculture, Plant Conservation Program	State
Boiling Spring Lakes Plant Conservation Preserve DNP	NC Department of Agriculture, Plant Conservation Program	State

* NOTE: If the proposed project intersects with a conservation/managed area, please contact the landowner directly for additional information. If the project intersects with a Dedicated Nature Preserve (DNP), Registered Natural Heritage Area (RHA), or Federally-listed species, NCNHP staff may provide additional correspondence regarding the project.

Definitions and an explanation of status designations and codes can be found at <https://ncnhp.de.natureserve.org/content/help>. Data query generated on April 12, 2016; source: NCNHP, Q4 October 2015. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

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Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Intersecting the Project Area
Williamson Tract
April 12, 2016
NCNHDE-1483

Element Occurrences Documented Within Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Status	Accuracy	Federal Status	State Status	Global Rank	State Rank
Bird	2457	<i>Picoides borealis</i>	Red-cockaded Woodpecker	1996-10-05	Historical	3-Medium	Endangered	Endangered	G3	S2
Natural Community	9279	Pond Pine Woodland (Typic Subtype)	---	1998	Current	3-Medium	---	---	G3	S3
Natural Community	30454	Sandy Pine Savanna (Rush Featherling Subtype)	---	2010	Obscure	3-Medium	---	---	G1	S1
Natural Community	9347	Sandy Pine Savanna (Typic Subtype)	---	2010	Obscure	3-Medium	---	---	G3	S1
Vascular Plant	5350	<i>Asclepias pedicellata</i>	Savanna Milkweed	2006-06-07	Current	3-Medium	---	Special Concern Vulnerable	G4	S3
Vascular Plant	9194	<i>Dionaea muscipula</i>	Venus Flytrap	2006-06	Current	3-Medium	Species of Concern	Special Concern Vulnerable	G3	S2
Vascular Plant	628	<i>Lachnocaulon minus</i>	Brown Bogbutton	1993-07-25	Current	3-Medium	---	Threatened	G3G4	S2
Vascular Plant	5688	<i>Litsea aestivalis</i>	Pondspice	1993-07-25	Current	3-Medium	Species of Concern	Special Concern Vulnerable	G3?	S2S3
Vascular Plant	5592	<i>Ludwigia suffruticosa</i>	Shrubby Seedbox	1993-07-25	Current	3-Medium	---	Threatened	G5	S2
Vascular Plant	17534	<i>Lysimachia asperulifolia</i>	Rough-leaf Loosestrife	2006-06	Current	2-High	Endangered	Endangered	G3	S3
Vascular Plant	1809	<i>Peltandra sagittifolia</i>	Spoonflower	1996-07-17	Current	3-Medium	---	Significantly Rare Peripheral	G3G4	S2S3
Vascular Plant	19289	<i>Rhynchospora pleiantha</i>	Coastal Beaksedge	1993-07-25	Current	3-Medium	Species of Concern	Threatened	G2G3	S2

Natural Areas Documented Within Project Area

Site Name	Representational Rating	Collective Rating
Boiling Spring Lakes Wetland Complex	R1 (Exceptional)	C1 (Exceptional)

Mailing Address: N.C. Wildlife Resources Commission • 1701 Mail Service Center • Raleigh NC 27699-1701

Telephone: (919) 707-0010

Managed Areas Documented Within Project Area^{*}

Managed Area Name	Owner	Owner Type
NC Department of Transportation Mitigation Site	NC Department of Transportation	State
NC Department of Transportation Mitigation Site	NC Department of Transportation	State
NC Department of Transportation Mitigation Site	NC Department of Transportation	State
NC Department of Transportation Mitigation Site	NC Department of Transportation	State
NC Department of Transportation Mitigation Site	NC Department of Transportation	State
NC Department of Transportation Mitigation Site	NC Department of Transportation	State

^{*} NOTE: If the proposed project intersects with a conservation/managed area, please contact the landowner directly for additional information. If the project intersects with a Dedicated Nature Preserve (DNP), Registered Natural Heritage Area (RHA), or Federally-listed species, NCNHP staff may provide additional correspondence regarding the project.

Definitions and an explanation of status designations and codes can be found at <https://ncnhde.natureserve.org/content/help>. Data query generated on April 12, 2016; source: NCNHP, Q4 October 2015. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

Mailing Address: N.C. Wildlife Resources Commission • 1701 Mail Service Center • Raleigh NC 27699-1701

Telephone: (919) 707-0010

3 QUALITY AND LEVEL OF SERVICE PRINCIPLES

Providing mobility for people and goods remains transportation's most essential function. There are four dimensions of mobility:

- **Quality of travel** – traveler satisfaction with a facility or service
- **Quantity of travel** – magnitude of use of a facility or service
- **Accessibility** – ease in which travelers can engage in desired activities
- **Capacity utilization** – quantity of operations relative to capacity

Of the four dimensions of mobility, this Q/LOS Handbook focuses primarily on quality, followed by capacity utilization. The quantity and accessibility dimensions are not addressed in this Q/LOS Handbook.

Quality of service (QOS) is based on a user's perception of how well a transportation service or facility operates. In other words, how do travelers perceive the overall quality of service?

Level of service (LOS) is a quantitative stratification of quality of service. Beginning in 1965, the HCM divided highway quality of service into six letter grades, A through F, with A being the best and F being the worst. With the A through F LOS scheme, traffic engineers were able to more easily explain operating and design concepts to the general public and elected officials. Despite its widespread use as an independent measurement, it is important to note that LOS is simply a quantitative breakdown from transportation users' perspectives of transportation QOS. LOS reflects the quality of service as measured by a scale of user satisfaction and is applicable to each of the following modes that use roadways: automobiles, trucks, bicycles, pedestrians, and buses.

Because this handbook deals with the overall quality of user satisfaction and its quantitative breakdown, it is labeled as the Quality/Level of Service Handbook. The measurement techniques, however, are frequently simply referred to as LOS analysis. This Q/LOS Handbook deals with both the quality of service and the level of service roadways provide to roadway users (i.e., motorists, bicyclists, pedestrians, and transit passengers) and provides planning tools to assist transportation planners and engineers with addressing these issues. This Q/LOS Handbook does not deal with the overall quality of the entire trip experience, which depends on a variety of factors including aesthetics, safety, and other social measures.

Trucks, recreational vehicles, and motorcycles are all considered part of the automobile mode.

HCM Capacity is the maximum sustainable flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.

LOS relates to the stratification of quality provided to travelers.

In this Q/LOS Handbook, the automobile mode includes all motor vehicle traffic using a roadway, except for buses. Thus, trucks, recreational vehicles, and motorcycles are all considered part of the automobile mode. Certain vehicle types, (e.g., trucks) have different operating characteristics than private automobiles; these characteristics are taken into account by the analytical methodologies where needed. The LOS thresholds for the automobile mode are based on the perspective of the automobile drivers. Therefore, the automobile LOS measures may not necessarily reflect the perspectives of drivers of other types of motorized vehicles, particularly trucks.

3.1 Common Q/LOS Misconceptions

Although frequently considered to be the same, highway capacity analysis and LOS analysis are two distinct, although closely related, analyses. The HCM defines capacity as the “maximum sustainable flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.” As used in Florida, motorized vehicle capacity may be thought of as the maximum hourly volume that can reasonably be expected to pass a point under prevailing conditions. LOS, on the other hand, relates to the stratification of quality provided to travelers. For most generalized and conceptual planning applications associated with motorized vehicles, the maximum service volumes for LOS E shown in this Q/LOS Handbook and accompanying software is approximately equivalent to the capacity of the roadway.

Three common misconceptions about Q/LOS often arise.

- Misconception 1: QOS is directly related to all other dimensions of mobility. **Truth: QOS is frequently related to the other dimensions of mobility but not in all cases.**
- Misconception 2: LOS is applicable only to automobile analysis, while QOS is related to the non-automobile modes. **Truth: Bicycle, pedestrian, and transit analyses are as quantitative and rigorously developed as those for automobiles.**
- Misconception 3: LOS letter A-F grades are comparable to American school letter grades. **Truth: Unlike school grades, LOS A is not necessarily a desirable goal and the meaning of A-F is not entirely consistent across modes.**

The first common misconception is related to the relationship between quality and other dimensions of mobility. They are frequently related, but not directly in all cases. Q/LOS for automobile drivers is usually closely linked to how many other motorized vehicles are on the road. However, the relationship is not always perfect.

For example, arterial speeds are more closely tied to signalization conditions than the number of other motorized vehicles on the roadway. A higher quality LOS grade may exist on a four-lane arterial with twice the volume of another arterial due to efficient signal progression. For transit users, pedestrians, and bicyclists, there is often an even weaker relationship between total demand and Q/LOS. In fact, in most situations in Florida, the total number of bicyclists and pedestrians on a facility has very little impact on Q/LOS; other factors are much more important. Similarly, in most of Florida, bus frequency is typically much more important to transit users than how many people are actually on a bus.

In some cases, particularly for the non-automobile modes, an analysis of total potential demand is a more important component of the decision making process than quality of service. This Q/LOS Handbook only addresses Q/LOS, not methods of determining overall demand or mode splits. Other tools, such as logit models, are more appropriate for these types of analyses.

The second common misconception is that LOS applies only to automobiles and QOS applies to the other modes. It is often assumed that while automobile analyses are highly quantitative, the bicycle, pedestrian, and transit analyses are more qualitative. However, the bicycle, pedestrian, and transit techniques are as quantitative and rigorously developed and tested as those for automobiles. The LOS for each mode for urban roadways is illustrated in **Figure 3-1**.

For bicycle and pedestrian analysis, the total number of users typically has very little impact on Q/LOS.

Bus frequency is typically much more important to transit users than how many people are actually on a bus.

Bicycle, pedestrian, and transit techniques are as quantitative and rigorously developed and tested as those for automobiles.

Figure 3-1
Examples of LOS By Mode for Urban Roadways

LOS	Automobile	Bicycle	Pedestrian	Bus
A/B				
C/D				
E/F				

Although it is true that A is best and F is worst, **LOS A is not necessarily a desirable goal.**

A third and perhaps most common misconception about LOS letter grades A-F is that they are comparable to school grades A-F. Although they share some basic similarities, there are some very important distinctions to make at a planning level. Although it is true that A is best and F is worst, this is strictly from a traveler perspective. LOS A is not necessarily a desirable goal to achieve from an overall transportation or societal perspective. In fact, LOS A in a peak travel hour could be an indicator of an inefficient use of limited funding. It is simply not cost effective to design the state's roadways to operate at LOS A during the peak hour. FDOT's LOS standards appearing in **Chapter 10** should therefore typically be considered a desirable condition during the peak hour, with significant variance from those standards in either direction an undesirable condition.

Although both LOS and letter grades use 'F' to represent a failing condition, there are more factors to consider when LOS reaches F. Essentially, LOS F either means travel demand exceeds capacity and the roadway is operating in oversaturated conditions, or another undesirable condition exists. However, oversaturated condition may only arise for a 15-minute or 1-hour period. Depending on the type and function of the facility, the condition may not necessarily warrant improvements for relatively short periods of congestion.

Although each of the methodologies for automobiles/trucks, bicycles, pedestrians, and buses make use of the LOS A-F scales, the meaning of A-F is not entirely consistent across the modes. Transportation professionals widely consider LOS D for the automobile mode an acceptable condition, and this threshold is often used as a design condition in urbanized areas. Both the bus and automobile LOS scales, however, were developed by transportation professionals, with the objective of classifying various levels of congestion in undersaturated conditions. It was members of the general public, however, who determined the derivation of the bicycle and pedestrian LOS thresholds, thus incorporating a general perception of LOS D as a largely undesirable condition. Because of this, LOS D likely represents a worse condition from the user perspective for the bicycle and pedestrian modes than the automobile and bus modes. FDOT and its research team evaluated and considered various methods to make the LOS thresholds more consistent across modes, but found no scientific basis to adjust the scales. Users should therefore simply be cautious about comparing the same LOS letter grade across modes.

The meaning of A-F is not entirely consistent across the modes.

APPENDIX C. DEFINITIONS

Should: An officially adopted course or method of action intended to be followed to implement the community goals. Though not as mandatory as “shall,” it is still an obligatory course of action unless clear reasons can be identified that an exception is warranted. City staff and Planning Board involved at all levels from planning to implementation.

Shall/Will: Expresses determination to implement/take action.

Continue: Follow past and present procedures to maintain desired goal, usually with City staff involved at all levels from planning to implementation.

Encourage: Foster the desired goal through City policies. Could involve City financial assistance.

Enhance: Improve current goal to a desired state through the use of policies and City staff at all levels of planning. This effort could include financial support.

Identify: Execute actions intended to guide the accomplishment of the plan recommendations.

Maintain: Keep in good condition the desired state of affairs through the use of City policies and staff. Financial assistance should be provided if needed.

Prevent: Stop described event through the use of appropriate City policies, staff actions, Planning Board actions, and City finances, if needed.

Promote: Advance the desired state through the use of City policies and Planning Board and staff activity at all levels of planning. This effort may include financial support.

Protect: Guard against a deterioration of the desired state through the use of City policies, staff, and if needed, financial assistance.

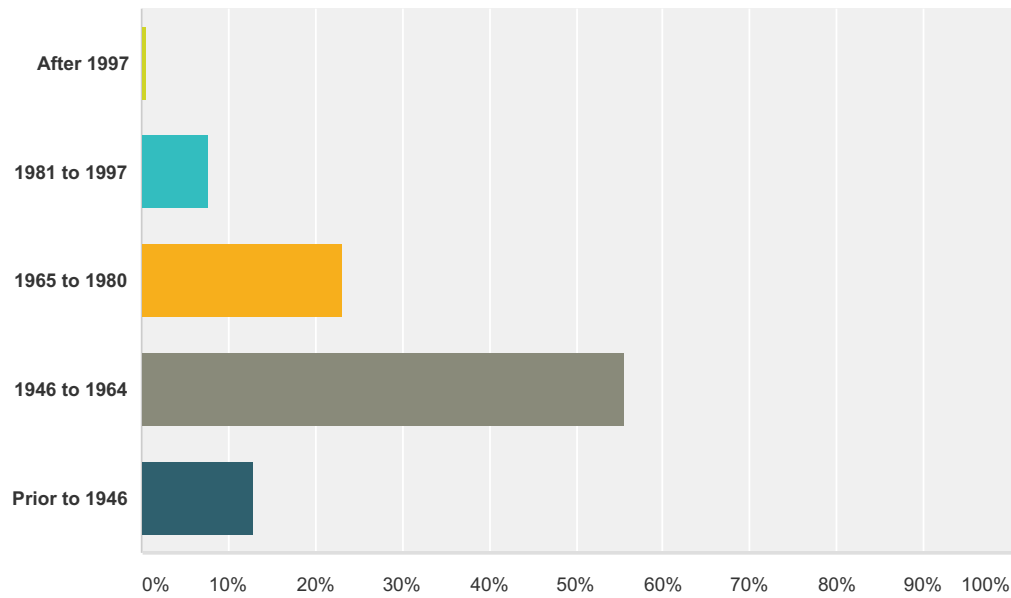
Provide

Take the lead role in supplying the needed financial and staff support to achieve the desired goal. The City is typically involved in all aspects from planning to implementation to maintenance.

Support: Supply the needed staff support, policies, and financial assistance at all levels to achieve the desired goal.

Q1 When were you born (age of person completing this survey)?

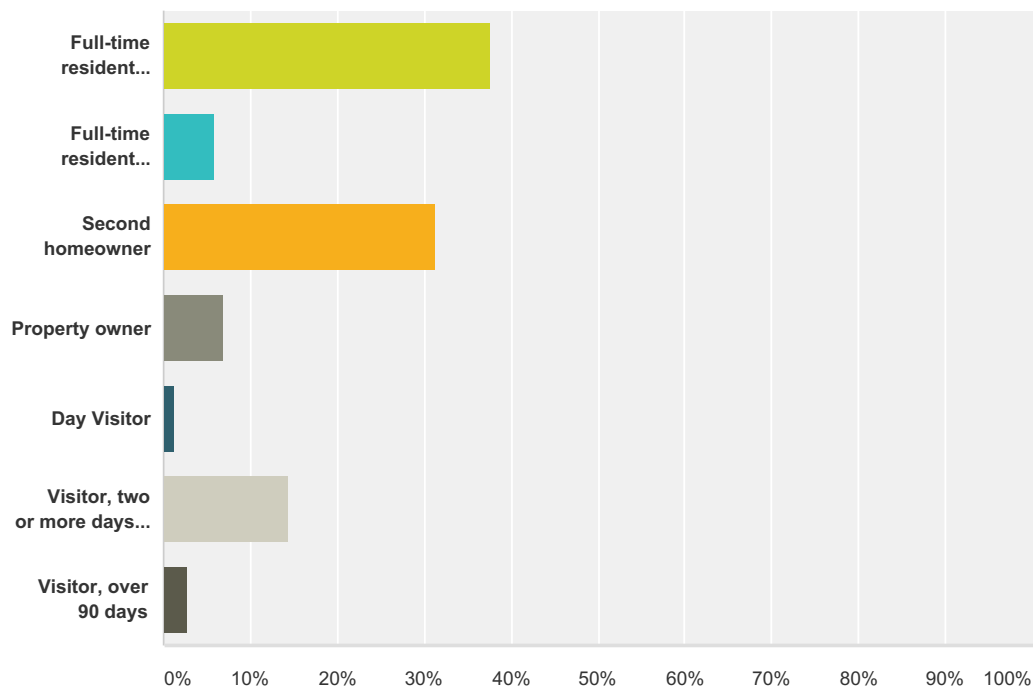
Answered: 1,921 Skipped: 0



Answer Choices	Responses
After 1997	0.62%12
1981 to 1997	7.70%148
1965 to 1980	23.27%447
1946 to 1964	55.54%1,067
Prior to 1946	12.86%247
Total	1,921

Q2 Are you a full-time resident, second homeowner, or visitor?

Answered: 1,921 Skipped: 0



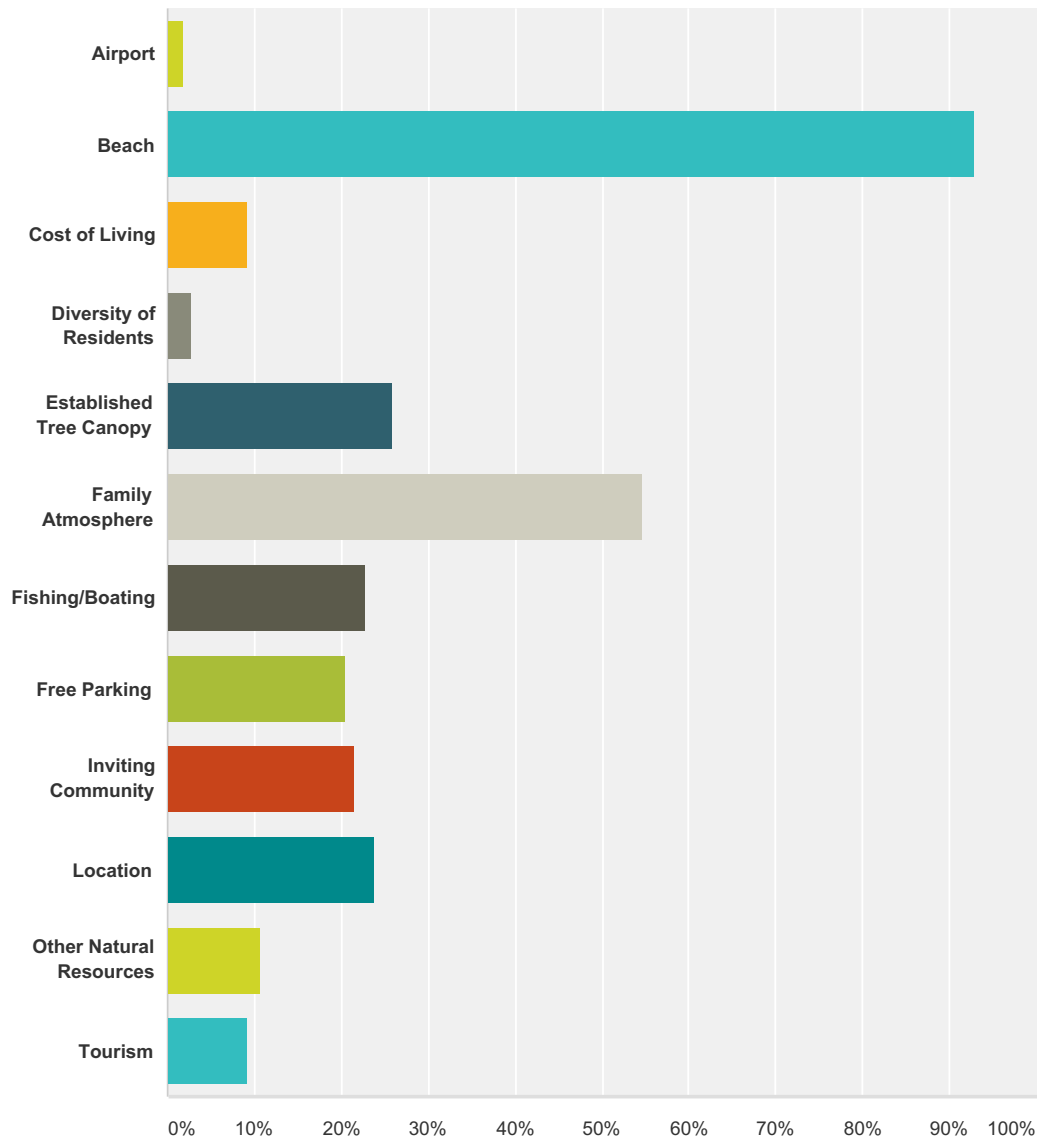
Answer Choices	Responses	
Full-time resident (homeowner)	37.48%	720
Full-time resident (renter)	5.93%	114
Second homeowner	31.29%	601
Property owner	6.98%	134
Day Visitor	1.25%	24
Visitor, two or more days, 90 days or less	14.32%	275
Visitor, over 90 days	2.76%	53
Total		1,921

Q3 What is your zip code?

Answered: 1,921 Skipped: 0

Q4 What are Oak Island's top THREE (3) assets? Please select only three. You may provide any additional assets not listed in the space provided. Choices are listed in alphabetical order.

Answered: 1,921 Skipped: 0

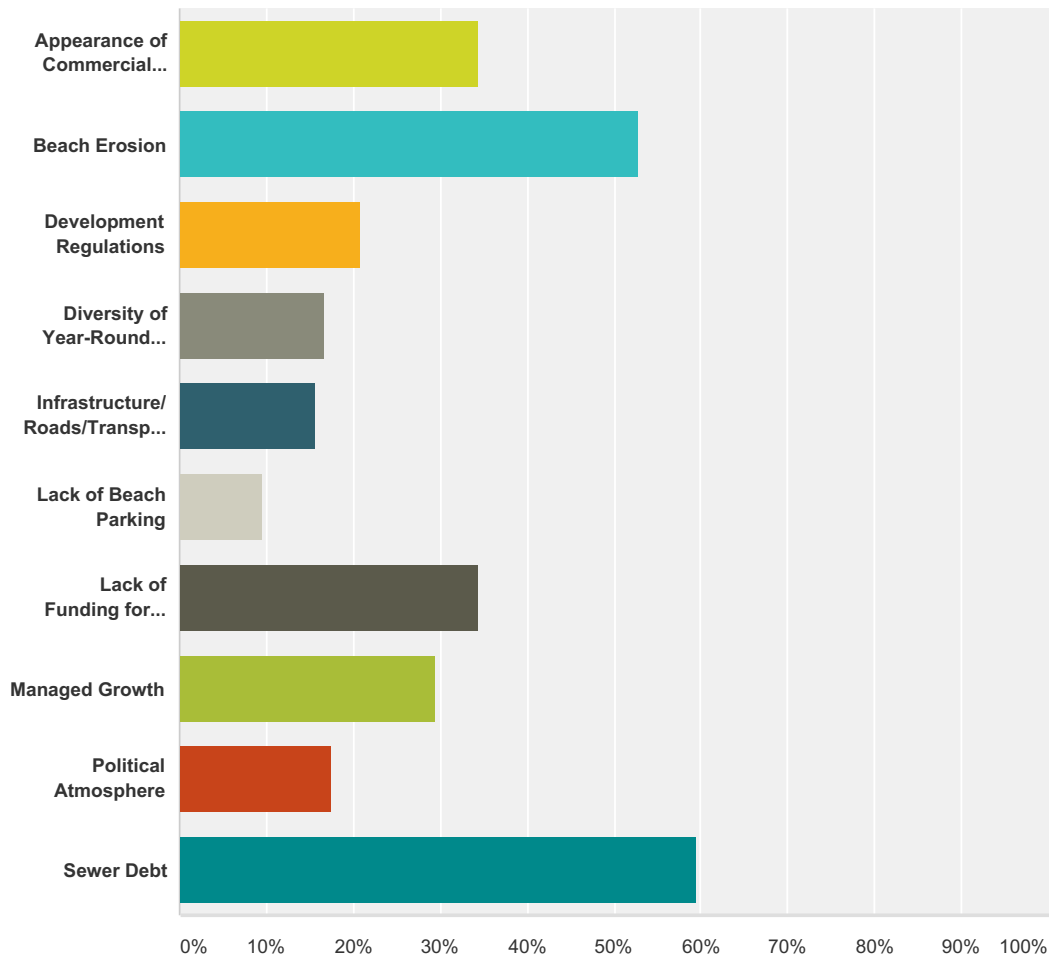


Answer Choices	Responses
Airport	1.98% 38
Beach	92.97% 1,786
Cost of Living	9.27% 178
Diversity of Residents	2.81% 54
Established Tree Canopy	25.98% 499

Family Atmosphere	54.71%	1,051
Fishing/Boating	22.80%	438
Free Parking	20.46%	393
Inviting Community	21.60%	415
Location	23.79%	457
Other Natural Resources	10.57%	203
Tourism	9.16%	176
Total Respondents: 1,921		

Q5 What are Oak Island's top THREE (3) issues? Please select only three. You may provide any additional concerns not listed in the space provided. Choices are listed in alphabetical order.

Answered: 1,881 Skipped: 40

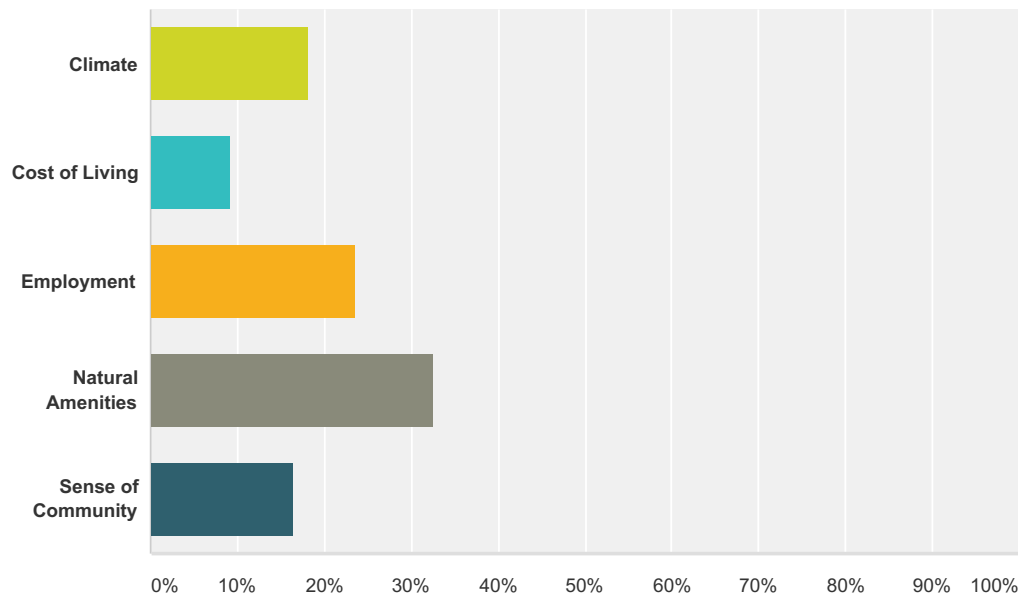


Answer Choices	Responses
Appearance of Commercial Areas	34.45% 648
Beach Erosion	52.90% 995
Development Regulations	20.84% 392
Diversity of Year-Round Businesses	16.80% 316
Infrastructure/Roads/Transportation	15.68% 295
Lack of Beach Parking	9.68% 182
Lack of Funding for Beach Renourishment	34.50% 649
Managed Growth	29.51% 555

Political Atmosphere	17.49%	329
Sewer Debt	59.44%	1,118
Total Respondents: 1,881		

Q6 What is the most important factor in your decision to live where you currently reside? Choices are listed in alphabetical order.

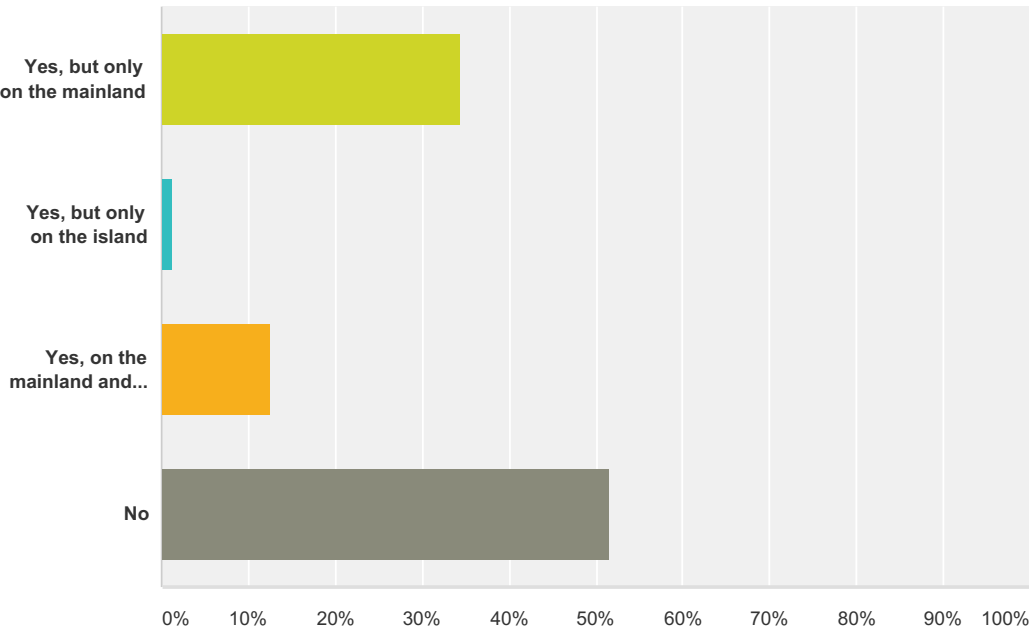
Answered: 1,881 Skipped: 40



Answer Choices	Responses	
Climate	18.13%	341
Cost of Living	9.20%	173
Employment	23.55%	443
Natural Amenities	32.59%	613
Sense of Community	16.53%	311
Total		1,881

Q7 Do you support the future development of resort/hotel(s) in the Town of Oak Island?

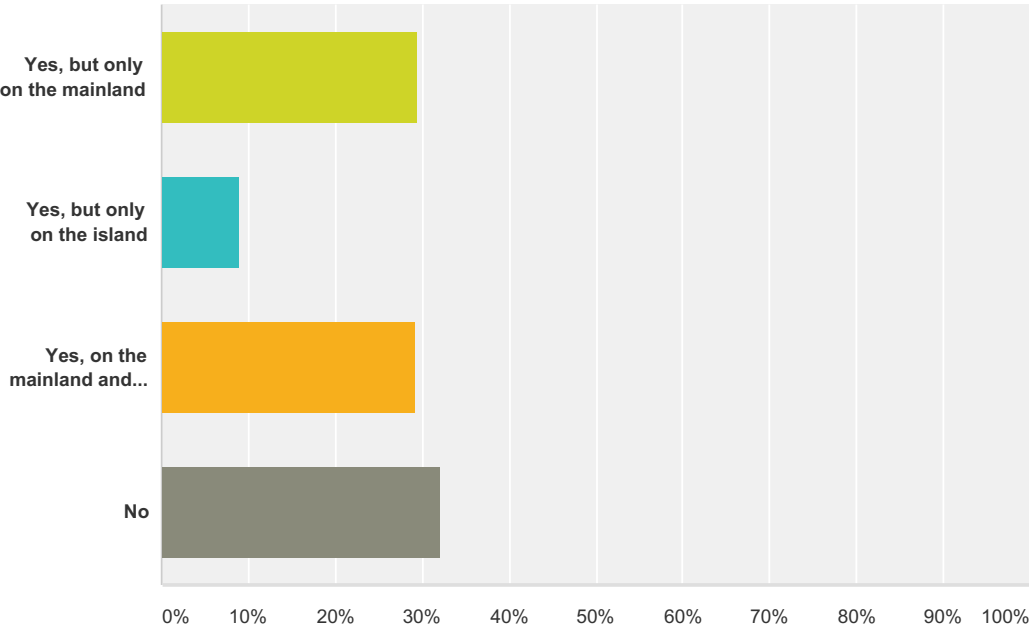
Answered: 1,881 Skipped: 40



Answer Choices	Responses	
Yes, but only on the mainland	34.50%	649
Yes, but only on the island	1.28%	24
Yes, on the mainland and the island	12.60%	237
No	51.62%	971
Total		1,881

Q8 Do you support the creation of a downtown/Central Business District in the Town of Oak Island?

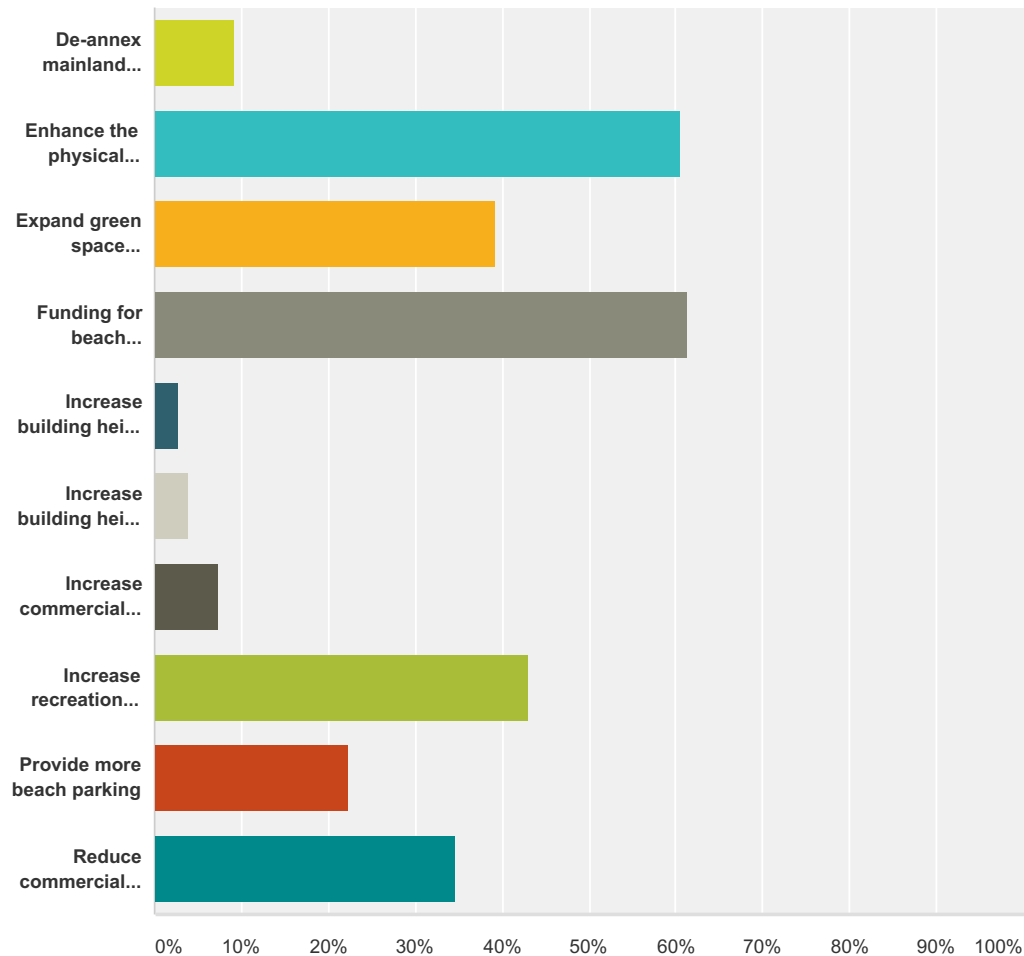
Answered: 1,881 Skipped: 40



Answer Choices	Responses	
Yes, but only on the mainland	29.51%	555
Yes, but only on the island	8.98%	169
Yes, on the mainland and the island	29.29%	551
No	32.22%	606
Total		1,881

Q9 If you could change THREE things about Oak Island, what would they be? Choices are listed in alphabetical order.

Answered: 1,838 Skipped: 83

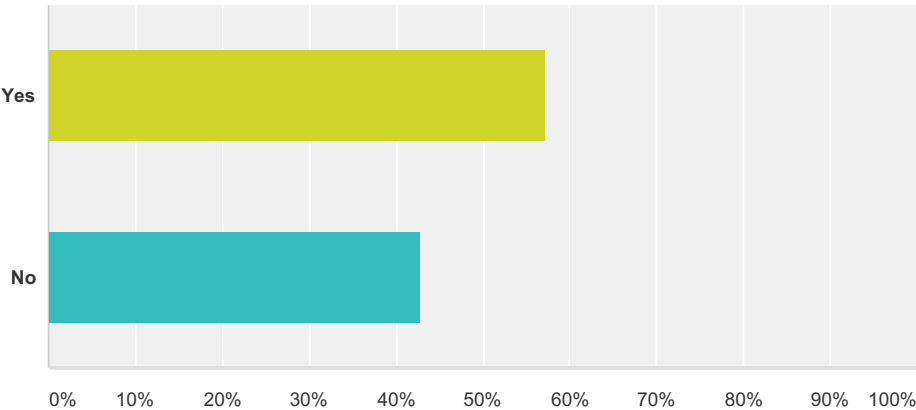


Answer Choices	Responses
De-annex mainland properties	9.19% 169
Enhance the physical appearance of commercial areas	60.61% 1,114
Expand green space opportunities	39.34% 723
Funding for beach renourishment	61.37% 1,128
Increase building height limits for residential units	2.61% 48
Increase building height limits for commercial development	3.97% 73
Increase commercial development (resort/hotels)	7.34% 135
Increase recreation facilities	43.04% 791
Provide more beach parking	22.31% 410
Reduce commercial development opportunities	34.71% 638

Total Respondents: 1,838	
--------------------------	--

Q10 Do you believe there are enough non-car transportation options available in the Town of Oak Island? Examples include bike paths, sidewalks, golf carts, and/or registered low-speed vehicles (low-speed vehicles must be registered and may only be operated on roadways with speed limits less than 35 mph).

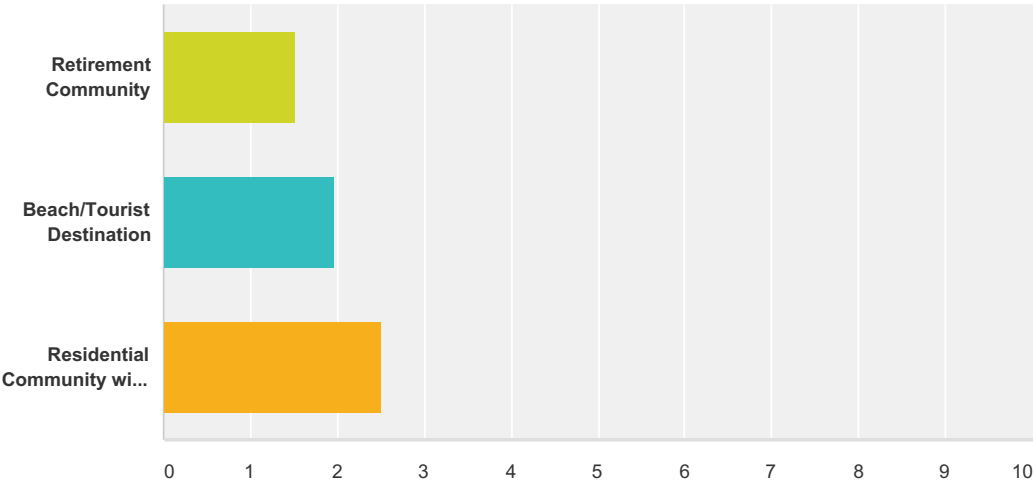
Answered: 1,838 Skipped: 83



Answer Choices	Responses	
Yes	57.18%	1,051
No	42.82%	787
Total Respondents: 1,838		

Q11 In the future, which of the following do you believe Oak Island should be, in order of importance - with "1" being the most important?

Answered: 1,838 Skipped: 83



	1	2	3	Total	Score
Retirement Community	10.45% 192	30.90% 568	58.65% 1,078	1,838	1.52
Beach/Tourist Destination	28.29% 520	40.42% 743	31.28% 575	1,838	1.97
Residential Community with Year-Round Citizens and Families	61.26% 1,126	28.67% 527	10.07% 185	1,838	2.51

Q12 Additional Comments: Please provide any additional comments you may have about the current or future aspects of Oak Island.

Answered: 998 Skipped: 923

APPENDIX E. CITIZEN PARTICIPATION PLAN

TOWN OF OAK ISLAND CITIZEN PARTICIPATION PLAN FOR PREPARATION OF THE TOWN OF OAK ISLAND COMPREHENSIVE PLAN

Introduction

The Town of Oak Island has initiated the preparation of a Comprehensive Plan for the Oak Island planning area. The final document will provide a creative and dynamic plan to guide future long-term growth and development. The intent of this project is to draft a plan that will establish a solid foundation for the ongoing planning program and to serve as the primary policy guide for short and long-range planning, zoning, and development related decision-making within the Oak Island planning area.

The initial step in the planning process is the adoption of this Citizen Participation Plan (CPP) which defines a collaborative effort with the public. Approval of the CPP was accomplished on March 10, 2015.

Comprehensive Plan Advisory Committee

A Comprehensive Plan Advisory Committee (CPAC) is established by the adoption of this plan. This committee will supervise the preparation of a draft Comprehensive Plan for presentation to the Oak Island Planning Board, and upon recommendation of the Planning Board, the Oak Island Town Council. The CPAC will act in an advisory capacity to the Town staff, Consultant, Planning Board, and Town Council during the preparation of the draft Comprehensive Plan. The Committee's responsibilities will end with the recommendation of a draft plan to the Town of Oak Island Planning Board. The CPAC responsibilities will not include review and update of the Oak Island Unified Development Ordinance. The CPAC shall adhere to the terms of the scope of work included in the contract for consulting services with Holland Consulting Planners, Inc., dated February 10, 2015. Deviations from the scope of work will not be allowed without the express consent of the Town of Oak Island Town Council. The CPAC will review and comment on all sections of the draft plan throughout its preparation. All CPAC meetings will be conducted in an open format which will encourage public involvement/engagement. The committee is composed of thirteen (13) members and three (3) alternate members representing diverse interests including the following members to be appointed by the Oak Island Town Council:

- | | |
|--------------------|---|
| 1. Gary Anderson | 10. Malcolm Morrison |
| 2. John W. Bach | 11. Denise Pacula |
| 3. Charlie Blalock | 12. Jim E. Snakenburg, Jr. |
| 4. Ted Bodenschatz | 13. Jeff Winecoff |
| 5. Neva Cardwell | 14. Jim Medlin (Council Alternate) |
| 6. Glenn Frazier | 15. Clay Jenkins (Planning Board Alternate) |
| 7. Kelley Germaine | 16. Jane Kulesza (Environmental Advisory Board Alternate) |
| 8. Cindy Johnson | |
| 9. Lynn McDowell | |

Meetings

The CPAC will conduct approximately ten (10) work sessions to prepare the draft Comprehensive Plan. All meetings of the CPAC will be advertised and open to the public. At a minimum, the following meetings will be conducted throughout the plan preparation process:

- Up to ten (10) two-hour work sessions of the CPAC will be conducted. At each CPAC meeting, the location, date, and time of the succeeding meeting will be determined. All meetings will be advertised, posted on the project and Town websites, and open to the public.
- A mid-project public review meeting to report overall project status and to obtain public input on progress to date. This meeting will be scheduled approximately six (6) to nine (9) months into the project, and will provide a summary of all data and issues identification obtained to date in the process.
- A multi-day planning charrette to develop area-wide plan approaches and to specifically focus on small areas, such as specific transportation corridors and the Central Business District.
- Submittal of draft plan to the CPAC. Following approval of a draft plan by the CPAC, two (2) open house meetings for public review will be conducted to allow the public to question and comment on the draft plan.
- A meeting with the Town Planning Board for presentation of the plan.
- Submittal of plan to the Town Council for consideration. Presentation of the final plan at a public hearing.

Rules of Conduct

The CPAC will adopt specific rules of procedure for conduct of the CPAC. These rules should define at a minimum:

- Advertising of committee meetings.
- Designation of Chairperson/Vice-Chairperson.
- Controlled opportunities for public input/comments at meetings.
- Meeting locations.
- CPAC meeting schedule objectives.
- Decision-making procedures/guidelines.

Public Notification

To ensure that the public is informed of meeting times and has access to the draft Comprehensive Plan throughout this process, the following steps will be taken:

- Notices of all public meetings will be advertised in a non-legal advertisement section of the State Port Pilot and Oak Island Tribune in addition to being placed in the Town Hall, G.V. Barbee Sr. Library, Senior Center, Recreation Center, and Community Resources Center.
- Notices of all public meetings will be, at a minimum, e-mailed to civic groups and other interest groups (to be determined in concert with the Town).
- The project team will create and maintain an interactive project-dedicated website to both collect and disseminate information regarding the project. The draft plan (as well as all notices) will be posted on this Comprehensive Land Use Plan website so that citizens may either review the document online or print it out. Information regarding the project website will be posted in the State Port Pilot, Oak Island Tribune, Town Hall, G.V. Barbee Sr. Library, Senior Center, Recreation Center, and Community Resources Center. Notice of the website will be included with selected utility bills.
- Notices of all meetings will be posted on the project website, www.planoakislandnc.net, and the Town's general website at www.oakislandnc.com.

Dissemination of Information

The following procedures will be utilized to ensure the availability of information:

- Copies of the draft plan will be placed at the Town Hall, G.V. Barbee Sr. Library, Senior Center, Recreation Center, and Community Resources Center for citizen review, as well as being available at all meetings to ensure that the citizens in attendance can review items being discussed.
- The draft Plan will be posted on the Town of Oak Island Comprehensive Plan website as it is developed so that citizens may either review the document online or print it out. Information regarding the location of the document online will be included in all published notices of CPAC meetings.
- Sections of the proposed plan will be provided to the CPAC prior to any meetings at which the draft plan section(s) will be discussed.
- Copies of the draft plan or sections of the draft plan may be purchased from the Town of Oak Island Planning Department for the cost of reproduction.

Public Comment

Throughout the process, the public will have the following opportunities for input:

- At each CPAC meeting, time will be allocated for public comments and/or questions.
- At any time during the preparation of the draft Plan, the public may obtain information and/or offer comments via e-mail.
- The town-wide mid-project status meeting, charrette, open houses, CPAC work sessions, and public hearing will all provide additional opportunities for public input and questions.
- Sign-up sheets will be placed in the Oak Island Town Hall. Individuals who place their names on this list will be mailed or e-mailed notices announcing meeting times for review of the Comprehensive Plan.
- Social media will be utilized on an as-needed basis.

Schedule

The Comprehensive Plan planning process will utilize the following schedule:

Project Task	Schedule
Phase I: – Issue Notice to Proceed	February 2015
– Project Initiation	February – March 2015
Phase II: Research and Analysis	March – July 2015
Phase III: Plan Format/Development	July 2015 – May 2016
Phase IV: Open House(s), DCM Review, Public Hearing	June 2016 – January 2017