# 2021 CAMA Land Use Plan Update

# CARTERET COUNTY

# NORTH CAROLINA

**Adopted by Carteret County**
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**Certified by the North Carolina Coastal Resources Commission**
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# 2021 Carteret County CAMA Land Use Plan
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# SECTION 1. COMMUNITY CONCERNS AND ASPIRATIONS

The 2021 Carteret County Land Use Plan represents an update to the previous Land Use Plan that was updated and locally adopted by the Carteret County Board of Commissioners on April 20, 2009. The previous plan was certified by the Coastal Resources Commission on December 20, 2010.

The 2021 Carteret County Land Use Plan has been developed in accordance with the requirements contained in the North Carolina Coastal Resources Commission (CRC) Land Use Planning Requirements 15A NCAC 7B as modified by the CRC in 2016. A matrix identifying the location within the plan of the required elements is located with the Table of Contents.

The Coastal Area Management Act (CAMA) legislation requires that each of the twenty coastal counties prepare and adopt a Land Use Plan. Municipalities within these counties have the option of adopting individual plans, or of being under the authority of the County plan. In Carteret County, the Towns of Bogue and Peletier fall under the purview of the Carteret County Land Use Plan. The other incorporated municipalities in Carteret County prepare and adopt individual Land Use Plans.

The Land Use Plan is intended to provide a framework that will guide local government officials and private citizens as they make day-to-day and long-term decisions affecting development. The Land Use Plan serves as an overall "blueprint" for the development of Carteret County that when implemented, results in the most suitable and appropriate use of the land and protection of the county's natural resources. The Land Use Plan will be used by local, state and federal agencies in CAMA permitting decisions, project funding, and project consistency determinations.

The Carteret County Planning Commission served as the lead group responsible for preparation of the 2021 Land Use Plan Update. The goal of the Carteret County planning process was to develop an updated plan that meets the County's planning needs and satisfies the CRC's requirements for certification. The update process considered existing Carteret County ordinances, regulations, and planning documents. It also incorporated findings from other area studies, such as the Cherry Point Regional Joint Land Use Study and was undertaken simultaneously with the Highway 24 Corridor Study overseen by the North Carolina Department of Transportation. State and federal regulations, for example those of the US Army Corps of Engineers and the CAMA, were also considered.

Carteret County emphasized public involvement in development of the Land Use Plan. All Planning Commission meetings where the plan was discussed were open to the public, with prior notice of the meetings provided on the official Carteret County website. In addition to the monthly Planning Commission work sessions, three Citizen Outreach Meetings were hosted by the Carteret County Planning and Development Department and advertised in the Carteret County News-Times. The initial Citizen Outreach Meeting was held on March 27, 2019 to share information with the public regarding the CAMA land use planning process and to involve citizens in identification of land use issues and development of future land use policies. Subsequent meetings were held on June 18, 2019 and December 9, 2019. These informational meetings were held to receive public input from citizens on issues, concerns and opportunities available to Carteret County. The citizen outreach meetings provided an opportunity for citizens to review maps and draft policies developed in conjunction with the planning process and to interact informally with members of the Planning Commission.

The 2021 Carteret County Land Use Plan Update is organized into eight sections that address various

facets of the land use planning process. The purpose of the Community Concerns and Aspirations section of the Carteret County Land Use Plan is to provide overall guidance and direction for the development of the plan. The Planning Commission used the following three-part process to describe dominant growth-related conditions that influence land use and development patterns in Carteret County, describe key planning issues and develop a community vision:

1. Review of technical information related to existing and emerging conditions;
2. Identification of major community assets and problems related to land use and development; and
3. Development of the community vision statement to serve as the foundation for more specific objectives and policies stated elsewhere in the Land Use Plan.

## DOMINANT GROWTH-RELATED CONDITIONS

The Carteret County Planning Commission, citizens, and staff of the Carteret County Planning and Development Department identified the following growth-related conditions that influence land use, development, water quality, and other environmental conditions:

- Population trends indicate that the population of Carteret County is aging. The number of older and retirement age residents is increasing at a greater rate than younger age groups. Steps should be taken to further improve the attractiveness of the County as a retirement area and thus capitalize on this potential economic growth opportunity. Economic development strategies should be developed to create more and better paying jobs to attract and retain younger adults.
- Carteret County continues to experience steady subdivision and land development activities. In recent years the majority of this growth has occurred in the western portion of the County, with the greatest percentage of growth occurring in the White Oak Township. With the County's proximity to Camp Lejeune and Cherry Point this pattern is expected to continue throughout the planning period. Areas of central Carteret County, particularly those served by central water service, are expected to also experience increased growth. The availability of central sewer through the Harkers Island Sewer Company is expected to increase growth in Harkers Island.
- The number of acres of closed shellfishing waters in Carteret County continues to gradually increase. Most of the closed waters are located in more densely populated areas, with Core Sound and Back Sound containing larger percentages of open shellfishing waters. Since the status of shellfishing waters is thought to be one of the best determinants of overall water quality, the County should work to protect water quality, while recognizing the qualities that attract residents and visitors to the area.
- The Carteret County economy is strongly influenced by the military presence in the area. Military and associated civilian employment constitutes a significant employment sector in the County. Impacts from future Base Realignment and Closures could potentially hurt the County's economy by closing military installations or reducing the level of military and associated civilian employment.
- Tourism continues to have major impacts on land use, natural resources, and economic conditions.
- Commercial and recreational saltwater fishing continue to provide significant economic impacts to Carteret County. Water quality and other environmental conditions impact this industry.

- Marine trades (boat building) and marine research are important contributors to the local economy.
- Transportation issues surround major highways (US 70, NC 24, NC 58, NC 101, and NC 12, as well as future Interstate 42). These include the need for improved safety, regional accessibility, and traffic flow. Anticipated growth of the County is expected to continue to place transportation pressures on the County.
- With the exception of Harkers Island, the planning jurisdiction lacks central sewer service. The development of countywide sewer has not occurred due to cost and permitting restrictions that have not been resolved. Central water service is available in some areas. Individual septic tanks and wells serve most homes.
- Approximately one-third of the area under Carteret County planning jurisdiction is zoned. All zoned areas are located in the western and central portions of the County.

## KEY ISSUES

The following list summarizes the planning conditions that are important to the future of Carteret County and are the focus of this Land Use Plan. These conditions address the CAMA Land Use Plan Management Topics, which include public access, land use compatibility, infrastructure carrying capacity, natural hazard areas, and water quality. The identification of assets and problems was developed with input from local citizens and property owners.

### Assets

- Plentiful waterfront areas throughout Carteret County to attract tourism and retirement and/or second home development.
- Countywide waterfront access plan in place to guide future acquisitions and improvements for public access.
- County development policies encourage consistency of proposed zoning and subdivision actions with Land Use Plan policies and Future Land Use Map
- State and federal permitting programs (such as those administered by the NC Division of Coastal Management and the US Army Corps of Engineers (USACE) provide a measure of protection for natural resources and provide basic requirements that affect construction of infrastructure (roads, utilities, etc.).
- The County employs a variety of local programs and regulations to protect natural features, including implementation of the Down East Conservation Ordinance (DECO).
- Carteret County is a National Flood Insurance Program (NFIP) participant, has adopted a Flood Damage Protection Ordinance, and is a community in good standing with the Community Rating System (CRS).
- Public outreach and education activities are in place to minimize flood damage risk.
- As a result of the damage caused by previous and future hurricanes, Carteret County actively participates in the Federal Emergency Management Agency Hazard Mitigation Grant Program.
- The existing lifestyle of smaller communities is desirable. The County should take steps to protect the character of these areas.
- US 70 in Carteret County from the North River Bridge to Atlantic and the entirety of NC 12 to Cedar Island are designated as part of the Outer Banks National Scenic Byway.
- Retiree population is an economic growth opportunity.

- Economic development strategies for growing the County's economy, tax base, and local government revenues are shifting from a focus on business recruitment to a model that prioritizes "people attraction." This approach represents a win-win opportunity that aims to provide much-needed employees for existing businesses and softens seasonal economic fluctuations without intensifying a tight labor market.
- Growth of Marine Corps Air Station (MCAS) Cherry Point should provide economic benefits for Carteret County.

**Challenges or Concerns**

- Limited beachfront areas under Carteret County planning jurisdiction, although significant estuarine waterfront areas exist.
- Additional funding for public access for land acquisition and improvements is needed.
- Funding and permit approvals for needed beach nourishment projects are difficult to obtain.
- Waterfront development requires consideration of fragile areas.
- Large portions of Carteret County are designated as wetlands.
- Closed shellfishing areas due to impacts from development.
- Some residents view existing environmental regulations as excessive.
- Limited soil suitability for septic tanks.
- Lack of central sewer systems to eliminate problems with malfunctioning septic tanks.
- Much of the County is located in a Special Flood Hazard Area or Storm Surge Area. Low-lying areas along all local waterways in the County are subject to flooding during and following storm events.
- County's location and topography make it vulnerable to hurricanes, tropical storms and other storm events such as nor'easters.
- Transportation improvements are needed to enhance economy and improve traffic patterns
- Level of service issues on major roads are troublesome.
- Lack of job opportunities for young adults often results in migration from the County.
- Impacts from future Base Realignment and Closures could hurt the County's economy.
- Growth of MCAS Cherry Point will create need for improved transportation and other infrastructure.

## COMMUNITY VISION

The Community Vision for Carteret County was developed by the Planning Commission early in the planning process to guide development of the Land Use Plan. In developing the Vision the Planning Commission built upon and updated the existing Vision contained in the previous Land Use Plan. The planners felt that the Vision had served the County well and with updates would continue to be a positive and appropriate direction for future growth and development of Carteret County.

The Community Vision described below is an important feature of the Land Use Plan because it provides a description of the general physical condition and form that represents the County's plan for the future. It provides the foundation for setting priorities, defining goals, and developing land use policies to achieve Carteret County goals. Input from the public was considered in development of the updated community vision.

## Carteret County Vision Statement for the Future

Carteret County creates an atmosphere and infrastructure that promotes sustainable economic development and growth of the County.

Carteret County strives to improve the quality of life for its residents and the economic stability of the County by encouraging and promoting job opportunities.

Carteret County balances growth with protection of its natural resources and areas with rich maritime history.

Carteret County explores traditional and alternative methods for the protection of its waters.

Carteret County recognizes the contributions of the military community to its economy and actively promotes its continued presence in the County.

## Goals and Objectives to Achieve the Community Vision

The Community Vision for Carteret County includes goals and objectives to be achieved by the Land Use Plan. Land use and development goals describe the values and general principles that guide the development of the County and are the desired ends toward which the policies and programs of the land use plan are directed. Objectives are specific strategies or actions to achieve the vison and goals of the Land Use Plan. They provide the benchmark for developing effective policies and programs to achieve the County's desired future. The Land Use Plan goals and associate objectives are shown below:

1. Maximize conveniently located access for the enjoyment of residents and visitors to Carteret County's public trust waters for a range of activities. These activities are an extremely important part of the tourist economy and overall economy of the County and are a strong contributor to the quality of life of its residents.

   Objectives:

   - Support development of additional public water access facilities for pedestrian, swimming, boating, and fishing access (both commercial and recreational) throughout the County, including the Outer Banks Scenic Byway Paddle Trails and Access Points.
   - Seek financial assistance from the State for new public access facilities.
   - Review existing and proposed access sites and remove barriers to satisfactory access for all.
   - Require new waterfront residential developments to provide neighborhood access for non-waterfront lots and non-waterfront developments to provide recreation areas or pay a fee in lieu of recreation areas.
   - Continue maintenance of Harbors of Refuge at Harkers Island, Atlantic, and Cedar Island.
   - Concur with state and federal standards for marina construction and expansion and marina associated dredging. Require compliance with local ordinances, including applicable zoning and subdivision regulations for development.

- Maintain and operate the County-owned Salter Path Public Beach Access facility to provide beach access opportunities and to ensure compliance with current access requirements of the USACE for nourished beaches.

2. Protect and provide long-term management of Carteret County's natural resources and fragile areas while recognizing the rights of property owners, balancing protection with the need for continuing economic development, and avoiding risks to public health, safety, and welfare.

   Objectives:

   - Develop policies that support protection and long-term management of the County's natural resources and fragile areas, due to the impact these resources have in protecting water quality, providing food and habitat for fish and wildlife, and maintaining Carteret County's coastal way of life.
   - Support and agree with development regulations of the North Carolina CRC for AECs and when needed implement local policies that exceed or are more restrictive than the State's minimum use standards.
   - Manage development in coastal shoreline areas, wetlands, and estuarine and public trust waters to protect water quality, conserve the County's valuable coastal resources, and maintain waterfront aesthetics.
   - Support purchase or donation for conservation of sensitive areas and those with high biologic and scenic values.

3. Land use and development patterns that are consistent with the capabilities and limitations of the County's natural systems, preserve the area's heritage and life styles, and promote sustainable economic growth.

   Objectives:

   - Develop policies that promote the County's desired future land use development patterns and avoid or reduce conflicts with resource protection.
   - Encourage Planned Conservation Development to provide more flexibility for development around identified conservation areas, avoid compromising the economic value of proposed development, and minimizing site disturbance.
   - Support growth and development at densities consistent with and in compliance with local zoning, DECO, and other County regulations. Densities contained in County policy documents will be consistent with densities represented on the Future Land Use Map, with more intense development located in areas designated as Developed and Limited Transition.

4. Carteret County's infrastructure systems (including water, wastewater, transportation, natural gas, and telecommunications) support sustainable industries and job opportunities, as well as orderly development of the County, while minimizing impacts to AECs and other fragile areas.

Objectives:

- Support extension of central water service to areas classified as developed, limited transition, and rural with services as needed.
- Continue support for future development of central sewer for developed, limited transition, and rural with services classified areas, while recognizing limitations due to permitting and cost factors.
- Allow construction of package treatment systems in areas where central sewer service is unavailable.
- Encourage water reuse technologies for agriculture and other uses and pilot projects using advanced technology for wastewater treatment in areas not suitable for septic tanks.
- Support advanced technology wastewater treatment in areas not suitable for septic tanks, including the use of constructed wetlands.
- Provide educational information on alternative septic systems for soils with severe limitations for conventional septic tanks and proper maintenance of septic tanks.
- Support transportation projects that improve highway safety, regional accessibility, and traffic flow, including a multi-county effort underway to improve traffic flow from US 70 in Wake County to the North Carolina Port in Morehead City.
- Study transportation issues identified in the NC Department of Transportation (DOT) NC 24 Corridor Management Study for application to other highways experiencing growth pressures. These include access management, land use and subdivision management, right-of-way needs and preservation, operational strategies, intergovernmental cooperation, financing for corridor management improvements and aesthetic concerns.
- Improve traffic flow and provide safe access to major roadways by minimizing access points for new commercial development along major roadways by amendments to subdivision and/or zoning ordinances.
- Support and seek options for extension of fiber-optic cabling and natural gas lines throughout the County.
- Support expansion of the North Carolina State Port Terminal and Michael J. Smith Airfield.

5. Mitigate risks associated with storms, flooding, and shoreline erosion.

   Objectives:

   - Allow development within the 100-year floodplain consistent with the NFIP, CAMA, and the County's Flood Damage Prevention and Protection Ordinance.
   - Support local beach nourishment programs, including the Carteret County Shore Protection Program.
   - Maintain or improve the NFIP CRS.
   - Seek funding to elevate older residences and other structures above the base flood elevation.
   - Continue enforcement of the NC State Building Code, including for wind-resistant construction and other code requirements.

6. Support continued presence of the military community and activities in the County.

Objective:

- Mitigate impacts of aircraft accident potential and elevated noise levels associated with Marine Corps Auxiliary Landing Field Bogue by continued enforcement of the Bogue Field Air Installation Compatible Use Zones.

7. Maintain navigation inlets and harbors to promote commercial/recreational uses of coastal waters, tourism, local economy, and protection of life and property, while avoiding negative impacts to the County's barrier island beaches resulting from dredging activities.

   Objectives:

   - Support and maintain the Carteret County Shore Protection Program.
   - Implement County policy of no net loss of sand from the barrier beaches resulting dredging to maintain and deepen navigation channels.

8. Water quality maintained, protected, and where possible, enhanced.

   Objectives:

   - Pursue limiting development density and impervious surface limits in areas adjacent to water bodies and wetlands, in particular areas adjacent to shellfishing waters, through changes to zoning, subdivision, and other County land use ordinances.
   - Consider implementing local erosion and sedimentation controls for site disturbances of less than one acre.
   - Encourage developers to implement the Low Impact Development option to control the volume, rate (velocity), and quality of stormwater into surface waters.
   - Encourage measures to manage and treat stormwater onsite, such as bio-retention areas, rain gardens, and other innovative practices.
   - Encourage road designs that allow stormwater to sheet flow to adjacent vegetated shoulders.
   - Allow use of pervious paving materials and innovative development techniques as appropriate to reduce impervious surfaces.
   - Encourage use of monitored pilot projects using advanced technology and engineered solutions to treat stormwater runoff.
   - Encourage participation in the Clean Marina Program.

9. Foster quality of life that attracts and retains young adults, retirees, military community and other groups who contribute to the County's economic diversity and well-being.

   Objectives:

   - Support the maritime culture of Carteret County, including the traditional way of life found in many communities such as those in the Down East area.
   - Support commercial and recreational fishing and marine trades, such as the boat building industry, that are important to the County's economy.
   - Encourage conservation easements to preserve important natural and scenic resources.

# SECTION 2. POPULATION, HOUSING & ECONOMY

## POPULATION

Information on Carteret County's permanent and seasonal population and the degree to which it will change during the planning period is an important component of the land use planning process. Population analysis can help identify growth areas, as well as the amount of land that should be allocated for future uses. Population trend analysis provides information on its expected impacts on the area's natural resources and future infrastructure needs. Population age and income characteristics help estimate demands for different types of housing and related land use, as well as special needs of the community.

### Regional and County Growth Trends

Population growth in Carteret County has increased at significant rates since 2000. The permanent population increased more than 20% from 2000 to the projected 2019 population, making it the eighth fastest growing North Carolina coastal county (Table 2.1). Even though military employment declined slightly during the period, the national trends of population movement toward the coast and the area's increasing popularity as a retirement/resort area remain important factors in the County's population growth.

Sixteen of the twenty North Carolina counties regulated by the Coastal Area Management Act (CAMA), including Carteret County, experienced a net permanent population growth from 2000 to 2019. During this period, only four coastal counties lost population (Chowan, Hyde, Tyrrell, and Washington Counties). Compared to Carteret's surrounding counties (Beaufort, Craven, Hyde, Pamlico and Onslow), Carteret was the second only to Onslow (32.8%) as fastest growing surrounding counties.

The highest rates of permanent population growth from 2000 through 2019 in the coastal region have occurred mainly in oceanfront counties with the exception of Camden County, which experienced an estimated 2.7% annual growth rate from 2000 to 2019. These six counties are Carteret, Brunswick, Currituck, Dare, New Hanover and Pender (Table 2.1).

Carteret County's annual growth rate for the 2000 to 2019 period is estimated to remain at approximately 1.0%, which is slightly lower than the rate for 1990 to 2000 (1.3%). Table 2.1 provides populations and percentage change for the twenty CAMA-regulated counties from 2000 through 2019 and includes population change projections through 2019.

### Geographic Distribution of Growth

Table 2.2 shows population changes for the County's townships and municipalities from 1990 to 2017. The table shows that 11 of the 15 townships in the table experienced population growth from 2010 to 2017. The fastest growing township for the projection period was White Oak Township in the coastal area, with a higher base population, which grew by 26% from 2000 to 2010 and 11.3% from 2010 to 2017. The two fastest growing municipalities from 2000 to 2010 were Cape Carteret and Cedar Point, which grew by 57.9% and 37.6% respectively. The townships with lower population bases experienced the most significant population loses during the period.

Table 2.1 Population Changes in CAMA Counties, 2000-2019

| CAMA County | Year | | | | Percentage Changed | |
|---|---|---|---|---|---|---|
| | 2000 | 2010 | 2015 | 2019 | 2000 to 2019 | Est. annual rate |
| **Carteret** | 59,383 | 66,469 | 69,826 | 71,117 | 19.8% | 1.0% |
| **Beaufort** | 44,958 | 47,759 | 47,829 | 47,362 | 5.3% | 0.3% |
| **Bertie** | 19,757 | 21,282 | 20,533 | 19,831 | 0.4% | 0.0% |
| **Brunswick** | 73,141 | 107,431 | 123,535 | 138,494 | 89.4% | 4.7% |
| **Camden** | 6,885 | 9,980 | 10,224 | 10,464 | 52.0% | 2.7% |
| **Chowan** | 14,150 | 14,793 | 14,541 | 14,059 | -0.6% | -0.0% |
| **Craven** | 91,523 | 103,505 | 103,691 | 103,854 | 13.5% | 0.7% |
| **Currituck** | 18,190 | 23,547 | 25,627 | 27,610 | 51.8% | 2.7% |
| **Dare** | 29,967 | 33,920 | 36,001 | 37,524 | 25.2% | 1.3% |
| **Gates** | 10,516 | 12,197 | 11,739 | 12,037 | 14.5% | 0.8% |
| **Hertford** | 22,977 | 24,669 | 24,426 | 23,765 | 3.4% | 0.2% |
| **Hyde** | 5,826 | 5,810 | 5,631 | 5,615 | -3.6% | -0.2% |
| **New Hanover** | 160,327 | 202,667 | 220,231 | 234,574 | 46.3% | 2.4% |
| **Onslow** | 150,355 | 177,772 | 194,636 | 199,635 | 32.8% | 1.7% |
| **Pamlico** | 12,934 | 13,144 | 13,174 | 13,309 | 2.9% | 0.2% |
| **Pasquotank** | 34,897 | 40,661 | 39,731 | 40,943 | 17.3% | 0.9% |
| **Pender** | 41,082 | 52,217 | 57,941 | 63,743 | 55.2% | 2.9% |
| **Perquimans** | 11,368 | 13,453 | 13,648 | 13,610 | 19.7% | 1.0% |
| **Tyrrell** | 4,149 | 4,407 | 4,217 | 4,137 | -0.3% | -0.0% |
| **Washington** | 13,723 | 13,228 | 12,589 | 12,196 | -11.1% | -0.6% |

Source: NC State Data Center (http://data.osbm.state.nc (accessed 01/26/19)

Table 2.2 Township and Municipality Population Growth Trends

| Township | Population totals | | | | Percent growth | | |
|---|---|---|---|---|---|---|---|
| | 1990 | 2000 | 2010 | 2017 | 1990-2000 | 2000-2010 | 2010-2017 |
| **Atlantic** | 805 | 817 | 595 | 678 | 1.49% | -27.17% | 13.95% |
| **Beaufort** | 8,013 | 7,665 | 8,219 | 8,740 | -4.34% | 7.23% | 6.34% |
| **Incorporated Area** | 3,808 | 3,771 | 4,039 | na | -0.97% | 7.11% | |
| **Unincorporated Area** | 4,205 | 3,894 | 4,180 | na | -7.40% | 7.34% | |
| **Cedar Island** | 385 | 324 | 340 | 533 | -15.84% | 4.94% | 56.76% |
| **Davis** | 535 | 412 | 450 | 350 | -22.99% | 9.22% | -22.22% |
| **Harkers Island** | 2,237 | 1,525 | 1,093 | 1,447 | -31.83% | -28.33% | 32.39% |
| **Harlowe** | 1,190 | 1,272 | 1,177 | 1,465 | 6.89% | -7.47% | 24.47% |
| **Marshallberg** | 646 | 528 | 324 | 340 | -18.27% | -38.64% | 4.94% |
| **Merrimon** | 542 | 657 | 527 | 625 | 21.22% | -19.79% | 18.60% |
| **Morehead** | 20,482 | 23,748 | 26,154 | 26,792 | 15.95% | 10.13% | 2.44% |
| **Atlantic Beach** | 1,938 | 1,781 | 1,495 | na | -8.10% | -16.06% | |
| **Indian Beach** | 153 | 95 | 112 | na | -37.91% | 17.89% | |
| **Morehead City** | 6,046 | 7,691 | 8,661 | na | 27.21% | 12.61% | |
| **Pine Knoll Shores** | 1,380 | 1,524 | 1,339 | na | 10.43% | -12.14% | |
| **Unincorporated Area** | 10,965 | 12,657 | 14,547 | na | 15.43% | 14.93% | |
| **Newport** | 7,333 | 8,326 | 9,300 | 9,702 | 13.54% | 11.70% | 4.32% |
| **Newport (Town)** | 2,569 | 3,349 | 4,150 | na | 30.36% | 23.92% | |
| **Unincorporated Area** | 4,764 | 4,977 | 5,150 | na | 4.47% | 3.48% | |
| **Sea Level** | 773 | 461 | 414 | 407 | -40.36% | -10.20% | -1.69% |
| **Smyrna** | 782 | 679 | 831 | 751 | -13.17% | 22.39% | -9.63% |
| **Stacy** | 401 | 206 | 156 | 244 | -48.63% | -24.27% | 56.41% |
| **Straits** | 1,948 | 2,686 | 2,805 | 2,511 | 37.89% | 4.43% | -10.48% |
| **White Oak** | 6,483 | 10,073 | 12,683 | 14,114 | 55.38% | 25.91% | 11.28% |
| **Cape Carteret** | 1,008 | 1,214 | 1,917 | na | 20.44% | 57.91% | |
| **Emerald Isle** | 2,434 | 3,488 | 3,655 | na | 43.30% | 4.79% | |
| **Cedar Point** | 628 | 929 | 1,279 | na | 47.93% | 37.67% | |
| **Unincorporated Area** | 2,413 | 4,442 | 5,832 | na | 84.09% | 31.29% | |
| **Carteret County Total** | 52,553 | 59,379 | 65,068 | 68,699 | 12.99% | 9.58% | 5.58% |
| Source: NC State Data Center (http://data.osbm.state.nc (accessed 01/26/19) | | | | | | | |

## Population Age Characteristics

Table 2.3A provides an analysis of the County's permanent population broken down by age group, and it provides guidance on the population trends that will affect Carteret County over the planning

period. This data is valuable information for projecting infrastructure, service, housing, and other special needs of the County, as well as land use needs. Since 2000, regular increases have been seen in age groups over 40, while the age groups under 40 years have remained mostly stable or with small increases. The largest percent increase in population from 2000 to 2038 is projected to be in the 60 years and over age group. For comparison, the County's 2015 median age is 47.3, which is significantly higher than the State's median age of 38.4. The table shows a consistent increase in the County population's median age over the projection period. The growth of these age groups is largely attributed to the County's popularity as a retirement location and the resulting immigration of older adults, as well as the aging trend for the overall populations. This trend has significant implications for housing, future land needs, transportation, medical care and other personal and professional services.

Even though projected increases in population age groups below 40 years are smaller, these increases have implications for schools, community services, and economic development. Table 2.3B shows overall projected changes in the age of the county's permanent population to 2038.

Table 2.3A Permanent Population Trends by Age Group, 2000-2038

| Year | 2000 | 2005 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | 2038 |
|---|---|---|---|---|---|---|---|---|---|
| **0-4** | 2,953 | 3,145 | 3,245 | 3,124 | 2,968 | 3,165 | 3,272 | 3,309 | 3,313 |
| **5-19** | 10,531 | 10,380 | 10,727 | 10,752 | 10,581 | 10,446 | 10,498 | 10,760 | 11,065 |
| **20-29** | 5,842 | 6,549 | 7,042 | 7,329 | 7,689 | 7,688 | 7,763 | 7,835 | 7,710 |
| **30-39** | 8,060 | 7,429 | 7,164 | 7,712 | 7,990 | 8,438 | 9,011 | 9,146 | 9,332 |
| **40-49** | 9,596 | 10,000 | 9,392 | 8,421 | 7,972 | 8,659 | 9,169 | 9,772 | 10,176 |
| **50-59** | 8,710 | 10,133 | 10,977 | 10,993 | 10,184 | 9,450 | 9,345 | 10,202 | 10,687 |
| **60-65** | 4,152 | 5,040 | 6,325 | 6,672 | 6,947 | 6,923 | 6,587 | 6,337 | 6,324 |
| **66-75** | 5,825 | 6,035 | 7,004 | 9,111 | 10,344 | 10,914 | 11,333 | 11,210 | 11,024 |
| **Age 76+** | 3,717 | 4,301 | 4,820 | 5,609 | 6,907 | 8,561 | 9,979 | 11,103 | 11,670 |
| **Median age** | 42.4 | 44.3 | 45.9 | 47.3 | 48.4 | 48.4 | 48.7 | 49.0 | 49.1 |
| **Pop. Total** | 59,386 | 63,012 | 66,696 | 69,723 | 71,582 | 74,244 | 76,957 | 79,674 | 81,301 |
| Source: NC State Data Center (accessed 01/24/19) | | | | | | | | | |

Table 2.3B Percent Change in Population by Age Group, 2000-2038

| Age group | Percent change, 2000-2038 |
|---|---|
| **0-4** | 12.0% |
| **5-19** | 5.0% |
| **20-29** | 32.0% |
| **30-39** | 16.0% |
| **40-49** | 6.0% |
| **50-59** | 23.0% |
| **60-65** | 52.0% |
| **66-75** | 89.0% |
| **Age 76+** | 214.0% |
| Source: NC State Data Center (accessed 01/24/19) | |

## Current estimates and projections of permanent and seasonal populations

Table 2.1 shows the most recent available estimates of the county's permanent population, which is 2019, and Table 2.3A shows permanent population projections through 2038. The 2019 estimated population is 71,117 and the 2038 projected population is 81,301. These estimates and projections show a population increase of approximately 10,200, or 14% for the 19-year period. This is an average annual growth rate of approximately 0.75%.

Estimates and projections of seasonal population for 2000 to 2030 were determined using a combination of information from the Census, the NC Department of Commerce, and local estimates. Seasonal units are estimated to have 8 persons per units. The number of seasonal housing units from the 2010 Census is 15,402 and are estimated to have eight people per unit. That population was added to the seasonal population staying in hotel and bed and breakfast rooms (estimated to be 1,826 rooms at three persons per room) to obtain the estimated seasonal population of 112,142 for the year 2000. Permanent population brings the total population 171,525. These relationships were used to estimate seasonal population for the forecast period.

Table 2.4 indicates that the seasonal population of Carteret County continued to grow faster than the permanent population for the entire 30-year forecast period from 2020 to 2050. This consistent with historical population trend data collected between 2000 and 2015. The county's seasonal population will grow by about 41,000 people, or 30% between 2020 and 2050; the permanent population will increase by more than 17,000 persons, or 25% for the period; and the total population will increase 59,000 persons, or 57%, for the planning period.

Table 2.4 Seasonal and Permanent Population Estimates and Projections

| Year | Seasonal population | Annual % change est. | Permanent population | Annual % change est. | Total population | Annual % change est. |
|---|---|---|---|---|---|---|
| **2000** | 112,142 | | 59,383 | | 171,525 | |
| **2005** | 119,207 | 1.26 | 61,825 | 0.82 | 181,032 | 1.11 |
| **2010** | 126,717 | 1.19 | 64,467 | 0.85 | 191,184 | 1.12 |
| **2015** | 132,673 | 0.01 | 68,228 | 1.17 | 200,901 | 1.02 |
| **2020** | 133,051 | 0.06 | 69,791 | 0.46 | 202,842 | 0.19 |
| **2025** | 139,961 | 1.04 | 73,125 | 0.96 | 213,086 | 1.01 |
| **2030** | 146,872 | 0.99 | 75,904 | 0.76 | 222,775 | 0.91 |
| **2035** | 153,782 | 0.94 | 78,682 | 0.73 | 232,464 | 0.87 |
| **2040** | 160,693 | 0.90 | 81,461 | 0.71 | 242,153 | 0.83 |
| **2045** | 167,603 | 0.86 | 84,239 | 0.68 | 251,842 | 0.80 |
| **2050** | 174,514 | 0.82 | 87,018 | 0.66 | 261,531 | 0.77 |

Sources: 2000-2025 Permanent Population Estimate and Projections / 2000 Seasonal Housing Units; Source: NC State Data Center (accessed 01/24/19); 2000 Seasonal Lodging - Carteret County Tourism Development Authority; 2000-2025 Seasonal Population Growth Rate - Carteret County EDC
Forecasts based on linear regression analysis. Slight variations between forecasts in Tables 2.3A and 2.4 are due to projection methods.

### Planning Area Population

The Carteret County planning area does not include the entire county. Therefore, Table 2.4.1 contains estimates of the planning area population. These estimates are based on 2019 population estimates and projections contained in Table 2.4. According to the estimates, Planning Area population will increase by nearly 6,800 by 2040 and by nearly 10,000 persons by 2050.

Table 2.4.1 Planning Area Permanent Population Estimate

| Year | County population projections | Planning area population estimate |
|---|---|---|
| **2019** | 69,000 | 40,020 |
| **2020** | 69,791 | 40,479 |
| **2025** | 73,125 | 42,413 |
| **2030** | 75,904 | 44,024 |
| **2035** | 78,682 | 45,636 |
| **2040** | 81,461 | 47,247 |
| **2045** | 84,239 | 48,859 |
| **2050** | 87,018 | 50,470 |

## HOUSING

### Housing Characteristics

The summary of population trends in the previous section indicates that the seasonal population of Carteret County continued to grow faster than the permanent population from 2000 to 2025 and that it will continue to slightly outpace permanent population growth for the 2025 to 2050. As shown in Table 2.5, this trend shows a slight increase in number of seasonal units over the 2010-2019 period.

For the 2010-2019 period, owner-occupied housing represents the predominant type of residential structure. According to the US Census, average household size for both renter and owner households remained fairly stable from 2010 to 2019. Average size of renter households increased slightly from 2.23 in 2015 to 2.44 in 2019; average owner household size increased from 2.31 to 2.70 for the same period.

### Housing Types

Table 2.6 also shows the types of housing units that make up Carteret County's permanent housing stock. In 2019, the majority, or 59.0% of the County's housing, consisted of single-family detached dwellings. Manufactured homes are 18.0% of the housing stock, and duplexes and multifamily units make up 18.7% of the county's total housing units.

Table 2.5 Types of Housing Units

| Type of Housing Unit | 2010 | % of total | 2015 | % of total | 2019 | % of total |
|---|---|---|---|---|---|---|
| **Total Housing Units** | 48,179 | | 48,694 | | 50,962 | |
| **Seasonal Units** | 15,402 | 32.0% | 14,576 | 29.9% | 16,509 | 32.0% |
| **Year-round Units** | 31,675 | 65.7% | 32,363 | 66.5% | 34,453 | 68.0% |
| **Vacant Units** | 19,309 | 40.1% | 19,129 | 39.3% | 20,464 | 40.0% |
| **Renter Occupied Units** | 8,268 | 17.2% | 8,536 | 17.5% | 7,931 | 16.0% |
| **Owner Occupied Units** | 20,602 | 42.8% | 21,029 | 43.2% | 21,509 | 42.0% |
| **Manufactured Homes** | 10,348 | 21.5% | 9,645 | 19.8% | 8,947 | 18.0% |
| Source: US Census; decennial census, ACS, 2019 | | | | | | |

Table 2.6 2010-2019 Units in Housing Structures

| Year | 2010 | % | 2015 | % | 2019 | % |
|---|---|---|---|---|---|---|
| **Units in Housing Structures** | 47,459 | | 48,694 | | 50,962 | |
| **Single Family Detached** | 26,519 | 55.88% | 28,397 | 58.32% | 30,164 | 59.0% |
| **Duplexes** | 2,081 | 4.38% | 1,805 | 3.71% | 2,040 | 4.0% |
| **2 Units** | 1,561 | 3.29% | 1,292 | 2.65% | 930 | 2.0% |
| **3 or 4 Units** | 1,576 | 3.32% | 1,540 | 3.16% | 1,437 | 3.0% |
| **5 to 9 Units** | 1,273 | 2.68% | 1,616 | 3.32% | 1,629 | 3.0% |
| **20 or more Units** | 1,013 | 2.13% | 3,133 | 6.43% | 3,479 | 7.0% |
| **Manufactured Homes** | 10,341 | 21.79% | 9,645 | 19.81% | 8,947 | 18.0% |
| **Other** | 12 | 0.03% | 32 | 0.07% | 80 | .02% |
| Source: US Census; decennial census, ACS | | | | | | |

**Housing Age**

Table 2.7 shows the trends in the age of the county's housing stock between 2010 and 2019. While there are slight variations over this period, overall age remains relatively consistent.

Table 2.7 Housing Age in Carteret County

| Year Structure Built | 2010 | | 2015 | | 2019 | |
|---|---|---|---|---|---|---|
| **2010 or later** | 1,814 | 3.8% | 722 | 1.5% | 2,673 | 5.2% |
| **2000 to 2009** | 5,375 | 11.3% | 9,391 | 19.3% | 9,311 | 18.3% |
| **1990 to 1999** | 10,384 | 21.9% | 9,683 | 19.9% | 9,344 | 18.3% |
| **1980 to 1989** | 12,405 | 26.1% | 11,445 | 23.5% | 11,802 | 23.2% |
| **1970 to 1979** | 7,561 | 15.9% | 7,590 | 15.6% | 7,295 | 14.3% |
| **1960 to 1969** | 3,577 | 7.5% | 3,649 | 7.5% | 3,568 | 7.0% |

| Year Structure Built | 2010 | | 2015 | | 2019 | |
|---|---|---|---|---|---|---|
| **1950 to 1959** | 2,923 | 6.2% | 2,771 | 5.7% | 2,799 | 5.5% |
| **1940 to 1949** | 1,475 | 3.1% | 1,628 | 3.3% | 1,505 | 3.0% |
| **1939 or Earlier** | 1,945 | 4.1% | 1,815 | 3.7% | 1,922 | 3.8% |
| **Total Housing Units** | 47,459 | | 48,694 | | 50,962 | |
| Source: US Census Bureau; decennial census, ACS, 2019 | | | | | | |

**Building Permits**

Table 2.8 provides information on the number, type and value of residential building permits issued by Carteret County. Consistent with recent population growth trends which showed higher growth in the western portion of the County, the Carteret County Planning and Development Department records indicate that approximately 50% of building permits issued annually were in the fast-growing White Oak Township.

Table 2.8 Carteret County Residential Permits

| | 2010 | 2014 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|
| **Total Permits** | 212 | 225 | 246 | 342 | 384 |
| **Stick built/Modulars** | 93 | 98 | 159 | 232 | 310 |
| **Manufactured Homes** | 119 | 127 | 87 | 110 | 74 |
| **Average Permitted Cost** | $189,402 | $231,700 | $167,814 | $167,524 | $162,536 |
| **Total Cost** | $40,153,299 | $52,132,500 | $41,282,302 | $57,293,066 | $62,413,932 |
| **Total Cost Stick Built/Modulars** | $35,713,513 | $46,368,163 | $36,119,317 | $52,310,497 | $57,835,727 |
| **Total Cost Manufactured Homes** | $4,439,786 | $5,764,337 | $5,162,985 | $4,982,569 | $4,578,205 |
| Source: Carteret County Building Inspections, 2021. | | | | | |

## ECONOMY

Key indicators of Carteret County's overall economy are provided in Table 2.9. All of the indicators included in the table show strong and consistent growth over the 15-year period. Compared to North Carolina as a whole, personal per capita income increased significantly. Retail sales and total employment also increased consistently over the last twenty years. Even with this economic growth, the number of families in poverty increased over the period. This rise of economic activity also has been accompanied by a rise in the cost of housing. The median housing value in Carteret County is above the North Carolina state average. For the year 2000, the Carteret County median occupied housing value was $123,900 and by 2015 it had increased to $207,500.

Table 2.9 Carteret County Key Economic Indicators

| Per capita income | 2000 | 2005 | 2010 | 2015 |
|---|---|---|---|---|
| **Carteret County** | $21,260 | | $26,791 | $28,991 |
| **North Carolina** | $20,307 | | $24,745 | $25,920 |
| **Total personal income ($000)** | $1,543,915 | $2,091,352 | $2,608,338 | $3,044,352 |
| **Median family income** | $45,400 | | $46,155 | $60,560 |
| **Median occupied housing value** | $123,900 | | $196,800 | $207,500 |
| **Median gross rent** | $511 | | $699 | $794 |
| **Gross retail sales ($000)** | $778,265 | $1,016,546 | $810,348 | $979,778 |
| **Total employed labor force** | 32,163 | 35,969 | 32,945 | 34,914 |
| **Families in poverty** | 1,397 | No data | 1,492 | 2,361 |
| Source: NC State Data Center (http://data.osbm.state.nc.us, accessed 01/24/19) | | | | |

## Employment and Income

As shown in Table 2.10, employment has remained relatively stable in Carteret County from 2000 to 2015. The two employment sectors seeing the greatest percentage increases are a range of management and scientific employers and jobs in arts, entertainment, and food service. This latter category may be directly related to tourism employment and a range of employment related to waste management. Manufacturing, construction, and wholesale trade showed significant declines over the period. Government employment showed a slight decline. Federal civilian employment and military employment showed increases between 2000 and 2010, but both sectors declined from 2010 to 2015.

Table 2.11 shows earnings by major industry complement the employment data and provides information about which sectors produced the most revenue for Carteret County. In the year 2015, Census estimates show that retail, health and social services, construction, and service occupations were the top non-governmental earners in the county.

Table 2.10 Employment by Industry, 2000-2015

| | Year | | | Annual rate of change | |
|---|---|---|---|---|---|
| **Employment category** | **2000** | **2010** | **2015** | **2000-2010** | **2010-2015** |
| **Agriculture, forestry, fishing and hunting, and mining** | 805 | 521 | 615 | -3.5% | 3.6% |
| **Construction** | 3,042 | 3,366 | 2,441 | 1.1% | -5.5% |
| **Manufacturing** | 2,043 | 1,936 | 1,763 | -0.5% | -1.8% |
| **Wholesale trade** | 733 | 749 | 397 | 0.2% | -9.4% |
| **Retail trade** | 3,495 | 3,801 | 3,765 | 0.9% | -0.2% |
| **Transportation, warehousing, and utilities** | 1,095 | 1,370 | 1,238 | 2.5% | -1.9% |
| **Information** | 494 | 369 | 412 | -2.5% | 2.3% |
| **Finance and insurance, and real estate and rental and leasing** | 1,643 | 1,934 | 1,798 | 1.8% | -1.4% |

| | Year | | | Annual rate of change | |
|---|---|---|---|---|---|
| **Employment category** | **2000** | **2010** | **2015** | **2000-2010** | **2010-2015** |
| **Professional, scientific, and mgmt., and admin. and waste mgmt. services** | 1,894 | 2,532 | 3,070 | 3.4% | 4.2% |
| **Educational services, and health care and social assistance** | 4,881 | 5,634 | 5,877 | 1.5% | 0.9% |
| **Arts, entertainment, and recreation, and accommodation and food services** | 2,776 | 3,331 | 3,920 | 2.0% | 3.5% |
| **Other services, except public administration** | 1,394 | 1,499 | 1,574 | 0.8% | 1.0% |
| **Public administration** | 2,815 | 2,682 | 2,626 | -0.5% | -0.4% |
| **Total private employment** | 27,110 | 29,724 | 29,496 | 1.0% | -0.2% |
| **Federal civilian** | 259 | 343 | 262 | 3.2% | -4.7% |
| **Military** | 385 | 463 | 393 | 2.0% | -3.0% |
| **State** | 1,018 | 1,159 | 1,063 | 1.4% | -1.7% |
| **Local** | 3,179 | 3,503 | 3,475 | 1.0% | -0.2% |
| **Total public employment** | 4,841 | 5,468 | 5,193 | 1.3% | -1.0% |
| Source: https://factfinder.census.gov; economic characteristics (accessed 01/26/19) | | | | | |

Table 2.11 Earnings by Major Industry Group in Carteret County ($000)

| **Industry** | **2001** | **2010** | **2015** |
|---|---|---|---|
| **Agriculture, Forestry, fishing, and other** | $920 | $139 | $235 |
| **Mining** | na | na | $110 |
| **Construction** | $87,551 | $85,049 | $82,520 |
| **Manufacturing** | $48,792 | $40,449 | $51,615 |
| **Retail** | $94,647 | $112,764 | $157,869 |
| **Transportation and warehousing** | $14,608 | $13,579 | $18,617 |
| **Information** | $13,842 | $15,704 | $14,974 |
| **Finance and insurance** | $23,872 | $62,512 | $38,469 |
| **Real estate** | $24,302 | $19,393 | $42,763 |
| **Professional and technical** | $39,993 | $62,643 | $60,953 |
| **Health and social services** | $58,537 | $101,966 | $137,503 |
| **Arts, entertainment, and recreation** | $14,448 | $15,083 | $20,023 |
| **Food** | $38,779 | $52,481 | $69,001 |
| **Other services** | $41,992 | $62,624 | $77,101 |
| Source: NC State Data Center (http://data.osbm.state.nc (accessed 01/26/19) | | | |

## Military

According to the most recent data available (NC State Data Center, accessed 01/30/19), earnings by county civilian residents employed by the military in 2015 were $28,350,000, which is an

increase from $22,721,000 in 2010. Military employment decreased from 463 persons in 2010 to 393 persons in 2015.

According to a report by Carteret County (Carteret County EDC-A 2004), ten percent, or 884 people, of the total active military population at Marine Corps Air Station Cherry Point reside in Carteret County. Carteret County active military residents earn approximately $42,640,550 (10%) out of a total active duty payroll of $426,405,497 for the quad-county region. Active military and retired personnel, civilian employees and their families account for 9,517 people, or 16% of the County's population.

## Tourism Impact

Much of the local economic activity in Carteret County is based on or related to tourism. Restaurants, accommodations, fishing, retail trade, services, construction, and the real estate and finance industries benefit directly from the impact of tourism. In 2015, approximately 30% of all housing in Carteret County was considered to be for seasonal or recreational use. This ranked Carteret County third in North Carolina in the number of seasonal housing units, following Brunswick and Dare Counties. Table 2.12 shows counties in the Carteret region and their seasonal housing units from 2000 to 2015.

Table 2.12 Seasonal Housing in the Carteret County Region

| County | 2000 | 2010 | 2015 |
|---|---|---|---|
| **Carteret** | 13,333 | 15,402 | 14,576 |
| **Craven** | 433 | 737 | 1,044 |
| **Onslow** | 2,906 | 3,914 | 3,299 |
| **Pamlico** | 903 | 1,202 | 1,291 |
| Source: NC State Data Center (http://data.osbm.state.nc.us, accessed 01/25/19) | | | |

According to the NC Department of Commerce, Division of Tourism, the Carteret County tourism industry generated approximately $38.0 million dollars in local and state revenues and employed 3,510 persons with a total payroll of approximately $69,830,000. Table 2.13 summarizes tourism impacts in the County for 2000 through 2017.

Table 2.13 Tourism Impact in Carteret County

| Year | Payroll $(millions) | Employment (thousands) | State Tax Receipts $(millions) | Local Tax Receipts $(millions) |
|---|---|---|---|---|
| **2017** | $69.83 | 3.51 | $16.33 | $21.56 |
| **2016** | $65.05 | 3.45 | $15.97 | $20.63 |
| **2015** | $61.75 | 3.33 | $15.22 | $19.71 |
| **2014** | $57.21 | 3.20 | $14.12 | $18.84 |
| **2013** | $52.93 | 3.06 | $13.38 | $17.76 |
| **2012** | $49.18 | 2.93 | $12.45 | $16.98 |
| **2011** | $48.77 | 2.96 | $13.20 | $17.38 |
| **2010** | $48.65 | 2.99 | $13.60 | $17.52 |

| Year | Payroll $(millions) | Employment (thousands) | State Tax Receipts $(millions) | Local Tax Receipts $(millions) |
|---|---|---|---|---|
| **2009** | $48.59 | 3.02 | $12.36 | $16.74 |
| **2008** | $51.25 | 3.09 | $12.05 | $17.38 |
| **2007** | $50.96 | 3.17 | $11.99 | $17.39 |
| **2006** | $51.26 | 3.25 | $12.22 | $16.96 |
| **2005** | $50.64 | 3.27 | $11.67 | $16.04 |
| **2004** | $50.37 | 3.31 | $11.35 | $15.58 |
| **2003** | $49.91 | 3.31 | $10.92 | $14.90 |
| **2002** | $48.16 | 3.24 | $10.39 | $14.06 |
| **2001** | $48.00 | 3.25 | $10.18 | $13.63 |
| **2000** | $48.10 | 3.29 | $10.34 | $13.94 |
| Source: NC Department of Commerce, (https://partners.visitnc.com/economic-impact-studies, accessed 01/26/19) | | | | |

## Commercial Seafood Impact

A report by the NC Division of Marine Fisheries[1] tracks commercial fishing in North Carolina counties. According to the latest information available, the total pounds of fish landed in Carteret County declined between 2005 and 2012. In 2005, landings totaled 19,298,000 pounds. In 2012 that number declined to 6,501,000. However, the value of the landings remained consistent—$11,425,000 in 2005 and $11,549,000 in 2012.

While some local residents believe that current regulations affecting commercial fishing may be responsible for the decline in fish landings, the impact of these regulations is unknown.

## Retiree Population Impact

While attracting retirees is not a traditional type of economic development, it is important because retirees provide significant economic benefits to the community in which they live. Retirees have the ultimate effect of attracting business. The spending of retirees provides the same type of spending multiplier effect as does adding employment to a community. Factors which tend to influence retiree's location decisions include housing characteristics, availability of health care facilities, continuing education opportunities, availability of restaurants, number of stores (grocery, department, and specialty), ease of transportation, recreational opportunities, entertainment and cultural amenities, availability of part-time jobs, social opportunities, and climate.

As expected, the percentage of individuals who receive retirement income is higher in Carteret County than for the state. In 2017, according to the US Census Bureau, 21,603 people, or 37% of the permanent population, received social security and/or other retirement income. For North Carolina, approximately 25% of the population received social security and/or retirement income.

[1] NC Division of Marine Fisheries, "An Economic Profile Analysis of Coastal Commercial Fishing Counties in North Carolina" 2014.

# SECTION 3. NATURAL SYSTEMS ANALYSIS

This section of the Land Use Plan provides a description of the natural features and environmental conditions within the Carteret County planning area. It addresses the requirements of the Land Use Planning Guidelines of the Coastal Resources Commission (CRC) that were readopted effective February 1, 2016.

## NATURAL FEATURES

The discussion of natural systems includes the following features and conditions:

- Coastal Area Management Act (CAMA) Areas of Environmental Concern (AECs)
- Soil characteristics
- Environmental Management Commission (EMC) water quality classifications and related use support designations; Division of Marine Fisheries (DMF) shellfish growing areas and water quality conditions
- Flood and other natural hazard areas
- Storm surge areas
- Non-coastal wetlands
- Water supply watersheds or wellhead protection areas
- Primary Nursery Areas (PNAs)
- Environmentally fragile areas such as wetlands, natural heritage areas, areas containing endangered species, prime wildlife habitats, or maritime forests
- Additional natural areas or conditions identified by the local government

## AECs

AECs are the foundation of the CRC's permitting program for coastal development. AECs are areas of natural importance and are classified by the CRC. The purpose of the AEC classification is to protect these areas from uncontrolled development, which may cause irreversible damage to property, public health or the environment. Development within the designated AECs is limited by CAMA regulations and minimum use standards. The CRC establishes use standards to regulate development in AECs. Local governments, through the CAMA Land Use Plan, can establish development standards for AECs that are more stringent than state standards. The CRC has established four categories of AECs: estuarine and ocean system, Ocean Hazard System, Public Water Supplies, and Natural and Cultural Resource Areas. AECs include most coastal waters and less than 3% of the land area of the coastal region in North Carolina.

### Estuarine and Ocean System AECs

*Public Trust Areas* are 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), not including privately owned lakes where the public doesn't have access rights; all water 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. Public trust areas often overlap with estuarine waters.

*Estuarine Waters* are the ocean, sounds, tidal rivers and their tributaries that stretch across coastal North Carolina and link to other parts of the estuarine system: public trust areas, coastal wetlands and coastal shorelines. For regulatory purposes, the inland/upstream boundary of estuarine waters is the same line used to separate the jurisdictions of the North Carolina DMF and the North Carolina Wildlife Resources Commission.

*Coastal Shorelines* include all lands within 75 feet of the normal high water level of estuarine waters. This definition also includes lands within 30 feet of the normal high water level of public trust waters located inland of the dividing line between coastal fishing waters and inland fishing waters. Along Outstanding Resource Waters (ORW), this definition includes lands within 575 feet of the normal high water level. Uses in coastal shoreline AECs can significantly impact water quality and the productivity of the estuary.

*Coastal Wetlands* are any marsh in the 20 coastal counties that regularly or occasionally floods by lunar or wind tides and that includes one or more of 10 plant species:

*Spartina alterniflora:* Salt Marsh (Smooth) Cord Grass
*Juncus roemerianus:* Black Needlerush
*Salicornia* spp: Glasswort
*Distichlis spicata:* Salt (or Spike) Grass
*Limonium* spp: Sea Lavender
*Scirpus* spp: Bulrush
*Cladium jamaicense:* Saw Grass
*Typha spp:* Cattail
*Spartina patens:* Salt Meadow Grass
*Spartina cynosuroides:* Salt Reed or Giant Cord Grass

Freshwater swamps and inland, non-tidal wetlands are not in the CAMA permit jurisdiction unless the CRC specifically designates them as AECs. However, these wetlands are protected by the federal Clean Water Act. An Army Corps of Engineers 404 permit may be required for projects taking place in these wetlands.

**Ocean Hazard System AECs**

The *Ocean Erodible* AEC includes beaches and 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 90 times the long-term, average annual erosion rate for the shoreline. Where there has been no long-term erosion or the rate is less than two feet per year, this distance shall be set at 190 feet landward from the first line of stable and natural vegetation.

The *Unvegetated Beach Area AEC* includes beach areas within the Ocean Hazard Area where no stable natural vegetation is present. These areas may be designated as an Unvegetated Beach

Area on a permanent or temporary basis as provided for in 15A NCAC 7H.

The *Inlet Hazard* AEC includes lands near ocean inlets. Inlet shorelines are especially vulnerable to erosion and flooding and can shift suddenly and dramatically. For each inlet, the inlet hazard AEC is determined by a statistical analysis of inlet migration, previous inlet locations, narrow or low lands near the inlet and the influence of man-made features, such as jetties and channelization projects. The distance the inlet hazard AEC extends inland is estimated to be large enough to encompass those lands where the inlet can be expected to migrate. At a minimum, this distance is the same distance inland as the ocean erodible AEC. Inlet hazard AECs range in width from about 250 feet for a fairly stable inlet to about 4,000 feet for the most dynamic inlets.

The *State Ports Inlet Management Areas* are adjacent to and within Beaufort Inlet (Carteret County) and the mouth of the Cape Fear River (New Hanover County) that provide access to a State Port by means of a channel maintained by the US Army Corps of Engineers. Due to the importance of these areas for maintaining shipping access to North Carolina's State Ports they may require specific strategies not warranted at other inlets to address erosion and shoreline stabilization. State Ports Inlet Management Areas extend from the mean low water line landward as designated on maps approved by the Coastal Resources Commission.

**Public Water Supply AECs**

The *Small Surface Water Supply Watershed* AEC protects coastal drainage basins that contain a public water supply classified as A-II by the NC Environmental Management Commission. Currently, only two such watersheds in the state have been designated as AECs: the Fresh Pond and adjacent catchment area at the Nags Head and Kill Devil Hills border on Bodie Island in Dare County and the Toomer's Creek near Wilmington in New Hanover County. There are no Small Surface Water Supply Watershed AECs in Carteret County.

*Public Water Supply Wellfields* are areas of rapidly draining sands extending from the earth's surface to a shallow groundwater table that supply public drinking water. The Cape Hatteras Well Field on Hatteras Island between Frisco and Buxton is the only designated Public Water Supply Wellfield AEC in North Carolina.

**Natural and Cultural Resources AECs**

Natural and Cultural Resources AECs include natural and cultural resources of more than local significance in which uncontrolled or incompatible development could result in major or irreversible damage to scientific, educational, associative values or aesthetic qualities of natural systems cultural resources. These areas include coastal complex natural areas, coastal areas that sustain remnant species, unique coastal geologic formations and significant coastal archaeological resources and significant coastal historical archeological resources. Any person can nominate an area as a natural or cultural resource AEC. However, the CRC makes the final decision on designation.

**AECs in Carteret County**

AECs located in the Carteret County planning jurisdiction include the Estuarine and Ocean System and Ocean Hazard System AECs, with the exception of the Inlet Hazard AEC. There are

currently no Public Water Supply or Natural and Cultural Resources AECs within Carteret County.

The County's Estuarine and Ocean System AECs include the waters and tributaries of the White Oak, Neuse, Newport and North Rivers and Bogue, Back, Core and Pamlico Sounds, as well as waters of the Atlantic Ocean and the shorelines of these water bodies. Coastal wetland AECs are located throughout the County and are identified on-site by the permitting staff of the Division of Coastal Management. Locations of extensive coastal wetland areas located under Carteret County planning jurisdiction include Cedar Island and adjacent areas in the eastern portion of the County, Brown's Island, Middle Marshes in Back Sound, shore of the North River and the Bogue Sound area in the western portion of the County.

While the CRC's use standards found in 15A NCAC 7H give priority to the conservation of coastal wetlands, estuarine waters, and public trust areas, certain water-dependent uses are allowed in these areas. Generally, those uses which require water access and which cannot function elsewhere, such as access channels, structures to prevent erosion, navigation channels, boat docks, marinas, piers, wharfs and mooring pilings are allowed provided construction occurs in compliance with state standards.

The CRC's guidelines for development within the coastal shoreline AEC are found in 15A NCAC 7H. Key guidelines include the following:

- Not weaken or eliminate natural barriers to erosion
- Limit impervious surfaces such as buildings, paved parking lots and roads to the amount necessary to support the use and generally not exceed 30% of the AEC area of the lot, except along the shoreline of an ORW where the built-upon limit is 25% of the AEC area
- Maintain a buffer zone for a distance of 30 feet landward of the normal water level, except along shorelines where the EMC has adopted its own buffer standards

The only Ocean Hazard System AEC under Carteret County planning jurisdiction is located along the ocean shoreline areas of the unincorporated community of Salter Path, located on Bogue Banks. The CRC allows uses in the ocean hazard AECs, consistent with use standards contained in 15A NCAC 7H for minimizing losses to life and property from storms and long-term erosion. A key consideration contained in these standards includes compliance with setback requirements based on erosion rates. The erosion setback line extends inland from the first line of stable vegetation and varies based on size of the structure as well as local erosion rates.

The exact locations of AECs are difficult to map, particularly coastal wetlands, coastal shorelines, and ocean hazard AECs. The exact location of AECs must be identified on-site by the permitting staff of the NC Division of Coastal Management (DCM). Additionally, Carteret County Planning and Development staff can provide assistance in locating ocean hazard AECs within the Carteret County planning jurisdiction.

## Soil Characteristics

The Soil Conservation Service, now known as the United States Department of Agriculture - Natural Resources Conservation Service (USDA-NRCS) completed a soils survey of Carteret County in 1987. This document was used for many years by soil scientists, County environmental health

specialists, and others to assist in evaluating characteristics of soils in particular locations for various uses. In order to provide the most current and reliable data, the USDA-NRCS has now moved to digital soils data. The Web Soil Survey (WSS), produced by the National Cooperative Soil Survey and available at https://websoilsurvey.sc.egov.usda.gov has soils maps and data available online for Carteret County. The WSS is an interactive mapping tool that allows users to generate reports on soils within their area of interest. Soil surveys are suitable for general farm, local, and broader planning purposes. They are not typically completed at the detailed scale needed for permit decisions. All determinations of septic suitability must be made by onsite investigation by a licensed soil scientist or county environmental systems health specialist.

In general, the soils in the Carteret County planning jurisdiction have limitations for many uses due to wetness, flooding and high sand content. According to the soil survey, all soil types in Carteret County have slight erosion hazard ratings. Countywide, approximately 99% of the soils in Carteret County have moderate to severe limitations for conventional onsite soil absorption waste treatment systems (septic systems). Most soil types in Carteret County are rated as very limited for septic tank absorption fields and sewage lagoons. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. Advanced and engineered septic systems are available as potential options for use in soils with limitations.

Only three soil types are rated as somewhat limited, indicating that those soil types have features that are moderately favorable for sewage disposal. Soils with slight limitations for septic systems (rated as somewhat limited) are primarily located in western Carteret County along the White Oak River and the Newport River. The extent of soils suitable for development is important due to the continuing development of the County and the absence of centralized sewer systems in most areas. Planned development densities in areas without central sewer service must consider soil suitability for septic systems or alternative systems must be developed.

Prime farmland as defined by the U.S. Department of Agriculture is land that has the best combination of physical and chemical characteristics for producing food, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas.

Prime farmland is of major importance in meeting needs for food and fiber. However, prime farmland is also suited to other uses. Prime farmland lost to residential, industrial, or other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and not as easily cultivated.

Specific soil limitations data associated with suitability for development (sewage disposal and construction of dwellings and small commercial buildings) in Carteret County is found in Appendix D. Data on soils classified as prime farmland in Carteret County is also included in this appendix.

## EMC Water Quality Classifications

All surface waters in North Carolina are assigned a primary classification by the NC Division of Water Resources (DWR), formerly the Division of Water Quality (DWQ). Classifications are assigned based on the existing or anticipated best use of the water body. All waters must at least meet the standards for Class C (fishable/swimmable waters). A wide range of primary and supplemental classifications are present in Carteret County. These classifications are described in Table 3.1 Water

Quality Classifications.

Table 3.1 Water Quality Classifications

| DWR Primary Classifications | |
|---|---|
| **Class C** | Waters protected for secondary recreation, fishing, wildlife, fish consumption, aquatic life, including, propagation, survival, and maintenance of biological integrity, and agriculture. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized or incidental manner. |
| **Class SC** | All tidal salt waters protected for secondary recreation such as fishing, boating and other activities involving minimal skin contact; fish and noncommercial shellfish consumption, aquatic life propagation, and survival; and wildlife. |
| **Class SB** | Tidal salt waters protected for all SC uses in addition to primary recreation. Primary recreational activities include swimming, skin diving, water skiing and similar uses involving frequent or organized bodily contact with water. |
| **Class SA** | Tidal salt waters that are used for commercial shellfishing or marketing purposes and all SC and SB uses. All SA waters are also HQW by definition. |
| **DWR Supplemental Classifications** | |
| **High Quality Waters (HQW)** | Supplemental classification intended to protect waters which are rated excellent based on biological and physical/chemical characteristics through Division monitoring or special studies, PNAs designated by the Marine Fisheries Commission (MFC), and other functional nursery areas designated by the MFC. The following waters are HQW by definition:<br>• SA (commercial shellfishing)<br>• ORW<br>• Waters designated as PNAs or other functional nursery areas by the MFC |
| **Nutrient Sensitive Waters (NSW)** | Supplemental classification intended for waters needing additional nutrient management due to their being subject to excessive growth of microscopic or macroscopic vegetation. |
| **ORW** | All ORW are a subset of HQW. This supplemental classification is intended to protect unique and special waters having excellent water quality and being of exceptional state or national ecological or recreational significance. To qualify, waters must be rated Excellent by DWR and have one of the following outstanding resource values:<br>• Outstanding fish habitat or fisheries<br>• Unusually high level of water based recreation or potential for such kind of recreation<br>• Some special designation such as NC Natural and Scenic River or National Wildlife Refuge, etc.<br>• Important component of state or national park or forest, or<br>• Special ecological or scientific significance (rare or endangered species habitat, research or educational areas)<br>ORW areas are HQW by definition. |

Major Carteret County water bodies and their corresponding classifications are shown in Table 3.2 below.

Table 3.2 Carteret County Major Water Body Classifications

| Waterbody | Location | Classification |
|---|---|---|
| **Neuse River** | From a line across Neuse River from Wilkinson Point to Cherry Point to its mouth in Pamlico Sound (described as a line running from Maw Point to Point of Marsh). | SA-HQW, NSW |
| **Newport River** | From source to Little Creek Swamp | C |
| **Newport River** | From Little Creek Swamp to Atlantic Ocean wit exception of Morehead City Harbor restricted area | SA-HQW |
| **North River** | From source to Back Sound | SA-HQW |
| **White Oak River** | From Hunters Creek to Atlantic Ocean, | SA-HQW |
| **Back Sound** | From Newport River to a point pm Shackleford Banks at lat. 34 40' 57 and long.76 37' 30 north to the western most point of Middle Marshes and along the northeast shoreline of Middle Marshes to Rush Point on Harkers Island | SA-HQW |
| **Bogue Sound** | From a line running from the eastern mouth of Bogue Inlet to SR 1117 on the mainland | SA- ORW |
| **Bogue Sound** | From a line running from the southwest side of mouth of Gales Creek to Rock Point to Beaufort Inlet | SA-HQW |
| **Core Sound** | From northern boundary of White Oak River Basin (a line from Hall Point to Drum Inlet) to Back Sound | SA-ORW |
| **Pamlico Sound** | All waters within a line beginning at the southwest tip o Ocracoke Island, and extending northwest along the Tar-Pamlico River Basin and Neuse River Basin boundary line to Lat. 35 06' 50, Long. 76 06' 30, thence in a southwest direction to Ship Point | SA-ORW, NSW |
| **Atlantic Ocean** | Waters of the Atlantic Ocean | SB |

**Shellfish Growing Areas and Water Quality Conditions**

Carteret County has abundant shellfishing waters, located throughout the County as shown on the Carteret County Shellfishing Areas and Classifications Map found at the end of this section. The map identifies the County's shellfishing areas and their associated shellfishing classifications.

In the western portion of the County shellfishing waters include the White Oak River and its tributaries, Bogue Sound and its tributaries (including Broad Creek, Gales Creek, and Spooners Creek), and the Newport River and its tributaries (including Core Creek and Harlowe Creek). Shellfishing waters in the eastern portion of the County include South River, North River, Jarrett Bay, Nelsons Bay, Back Sound, Core Sound, Cedar Island Bay, and West Bay.

The Shellfish Sanitation and Recreational Water Quality Section of DMF is responsible for protecting the consuming public from shellfish that could cause illness. The Section tests, monitors,

and classifies shellfish growing areas as to their suitability for shellfish harvesting, utilizing a sanitary survey report to assign classifications. The survey is required for each shellfish growing area every three years and includes a shoreline survey of sources of pollution and hydrographic, meteorological, and bacteriological surveys of shellfishing waters.

Shellfish classifications include approved, conditionally approved, restricted, and prohibited areas for shellfish harvesting. Conditionally approved – open areas are considered safe for shellfish harvesting, except following heavy rainfall. The Shellfish Sanitation Section is responsible for testing these waters and recommending to the DMF temporary closures when heavy rainfall increases fecal coliform bacteria levels above acceptable levels. Likewise, waters classified as conditionally approved – closed are usually closed, except that in very dry weather the Shellfish Sanitation Section is responsible for testing and recommending temporary openings when fecal coliform bacteria counts are acceptable.

The restricted classification was introduced in 2018. It represents areas that are normally off limits to the harvest of shellfish, but can be used for shellfish relay or for the rearing of seed shellfish. Prior to 2018 these areas were included in the prohibited classification.

The Carteret County Shellfishing Areas and Classifications Map provides shellfish growing area classifications as of December 2020. Shellfishing waters classified as approved for harvesting of shellfish for consumption include areas of Bogue Sound, Back Sound, Core Sound, Pamlico Sound, Cedar Island Bay, and West Bay as depicted on the map.

Also shown on the map, Carteret County shellfishing waters classified as conditionally approved – open include portions of the White Oak River, Newport River, North River, Jarrett Bay and Nelson Bay, as well as areas located along Bogue Sound. Conditionally approved –closed shellfishing waters are located in sections of the White Oak, Newport, and North Rivers and their tributuaries, as well as areas of Bogue Sound and Jarrett Bay.

The upper reaches of the White Oak River are prohibited (closed to harvesting of shellfish), as are sections of the Newport River, North River, South River, Jarrett Bay, Nelson Bay, some tributaries of Bogue Sound, and waters of Bogue Sound and Back Sound near Beaufort Inlet.

Restricted shellfishing areas shown on the map include portions of South River, Jarrett Bay, North River, and Newport River. Certain tributaries of Bogue Sound and the White Oak River are also designated as restricted.

Current information on temporary closures of specific areas is continually developing and is therefore not included in this plan. Up-to-date information about open and closed shellfishing areas and specific water bodies is provided daily on the DMF website at http://portal.ncdenr.org/web/mf/shellfish-closure-maps or by calling the Shellfish Sanitation and Recreational Water Quality Section at 252-726-6827.

In 2020 Carteret County contained 384,027 acres of shellfishing classified waters, based on data provided by the Shellfish Sanitation and Recreational Water Quality Section. Of these waters, 20,753 acres, or 5.4% of the total, were classified by the Section as prohibited or permanently closed to shellfish harvesting in December 2020. Data provided by the Section indicates a gradual increase in both total and closed shellfishing waters and percentages from 2007 through 2020 as shown in Table

3.3, with a spike in closures occurring in 2019.

Table 3.3 Carteret County Total and Closed (Prohibited) Shellfishing Acres

| Year | Total Classified Shellfishing Acres | Total Acres Closed to Harvest | % Closed |
|---|---|---|---|
| **2007** | 382,647 | 17,116 | 4.5 |
| **2008** | 382,647 | 17,166 | 4.5 |
| **2009** | 382,648 | 17,230 | 4.5 |
| **2010** | 382,648 | 17,233 | 4.5 |
| **2011** | 382,648 | 17,233 | 4.5 |
| **2012** | 382,649 | 17,301 | 4.5 |
| **2013** | 382,650 | 17,648 | 4.3 |
| **2014** | 382,681 | 17,766 | 4.6 |
| **2015** | 382,681 | 17,766 | 4.6 |
| **2016** | 382,680 | 17,980 | 4.7 |
| **2017** | 382,673 | 18,831 | 4.9 |
| **2018** | 382,673 | 18,831 | 4.9 |
| **2019** | 383,971 | 21,011 | 5.5 |
| **2020** | 384,027 | 20,753 | 5.4 |

Although the reported number of total classified shellfishing acres has increased during the time frame reflected in this table, areas classified as shellfishing waters have not changed. Note should be made that data from 2007 and later was calculated using updated Geographic Information Systems layers accounting for better imagery, shoreline erosion, shoreline modifications (such as new bulkheads), and development. This resulted in slightly higher data than prior acreage figures that were calculated by hand. As new aerial photography becomes available technicians refine the layer to match up with the existing shoreline, so as the shoreline changes acreage totals may change as well.

As shown in Table 3.3 the acreage and percentages of prohibited shellfishing waters has continued to gradually increase, reflecting the pattern of increasing development of Carteret County. Greater development of the watersheds containing shellfishing waters increases impervious surfaces and associated stormwater run-off and potentially contributing to additional closures. The conversion of undeveloped and underdeveloped land to more intensive land uses can potentially negatively impact shellfishing waters.

The larger increase in prohibited waters in Carteret County beginning in 2019 is in part a reflection of water samples taken during “wet” years and following Hurricane Florence. Shellfish Sanitation Section staff are required to collect and assess five years of data to determine if a location meets the national standards for safe shellfish harvest. The dataset used to evaluate classifications in late-2018 (which were then reflected in the early-2019 classification changes) include data from 2014 through 2018. All of these years, with the exception of 2017, experienced significantly above average rainfall in Carteret County, thus negatively impacting overall water quality trends. In normal or dry years, the stormwater drainage system has some capacity to absorb rainfall into the ground and reduce the amount of runoff. In those situations, a waterbody may for example be able to handle a three-quarter

inch rain event without any real detriment to water quality. During periods of above-average rainfall when the water table is high and ditches are already full before it rains, any rainfall event regardless of scale will result in immediate stormwater runoff, carrying any contaminants that might be present on the ground surface, thus having a bigger impact on water quality.

Two locations were responsible for most of the acreage increase in closed areas in early 2019. Several sampling stations in South River began to exceed the standards for safe shellfish harvest as of the late-2018 analysis, which resulted in most of the river (an additional 1,100 acres) being closed. At the same time, stations in two bays off of Jarrett Bay also began to exceed standards, resulting in the closure of an additional 600 acres. Much of the Jarrett Bay closure acreage consisted of mosquito ditches, so the acreage total isn't totally reflective of regular surface waters.

Temporary closures are relative to the amount of rainfall and are more indicative of weather (rainfall) conditions rather than changes in water quality. Some temporary closures are "pre-emptive closures" before hurricanes, although the effective date of the temporary closure is typically set to reflect when impacts from the storm are anticipated to occur. For example, before Hurricane Florence a statewide closure proclamation was issued on September 11 to allow staff to concentrate on storm prep and/or evacuations, but the effective date/time of the closure was sunrise on September 13th, which was about the time the rains began arriving in Carteret County.

Table 3.4 provides data on shellfishing areas acreages classified as conditionally approved – open and conditionally approved – closed from 2007 through 2020. Total acreage classified as conditionally approved – open decreased by 1,479 acres (5.2%) during this period, while conditionally approved – closed areas increased by 378 acres (1%). The table also shows acreage classified as restricted beginning in 2018 when the classification was introduced.

Table 3.4 Carteret County Conditionally Approved and Restricted Acres

| Year | Conditionally Approved-Open | Conditionally Approved – Closed | Restricted |
|---|---|---|---|
| **2007** | 28,388 | 3,821 | |
| **2008** | 28,476 | 3,817 | |
| **2009** | 28,476 | 3,807 | |
| **2010** | 27,999 | 3,807 | |
| **2011** | 27,999 | 3,807 | |
| **2012** | 27,929 | 3,849 | |
| **2013** | 27,945 | 3,828 | |
| **2014** | 27,906 | 3,828 | |
| **2015** | 27,906 | 3,828 | |
| **2016** | 27,751 | 3,932 | |
| **2017** | 27,706 | 3,961 | |
| **2018** | 27,408 | 3,966 | 5,657 |
| **2019** | 26,735 | 4,640 | 6,783 |
| **2020** | 26,909 | 4,199 | 6,427 |

## Flood and Other Natural Hazard Areas

Natural hazards in Carteret County are related to its location as a coastal county subject to flooding, high winds, erosion and other impacts of storm events. The leading source of flooding in Carteret County is wind-driven storm surge associated with hurricanes, tropical storms, and nor'easters. These events are more common during the official hurricane season which runs from June 1 through November 30. However, flooding can occur at other times during the year.

Carteret County is a participant in the National Flood Insurance Program (NFIP). The NFIP is a federal program that enables property owners in participating communities to purchase insurance protection against losses by flooding. Communities that participate in the NFIP agree to adopt and enforce floodplain management ordinances to reduce future flood damage in flood hazard areas.

The County joined the NFIP in 1980 and has adopted a Flood Damage Prevention and Protection Ordinance and the Flood Insurance Rate Maps (FIRM). Additionally, the County participates in the Community Rating System (CRS), a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the NFIP minimum standards.

Due to implementation of the Flood Damage Prevention and Protection Ordinance and participation in the CRS, unincorporated Carteret County is designated as a Class 7 Community. As a result of this designation and community actions to reduce risk, flood insurance premiums are discounted 15% for properties located within the Special Flood Hazard Areas (high flood risk areas or the land area covered by the floodwaters of the base flood as shown on NFIP maps).

Low-lying coastal areas are especially vulnerable to damage from erosion, waves, and storm surge. Many factors affect flood risk, including but not limited to current weather patterns, natural changes in the environment, recent development, date of construction, history of flooding, and flood map changes. Flood risk changes over time and may be reflected on future flood maps.

According to the National Oceanic and Atmospheric Administration Coastal Services Center, approximately 33% of the total populations of Carteret County live within a Special Flood Hazard Area (SFHA). Approximately 47% of the land area, 24% of critical facilities (such as hospitals, schools, and shelters), and 39% of road miles are located within the SFHA.

Carteret County maintains records of elevation certificates for all new construction and substantial improvements and provides flood information services for citizens. Advice on how to protect your property from flooding, hurricane preparedness, and flood education is also provided by the County.

In Carteret County, current Federal Emergency Management Agency (FEMA) flood zones include the following:

- Shaded X: Areas of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods
- Unshaded X: Areas of minimal flood hazard, usually outside the 500-year flood level.
- AE: The base floodplain where base flood elevations are provided.
- AO: River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet.

- VE: Coastal areas with a 1% or greater chance of flooding associated with storm waves.
- Floodway: A "regulatory floodway" is the channel of a river of other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

New preliminary FIRM for Carteret County were released on June 30, 2016. They are currently being reviewed and finalized.

Links are available on the Carteret County official website at http://carteretcountync.gov/244/Carteret-County-Flood-Information to assist citizens in determining flood risks for specific properties, as well as information on new preliminary FIRM.

**Repetitive Flood Losses**

Portions of Carteret County have been subject to recurrent flooding. On or before March 31, 2019 repetitive loss data compiled through FEMA identified 577 NFIP-insured properties with at least two paid flood insurance losses of more than $1,000 each in any 10-year period since 1978. These properties are scattered throughout the County, including the Down East and Merrimon areas and the communities of Broad Creek and Salter Path.

Approximately 15 of these properties are considered to be severe repetitive loss buildings. Most of these properties are located in the Down East area of the County. These are defined as any building that is covered under a Standard Flood Insurance Policy (SFIP) and has either 1) incurred flood damage from which four or more separate claim payments have been made under a SFIP, with the amount of each claim exceeding $5,000 and with the cumulative amount of each claim payment exceeding $20,000, or 2) at least two separate claim payments have made under a SFIP, with the cumulative amount of these claim payments exceeding the fair market value of the insured building on the day before each loss.

**Storm Surge Areas**

Storm surge is the relatively rapid rise in sea level caused by water being pushed towards shore by the force of the winds associated with a hurricane or other intense storm. As the water comes ashore with the storm, it causes flooding that is often a hurricane's most dangerous and damaging characteristic. Extensive areas of Carteret County are vulnerable to storm surge hazards associated with hurricanes. Depending upon the severity and speed of the storm, much of the area could be impacted by storm surge.

According to the storm surge guidance provided by the National Hurricane Center, slow-moving hurricanes can impact a larger area of the coast than a fast moving hurricane, though the maximum storm surge amount would be lower. Fast moving hurricanes can impact a smaller portion of the coast but with a higher maximum storm surge amount.

Low-lying areas along all local waterways in the County are subject to flooding during and following storm events. Each storm has numerous variables that affect the area of storm surge, including wind field, storm intensity, direction, forward speed, angle of approach, and the shape and characteristics of coastal features such as the continental shelf. FEMA storm surge maps show that large areas of Carteret County are subject to possible flooding from

storm surge. A map of areas of potential flooding patterns associated with all hurricane categories, prepared by FEMA, is included as Appendix A to this plan.

**Shoreline Erosion**

DCM Erosion Rate Maps are updated every 5 to 10 years using aerial photography to identify changes in the shoreline. The most recent Erosion Rate Study was completed in 2017. An online map of the erosion rates and setback factors is available on the DCM website.

Used to determine oceanfront setbacks for development, these maps indicate that long-term beach erosion in Salter Path, the small oceanfront area (approximately 0.8 mile) in the Carteret County planning jurisdiction, is minimal and rated in the lowest category of 2' or less per year.

DCM provides maps showing general erosion rates at no charge. More detailed erosion rate maps are available for review at all DCM field and local permitting offices, as well as Carteret County Planning and Development Offices located in Beaufort and Cedar Point.

Erosion damage to Carteret County beaches from Hurricane Florence in September 2018 was unprecedented, with more than 3.2 million cubic yards of sand lost from Bogue Banks. A two-phase nourishment project, planned before Hurricane Florence, has been completed. A total of 2.9 million cubic yards of sand was placed on the beaches during the two phases of this project. The sand came from the Offshore Dredged Material Disposal Site just off the coast of Morehead City.

The Carteret County Shore Preservation Office coordinates ocean beach preservation efforts throughout the County, including beach areas located in the Towns of Atlantic Beach, Pine Knoll Shores, Indian Beach, and Emerald Isle. The Carteret County Shore Beach Preservation Plan contains preservation strategies that encompass the entire Bogue Banks barrier chain. The majority of ocean beaches in Carteret County are outside the County's planning jurisdiction. While all oceanfront areas are subject to shoreline erosion, there are no areas within the planning jurisdiction that currently contain eminently threatened structures or public facilities.

## Non-Coastal Wetlands

According to the US Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA), 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." As a significant natural resource, wetlands serve important functions relating to fish and wildlife. Such functions include food chain production, habitat, nesting, spawning, rearing and resting sites for aquatic and land species. They also provide protection of other areas from wave action and erosion, storage areas for storm and flood waters, natural recharge areas where ground and surface water are interconnected, and natural water filtration and purification functions.

While individual alterations of wetlands may constitute a minor change, the cumulative effect of

numerous changes could result in major damage to wetland resources. The USACE regulates development in wetlands under Section 404 of the Clean Water Act, which determines which areas qualify for protection as wetlands. The review of applications for alteration of wetlands by these agencies includes consideration of whether the proposed activity is dependent upon being located in an aquatic environment.

The North Carolina Coastal Region Evaluation of Wetland Significance (NC-CREWS) rates wetlands as having exceptional, substantial, or beneficial functional significance. Carteret County served as the pilot county for the NC-CREWS program and as such, was the first county to benefit from the information provided by this program. NC-CREWS was later expanded to other coastal and non-coastal counties.

NC-CREWS is the name of the procedure used by DCM to assess the functions of wetlands in the coastal region. The process rates each wetland type on its ability and opportunity to provide water quality, hydrologic, and wildlife habitat functions. Although most wetlands perform a variety of wetland functions, all wetlands do not provide all functions. Some wetlands may not perform some functions due to degradation or alteration, but may provide other functions at below normal levels.

NC-CREWS rates a wetland as exceptional when it performs at well above normal levels, or when any two of the primary wetland functions (water quality, hydrology, and wildlife habitat) are rated as exceptional. The system also rates wetlands that are located adjacent to PNAs, unique natural ecosystems or special wildlife habitat areas, wetlands that contain threatened or endangered species, and estuarine shrub-scrub wetlands as exceptional.

A wetland is rated substantial when the wetland performs the three wetland functions at normal or slightly above normal levels. A wetland that is a buffer to a wetland rated exceptional is also rated as substantial.

A wetland is rated as beneficial when it performs the three primary wetland functions at below normal levels or, in some cases, not at all. A wetland is rated beneficial when any two of the primary wetland functions are rated low and none are rated high.

This brief explanation of NC-CREWS and wetland functional significance rating definitions are based on information contained on the DCM website at https://deq.nc.gov/about/divisions/coastal-management. Please refer to this website for additional information on NC-CREWS.

Non-coastal wetlands are often referred to as “404” wetlands and may be found in many areas of the Carteret County planning jurisdiction. A map showing general areas where wetlands may be located can be viewed on the Carteret County website at http://www.carteretcountync.gov/469/GIS-Services.

Authorization from the USACE is typically required prior to undertaking development that impacts non-coastal wetlands. While areas that may contain wetlands are extensive, precise locations must be determined by on-site investigation.

Coastal marsh is often referred to as coastal wetlands. Development that impacts coastal wetlands is regulated by CAMA. Authorization from DCM is typically required prior to undertaking development that impacts coastal wetlands. While precise locations of coastal wetlands must also be made onsite, a map showing general locations of coastal wetlands in Carteret County can be found on

the NC Natural Heritage Program mapping site at https://ncnhde.natureserve.org/content/map.

More information regarding wetlands (coastal and non-coastal) can be found later in this chapter under the discussion of Environmentally Fragile Areas. The discussion of CAMA AECs earlier in this section also provides more information regarding coastal wetlands.

**Water Supply Watersheds and Wellhead Protection Areas**

The NC Water Supply Watershed Protection Program establishes minimum statewide water supply watershed protection requirements to protect surface water supplies by (1) controlling development density, (2) providing for performance based alternatives to development density control based on sound engineering principles or (3) a combination of these measures. This program is implemented at the local level through permits issued by the appropriate County or municipal government. While all land is located within a watershed of some kind, only 20% of North Carolina's land area is classified as being in a water supply watershed. No water supply watersheds are located in the Carteret County planning jurisdiction.

The NC Wellhead Protection Program is a pollution prevention and management program used to protect underground sources of drinking water. This program in North Carolina and other states was established by the Safe Drinking Water Act Amendments of 1986 and was intended to be a key part of a national groundwater protection strategy to prevent contamination of ground waters that are used as public drinking water supplies. North Carolina does not mandate local Wellhead Protection Plans, but rather considers them to be a valuable supplement to existing State groundwater protection programs, as well as added protection for local groundwater supplies. Once implemented, a Wellhead Protection Plan reduces the susceptibility of wells to contaminants.

Wellhead protection involves protecting all or part of the area surrounding a well from which the well's groundwater is drawn. This area is known as the Wellhead Protection Area (WHPA). The Safe Drinking Water Act defines a WHPA as "the surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfields." A number of factors affect the size of the WHPA, including the geologic and hydrogeological features of area, as well as the goals of the State program. The North Carolina Rural Water Association provides assistance at no charge to Public Water Supply systems that wish to develop a Wellhead Protection Plan.

Water systems serving the Carteret County planning jurisdiction with approved Wellhead Protection Plans include the following, with date of approval in parenthesis:

- Bogue Banks Water Corporation (4/23/2010)
- Harkers Island Sanitary District (2/22/2010)
- Merrimon Water System (5/31/2016)
- North River Water System/Mill Creek Water Service District ((5/31/2016)
- West Carteret Water Corporation (11/24/2009)

**Primary Nursery Areas (PNAs)**

Since 1978 PNAs have been designated by the MFC as areas where initial post-larval development of

fish or shellfish takes place. PNAs are generally located in the upper reaches of creeks and bays where populations are uniformly very early juveniles. These areas are usually shallow with soft muddy bottoms and are surrounded by marshes and wetlands.

Designation of PNAs is generally based on sampling over a three-year period, with proposed sites compared to similar areas for notable differences of species abundance, size distribution, and diversity. Criteria used to designate PNAs include the following:

- Abundance of selected recreationally and commercially important fish and shellfish species, including brown shrimp, blue crab, spot, croaker, and southern flounder
- Size composition of early juvenile species
- Species diversity
- Bottom type –clay, course silt, detritus
- Water depths usually less than 6 feet

Multiple state agencies have established protections for PNAs. These protections include prohibition by DMF for using bottom-disturbing fishing gears in PNAs. DCM prohibits new dredging in PNAs and has established minimum water depth standards for permitting of boat slips in PNAs. The NC DWR also requires higher standards on wastewater discharge and prohibits new dredging.

Table 3.5 gives the locations of significant PNAs (those over 100 acres) in Carteret County.

Table 3.5 Significant PNAs in Carteret County

| **Primary Nursery Areas** | **Area (acres)** |
|---|---|
| Thorofare Bay | 2,174 |
| Cedar Island Bay | 2,171 |
| Newport River | 1,532 |
| Jarrett Bay | 1,461 |
| North River | 1,359 |
| Nelson Bay | 1,063 |
| Long Bay | 792 |
| Best Thorofare Bay | 783 |
| Ward Creek | 596 |
| Ditch Bay | 482 |
| Upper Cedar Island Bay | 381 |
| Back Creek | 262 |
| Brett Bay | 249 |
| Pettiford Creek | 230 |
| Broad Creek | 204 |
| Oyster Creek | 173 |
| Sleepy Creek | 150 |
| Crab Point Bay | 148 |
| Calico Creek | 140 |
| Harlow Creek | 139 |
| Codduggen Creek | 108 |
| Lewis Creek | 103 |

| Primary Nursery Areas | Area (acres) |
|---|---|
| Areas less than 100 acres | 1,824 |
| **TOTAL** | **16,524** |
| *Source: NC Center for Geographic Information and Analysis (pna.shp)* | |

PNA maps can also be accessed at http://portal.ncdenr.org/web/mf/primary-nursery-areas

## Environmentally Fragile Areas

Fragile areas are sensitive areas that are easily destroyed by inappropriate or poorly planned development. Much of Carteret County is located within or in close proximity to fragile areas. Incompatible development could result in a loss of these resources or impacts to the resource functions of these areas. Environmentally fragile areas include wetlands, prime wildlife habitats, areas that contain endangered species, maritime forests, and natural heritage areas.

### Wetlands

#### Coastal Wetlands

Coastal Wetlands are any marsh in the 20 coastal counties that regularly or occasionally floods by lunar or wind tides and that includes one or more of 10 plant species:

*Spartina alterniflora:* Salt Marsh (Smooth) Cord Grass
*Juncus roemerianus:* Black Needlerush
*Salicornia* spp: Glasswort
*Distichlis spicata:* Salt (or Spike) Grass
*Limonium* spp: Sea Lavender
*Scirpus* spp: Bulrush
*Cladium jamaicense:* Saw Grass
*Typha spp:* Cattail
*Spartina patens:* Salt Meadow Grass
*Spartina cynosuroides:* Salt Reed or Giant Cord Grass

Coastal wetlands are designated by the CRC as an AEC and are regulated under CAMA. The purpose of the AEC classification is to protect these areas from uncontrolled development, which may cause irreversible damage to property, public health, or the environment Development within coastal wetlands is limited by CAMA regulations and minimum use standards.

Coastal wetlands are widespread in Carteret County and can be found along the shoreline of many water bodies. Locations of extensive areas of coastal wetlands under Carteret County planning jurisdiction include Cedar Island and adjacent areas in the eastern portion of the County, Brown's Island, Middle Marshes in Back Sound, shore of the North River and the Bogue Sound area in the western portion of the County. General locations of coastal wetlands can also be viewed on maps available from the Natural Heritage Program (NHP) at https://ncnhde.natureserve.org/content/map and interactive maps found on the DCM website at https://deq.nc.gov/about/divisions/coastal-management. However, precise locations of coastal

wetland vegetation must be made onsite through field investigation and analysis.

### Non-Coastal Wetlands

Non-coastal wetlands include all wetlands not classified as coastal wetlands. Non-coastal wetlands, also known as "404" wetlands, are protected by the Clean Water Act and are federally regulated by the USACE. The State of North Carolina also imposes regulations on development affecting non-coastal wetlands that are implemented by DWR. State regulators often refer to non-coastal wetlands as "401" wetlands. Non-coastal wetlands are located throughout Carteret County.

Additional information regarding non-coastal wetlands can be found earlier in this chapter under discussion of natural systems. A map showing general locations of non-coastal wetlands can be viewed on the Carteret County website at http://www.carteretcountync.gov/469/GIS-Services and on the DCM website. However, as with coastal wetlands, the precise location of non-coastal wetlands must be made onsite through investigation and analysis.

## Natural Heritage Areas

Natural Heritage Areas include lands that support rare plant and animal species, rare or high quality natural communities, or other important ecological features as identified by the North Carolina NHP within the NC Department of Natural and Cultural Resources. This program inventories, catalogues and facilitates protection of the rarest and the most outstanding elements of the natural diversity of our state. The program weighs the ecological significance of various sites and evaluates ecological impacts of development. Information is provided to help project planners and landowners make land use decisions that have the most benefit for society while having the least ecological impact. These elements of natural diversity include those plants and animals that are so rare, or the natural communities that are so significant, they merit special attention as land use decisions are made.

Currently, NHP identifies 38 sites constituting approximately 118,562 acres as Natural Heritage Areas in Carteret County. Approximately 33 of these sites (approximately 111,857 acres) are classified as Excellent, Very High, or High significance. A table of Natural Heritage Areas located wholly or in part in the Carteret County planning jurisdiction is included as Appendix B.

NHP is not a regulatory program, although some of these sites may be protected or regulated by other state or federal agencies. Many of these sites are unprotected.

## Areas Containing Endangered Species

An endangered species is an animal or plant that is considered at risk of extinction due to a sudden rapid decrease in population or a loss of its critical habitat. On the federal level, the endangered species list is managed under the Endangered Species Act (ESA), which was enacted by Congress in 1973. The federal government has the responsibility to protect endangered species (species that are likely to become extinct), threatened species (species that are likely to become endangered) and critical habitat (areas vital to the survival of endangered or threatened species).

The federal government provides special protections to species listed as threatened or endangered.

Animals are protected from "take" and being traded or sold. A listed plant is protected on federal property or when federal actions are involved, such as the issuance of a federal permit on private land.

The term "take" under the ESA is used to include "harass, harm, pursue, hunt, shoot, wound, kill trap, capture, or collect, or to attempt to engage in any such conduct." Protection is also provided against interfering in vital breeding and behavior or critical habitat degradation.

Under the ESA, the U.S. Fish & Wildlife Service (USFWS) and National Marine Fisheries Service oversee the listing and protection of terrestrial animals and plans, freshwater and marine fish, and wildlife. Appendix C provides information on endangered and threatened species found in Carteret County, including descriptions of known areas containing endangered species.

**Prime Wildlife Habitats**

Wildlife habitat areas provide the basic requirements for food, water, reproduction (including nesting), and protection from competitors and predators for specific wildlife species. Based on guidance from the USFWS, the following areas in Carteret County contain features and characteristics of prime wildlife habitat:

- Salt marsh, mud flats, and other high quality estuarine habitats
- Ocean shorelines, spits, and inlet shoulders
- Bird islands in the Atlantic Intracoastal Waterway
- State Natural Areas
- PNAs
- Shellfishing waters (Class A)
- Pocosin Wilderness Area of the Croatan National Forest
- Rachel Carson National Estuarine Research Reserve
- Shackleford Banks and Core Banks
- Cedar Island National Wildlife Reserve
- North River Marsh and Newport River Marshes

Maps of the most suitable habitat for threatened and endangered species in Carteret County can be viewed on the NHP mapping site. The site can be accessed at https://ncnhde.natureserve.org/content/map

**Maritime Forests**

Maritime forests are described variously, but in general are considered to be woody plant communities that grow along coastal barrier islands, usually on stabilized dune systems located on the sound side of the islands. They are composed of species adapted to survive and reproduce under harsh conditions of the coastal barrier system, including salt spray, wind shear, nutrient poor soils, and low availability of fresh water. They often exhibit stunted growth from salt spray from the ocean.

A report prepared by DCM in November 1988, An Assessment of Maritime Forest Resources on the North Carolina Coast, reviewed the maritime forest ecosystem in North Carolina. The report identified and studied 11 intact maritime forest areas in Carteret County. Maritime forests were identified on Shackleford Banks (Cape Lookout National Seashore) and in the Towns of Atlantic

Beach, Pine Knoll Shores, Indian Beach, and Emerald Isle on Bogue Banks. None of the sites were located in the Carteret County planning jurisdiction.

**Agricultural Resources**

Prime farmland soils are those that are best suited to production of food, feed, forage, fiber, and oilseed crops (US Department of Agriculture 1987)**.** Areas with prime farmland are also usually well suited for development. Current trends show continuing slow conversion of agricultural land in Carteret County into residential uses. This movement is attributed to development and economic pressures and sometimes occurs in isolated areas apart from other residential development. Some conversion is occurring in Peletier, Stella, and NC 58 in the western portion of the County. Other residential development of agricultural land is occurring in the Newport and Down East areas. See Appendix D for information on soils classified as prime farmland soils in Carteret County.

**Anadromous Fish Spawning Areas**

Anadromous fish spawning areas are those tributary streams where fish swim upstream to spawn. These fish migrate from their primary ocean habitat to spawn, or breed, in freshwater areas. Anadromous fish are valuable recreational and commercial species and are an important component of the ecosystem.

One main anadromous fish spawning area in Carteret County is found on maps developed by the DMF. This area includes the White Oak River from north of Webb Creek to Jones County.

**Assessment of impacts of development on environmentally fragile and natural resource areas, including natural resource areas impacted or lost due to incompatible development. These areas include wetlands, natural heritage areas, areas containing endangered species, prime wildlife habitat, and protected open space.**

Land development within most environmentally sensitive areas is regulated by local, state, and and/or federal regulations or controls. Development within CAMA AECs is restricted by CAMA regulations and minimum use standards in Carteret County and other coastal counties. The regulations are in place to protect AECs from uncontrolled development that may cause irreversible damage to property, public health of the environment. Development within coastal wetlands and estuarine and public trust waters is usually limited to water-dependent uses (such as docks, piers, bulkheads, boat ramps, bridges, navigation channels), with priority given to conservation of these areas. CAMA regulations also apply to estuarine and public trust shorelines, providing limitations on development. Specific CAMA standards can be found at 15NCAC 7H.

The USACE regulates non-coastal or “404” wetlands and requires that development be authorized by this agency prior to disturbing wetlands.

Much of the prime wildlife habitat as listed previously in this section and areas containing endangered species (see Appendix C) are located fully or partially in CAMA AECs or contain federally regulated wetlands.

A large percentage of the land in the County consists of areas that are not available for future

development. These areas include federal, state, local, and non-profit property and easements that are managed for conservation or open space. Examples include the Croatan National Forest which covers large portions of western and central Carteret County, the Cedar Island Wildlife Refuge, and Shackleford Banks.

The NHP is not a regulatory program, although some of the natural heritage areas may be protected or regulated by other state or federal agencies. Many of these sites are privately owned and unprotected.

## WATER QUALITY

### Surface Water and Impaired Streams

Parts of three river basins are found in Carteret County: the White Oak River Basin, Neuse River Basin, and Tar-Pamlico River Basin. The White Oak basin encompasses most of the populated land area whereas the Neuse encompasses undeveloped, agricultural, and sparsely populated land. A small area of the Pamlico Sound is part of the Tar-Pamlico River Basin portion of the County.

Basinwide water quality planning is a non-regulatory watershed-based approach to restoring and protecting the quality of North Carolina's surface waters. DWR prepares and updates basinwide water quality plans. While DWR prepares the basinwide plans, implementation and protection of water quality requires the coordinated efforts of many agencies, local governments, and stakeholders. Recommendations contained in the applicable basinwide plans were reviewed and considered in the development of this plan.

Each river basin is divided into subbasins or smaller watersheds. A watershed is a geographic area draining to a common water body. The basinwide plans describe water quality and make recommendations for actions to improve or protect water quality on a subbasin basis.

The North Carolina EMC has designated certain waters within North Carolina as ORW. This designation is intended to protect unique and special waters having excellent water quality and being of exceptional state or national ecological or recreational significance. (Please see Table 3.1 Water Quality Classifications for more information on this classification.) Three areas of Carteret County are designated: (1) Western Bogue Sound, (2) Core Sound, and (3) Southeast Pamlico Sound.

The descriptions of impaired waters from the most recent basinwide plans provides information on water quality in the planning jurisdiction. Basinwide water quality plans are prepared by DWR. Implementation of plan recommendations and protection of water quality depends upon coordination of many agencies, including local governments, and citizens.

Information from the 2007 White Oak River Basinwide Plan and the 2009 Neuse River Basinwide Plan is described below. These are the most current Basinwide plans as of the date of the Carteret County Land Use Plan Update. In the White Oak River Basin there are three subbasins located wholly or partially in Carteret County. There are two subbasins of the Neuse River Basin located partially within Carteret County.

White Oak River Subbasin 03-05-01

Carteret County represents a portion of the area within this subbasin. The subbasin contains the White Oak River and its tributaries in Onslow, Jones, Craven, and Carteret County. Much of the area lies within the Croatan National Forest and Hoffman State Forest. Forest/wetlands constituted 76% of the land cover, per the basinwide plan. Urban areas, including Peletier and Cedar Point, increased in population at least 17% in recent years. A noted loss of agricultural land had occurred as development expanded inland

In the subbasin, 60.5% of the waters are listed as SA, 15.5% of the waters are considered ORW, and 63% of the shellfish harvesting waters are considered impaired. This is a slight increase from 62% impaired shellfishing waters reported in the 2001 basinwide plan. In the Carteret County portion of the subbasin, impaired waters due to fecal coliform bacteria in the upper reaches of the White Oak River continue to impair waters. Potential sources of pollution are runoff from subdivisions and agricultural land. Increased impervious surfaces and loss of vegetated buffers likely contributed to water quality conditions. Consistent with the previous basinwide plan, the remaining impaired streams in the subbasin are mostly west of the White Oak River in Onslow County. A land acquisition and study undertaken by DWQ (now DWR), the North Carolina Department of Transportation, , the Town of Cedar Point, and the NC Coastal Federation to preserve habitat and protect water quality in the White Oak River was also noted.

All of the Wastewater Treatment Plants (WWTPs) located in this subbasin exist in Onslow County, with some septic system problems noted. This subbasin contained 5 registered animal operations (all swine) in the White Oak River basin. No violations or problems were reported for any of the operations, per the 2007 plan.

White Oak River Subbasin 03-05-03

This subbasin contains the center of Carteret County, extending from the Croatan National Forest to the Town of Beaufort and Beaufort Inlet. With the exception of Newport, most of the development in this subbasin is along the coast: Morehead City, Beaufort, Atlantic Beach, and Bogue Banks. In the subbasin, 88.9% of the waters are listed as SA, 29.6% of the waters are considered ORW, and 43% of the shellfish harvesting waters are considered impaired.

The plan notes that there are some areas of water quality improvement in the subbasin, while some deterioration at others. Areas of impaired waters include the north shore of Bogue Sound, Broad Creek, Gales Creek, and the Newport River and its tributaries. The main cause of impairment for waters in this subbasin is fecal coliform bacterial contamination, resulting from runoff from urbanized areas and subdivisions. Construction of several marinas in the subbasin resulted in shellfish water closures, as required by current permitting regulations. WWTPs are operated by several municipalities in this subbasin, but none are located within the planning jurisdiction.

Local initiatives to improve water quality in the subbasin include land acquisition, stormwater, and Living Shoreline projects undertaken by the NC Coastal Federation. Conservation efforts to acquire Sugarloaf Island and Emerald Isle Woods were also undertaken by the Towns of Morehead City and Emerald Isle.

White Oak River Subbasin 03-05-04

This subbasin is located to the east and north of the City of Beaufort. Waterbodies in this subbasin, include the North River, Jarrett Bay, Nelson Bay, and the landward halves of Back Sound and Core Sound. A large part of the subbasin is cultivated cropland (Open Grounds Farm). In this subbasin, 90% of the waters are listed as SA, 59.6% of the waters are considered ORW, and 33.9% of the shellfish harvesting waters are considered impaired, an increase from 29% reported in the 2001 basinwide plan.

Water quality in this subbasin is generally considered high, with large portions of this subbasin classified as ORW, although there are areas in the North River and adjacent bays and tributaries that are not supporting shellfish harvesting. The major cause of impairment for waters in this subbasin is fecal coliform bacterial contamination. Potential sources of pollution include runoff from subdivisions, agricultural land, domesticated animals, forestry practices, and wildlife. Large numbers of boats at marinas increase the potential for increases in fecal coliform and also result in required closure of shellfishing waters.

Neuse River Subbasin 03-04-10

A small eastern portion of this subbasin is located in Carteret County. There are a few small towns in the subbasin, but none in Carteret County. Most of the waters in the subbasin are estuarine in nature, with 47% of the total monitored estuarine waters impaired. The cause of impairment is overloading of nutrients into this segment of the Neuse River and high fecal coliform bacterial levels. However, because of the chronic overloading of nutrients into the Neuse River over a long period of time in the past, it may be some time before current reductions will result in improved water quality.

Impaired shellfish harvesting waters are located in south River and its tributaries. Some shellfishing areas have improved, while others have seen declines. The most significant threat to shellfishing waters is stormwater and runoff from farming and silvaculture operations.

There are no WWTPs located in the Carteret County portion of this subbasin, but many are located in the adjacent counties and have reported effluent problems  Even though the WWTPs are located in other counties, they are in the same subbasin and pose a potential risk to the water quality in Carteret County.

Neuse River Subbasin 03-04-13

A small sliver of this subbasin is found in the County. The sliver is part of Pamlico Sound and contains no land area. This small area is classified as SA NSW.

Neuse River Subbasin 03-04-14

There is very little land area in this subbasin and no large communities. Shellfish growing areas within the subbasin are not generally affected by freshwater runoff due to the small watershed and lack of major tributaries. Rainfall normally has little effect on the approved waters of this area except during extremely heavy rainfall events (hurricanes or other severe coastal storm events) which cause temporary closures. Based on shellfish harvesting data, there has been little water quality change since the previous assessment. Most of the waters are listed as fully supporting for shellfish harvesting.

Tar River Subbasin 03-03-08
A small sliver of this sub-basin is found in the County. The sliver is part of Pamlico Sound and contains no land area. This small area is classified as SA.

## 303(d) Listed Waters

Section 303(d) of the Clean Water Act requires states to develop a list of waters not meeting water quality standards or which have impaired uses. Listed waters must be prioritized, and a management strategy must subsequently be developed for all listed waters. DWR prepares and maintains the list of impaired waters in North Carolina, known as the 303(d) list. The final 2018 303(d) list for Carteret County contains 234 listings. Combined, the impaired waterbodies listed constitute about 40,000 acres within Carteret County, as determined by DWR. The parameter for the majority of listings was shellfish growing area status. Stormwater runoff is the largest source of impairment to shellfish harvesting waters.

Comparisons of current data with previous information must consider current methodology for listing impaired waters. Beginning in 2008 conditional classified waters were added to the list. Also, improvements in Geographic Information System technology employed by DWR have resulted in mapping differences and corrections. Previously the State did not have a way to report by County, which may result in some differences.

A list of Carteret County water bodies included on the final 2018 303(d) list is included as Appendix E. Further information and the list of impaired waters are also available at 2018-NC-303-d--List-Final.pdf

## Nonpoint Source Pollution

The Coastal Nonpoint Source Program identifies various categories of nonpoint pollution. These include agricultural sources; urban areas (urban runoff, construction activities, existing development, onsite disposal systems, and roads, highways and bridges); hydrologic modification (channelization and channel modification), dams, and streambank and shoreline erosion; and wetlands, riparian areas, and vegetated treatment system. Although nonpoint sources have contributed to water quality conditions, no public health problems related to nonpoint pollution have been identified in the planning area.

The White Oak River Basin Plan identifies potential sources of pollution in the western portion of the basin (subbasin 03-05-01) as runoff from subdivisions and agricultural land. Increased impervious surfaces and loss of vegetated buffers likely have contributed to water quality conditions. The main cause of impairment for waters in the central portion of the basin (subbasin 03-05-03) is fecal coliform bacterial contamination resulting from runoff from urbanized areas and subdivisions. Potential sources of pollution in subbasin 03-05-04 include runoff from subdivisions, agricultural land, domesticated animals, forestry practices, and wildlife.

Algal blooms have been noted in Calico Creek (White Oak 03-05-03) but no algal toxins have been confirmed.

**Waste Water Treatment Malfunctions**

Portions of three river basins are located in Carteret County; the White Oak, Neuse, and Tar-Pamlico river basins. The Carteret County portion of the Tar-Pamlico river basin contains no land area and therefore is not addressed in this section. There are portions of three White Oak subbasins and three Neuse subbasins in Carteret County.

There are five individual National Pollutant Discharge Elimination System (NPDES) wastewater discharge permits in the White Oak River subbasin 03-05-01 with a total permitted flow of 0.51 MGD. Three of these facilities were previously out of compliance. None of the permitted WWTPs are located in Carteret County.

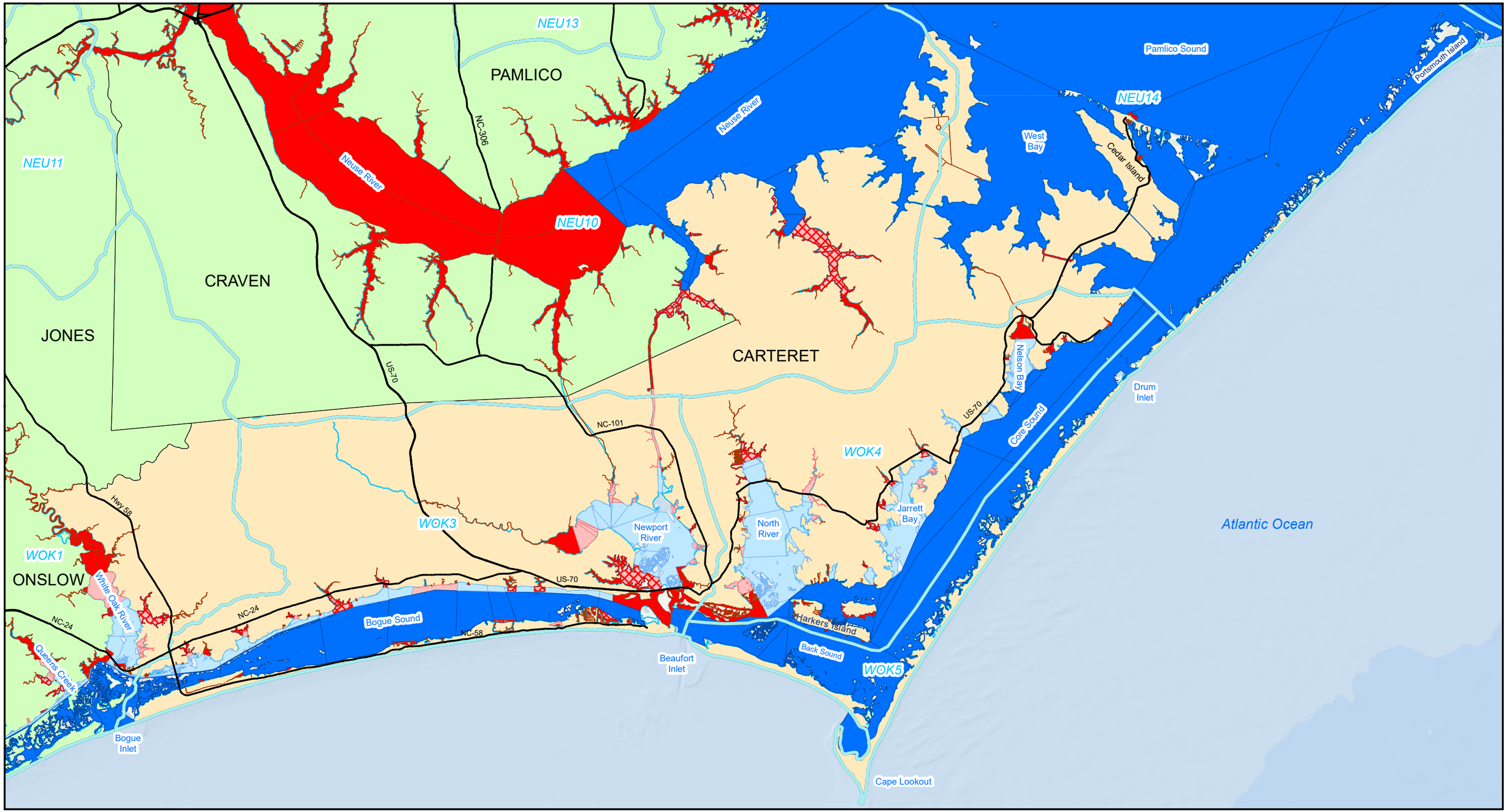
There are ten individual NPDES wastewater discharge permits in the White Oak River subbasin 03-05-03 in Carteret County with a total permitted flow of 3.95 MGD. Only two (West Carteret Water Corporation and Bogue Banks Water Corporation) are located in the Carteret County planning jurisdiction. Based on the 2019 Water Quality Report, neither system had any violations. Wastewater Treatment Plants are operated by several municipalities in this subbasin, but none of the municipal facilities are located within the Carteret County planning jurisdiction.

There are five individual NPDES wastewater discharge permits in the White Oak River subbasin 03-05-04 with a total permitted flow of 0.034 MGD. The largest capacity permit is held by Snug Harbor Management, LLC in Nelson Bay. The second largest discharge is associated with Taylor Hospital and Extended Care WWTP also in Nelson Bay. Four of these facilities were previously out of compliance with permit limits, with only Snug Harbor and Taylor Extended Care having significant non-compliance. Snug Harbor has closed and Taylor Extended Care is relocating its facility. No information is available on new uses for the property and treatment facility.

Available information on WWTPs operation and compliance is included in the wastewater portion of Section 5 of this plan.

Much of Carteret County is dependent upon individual septic systems. As expected, some septic systems experience failures. Some septic problems occur in low-lying areas and in high-density areas on the fringe of sewer supply lines. Septic systems that were permitted or installed prior to implementation of the 1977 North Carolina regulations are more likely to be problematic. Permit staff at the Carteret County Health Department report no notable areas with concentrations of septic failures although sporadic failures exist throughout the County.

# Carteret County Shellfishing Areas and Classifications




**Shellfish Growing Area Classification**

- Approved
- Conditionally Approved - Open
- Prohibited
- Conditionally Approved - Closed
- Restricted
- River Subbasins
- Hydrography
- Roads

0 1.5 3 6 9 12 Miles

N W E S

**North Carolina Department of Environmental Quality**
**Division of Marine Fisheries**
**Shellfish Sanitation and Recreational Water Quality**
**December 29, 2020**

# SECTION 4. EXISTING LAND USE AND DEVELOPMENT

This section of the Carteret County Land Use Plan provides a description of current and emerging land use patterns and development trends in Carteret County. The analysis of existing development is a major component of the foundation upon which land use policies and the future land use map are built. It provides a base for projecting future land needs and for forecasting the location of development.

## EXISTING LAND USE

Carteret County is considered to have three distinct areas in terms of general land use. The first area is the Down East area, which lies east of the North River. The central area is generally described as being north of the Town of Beaufort and includes the Towns of Morehead City and Newport and surrounding unincorporated areas. The third area lies west of Morehead City along the NC 24 and NC 58 corridors and Bogue Banks. This area is generally referred to as western Carteret County.

The Down East area has developed as predominantly rural with large areas of wetlands and agricultural uses. Land uses include single-family residences, general and convenience stores, churches, public facilities, and other mixed land uses at low density, mainly along US 70 East and NC 12. The population is concentrated in several unincorporated communities. These communities include Atlantic, Bettie, Cedar Island, Davis, Gloucester, Harkers Island, Marshallberg, Otway, Sea Level, Smyrna, Stacy, and Williston. A major land use in this area of the County is Open Grounds Farm.

Central Carteret County has traditionally contained the population centers of Newport, Morehead City, and Beaufort, all of which are outside of the Carteret County planning jurisdiction. Other than these municipalities and their planning jurisdictions, this area has traditionally been considered mostly rural in character. However, recent and anticipated residential growth has been influenced by the provision of central water service and the development of additional subdivisions. The Jarrett Bay Marine Industrial Park and other scattered industrial uses are also located in this area.

Western Carteret County has developed as the major development and population base of the County. Development is concentrated in the incorporated areas on Bogue Banks and along NC 24 and Bogue Sound west of Morehead City. Increasingly, new subdivisions and other development are occurring in areas near the White Oak River and in the farthest western portions of the County, including areas along NC 58. The majority of the County's zoned areas are in Western Carteret County and these areas are experiencing the heaviest growth.

The majority of new subdivisions from 2004-2019 have been located within the White Oak and Morehead Townships. The remainder of new subdivisions have been scattered equally throughout the County's other Townships.

In addition to residential development, scattered commercial and industrial development continues to occur throughout the County. Concentrated commercial and industrial development has occurred along US 70 between Newport and Morehead City, with increasing development along the NC 24 and NC 58 corridors.

The developed areas of the County extend well beyond central water and sewer systems operated by municipalities and private entities. The majority of the unincorporated areas under Carteret County planning jurisdiction are served by individual septic systems or package treatment plants. In addition to individual wells, Carteret County's water supply system is composed of 20 individual systems, including five large systems. Section 5 of this land use plan provides information on these systems and the service areas.

Second home, retirement and tourist related development is concentrated in the Bogue Banks communities, with increasing presence in mainland areas located Down East and in western and central Carteret County. Carteret County's vast shoreline areas are attractive for development and are expected to continue to attract resort/retirement development throughout the County.

A large percentage of the land in the County planning jurisdiction consists of areas that are not available for future development. These areas include federal, state, local, and non-profit property and easements that are managed for conservation or open space and federally owned lands used for military purposes. The Croatan National Forest covers large portions of western and central Carteret County. The Cedar Island Wildlife Refuge is located in the Down East area. The Marine Corps Air Station (MCAS) Cherry Point operates three facilities in Carteret County. BT-11 Piney Island and the Marine Corps Outlying Landing Field (MCOLF) Atlantic are both located Down East. The Marine Corps Auxiliary Landing Field (MCALF) Bogue is located near the community of Bogue along the NC 24 corridor in western Carteret County. Other areas within the County that are unavailable for development include Cape Lookout National Seashore, Cedar Island National Wildlife Refuge, and Fort Macon State Park.

Incompatible land uses (primarily residential) associated with the Marine Corps outlying field in Bogue are a concern due to noise associated with the facility and the potential for aircraft crashes in populated areas. Local governments impacted by MCAS Cherry Point addressed this concern in the Eastern Carolina Joint Land Use Study (ECJLUS) completed in 2002 and the Cherry Point Regional Joint Land Use Plan (CPRJLUS) adopted by Carteret County on April 18, 2016. Carteret County has implemented Air Installation Compatible Use Zoning (AICUZ) for areas adjacent to the MCAS Auxiliary Landing Field and in the flight path of the aircraft.

The purpose of the Bogue Field AICUZ Overlay District is to identify properties located within the proximity of the MCALF Bogue as identified in the AICUZ Requirements Update Marine Corps Air Station Cherry Point, NC dated December 18, 2001. Areas identified in this overlay district include Compatible Use Zones 1 and 2 related to proximity to air base operations and Noise Exposure Levels 1, 2, and 3 related to significant, moderated, or low noise impacts. These properties are subject to the requirements of the underlying zoning district, as well as additional disclosure requirements for property transfers, leases for greater than 90 days, subdivision plats, and building permits. Carteret County has placed certain use restrictions and requirements on the development of property within the AICUZ footprint, as reflected in the list of permitted and special uses for the overlay district.

Military activities at MCOLF Atlantic include heliborne, tilt-rotor, and Unmanned Aerial System (UAS) aviation operations. Noise contours and accident potential zones are not generated for facilities that conduct rotary-wing aircraft operations, so AICUZ overlay districts are not possible for areas surrounding MCOLF Atlantic.

The Existing Land Use Map located at the end of this chapter provides a general pattern of existing

land use in the planning area. Land use categories shown on this map include residential, commercial, institutional, industrial, undeveloped, and protected lands.

The residential category includes single-family, multi-family, and manufactured housing residential properties. The commercial category includes retail, wholesale, and service establishments. The industrial category includes manufacturing, warehouses, salvage facilities, public utilities, storage facilities, and other similar uses. The institutional category, as shown on this map, includes such uses as churches, schools and other institutions. The undeveloped category includes sparsely developed land or land that might be used for agriculture or forestry practices. Protected Lands are unavailable for development and include all military bases, federal lands such as the Croatan National Forest, state-owned land, county parks and beach access points.

A large high-resolution Existing Land Use Map is also available for review in the Carteret County Planning and Development Office.

Table 4.1A provides an estimate of the number of acres and percentages for the various developed land uses in the Carteret County planning area (unincorporated areas, Town of Bogue, and Town of Peletier), based on analysis of 2019 tax parcel data. Table 4.1B provides estimates for undeveloped, protected, and developed lands.

Table 4.1A Developed Land Use in Carteret County Planning Area

| Land Use | Acres | Percentage of Total Land | Percentage of Total Developed Land |
|---|---|---|---|
| **Residential** | 19,784 | 8.24% | 82.28% |
| **Commercial** | 2,299 | 0.96% | 9.56% |
| **Institutional** | 1,912 | 0.80% | 7.95% |
| **Industrial** | 49 | 0.02% | 0.20% |
| **Total Developed** | 24,044 | 10.02% | |

Table 4.1.B Undeveloped, Protected, and Developed Lands in Carteret County Planning Area

| Land Use | Acres | Percentage of Total Land |
|---|---|---|
| **Undeveloped** | 159,130 | 66.29% |
| **Protected Lands** | 56,860 | 23.69% |
| **Developed** | 24,044 | 10.02% |
| **Total** | 215,990 | 100.00% |

**Future Development Trends**

General development trends described and projected in the previous Land Use Plan update have taken place and are expected to continue. Expanded residential and commercial uses have occurred in the western portion of the County including along NC 58, the White Oak River and the Town of Peletier. The NC 24 corridor in the western and central portions of the County have also seen residential and commercial growth. With the County's proximity to Marine Corps Base Camp Lejeune and MCAS Cherry Point, this pattern is expected to continue throughout the planning period.

The western portion of Carteret County is expected to continue to experience growth pressures during the planning period. Areas of central Carteret County, particularly those served by central water service, are also expected to experience increased growth. Areas near or adjacent to the White Oak River and Bogue Sound, as well as other waterfront areas throughout the County will continue to attract retirees, second-home owners, seasonal visitors, and others, thus maintaining strong residential and associated development trends. The NC 24 corridor, from Morehead City to Cape Carteret (including the Town of Bogue) and the NC 58 corridor including the Town of Peletier north of Cape Carteret are expected to experience increasing development. Redevelopment and infill development of existing developed areas, such as the Salter Path community on Bogue Banks, are also expected to continue.

Other areas of the County planning jurisdiction are also expected to continue to grow, particularly those areas served by central water service. In particular, the areas north of the Town of Beaufort along the NC 101 and US 70 corridors and north of the Newport River are expected to experience increased development. The availability of central water and sewer is expected to facilitate growth in Harkers Island.

## HISTORIC, CULTURAL, AND SCENIC AREAS

The Historical and Scenic Locations Map at the end of this chapter portrays several sites within the Carteret County planning jurisdiction that are listed on the National Register of Historic Places (NRHP). The map also includes locations of markers erected through the North Carolina Highway Historical Marker Program for historically significant sites. The portion of the Outer Banks National Scenic Byway that passes through Carteret County is also shown on the map.

The NRHP is the official list of the nation's buildings, structures, objects, sites, and districts that merit preservation for their significance in American history, architecture, archaeology, and culture. It was authorized by the National Historic Preservation Act of 1966. Nationwide, as of 2019 more than 95,000 properties representing 1.8 million contributing resources (buildings, sites, districts, structures, and objects) were listed on the registry.

The Historical and Scenic Locations Map portrays the following listings on the NRHP within the planning jurisdiction:

- *Cape Lookout Coast Guard Station* was built as a lifeboat station beginning in 1916. It is located on Core Banks between Cape Lookout and the Cape Lookout Lighthouse. It consists of several frame buildings, including the Main Station which is surrounded by a galley (mess hall), equipment buildings, cisterns and similar support structures. The Cape Lookout Station primarily provided rescue services in the Cape Lookout Shoals, which extend ten miles into the Atlantic Ocean. It operated until 1982, and in 1984 the station buildings and property were transferred to the Cape Lookout National Seashore (National Park Service).
- *Cape Lookout Light Station* is the second lighthouse at Cape Lookout, built in 1859. It replaced the first Lighthouse that operated from 1812 until 1859. While the lighthouse was a principal part of a light station, other structures were required for its operation. The First Keeper's Quarters was built in 1812 at the same time as the first lighthouse, and based on historic photographs remained standing until 1893. The Second Keeper's Quarters built in 1873 to accommodate assistant keepers and their families now functions as a museum. The

Third Keeper's Quarters was built in 1907 to house the primary Keeper and his family and was in use until the tower was automated in 1950. It was deemed surplus in 1957, and subsequently moved to the Cape Lookout Village. Other structures at the Light Station include cisterns, an oil house (circa 1930s or 1940s) for storage of oil, a coal shed built around 1939 and destroyed by Hurricane Isabel in 2003, and a summer kitchen (circa 1907) converted in the late 1930's to house generator and batteries for the radio beacon. Storage sheds existed but have now been removed or destroyed. The Cape Lookout Light Station is located within the Cape Lookout National Seashore.

- *Cape Lookout Village Historic District* is located in an area between the Cape Lookout Light Station and the Cape Lookout Life-Saving Station. The village was established in the early 1900's when settlements on Shackleford Banks were largely abandoned due to especially bad hurricane seasons in 1896 and 1899. Some of the fishing families from Shackleford Banks relocated, thus establishing Cape Lookout Village. Comprising approximately 810 acres, the Cape Lookout Village Historic District contains remnants of a World War II Army coastal defense facility, several former fishing cottages, and vacation homes. Once a small but thriving village and during World War II home to a military presence, the historic district is now part of the Cape Lookout National Seashore.
- *Fort Macon State Park* is located on Bogue Banks near Atlantic Beach. Construction of the fort was completed in 1834 by the United States government to guard Beaufort Inlet and Beaufort Harbor, North Carolina's only major deep water ocean port at the time. North Carolina seized the fort from Union forces for the state of North Carolina and the Confederacy at the beginning of the Civil War in 1861. The Battle of Fort Macon was fought in March and April of 1862 and Union forces regained control. The US Army completely vacated the fort in 1903. In 1924 the fort and surrounding area were sold to the State of North Carolina, with restoration of the fort and establishment of public recreational facilities by the Civilian Conservation Corps occurring in 1934-1935. Fort Macon State Park opened in May 1936 as North Carolina's first functioning state park.
- *German Submarine U-352* was a type VIIC U-boat of Nazi Germany's Kriegsmarine during World War II. She was sunk on May 9, 1942 by depth charges from the U.S. Coast Guard Cutter Icarus. The wreck was discovered 26 miles south of Morehead City in 1975. It lies in about 115 feet of water. A replica of the wreck is on display at the North Carolina Aquarium at Pine Knoll Shores.
- *Portsmouth Village* was a fishing and shipping village located on Portsmouth Island that was established in 1753 by the North Carolina Colonial Assembly. It grew to a peak population of 685 in 1860. Though small, it was one of the most important points-of-entry along the Atlantic coast following the Revolutionary War. The decline of Portsmouth was due to several factors, including shoaling of the waters around Portsmouth's harbor and effects of strong hurricanes in 1846 on the North Carolina coastline. Creation of Oregon Inlet and deepening of the existing Hatteras Inlet lessened the desirability of Ocracoke Inlet in comparison. The village also lost population due to residents fleeing the island during the Civil War to avoid occupation by Union soldiers. The US Life-Saving Station on Portsmouth was decommissioned in 1937 and the post office closed in 1959. By 1967 Portsmouth Island and village had been acquired by the National Park Service and integrated into the Cape Lookout National Seashore. The last residents left the island in 1971.
- *Queen Anne's Revenge* was an early 18th-century ship used as a flagship by pirate Blackbeard (or Edward Teach or Edward Thatch) that ran aground near Beaufort Inlet in May 1718. In 1996 the remains of a vessel that was later determined to be Queen Anne's Revenge

was discovered and subsequently added to the NRHP.

- *Salter-Battle Hunting and Fishing Lodge*, also known as Portsmouth Hunting and Fishing Club, was built around 1945 on Sheep Island in Carteret County and near Ocracoke. In addition to a one-story frame building on concrete piers, the property also includes a cistern, storage shed, and cemetery with graves of early settlers of the island.

In 1935 the North Carolina General Assembly authorized the establishment of the North Carolina Highway Historical Marker Program to denote locations of historically significant sites. The markers honor places, people, and events and cover a range of subjects including schools, churches, battles, generals, ports, artists, preachers, musicians, and civil rights. Over 1,500 state highway historical markers have been erected, including the following ones in the planning jurisdiction:

- *Ocracoke Inlet (Marker C-4)*: Located on NC 12 at the Cedar Island ferry landing, the marker notes that Ocracoke Inlet was once the chief trade inlet of North Carolina. In 1718 pirate Blackbeard was killed there, 17 miles northeast across Pamlico Sound.
- *Cape Lookout Lighthouse (Marker C-24)*: Located on Harkers Island Road at the tip of Harkers Island, the marker notes construction dates of 1857-1859 of replacement of the original 1812 tower. The present lighthouse is located four miles south.
- *Core Sound Meeting (Marker C-35)*: The marker is located on NC 101 southeast of Harlowe. It commemorates the Quaker center that thrived for more than 100 years after 1733. Migration west was one cause of decline. The meeting house was 50 yards west.
- *Fort Hancock (Marker C-55)*: The marker is located on Harkers Island Road at the tip of Harkers Island. Fort Hancock was a Revolutionary Fort erected on Shackleford Banks in 1778 to protect Cape Lookout Bay. It was abandoned and partially demolished in 1780. The site is located four miles south.

The National Scenic Byways Program is a voluntary, community-based program to recognize, protect, and promote the nation's most outstanding roads. It was established by Congress in 1991 and is administered by the Federal Highway Administration. This program assists communities balance economic development and resource conservation. It recognizes and designates roads across the country that possess characteristics of regional significance within at least one of six categories: scenic, natural, historic, recreational, archaeological, or cultural.

The Outer Banks Scenic Byway, chosen in 2009 based on the traditional maritime culture, is one of just a few stretches of road in North Carolina and the Eastern Seaboard region that have achieved this designation. The byway extends for 138 driving miles and 25 ferry-traveling miles, and can take five or six hours to travel. The route begins at the beginning of NC 12 at Whalebone Junction (just south of Nags Head in Dare County), crosses over to Hatteras Island, through Ocracoke Island (Hyde County), then by ferry to Cedar Island in Carteret County and then along US 70 to the Byway's end at the intersection with NCSR 1300 (Merrimon Road). The portion of the Byway located within Carteret County is shown on the Historical and Scenic Locations Map.

## LAND SUITABILITY ANALYSIS

Carteret County was a participant in the 2016 CPRJLUS, a collaborative planning process that brought together military installation personnel, local government officials, and interested members of the community to discuss the relationship of activities of both the military and local communities

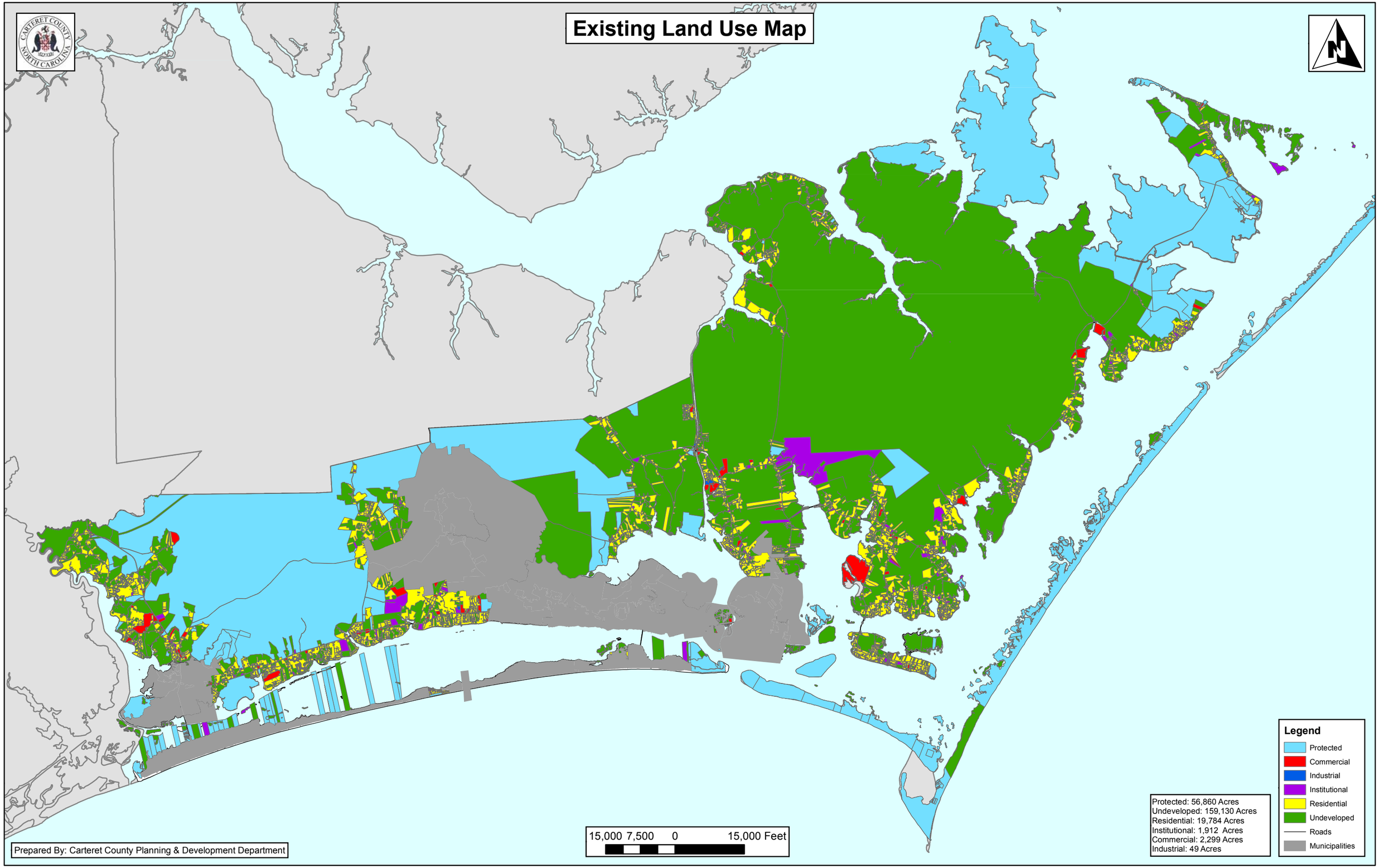
surrounding it. The study focused on MCAS Cherry Point and outlying/auxiliary facilities (MCALF Bogue, MCOLF Atlantic, BT-9, BT-11, and MCOLF Oak Grove installations).

The established military bases are important sources of economic development in the community, generating the need for services, construction, and other ancillary opportunities. Development pressures in areas bordering the military installation and community can create serious barriers to the normal functioning of the military base. Equally important, long-term discomfort by residents and businesses near the military installations can result from unplanned development. The interdependencies between military and civilian interests emphasized the need for safeguarding MCAS Cherry Point, both as a US military asset and an economic engine for the surrounding area.

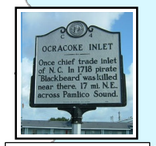
A land suitability analysis for surrounding areas, including Carteret County, was undertaken as part of the CPRJLUS to identify land that is most suitable and compatible for development in relationship to the military presence. The process began with an inventory and assessment of existing conditions and features to evaluate the area's potential for new development. The Land Suitability Analysis assessed six general areas: highly-constrained areas for development, future development potential, development attractors, anticipated growth, growth allocation, and important considerations for moving forward. The resulting Land Suitability Analysis ranks land in the planning jurisdiction from less suitable to more suitable for development in harmony with the military.

Carteret County used the data from the analysis conducted as part of the CPRJLUS to develop the Land Suitability Map for Carteret County found at the end of this section. The map ranks land in the County on suitability for development that is compatible with both the military installations and surrounding areas.

# Existing Land Use Map



# Historical & Scenic Locations Map




Ocracoke Inlet
(Marker C-4)


Core Sound Meeting
(Marker C-35)

Salter-Battle
Hunting and Fishing Lodge

Portsmouth Village

CEDAR ISLAND RD

HWY 12 ATLANTIC

HWY 70 STACY

HWY 70 OTWAY

HWY 101

HWY 70

HWY 70

HWY 58

HWY 24

ARENDELL ST

SALTER PATH RD

FORT MACON RD

EMERALD DR


Fort Hancock
(Marker C-55)


Cape Lookout Lighthouse
(Marker C-24)

Fort Macon

Queen Anne's Revenge

Cape Lookout Village Historic District

Cape Lookout Light Station

Cape Lookout Coast Guard Station

German Submarine U-352

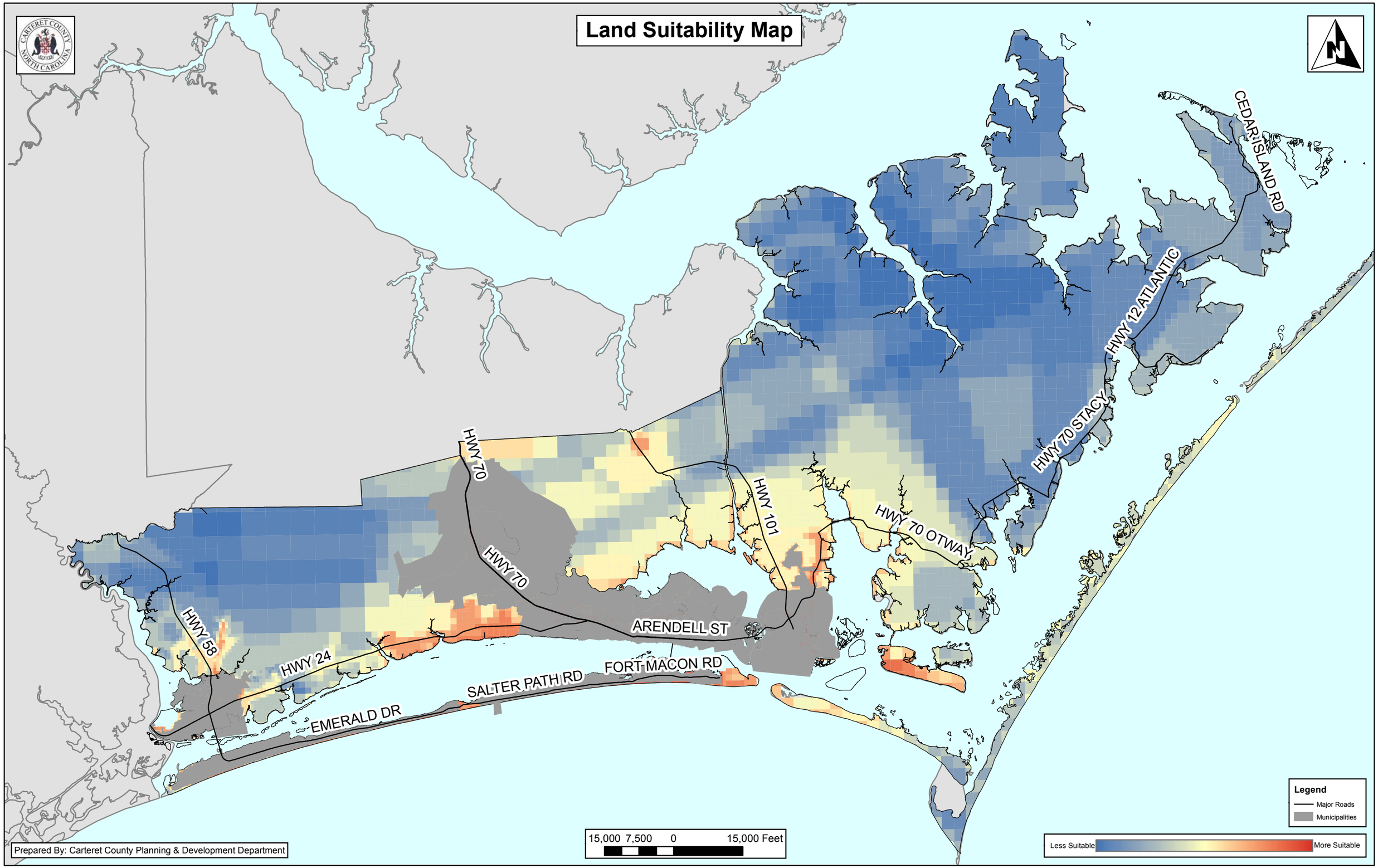
Prepared By: Carteret County Planning & Development Department

19,000 9,500 0 19,000 Feet

**Legend**

- Historical Places
- Historical Markers
- Outer Banks National Scenic Byway
- Major Roads
- Municipalities

# Land Suitability Map



# SECTION 5. COMMUNITY FACILITIES ANALYSIS

Community facilities — sewer, water, roads, and storm water systems — can be the major growth generators and guides for the planning area. They provide a major part of the basic land use planning framework for Carteret County. Where these facilities are in place and have adequate capacity, they may generate and attract development; where they are not in place or where they are not adequate, they may inhibit development. Land use and development policies must take into account the community's facilities, their current and future location, and possible upgrades where they are not adequate.

This section of the Land Use Plan analyzes the existing and planned capacity and adequacy of Carteret County's larger public water and wastewater systems, roads, and other transportation systems.

## WATER AND WASTEWATER SYSTEMS

The Carteret County planning area is composed primarily of the unincorporated areas of the county plus the municipalities of Bogue and Peletier. Much of this area is served by private wells, septic tanks, and other types of wastewater treatment systems. Other areas are served by public and private systems. Maps of the planning area water and sewer service areas are located at the end of Section 5. Limited information is available for private systems. Public systems that serve the planning area are described in detail. A large high-resolution map is available for review at the Carteret County Planning and Development Department.

## WATER SYSTEMS

### Central Coastal Plain Capacity Use Area (CCPCUA).

The CCPCUA is an important factor in planning for water service in the area. Over pumping of important aquifers in the coastal plain led to the creation of North Carolina's CCPCUA and its associated water withdrawal rules. Carteret County is one of the 15 counties in the area.

The CCPCUA rules became effective in 2002. There requirements are (1) for any person or system that withdraws 10,000 gallons of ground water and/or surface water to register and report usage amounts; and (2) for any person or system withdrawing 100,000 gallons per day to obtain a permit. (https://www.ncwater.org/Permits_and_Registration/Capacity_Use/Central_Coastal_Plain, accessed 12.16.20)

There are currently 26 water systems with CCPCUA permits in Carteret County. Most of these systems are associated with commercial operations, like mining or golf course irrigation. There are 10 public water systems with permits. These permitted systems along with their withdrawal limits and their average daily withdrawals are shown in Table 5.1 (2019).

Table 5.1 Carteret County CCPCUA Permit Limits and Average Withdrawals - 2019

| System | Maximum day limit (gpd) | Average daily withdrawal (gpd) |
|---|---|---|
| **Bogue Banks Water** | 5,760,000 | 1,069,266 |
| **CWS Inc. of NC (Brandywine Bay)** | 500,000 | 14,002 |
| **Harkers Island Sanitary Dist.** | 504,000 | 82,545 |
| **Town of Atlantic Beach** | 2,500,000 | 51,003 |
| **Town of Beaufort** | 702,000 | 144,123 |
| **Town of Newport** | 1,392,480 | 578,174 |
| **Town of Morehead City** | 3,000,000 | 981,929 |
| **North River/Mill Creek** | 676,808 | 211,052 |
| **Town of Pine Knoll Shores** | 1,200,000 | 313,932 |
| **West Carteret Water Corp.** | 3,064,000 | 878,953 |

Systems in shaded rows serve the planning area.
Source: Central Coastal Plain Capacity Use Area Status Report, 2019 (https://www.ncwater.org/Reports_and_Publications/GWMS_Reports/CCPCUA Status Rep2019final.pdf., accessed 11.02.20)

## Planning Area Water Systems

Carteret County has two types of water distribution systems. Type A systems are typical **public systems** and Type B are special private systems that have **limited impact** on future development. In addition to individual wells, Carteret County's water supply system is composed of a large number of individual facilities (NC ONEMAP, 2016) that are classified as **Type B.** Many of these facilities are designed to serve individual subdivisions, mobile home parks, specific commercial activities, and similar land uses. These facilities are not part of this analysis. **Type A** facilities for which information is available are included in this analysis. These facilities include the following: 1) West Carteret Water Corporation, 2) Harkers Island Water Sanitary District, 3) North River Community Water System, 4) Merrimon Community Water System and 5) Bogue Banks Water Corporation. The service areas for these five systems are described in Table 5.2 below.

Table 5.2 Water System Service Areas

| Water System | Service Area |
|---|---|
| **West Carteret Water Corporation** | Along NC 24 and NC 58 in the White Oak Township |
| **Harkers Island** | All of Harkers Island |
| **North River/Mill Creek** | Parts of Harlowe and Beaufort Townships |
| **Merrimon Community** | Along Silver Dollar Road |
| **Bogue Banks Water Corporation** | All of Bogue Banks |

The North River/Mill Creek and Merrimon Community systems are operated and maintained by Carteret County. Combined, the five systems are able to provide 10.1 million gallons per day (MGD) of supply and serve a total population base, seasonal and permanent, of approximately 56,000 persons. Overall, the combined average daily use for the facilities is 3.1 MGD, which represents approximately 30.0% of the total supply. The five water systems for which complete information is available are described below. Table 5.3 shows the population served, total supply, and total demand for each system. The table also projects total population served and percent of total supply required to serve the projected customer base for the planning period. Below are detailed descriptions of the five water supply systems. (Data sources are system Water Supply Plans, 2019)

**West Carteret Water Corporation**

This system serves the largest geographic area and it has the largest population base in the planning area. In 2019, this system served an estimated total population of 15,420. The service areas for the system are primarily located along the NC 24 corridor from the western portion of the planning area east toward Morehead City and along NC 58 north toward Jones County. Natural boundaries define the other portions of the service area: Croatan National Forest to the north; the White Oak River to the west; and Bogue Sound to the south. Long term plans include connection with the Morehead City system but no date is specified. (2019 Water Quality Report)

The system's water is sourced from 6 wells. Before distribution the water is softened, treated for color, and chlorine and corrosion control materials are added. West Carteret is able to store 1.35 million gallons of treated water. According to the 2019 Water Quality Report, the system had no violations and drinking water met or exceeded all federal and state requirements.

The West Carteret Water Corporation has an available supply of 3.064 MGD. Average daily use in 2019 was calculated at 1.10 MGD. The current average daily use represents 36% of the current available supply. According to the 2019 Water Supply Plan, the system's available supply in

2050 will be 3.496 MGD and the total demand will be 1.6195 MGD which is 46% of supply and below the 80% standard.

**Harkers Island Water Sanitary District**

The Harkers Island Water Sanitary District provides service to all of Harkers Island. The system

served a total population of approximately 2,400 in 2019. The system's water supply comes from two wells.

The system's total supply is 0.504 MGD. The total storage capacity of the system is 0.250 million gallons with one elevated tank. Average daily usage for the system in 2019 was 0.095 MGD. The 2019 average daily usage is approximately 19% of available supply. In 2050, the system's water supply plan projects in a total service population of 2,700, total demand of 0.1316 MGD, and total supply remaining at 0.504 MGD. Demand as a percent of supply will increase to 26% in 2050. (Water Supply Plan, 2019).

The system had no violations and its drinking water met or exceeded all federal and state requirements (Water Supply Plan and Annual Drinking Water Report, 2019).

**North River/Mill Creek Water System**

The service area for this system is bounded by NC 101 and US 70 and serves primarily the unincorporated area north of Beaufort. The system is operated and maintained by Carteret County. In 2019, this system served a population of approximately 2,950. The system's water supply comes from two wells.

The total available supply of the system is approximately 0.6768 MGD. Average daily use for the system was approximately 0.2383 MGD in 2019. The current daily usage is about 35% of available supply. The population served by the system is estimated to increase to 3,100 by 2050 with a projected total demand of 0.355 MGD, which is approximately 52% of total supply. No increases in available supply are planned for this system.

According to the 2019 Water Quality Report, the system had no violations and drinking water met or exceeded all federal and state requirements (Annual Drinking Water Report, 2019).

**Merrimon Community Water System**

This system is located around the Merrimon community in the northern area of the county near the Neuse River and the South River and, in 2019 it served a small population of approximately 80 persons. The system's water supply consists of one well,

Merrimon has a total available supply of 0.086 MGD. The system's water storage capacity is 0.0050 million gallons. The average daily use in 2019 was 0.0025 MGD. The current average daily use represents only 3.0% of the available supply. The projected future supply in 2050 remains at 0.0860 MGD, and it will serve a slightly larger population of 100 persons. In 2050, average daily use will be approximately 4.0% of supply, which is far below 80% of the available supply, which is the most allowed without adding additional supply. (2019 Water Supply Plan)

According to the 2018 Water Quality Report, the system had no violations and drinking water met or exceeded all federal and state requirements.

**Bogue Banks Water Corporation**

The Bogue Banks system is located along most of Bogue Sound. The system serves the area from Emerald Isle to Salter Path. In 2019 the Bogue Banks system served approximately 5,000 permanent and 30,000 seasonal residents in the Bogue Banks area. It serves Salter Path which is within the Carteret County planning area.

In 2019, the system's total available supply is 5.76 MGD and the total demand is 1.62 MGD, or demand as percent of supply of 28%. According to the system's water supply plan, Bogue Banks will add 1.0 MGD to supply by 2050 and the demand as percent of supply will remain relatively steady at 29% through the planning period. (2019 Water Supply Plan)

According to the 2019 Water Quality Report, the system had no violations and drinking water met or exceeded all federal and state requirements.

Table 5.3 below summarizes key factors in the planning area's water supply systems: current and projected population served; total available water supply; projected total demand for treated water; and demand as a percentage of supply.

Table 5.3 Population Served, Water Demand, and Water Supply for Major Planning Area Water Supply Systems

| Water supply system | Population (includes permanent and seasonal), demand, and supply | 2019 | 2020 | 2030 | 2040 | 2050 |
|---|---|---|---|---|---|---|
| **Bogue Banks** | Population served | 34,995 | 34,995 | 36,050 | 37,100 | 38,150 |
| | Total Available Supply (MGD) | 5.76 | 5.76 | 6.76 | 6.76 | 6.76 |
| | Total Demand (MGD) | 1.6153 | 1.8163 | 1.856 | 1.9156 | 1.9753 |
| | Demand as % of Supply | 28% | 32% | 27% | 28% | 29% |
| **Harkers Island** | Population served | 2,358 | 2,494 | 2,562 | 2,627 | 2,692 |
| | Total Available Supply (MGD) | 0.504 | 0.504 | 0.504 | 0.504 | 0.504 |
| | Total Demand (MGD) | 0.095 | 0.1163 | 0.1218 | 0.1273 | 0.1316 |
| | Demand as %of Supply | 19% | 23% | 24% | 25% | 26% |
| **Merrimon** | Population served | 80 | 85 | 90 | 95 | 100 |
| | Total Available Supply (MGD) | 0.086 | 0.086 | 0.086 | 0.086 | 0.086 |
| | Total Demand (MGD) | 0.0025 | 0.0035 | 0.0036 | 0.0037 | 0.0038 |
| | Demand as % of Supply | 3% | 4% | 4% | 4% | 4% |

| Water supply system | Population (includes permanent and seasonal), demand, and supply | 2019 | 2020 | 2030 | 2040 | 2050 |
|---|---|---|---|---|---|---|
| **North River/Mill Creek** | Population served | 2,950 | 2,950 | 3,000 | 3,050 | 3,100 |
| | Total Available Supply (MGD) | 0.6768 | 0.6768 | 0.6768 | 0.6768 | 0.6768 |
| | Total Demand (MGD) | 0.2383 | 0.287 | 0.307 | 0.329 | 0.355 |
| | Demand as % of Supply | 35% | 42% | 45% | 49% | 52% |
| **West Carteret Water** | Population served | 15,420 | 16,962 | 18,658 | 20,524 | 22,576 |
| | Total Available Supply (MGD) | 3.064 | 3.064 | 3.496 | 3.496 | 3.496 |
| | Total Demand (MGD) | 1.0955 | 1.2061 | 1.343 | 1.4728 | 1.6195 |
| | Demand as % of Supply | 36% | 39% | 38% | 42% | 46% |

Source: Annual Water Supply Plans, 2019 (https://www.ncwater.org/WUDC/app/LWSP/report.php?pwsid=04-16-197&year=2019, accessed 11.02.20)

## SEWER SYSTEMS

Most of the unincorporated areas of Carteret County are served by individual septic systems and package treatment plants. These systems are used to treat and dispose of relatively small volumes of wastewater, usually from houses and businesses located in areas not served by a centralized public sewer system.

Of the wastewater treatment systems located within Carteret County's planning jurisdiction, approximately 350 are Type V on-site wastewater treatment systems and approximately 34 are Type VI (Carteret County DEH, 2020). Both types are advanced septic systems with more pre-treatment than most onsite wastewater treatment systems. These types of systems are described as follows (NC Administrative Code):

- Type V onsite wastewater systems include systems with sand filter pretreatment, any large volume septic tank system with a nitrification field for more than 3,000 GPD, or for aerobic treatment units designed for less than 3,000 GPD. These systems must be managed by a state-certified operator.
- Type VI onsite systems are larger with greater than 3,000 GPD capacities and with a mechanical, biological or chemical pretreatment system plant. These systems may also include wastewater reuse and recycling. Like Type V systems, Type VI systems must be managed by a state-certified operator.

Both individual septic systems and package treatment plants may be Type V or Type VI systems.

In addition to the private systems described above, Carteret County has two types of community wastewater systems. Like the classifications of water systems, Type A systems are typical public systems, and Type B are special private systems that have limited impact on future development. Operational and engineering information is readily available for seven systems. Only the Beaufort system is classified Type A. The other systems are Type B. The planning area's wastewater systems are: 1) Beaufort Wastewater Treatment Plant, 2) Snug Harbor Wastewater Treatment Plant, 3) Taylor Hospital and Extended Care, 4) Marine Corps Air Station (MCAS) Bogue Landing Field, 5) MCAS Atlantic Field, 6) MCAS BT-11 Cherry Point, and 7) Harkers Island Sewer Company, LLC. These wastewater treatment systems serve relatively small areas of unincorporated areas of the County and are described below in greater detail.

**Beaufort Wastewater Treatment Plant (National Pollutant Discharge Elimination System [NPDES] permit # NC0021831)**

The Beaufort Wastewater Treatment System serves the Town of Beaufort and a portion of the unincorporated planning area, including East Carteret High School, Jarrett Bay Marine Industrial Park, and the Eastman Creek Landing subdivision. The plant is permitted as a 1.5 MGD activated sludge process. The system discharges treated effluent into Taylor's Creek.

For the fiscal year period 2017, the treatment plant processed an average daily quantity of about 0.74 MGD. The system is currently at 49% capacity (2017 NPDES Permit Renewal). In the past the system experienced system overflows due to inflow and infiltration. Mitigation measures have significantly reduced these overflows and the system has been assessed no fines for permit violations over the last 5 years. (NC Division of Environmental Quality [NCDEQ] Enforcement Actions 2014-2019).

**Sailors Snug Harbor Wastewater Treatment Plant (NPDES permit # NC0028827)**

This point discharge facility has a designed capacity of 0.02 MGD. Its average annual daily flow is approximately 0.011 MGD. It is located in Sea Level and serves the Sailor's Snug Harbor Retirement Home. There have been 13 notices of permit violations since July 2017. The total penalty amount is $12,180. (NCDEQ, 2019)

Sailor's Snug Harbor closed at the end of 2019. No information is available on new uses for the property and the treatment facility.

**Taylor Hospital and Extend Care (now PruittHealth at Sea Level) (NPDES permit # NC0047759)**

This point discharge facility is located in Sea Level and serves an extended care facility. It has a designed capacity of 0.014 MGD (edocs.deq.nc.gov/Water Resources). Current information on average daily flow is not available. Between 2018 and 2019, there are 3 recorded permit violations. This facility has announced its intention to relocate to Beaufort. No information is available on new uses for the property and the treatment facility.

### U.S. Marine Corps Facilities

The U.S. Marine Corps operates three treatment facilities on its bases in Carteret County. None of these facilities accept flow from private entities. The components and capacities of these facilities are described in the table below.

Table 5.4 U.S. Marine Corps Facilities in Carteret County

| System | Permit number | Permitted average daily discharge |
|---|---|---|
| **Bogue Landing Field** | WQ0004240 | 0.018 MGD |
| **Atlantic Field** | WQ0005233 | 0.0050 MGD |
| **Cherry Point MCAS** | WQ0007217 | 0.00175 MGD |
| Source: https://edocs.deq.nc.gov/WaterResources | | |

### Harkers Island Sewer Company, LLC.

This public utility company serves the West Bay and James Creek subdivisions on Harkers Island and the Cape Lookout National Seashore, as well as other developed areas. The company operates three non-discharge treatment facilities with a total capacity of approximately 0.06 MGD. These facilities were permitted in 2015. According to information available at the company's website, the facilities serve approximately 115 residential units (http://www.hisco.online/, accessed 11.10.20). The typical flow per unit is estimated at 350 GPD or approximately 40,000 GPD for the residential portions of the system (http://reports.oah.state.nc.us/ncac/, accessed 11.10.20). This flow is 0.040 MGD, which is approximately 67.0% of permitted capacity. Flow information for Cape Lookout is not available.

## ESTIMATE OF FUTURE WATER AND WASTEWATER NEEDS

Policies to address future water and sewer needs are an important focus of the CAMA Land Use Plan. There are important links between future land use and development and the capacity and location of these infrastructure components. Additional information is provided below.

### Water System Needs

As mentioned above, the Carteret County planning area is served by 5 water systems: Bogue Banks Water System, Harkers Island Water System, Merrimon Community Water System, North River/Mill Creek Water System, and the West Carteret Water Corporation. Current and future demands on these systems are detailed in Table 5.5 below.

Table 5.5 Current and Future Water System Needs – Carteret County Planning Area

| **Total Population, Water Supply, Water Demand, and Demand as Percent of Supply for Five Planning Area Water Systems** | | | | | |
|---|---|---|---|---|---|
| Year | 2019 | 2020 | 2030 | 2040 | 2050 |
| Total population served (permanent & seasonal) | 55,803 | 57,486 | 60,360 | 63,396 | 66,618 |
| Total water supply (MGD) | 10.1 | 10.1 | 11.5 | 11.5 | 11.5 |
| Total demand (MGD) | 3.0 | 3.4 | 3.6 | 3.8 | 4.1 |
| Demand as Percent of Supply | 30% | 34% | 32% | 33% | 35% |
| Source: System Water Supply Plans, 2019-2020<br>Water systems: Bogue Banks, Harkers Is., Merrimon, North River/Mill Cr., and West Carteret | | | | | |

Current available water supply resources appear to be more than sufficient to meet current and projected needs for the 2020-2050 planning period. Carteret County will review plans for maintenance and expansion of its distribution systems and to coordinate with non-county providers to ensure that water is available to developing areas. There are no planned public or private water service areas in the Carteret County planning jurisdiction.

### Wastewater System Needs

**Projected wastewater treatment needs.**
Table 2.4.1 in Section 2 provides estimates of current and future permanent population in the planning area. Between 2020 and 2040, the permanent population is expected to increase by approximately 6,800 persons; and by 2050, it is expected to increase by approximately 10,000 persons.

Using Morehead City's wastewater treatment flows as a guide, the County can expect additional wastewater flows from the planning area of approximately 2.4 MGD by 2040 and 3.5 MGD by 2050. These estimates account for commercial, industrial, and seasonal population.

Wastewater systems in the planning area are owned and operated primarily by private or non-profit entities. Therefore, the County will use its plans and development codes to ensure that development is directed to areas where water and other resources will not be negatively impacted, and it will work with other public sewer providers to extend services to support planned development.

Water and Sewer Systems maps are located at the end of this section, along with the Transportation Map.

## TRANSPORTATION

Planned highway and transportation improvements, whether built by the public sector or by private entities, can have a major influence on the County's growth and development – location, costs,

density, timing, and the amount of new development. Transportation issues, particularly surrounding major highways, are of concern to Carteret County. These include the need for improved safety, regional accessibility, and traffic flow.

Carteret County's major road network is limited. The four major arteries are US 70, NC 24, NC 58, and NC 101. Each of these roadways has a varying speed limit, capacity, and number of lanes. The primary access to the County is by US 70. It is a major east-west corridor in Carteret County, connecting New Bern and Havelock in Craven County to Newport, Morehead City, Beaufort, and other rural parts of Carteret County. The highway is a vital artery in moving people and goods through southeast North Carolina. It connects Raleigh, Goldsboro, Kinston, New Bern, and Morehead City. It also provides access to the NC Port at Morehead City. NC 24 provides a link to Interstate 40 for the County. Carteret County's major road systems are summarized on the Transportation Systems map at the end of this section.

Of particular significance to the future of the County is the ongoing conversion of US 70 to I-42 interstate status from Raleigh to the Port at Morehead City. Many individual segments of this project have already been completed, such as the Goldsboro Bypass. Additional segments to be completed in the near future include the Havelock Bypass. When complete, the project will provide a significantly reduced travel time from the Research Triangle Park area to Carteret County.

The Michael J. Smith Airport, a County-owned facility in Beaufort, has recently experienced significant air traffic increases from private aircraft as well as private jet charter services. Improvements are in the planning stage that when complete will significantly enhance access to Carteret County from the state and country. The NC Port in Morehead City continues to grow, resulting in additional truck and rail traffic to and from the Port.

A future project to four-lane the Newport River Bridge will significantly improve traffic along US 70 through Morehead City to the communities and businesses located in the Down East section of Carteret County.

The North Carolina Department of Transportation (NCDOT) recently undertook a corridor study of NC 24 through Carteret and Onslow Counties. The plan reveals a number of potential solutions to improve safety and mobility along the corridor which serves the western portion of the County while continuing to experience growth. The plan studied conversion of the highway into a superstreet to provide greater access control and improve safety. The proposed superstreet design for NC 24 involves two travel lanes in each direction separated by a raised concrete median with a mountable curb for emergency vehicle access. Dedicated turn lanes, some of which may be signalized, would be placed at strategic intersections with extra room for U-turns. Sidewalks and multi-use paths may be constructed in some sections, and designated crosswalks would make it safer for pedestrians to cross traffic. The study also reviewed the road's intersection with NC 58, which will eventually need improvements to accommodate the anticipated increase in travel volumes.

Two important transportation plans are important for developing Carteret County's long term and use and development policies:

1. The Comprehensive Transportation Plan (CTP) is a county-wide, long-range transportation plan that assesses Carteret County's existing and future transportation needs including roadways, bicycle and pedestrian facilities, and transit services. The goals of the CTP are to assist with identifying short- and long-term transportation priorities and to reinforce other

County and regional development planning programs.

2. The Transportation Improvement Plan (TIP), which is a short-term plan of approximately 10 years, is intended to fund and implement transportation improvement projects included in the CTP. The TIP is updated about every 2 years. These planned highway and transportation improvements, whether built by the public sector or by private entities, can have a major influence on the County's growth and development – location, costs, density, timing, and the amount of new development.

## CTP

The CTP is the key planning document for the County's transportation system. It was prepared with assistance by the NCDOT and was adopted by Carteret County in 2015. The plan includes numerous maps that illustrate the findings and recommendations. This document can be accessed at: https://connect.ncdot.gov/projects/planning/Pages/CTPdetails.aspx?study_id=Carteret%20County

In the process of developing the CTP, a number of facility deficiencies were identified and plans and policies were developed to address them. These deficiencies are listed below:

- US 70 is projected to be over capacity by 2040 in the vicinity of Radio Island Road (SR 1175) in Morehead City.
- US 70 is projected to be over capacity by 2040 from 4th Street to Radio Island Road (SR 1175) in Morehead City.
- US 70 is projected to be over capacity by 2040 in the vicinity of Radio Island Road (SR 1175) in Morehead City.
- US 70 is projected to be over capacity by 2040 from Olga Road (SR 1429) to Whitehurst Road (SR 1350) in Smyrna.
- US 70 is projected to be over capacity by 2040 through Morehead City.
- US 70 is projected to be at capacity by 2040 from McCabe Road (SR 1147) to Bridges Street Extension (SR 1738) in Morehead City.

There are currently a limited number of east-west facilities that link the two major north/south facilities of NC 101 and US 70 north of Beaufort in Carteret County.

## CTP Recommendations

The following is a brief summary of the details and recommendations for improvements contained in this plan.

- **North Carteret Bypass**: Bypass connects from US 70 and the Havelock bypass and runs east and south to an interchange connection with NC 101 and US 70 at Beaufort. It includes a grade separation at Laurel Road. This planned project also includes a 2-lane expressway at a new location that will connect NC 101 and US 70. The bypass and the expressway will improve access from northern Carteret to the east.
- **US 70 Enhancements**: Includes upgraded access management options and intersection

improvements for US 70 from Lockhart Street to 4th Street in Morehead City. These improvements will help improve safety and reduce congestion to the west and north. The upgraded facility will include bike lanes from 35th St. to 4th St. and a multi-purpose path from 35th St. to South Lockhart Street.

- **US 70/Radio Island**: The TIP recommends improving the existing 2/4 lane facility with a 4-lane divided boulevard from 4th Street in Morehead City to Radio Island. A new interchange at US 70 and Radio Island Road is also recommended.
- **NC 58 and NC 24 Intersection**: A new interchange is proposed for this intersection at Cape Carteret.
- **East-West Access Country Club Rd. and North 20th Street**: This access road is a proposed new location that will provide a needed link to north-south facilities of Country Club Rd. (SR1177) and North 20th St. (SR1176). These improvements are in the Morehead City area.
- **SR 1247/SR 1140-Mills Creek Rd Connector**: This is a new road location that provides needed additional connection between Chatham Street./Roberts Road and Mill Creek Road in Newport.
- **NC 24 Enhancements**: A corridor study was recently completed for NC 24 from NC 172 to US 70. The study looked at converting this roadway from 5 lanes to a 4-lane cross section with medians to improve safety and access management.
- **Little Nine Road Extension**: This is a new facility that would extend from US 70 south to NC 24 giving greater industrial access to the business park on Little Nine Road. The road would be four lanes.
- **McCabe Road Bridges Street Extension**: This new facility location is intended to relieve congestion on US 70 in the western areas of Morehead City. This project is funded.

## Public Transportation

The plan proposes system “park and ride” (P&R) routes to link automobile travel with the County’s public transit. Four P&R lots are proposed: Emerald Isle Bridge at NC 58; Atlantic Beach Bridge at US 70; intersection of NC 24 and US 70 west of Morehead City; and at US 70 in Beaufort. Agreements have not been secured for the P&R lots, but once they have been implemented, fixed route public service will be available to NC 24, communities on Bogue Banks, Fort Macon, and east to Beaufort.

Public transit routes are recommended for US 70 to north Carteret County, and on NC 12 to Cedar Island.

## Bicycle Facilities

Nearly all of the existing bicycle facilities on mainland Carteret County are identified as needing improvement. Those in the Town of Beaufort are considered to be adequate. The existing facilities on Bogue Banks from Emerald Isle to Indian Beach are considered to be adequate.

Those from Indian Beach to Fort Macon are considered to need improvement.
A new multi-use path is recommended along NC 24 from the Carteret County line east to the intersection at US 70.

## Bridges

The CTP identified 13 bridges in Carteret County that are "structurally deficient" or "functionally obsolete." As of April 2021 the number has decreased to 12 bridges due to ongoing preservation work on the Atlantic Beach Bridge. The sufficiency rating has also increased for the Emerald Isle Bridge. While the Emerald Isle Bridge is no longer listed as Structurally Deficient, it is still listed as Functionally Obsolete. It would stay the same unless a geometric change is made to the structure, such as adding lanes. Structurally deficient bridges are "safe but deteriorating"; functionally obsolete bridges are "safe, but over capacity."

Some replacements and improvements are planned or underway. The Gallants Channel Bridge Project and the North River Bridge have been completed. Work on the Harkers Island Bridge replacement began in August 2021.

## Ferries

The only state-operated ferry in Carteret County is the Cedar Island Ferry that connects NC 12 to Ocracoke. This ferry is deemed "functionally obsolete" in the details of the CTP. This means that the ferry is safe but over capacity. According to a recent announcement by NCDOT, no upgrades or additions to this ferry route are planned for the near future.

## TIP Projects

Table 5.6 shows the key major and minor transportation improvements planned for the County over the 2020-2029 period. The funding and scheduling of this plan is reviewed frequently to ensure that it is consistent with County's needs and the resources available.

Table 5.6 Carteret County Projects in the NCDOT TIP

| TIP NUMBER | ROUTE/ST. | PROJECT DESCRIPTION | CURRENT STATUS | R.O.W YEAR | CONSTRUCTION YEAR |
|---|---|---|---|---|---|
| **R-5727** | SR 1176 (BRIDGES STREET EXTENSION) | SR 1738 (BRIDGES STREET) TO SR 1147 (MCCABE ROAD). WIDEN EXISTING ROADWAY AND CONSTRUCT PART ON NEW LOCATION | PLANNING | 2027 | NA |
| **B-5938** | SR 1182 (ATLANTIC BEACH CAUSEWAY) | REHABILITATE BRIDGE 150068 OVER BOGUE SOUND | UNDER CONSTRUCTION | | NA |

| TIP NUMBER | ROUTE/ST. | PROJECT DESCRIPTION | CURRENT STATUS | R.O.W YEAR | CONSTRUCTION YEAR |
|---|---|---|---|---|---|
| **R-4746** | US 70/NC 12 | SR 1429 (OLGA ROAD) TO SR 1350 (WHITEHURST ROAD). UPGRADE ROADWAY | | 2029 | NA |
| **B-4722B** | US 70 | REPLACEMENT OF BRIDGE NO. 33 OVER NORTH RIVER | COMPLETED | | NA |
| **B-5939** | NC 58 | REHABILITATE BRIDGE 150006 OVER BOGUE SOUND | UNDER CONSTRUCTION | | NA |
| **R-5886** | NC 58 (EMERALD DRIVE) | INSTALL ROUNDABOUT | | 2028 | NA |
| **U-6058** | US 70 (LIVE OAK STREET) | NC 101. CONSTRUCT ONE LANE ROUNDABOUT | | 2023 | NA |
| **R-5962** | US 70 (CEDAR STREET) | US 70 (LIVE OAK STREET). CONSTRUCT ROUNDABOUT | | 2029 | NA |
| **W-5802A** | SR 1493 | LIVE OAK STREET AT CAMPEN ROAD. REVISE TRAFFIC SIGNAL, INSTALL PEDESTRIAN CROSSING WITH SIGNAL HEADS, AND UPGRADE SIDEWALK | | | 2022 |
| **TA-6717** | | PURCHASE PUBLIC TRANSIT VEHICLE FOR CARTERET COUNTY | PURCHASE 2020 | | NA |
| **TA-6718** | | PURCHASE PUBLIC TRANSIT VEHICLE FOR CARTERET COUNTY | PURCHASE 2020 | | NA |
| **R-5946** | US 70 (LIVE OAK STREET) | SR 1310 (LENNOXVILLE ROAD). UPGRADE INTERSECTION | | 2028 | NA |

| TIP NUMBER | ROUTE/ST. | PROJECT DESCRIPTION | CURRENT STATUS | R.O.W YEAR | CONSTRUCTION YEAR |
|---|---|---|---|---|---|
| **R-5816** | NC 58 (WEST FORT MACON) | ATLANTIC BEACH CAUSEWAY. ADD RIGHT TURN LANE | | 2020 | 2022 |
| **W-5802C** | NC 58 | E. FORT MACON ROAD AT E. BOGUE SOUND DRIVE. INSTALL RECTANGULAR RAPID FLASH BEACON AT CROSSWALK | | | 2022 |
| **W-5802B** | NC 58 | E. FORT MACON ROAD AT BROOKS STREET. INSTALL RECTANGULAR RAPID FLASH BEACON AT CROSSWALK | | | 2022 |
| **R-5858** | NC 24/NC 58 | INTERSECTION IMPROVEMENTS | | 2022 | 2025 |
| **R-5886** | NC 58 (EMERALD DRIVE) | SR 1000 (COAST GUARD ROAD). INSTALL ROUNDABOUT | | 2028 | NA |
| **R-5884** | NC 58 (EMERALD DRIVE) | LOON STREET. INSTALL ROUNDABOUT | | 2028 | 2029 |
| **R-5944** | NC 58 (EMERALD DRIVE) | MANGROVE DRIVE. UPGRADE INTERSECTION | | 2028 | NA |

## STORMWATER

Like most counties in North Carolina, Carteret County does not operate a stormwater infrastructure. The only systems in the County are ditches that were installed for mosquito control, side ditches along roadways, and private drainage systems. No mapping of these facilities is currently available. No comprehensive or significant data is available on the location or condition of stormwater systems in the County. No information is available indicating drainage problems and water quality issues related to point-source discharges of stormwater runoff.

NCDOT maintains structures associated with public roadways. NCDOT generally maintains records through County Maintenance Engineers for all culverts (but not other stormwater system components) in the systems they maintain. The location of these, however, is generally only referenced by a sketch and estimated mileage to nearest intersections. Similarly, Carteret County

does not regulate stormwater systems owned by nongovernmental entities beyond property development permit application review and approval. Large developments require state stormwater management and sedimentation and erosion control plans. Available information on such systems is generally limited to subdivision design plans held by the County Planning and Development Department. As a result, though these systems have a significant and direct effect on water quality, an assessment of such is not currently feasible.

Phase II of the Environmental Protection Agency Stormwater program requires some larger communities to apply for permits for their stormwater system. A community may fall under the requirements of the Phase II program in one of three ways: automatic designation under the Federal rules, designation by the state, or designation by petition of a third party. Currently Carteret County is not a designated Phase II community.

Should designation occur, Carteret County will be required to develop a stormwater plan that is designed to reduce the discharge of pollutants. The plan must include the following components:

1. Education and outreach program to inform citizens how to reduce pollutants in stormwater.
2. Public involvement program that meets state requirements.
3. Detection of illicit discharges.
4. Reduction of runoff pollutants from construction.
5. Reduction of pollutants from new construction or reconstruction that disturbs one acre or more.
6. Pollution prevention/good housekeeping program for local government operations to prevent or reduce pollutant runoff.

# Carteret County, NC CAMA Land Use Plan Water Map

## Legend

- Major Highway Routes
- Type A Water
- Type B Water
- Non-Planning Area Municipalities
- Planning Area Municipalities

N

Neuse River
Pamlico Sound
Neuse River
Pamlico Sound
Neuse River
BT-11 (MCAS)
Catfish Lake
Long Lake
Great Lake
Sailors Snug Harbor
Atlantic Field
Taylor Extended Care
US-70
Core Sound
US-70
NC-101
US-70
Town of Newport WWS
Newport River
NC-58
North River
Town of Beaufort WWS
Town of Morehead City WWS
White Oak River
Bogue Sound
Sugarloaf Properties WWS
NC-58
Town of Atlantic Beach WWS
Back Sound
Bogue Landing Field
Bogue Inlet

0 2.25 4.5 9 13.5 18 Miles

Carteret County Department of Planning and Development

# Carteret County, NC
# CAMA Land Use Plan
# Sewer Map

## Legend

- Major Highway Routes
- Type A Sewer
- Type B Sewer
- Non-Planning Area Municipalities
- Planning Area Municipalities

N

Neuse River
Pamlico Sound
Pamlico Sound
Neuse River
Neuse River
BT-11 (MCAS)
Catfish Lake
Long Lake
Great Lake
Sailors Snug Harbor
Atlantic Field
Taylor Extended Care
US-70
Core Sound
US-70
NC-101
US-70
US-70
Town of Newport WWS
Newport River
NC-58
North River
Town of Beaufort WWS
Town of Morehead City WWS
Bogue Sound
Sugarloaf Properties WWS
White Oak River
NC-58
Town of Atlantic Beach WWS
Back Sound
Bogue Landing Field
Bogue Inlet

Miles
0 2.25 4.5 9 13.5 18

Carteret County Department of Planning and Development

# Carteret County, NC
# CAMA Land Use Plan
# Transportation Map

## Legend

- Structurally Deficient Bridges
- Functionally Obsolete Bridges
- Structurally Deficient and Functionally Obsolete Bridges
- Newly Constructed Bridge
- Roads
- Newly Constructed Roads
- Roads over capacity
- Roads nearing Capacity
- Municipalities

N

North Carteret Bypass

Highway 101/Highway 70 Connector

North River Bridge

East-West Access Country Club Road and North 20th Street

SR 1247/SR 1440 Mills Creek Road Connector

McCabe Road Bridges Street Extension

Little Nine Road Extension

US 70 Improvements

US 70/Radio Island Improvements

New Harkers Island Bridge Under Construction Starting August 2021

NC 58 and NC 24 Intersection Improvement

0 1.25 2.5 5 7.5 10 Miles

Carteret County Department of Planning and Development

Carteret County GIS, NC Onemap, NC DOT

# SECTION 6. GOALS AND POLICIES

## LAND USE AND DEVELOPMENT GOALS

Carteret County's land use and development goals are the desired ends toward which the policies and programs of the land use plan are directed. The goals also describe the values and general principles that guide the development of the County.

The land use and development goals listed below reflect key planning issues and concerns identified by the Planning Commission and through citizen input, the community vision, and the analysis of existing and emerging trends. They provide the benchmark for developing effective policies and programs to achieve the County's desired future.

- Conveniently located access for residents and visitors to Carteret County's public trust waters for a range of activities.
- Land use and development patterns that are consistent with the capabilities and limitations of the County's natural systems, preserve the area's heritage and life styles, and promote sustainable economic growth.
- Protection of natural areas that have high biologic, economic, and scenic values.
- Infrastructure systems (such as water, wastewater, transportation, natural gas, and telecommunications) that encourage and promote sustainable industries and job opportunities as well as orderly residential development.
- Mitigation of risks associated with storms, flooding, and shoreline erosion.
- Maintenance, protection, and where possible, enhancement of water quality in the County's public trust waters, including shellfishing areas.
- Quality of life that attracts and retains young adults, retiree population, military community and other groups that contribute to the County's economic diversity and well-being.

## FUTURE LAND USE AND DEVELOPMENT POLICIES

Carteret County's policies are the principles and decision guidelines or courses of action that have been selected to attain its land use and development goals.

The Coastal Resources Commission (CRC) planning guidelines require that local policies address five management topics. The purpose of the CRC management topics is to ensure that plans support the goals of the Coastal Area Management Act (CAMA), define the CRC's expectations for land use policies, and provide a basis for plan review and certification by the CRC. Each management topic includes two components: a management goal and planning objectives. The CRC management topics are listed below:

- Public Access
- Land Use Compatibility
- Infrastructure Carrying Capacity
- Natural Hazards
- Water Quality

CRC guidelines also allow local governments to include policies in the Land Use Plan to address

local areas of concern, in addition to the five CRC management topics listed above.

In addition to the role that land use and development policies play in local government, policies are also regulatory in that they are used by the Division of Coastal Management (DCM) in making consistency determinations for the issuance of CAMA permits. Other state and federal agencies use the local land use plan policies in making project consistency, funding, and permit decisions.

Carteret County's policies that address each of the five management topics are described on the following pages.

**Policy Notes**

1. The Carteret County Board of Commissioners accepts state and federal law regarding land uses in CRC designated Areas of Environmental Concern (AECs), with the exception of a few local policies that exceed state and federal requirements.
2. Carteret County policies that affect AECs and that are more stringent than State standards are printed in Italics. Policies 2.1.4 and 2.4.2 exceed state standards.

## 1.0 PUBLIC ACCESS

Management Goal: Develop comprehensive policies that maximize public access to the beaches and public trust waters of Carteret County.

Planning Objectives: Include policies in the plan to address access needs and opportunities for all segments of the community, including persons with disabilities. Establish public access policies for beach areas targeted for nourishment.

**Discussion**

As a shoreline county located in a mild climate, Carteret County offers a variety of water access opportunities. In addition to pedestrian access to its ocean beaches and public trust shorelines, these opportunities include boating, kayaking, swimming, scuba diving, water skiing, surfing, fishing and access to trails. Visual access to its waters is also important to Carteret County and its residents and visitors.

The need for regional and neighborhood public access sites to public trust waters in unincorporated areas of the county has assumed greater importance as these areas continue to grow. Ocean shoreline access is primarily a municipal concern as the beachfront communities on Bogue Banks have expanded. Ocean beaches under the County's jurisdiction are limited to those in the unincorporated community of Salter Path on Bogue Banks.

Carteret County considers boating activities, both recreational and commercial, to be an extremely important part of its tourist economy and overall economy. The County recognizes that the provision of adequate ocean and public trust access improves tourism and enhances the economy of the entire county. Additionally, the provision of public access continues to be a

requirement for federal assistance in beach nourishment activities.

The Carteret County Parks and Recreation Department maintains the following public access facilities:

- Salter Path Beach Access
- Radio Island Beach Access
- Harkers Island Beach Access
- West Beaufort Water Access
- Straits Fishing Pier

In addition to County maintained access facilities, other major access points include the following:

- Fort Macon State Park
- Cape Lookout National Seashore
- Cedar Island National Wildlife Refuge
- Croatan National Forest
- Roosevelt Natural Area
- Cedar Island Wildlife Boat Ramp
- Straits Landing Wildlife Boat Ramp
- Oyster Creek Wildlife Boat Ramp
- Taylor Creek Wildlife Boat Ramp
- Newport River Boat Ramp
- Salters Creek Boat Ramp
- Stella Boat Ramp
- Harkers Island Boat Ramp
- Cedar Point Wildlife Boat Ramp

The Carteret County Board of Commissioners adopted an updated Comprehensive Recreation and Park Master Plan (CRPMP) in March of 2019. The CRPMP provides an assessment of the quantity and quality of recreation facilities and services in Carteret County, including public water access. It provides recommendations and a plan of action for meeting future recreation and access needs.

Recommendations for public access contained in the CRPMP call for additional water access recreational facilities. The public input component of the CRPMP suggested the need for improved accessibility at existing water access sites. Specific recommendations for new facilities include purchase of land adjacent the Harkers Island Beach Access with the intent of building a boat ramp and coordinating with the NC Wildlife Resources Commission to develop boat trailer/vehicle parking. Also recommended is the purchase of land in the western part of the County on NC 24 to be developed into a boat ramp/water access with boat trailer/vehicle parking. The tract could also be used for passive recreation such as foot and bike trails picnic areas, kayak launch, playgrounds, and green space.

**Policy 1.1**

Carteret County supports the development of additional estuarine and ocean shoreline access facilities for pedestrian, swimming, boating, and fishing access in all areas of the County.

1. The County will encourage and cooperate with municipalities and state and federal agencies to locate and develop public access sites where appropriate. Areas that have traditionally been used by the public will be given special attention.
2. The County will seek financial assistance from the State and other grant sources for development of additional public access facilities.
3. The County will make the location and acquisition of access facilities on the County's major water bodies a high priority.
4. The County encourages the NC Department of Transportation (NCDOT) to provide limited access for fishing, kayaking and other water activities at new or rebuilt bridges. NCDOT should replace any existing access facilities that are removed or destroyed with new access facilities.
5. The County supports the Outer Banks Scenic Byway Paddle Trails and Access Points, a system of sixteen trails located in the County. Carteret County also supports the provision county-wide of small sites for put-in/take out of sailboats, canoes, and kayaks.

**Policy 1.2**

Carteret County will provide satisfactory access to residents and visitors of all abilities, where feasible. The County will review existing and proposed access sites and take steps to remove barriers.

**Policy 1.3**

Carteret County will require new waterfront residential developments to provide neighborhood access for non-waterfront lots as provided for in the Carteret County Subdivision Ordinance. Non-waterfront developments must provide open space for recreation or pay a fee-in-lieu of dedication.

**Policy 1.4**

Carteret County does not wish to impose local restrictions that would deny any waterfront property owner the opportunity for water access. The County also wishes to allow for water access opportunities for non-waterfront property owners. Subject to the following policies, Carteret County does not oppose the construction of marinas or other boat docking or storage facilities.

1. Carteret County will allow marina construction or expansion in all areas, provided local, state, and federal minimum standards are met.
2. Carteret County will allow dredging associated with the construction of new or expanded marinas, provided all local, state, and federal standards are satisfied.
3. Carteret County's policy for marina construction in Outstanding Resource Waters (ORW) or ORW shorelines shall be consistent with the state's management strategies for ORWs.
4. Carteret County will allow construction of dry stack storage facilities for boats associated

either with or independent of marinas. All applicable zoning and subdivision regulations must be satisfied.

5. Docks and piers in primary nursery areas existing as of the date of the CRC certification of this plan may be rebuilt to the original size and capacity, provided all local, state, and federal requirements are met.
6. Carteret County encourages development of joint piers and docks to serve nearby residential properties in order to help maintain visual access to public trust waters.

**Policy 1.5**

Carteret County will continue to maintain Harbors of Refuge at Harkers Island, Atlantic, and Cedar Island. The Carteret County Harbor Authority is responsible for these sites.

**Policy 1.6**

Carteret County will maintain the Salter Path Public Beach Access facility to ensure meeting current (2021) US Army Corps of Engineers (USACE) access requirements for nourished beaches.

## 2.0 LAND USE COMPATIBILITY

Management Goal: Balance protection of natural resources and fragile areas with economic development while avoiding risk to public health, safety, and welfare.

Planning Objectives: Include policies to describe future land use development patterns and develop mitigation standards and concepts aimed at reducing conflicts.

**Discussion**

Carteret County supports protection and long-term management of its natural resources and fragile areas, due to the strong role these resources play in protecting water quality, providing food and habitat for fish and wildlife, and otherwise maintaining the coastal way-of-life. At the same time, the County recognizes the rights of its property owners and the need for continuing economic development improvements. As such, the County supports the CRC's development regulations for AECs and other state and federal regulations regarding development in wetlands and other fragile areas. In addition, the County believes that state standards are sometimes insufficient to protect its natural resources and in these cases has adopted policies that exceed or are more restrictive than the State's minimum use standards.

Carteret County considers all lands classified as coastal wetlands and freshwater wetlands to be valuable. Some development, as allowed by state and federal regulations and consistent with policies contained in this plan, may occur in these areas.

Carteret County strongly supports management of development in its coastal shoreline areas, estuarine waters, and public trust areas to protect water quality, conserve valuable coastal resources, and maintain the aesthetics of the waterfront. The County concurs with the CAMA minimum use standards for coastal shorelines, although some policies contained in the Land Use

Plan exceed, or are more stringent, than the State's use standards for development in wetlands and public trust waters. More stringent local policies are printed in italics in this section of the Land Use Plan.

Carteret County will support growth and development at the average densities specified in the land classification definitions. During the planning period, it is projected that western Carteret County will contain the majority of the County's growth in urban type development. The Down East area is expected to remain low density consistent with the average densities portrayed on the Future Land Use Map. Low density land classifications include Limited Transition (three dwelling units per acre), Rural (two dwelling units per acre), and Rural with Services (two dwelling units per acre).

Currently, only about 30% of the planning jurisdiction of the County is zoned. All of the zoned areas are located in the central and western portions of the County. The Down East Conservation Ordinance, which applies to all land within the Down East section of the County, was adopted in September 2006 and regulates density and other development in these areas. The County's Subdivision Regulations apply to all areas under Carteret County planning jurisdiction and also contain requirements designed to ensure that proper development patterns are considered.

**Policy 2.1**

Carteret County's policies for development in coastal and non-coastal wetlands (also known as 401, 404, or jurisdictional wetlands) are as follow:

1. Carteret County will allow only land uses in coastal wetlands that require water access, cannot function elsewhere, and are consistent with state and federal regulations. Examples of acceptable uses are utility easements, piers, and docks.
2. Carteret County concurs with state and federal standards for residential, commercial, and industrial development in freshwater wetlands except as prohibited by this plan.
3. Carteret County will cooperate with the USACE in the regulation/enforcement of the "404" wetlands permit process. The County will require that areas of non-coastal wetlands be shown on all new subdivision plats.
4. *Carteret County opposes the installation of package treatment plants and septic tanks or discharge of any wastewater in coastal or freshwater wetlands.* (This policy exceeds state and federal standards for development in AECs or other fragile areas.)

**Policy 2.2**

Carteret County's policies for development in coastal shoreline areas are as follow:

1. Residential and commercial development meeting the state's minimum use standards shall be allowed in coastal shorelines and ORW estuarine shoreline classified lands. Construction will be in accordance with all Carteret County ordinances. Allowed densities are set forth in future land use map category descriptions beginning on Page 85 of this land use plan.
2. Carteret County will allow all uses (such as residential, commercial, industrial, and institutional) in estuarine shoreline and ORW estuarine shoreline areas, provided all

local, state, and federal standards are satisfied.
3. Parking lots that meet local, state, and federal requirements will be allowed in all waterfront areas.

**Policy 2.3**

Carteret County believes that "Living Shorelines" may provide a better alternative to shoreline stabilization than conventional structures. "Living Shorelines" are vegetated marshes and small stone sills used to prevent erosion rather than conventional hard bulkheads. The County will provide property owners with information on "Living Shorelines" as a shoreline stabilization option.

**Policy 2.4**

Carteret County's policies for development in estuarine and public trust waters are as follow:

1. Carteret County will only allow development activities in estuarine and public trust waters that are associated with water-dependent uses, consistent with state and federal standards, and meet all local policies contained in this plan.
2. *Carteret County does not allow floating structures in any public trust waters, except in commercial marinas. Carteret County defines a floating structure as any structure, not a boat, supported by means of floatation, designed to be used without a permanent foundation, which is used or intended for human habitation or commerce. A structure will be considered a floating structure when it is inhabited or used for commercial purposes for more than thirty days in any one location. A boat may be deemed a floating structure when its means of propulsion has been removed or rendered inoperative and it contains at least 200 square feet of living space area. All floating structures are subject to limitations contained in the Carteret County Zoning Ordinance.*
   (This policy exceeds State and federal standards for development in AECs or other fragile areas.)
3. Marinas and other docking facilities must be constructed in accordance with state requirements and must meet local requirements contained in Section 1.0 Public Access of this chapter.

**Policy 2.5**

1. Major development of an urban nature should be concentrated in the developed and limited transition areas. Major development is considered to be development that utilizes urban services, particularly water and sewer.
2. In areas classified as developed and limited transition and not served by public or community sewer and water service, a minimum lot size of 20,000 square feet (2.2 units per acre) shall be required through existing zoning, subdivision, and other regulatory ordinances. In areas classified as developed and limited transition and served by community water service, but having no public or community sewer service, minimum lot size is 15,000 square feet (2.9 units per acre). Minimum lot size for areas served by both community water and sewer services is 10,000 square feet (4.4 units per acre).
   Note: For purposes of this policy, Carteret County ordinances consider package treatment plants to be public or community sewer service.

**Policy 2.6**

The county will initiate zoning of unzoned areas when requested by the community.

**Policy 2.7**

Carteret County encourages private acquisition of conservation areas by purchase or gift from property owners for the purpose of preserving these areas.

**Policy 2.8**

Carteret County supports efforts by the NC Division of Marine Fisheries to identify areas suitable for shellfish bottom leases.

**Policy 2.9**

Carteret County will allow the development of estuarine islands consistent with the CRC's minimum use standards and local ordinances. However, the County encourages purchase for conservation of sound and estuarine islands that have been identified by the North Carolina Natural Heritage Program as Natural Heritage Areas.

**Policy 2.10**

Carteret County regulates building heights in zoned areas and in close proximity to the Michael J. Smith Field. Residential structures are limited to fifty (50) feet, with commercial, industrial, and other structures limited to sixty (60) feet. Heights adjacent the runways of the Michael J. Smith Field are restricted through the Airport Height Regulations. Permitted heights are determined based on a sliding scale of distance from the runways.

**Policy 2.11**

Carteret County encourages land owners to consider the Planned Conservation Development (PCD) option in development of their property. This alternative to traditional development practices provides greater flexibility and allows creativity for plan development around identified conservation areas. PCD aims to avoid compromising the economic value of the development while minimizing the total amount of disturbance of the site. The PCD development option is contained in the County's subdivision regulations.
For purposes of the Carteret County PCD, conservation areas include the following features:

- Wetlands that meet the definition of the Clean Water Act
- Shore land areas
- Water bodies
- Riparian buffers
- Populations of endangered or threatened species or habitat of such species
- Archaeological sites
- Cemeteries and burial sites

- Native forests
- Individual existing healthy trees
- Other significant natural features and scenic viewsheds
- Existing trails or corridors that connect the tract to neighboring areas.

## 3.0 INFRASTRUCTURE CARRYING CAPACITY

Management Goal: Ensure that development, extension, and upgrade of Carteret County infrastructure protects or restores AECs and other fragile areas.

Planning Objectives: Establish level of service policies and criteria that minimize impacts to AECs and other fragile areas while providing adequate services to support growth anticipated by the Land Use Plan.

**Discussion**

Policies addressing the Infrastructure Carrying Capacity management topic deal primarily with the provision of water service, wastewater treatment, and transportation systems throughout the County's planning jurisdiction. However, policies addressing other infrastructure concerns (such as solid waste management, public schools, natural gas service, the North Carolina State Port, and Internet access) are included in this section.

Most of the unincorporated areas of Carteret County are served by individual septic systems and package treatment plants. Interest in developing countywide sewer has not resulted in solutions to satisfactorily address the high cost of building and operating such a system. Additionally, previous proposals for central sewer service have not satisfactorily addressed permitting requirements for wastewater collection, treatment, and disposal. It should be noted that the Towns of Morehead City, Beaufort, and Newport operate municipal sewer systems. The Harkers Island Sewer Company provides sewer service in portions of Harkers Island.

In the absence of central sewer service, areas under Carteret County planning jurisdiction will continue to rely primarily on septic tanks and private package treatment plants. The County is concerned about the efficiency and effectiveness of these systems and has adopted policies to address these concerns. Although a countywide system does not appear to be feasible during the planning period, the County will continue to support the provision of sewer service including alternative methods, where appropriate.

Phase II improvements to the North River Community Water System have been completed since the last plan update. Additionally, West Carteret Water System has made improvements to its service in the western end of the County. It is not anticipated that any major extensions of water service will be provided during the current planning period.

The current availability and service area boundary for provision of central water service corresponds to areas classified on the Future Land Use Map as developed, limited transition, and rural with services. These areas are described in the Future Land Use Map discussion found later in this section.

Existing and planned highway and transportation improvements have a major influence on the County's growth and development. The location, costs, density, timing, and amount of development can all be affected by the area's transportation system. Transportation issues, particularly surrounding major highways (US 70, NC 24, NC 58, and NC 101) are of concern to the County. These include the need for improved safety, regional accessibility, and traffic flow. Anticipated growth of the County and the increasing number of commercial rezoning requests along major highways, particularly NC 24, are expected to continue to place transportation pressures on the County.

Carteret County has no established stormwater infrastructure, except for ditches and other traditional stormwater conveyances. A variety of state and federal programs address stormwater control. However, there is no central management of drainage issues. Policies addressing Water Quality are found in Section 5.0 of this chapter.

**Policy 3.1**

The County will provide educational information on alternative septic systems for soils that have severe limitations for conventional on-site soil absorption waste treatment systems (septic tanks).

**Policy 3.2**

Carteret County will undertake an educational program that provides information to property owners on proper maintenance of septic tanks and will pursue federal and state funding to assist property owners in identifying, mitigating, and upgrading failing or failed septic tanks.

**Policy 3.3**

Carteret County encourages the use of monitored pilot projects using advanced technology for wastewater treatment in areas not suitable for septic tanks, including the use of constructed wetlands.

**Policy 3.4**

Carteret County will support the provision of centralized sewer services in areas classified as developed, limited transition, and rural with services when the following conditions are met:

- Sewer service will serve to steer dense development away from environmentally sensitive areas, such as fragile coastal ecosystems.
- Service will encourage a more compact development pattern in areas adjoining existing urban areas, thereby conserving farmland and other open spaces.
- Citizens request service.

**Policy 3.5**

Carteret County supports the provision of central sewer service that results in the development of new or expanded industry and the creation of permanent jobs in numbers commensurate with the expenditure required.

**Policy 3.6**

Carteret County encourages the development of sewer services that employ water reuse technologies for agriculture and other uses.

**Policy 3.7**

Carteret County allows the construction of package treatment plants in areas not provided with central sewer service. The county supports more effective monitoring of package treatment plants by the state and local health department.

**Policy 3.8**

Carteret County supports efforts to extend central water service to areas classified as developed, limited transition, and rural with services. The County supports development of a countywide plan for the provision of central water service.

**Policy 3.9**

The County's solid waste disposal policies are as follows:

1. The County will support and dispose of its solid waste in the Tri-County Landfill, located in Tuscarora in Craven County.
2. Carteret County will provide education on waste reduction and recycling through postings to the County's website and development of an informational brochure.
3. The County supports recycling by users of the landfill and supports setting up practical collection methods and education efforts to achieve a high degree of countywide recycling.
4. Carteret County favors the siting of recycling centers by its solid waste management contractor throughout the County, except in Conservation areas.

**Policy 3.10**

The County will coordinate facility planning with the school system and the municipalities by sharing growth projections.

**Policy 3.11**

Carteret County supports highway projects that will improve highway safety, regional accessibility, and traffic flow within the County's planning jurisdiction. Carteret County supports the transportation improvement priorities contained in the Comprehensive Transportation Plan adopted by the County in 2014.

These improvements include the following projects:

- A recently completed corridor study for NC 24 from NC 172 in Onslow County to US 70 in Morehead City considered conversion of this roadway from 5 lanes to a 4-lane cross section with medians to improve safety and access management.
- Carteret County Northern Bypass from US 70 and the Havelock Bypass to an interchange

connection with NC 101 and US 70.

- Improving the existing 2/4 lane facility for US 70/Radio Island with a 4-lane divided boulevard from 4th Street in Morehead City to Radio Island, including a new interchange at US 70 and Radio Island Road.
- A new interchange for the NC 58 and NC 24 intersection at Cape Carteret.
- A new facility extending from US 70 south at Little Nine Road to NC 24 to provide greater industrial access to the business park on Little Nine Road.
- McCabe Road – Bridges Street Extension to relieve congestion on US 70 in the western areas of Morehead City.

**Policy 3.12**

Carteret County will support and participate in the multi-county effort underway by the I-42/US 70 Corridor Commission. The goal of this effort is to improve traffic flow along US 70 from Wake County to the North Carolina Port at Morehead City.

**Policy 3.13**

Carteret County supports new development along US 70, NC 24, NC 101, and NC 58 providing safe access to these corridors while minimizing the need for additional stoplights. Amendments to subdivision and/or zoning regulations will encourage new commercial development to minimize access points to these highways by use of such techniques as shared driveways and access roads.

**Policy 3.14**

Carteret County will support and participate in the NCDOT NC 24 corridor management study to identify and understand causes of increased traffic pressures and develop strategies to improve the safety and mobility of this route. The study will address the following areas: access management, land use and subdivision management, right-of-way needs and preservation, operational strategies, intergovernmental cooperation, financing of corridor management improvements, and aesthetic concerns. Strategies developed for the NC 24 corridor will be expanded to apply these principles to other highways experiencing growth pressures.

**Policy 3.15**

Carteret County supports growth and material expansion of the North Carolina State Port Terminal, provided plans are prepared that address the impact of associated rail and road traffic increases in Morehead City and Carteret County. Carteret County will rely on the State Port Authority to prepare these plans prior to any material expansion.

**Policy 3.16**

Carteret County supports the extension of fiber-optic cabling throughout Carteret County to provide high speed internet access for the entire County.

**Policy 3.17**
Carteret County supports the extension of natural gas lines throughout the County.

**Policy 3.18**

Carteret County supports plans for expansion of Michael J. Smith Field as detailed in the airport's Master Plan. This plan is the responsibility of the Carteret County Airport Authority.

## 4.0 NATURAL AND MAN-MADE HAZARD AREAS

Management Goal:
Conservation of coastal features to maintain their natural storm protection functions and natural resources and recognition of the contributions of military installations to the area in relation to public health, safety, and welfare issues.

Planning Objectives:
Policies that establish mitigation and adaptation concepts and criteria for development and redevelopment and that minimize threats to life, property, and natural resources resulting from natural and man-made hazards.

**Discussion**

Hazard areas in Carteret County include those associated with both natural and man-made hazards. Natural hazards are related to its location as a coastal county subject to storm surge, flooding, high winds, erosion and other impacts of storm events. Additionally, accident potential and noise impacts associated with aircraft operations at Marine Corps Air Station (MCAS) Cherry Point and its auxiliary and outlying facilities represent man-made hazards in the County.

Carteret County recognizes the risks to life, health, public safety, and property that exist within its flood hazard areas and the ocean hazard area AECs. The County also recognizes that a significant amount of its housing stock was built prior to implementation of the Flood Damage Prevention Ordinance (1980) and is working to obtain funding to assist in elevating existing homes in flood-prone areas above base flood level. The County participates in the National Flood Insurance Program (NFIP) that requires the community to adopt a Flood Damage Prevention and Protection Ordinance and the Flood Insurance Rate Maps. The County joined the program in 1980 and updated the ordinance and maps effective June 19, 2020. Additionally, the County participates in the Community Rating System, a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the NFIP minimum standards. As a result, flood insurance premium rates in Carteret County are discounted to reflect the reduced flood risk resulting from the County's actions.

Carteret County has adopted the Pamlico Sound Regional Hazard Mitigation Plan (PSRHMP) that contains mitigation actions aimed toward reducing vulnerability to all natural hazards that can be addressed in a practical manner at the local level. Mitigation actions contained in the PSRHMP have been determined to be cost effective, environmentally sound, and technically feasible. Mitigation policies fall into six mitigation categories provided by the Federal Emergency Management Agency (FEMA). These include the following: prevention measures,

property protection measures, natural resource protection, emergency services, structural projects, and public information activities. The PSRHMP and the Carteret County Land Use Plan Update are consistent with one another. In the event that any policy statements are found to be conflicting, the Land Use Plan will take precedence over the Hazard Mitigation Plan.

The County has considered traffic handling capacity in emergencies and during evacuations in its Thoroughfare Planning. Needed improvements that affect evacuation are included in the NCDOT Transportation Improvement Program. Hurricane evacuation routes in Carteret County are marked with blue and white evacuation route signs. The evacuation routes for Carteret County are US 70, NC Hwy 101, and NC Hwy 58.

Carteret County supports measures to mitigate the impacts of aircraft accident potential and elevated noise levels associated with operations at Marine Corps Auxiliary Landing Field (MCALF) Bogue. The County was a partner in the Cherry Point Regional Joint Land Use Study (JLUS) that addressed the impacts of military activities at MCAS Cherry Point, MCALF Bogue, Marine Corps Outlying Landing Field Atlantic, and Bombing Targets 9&11 and Oak Grove. The Cherry Point Regional JLUS provided recommendations for mitigating impacts of aircraft accident potential. The County has also implemented overlay districts to its zoning ordinance that affects areas in the western portion of the County that are in "accident potential" and "noise impact" zones. The total number of parcels affected by the overlay district in 2019 was 1340. Of these parcels, 443 were located in the Town of Bogue.

The County recognizes the need for maintaining navigation inlets and harbors to promote commercial and recreational uses of coastal waters. The County further recognizes that dredging activities to maintain and deepen navigation channels within tidal inlets and harbors often alter the natural movement of sand resources within the littoral zone. Negative alterations are exacerbated when sand resources are removed and subsequently deposited in designated offshore or upland disposal areas instead of being returned to the natural beach, shoreface, and inlet system. This is particularly relevant to the Morehead City Federal Navigation Project located within and adjacent to Beaufort Inlet, Carteret County as documented by the County, the USACE and DCM. These negative alterations adversely impact recreation, tourism, coastal economies, and the County's ability to protect life and property.

Mitigation strategies for risks associated with these hazards also include providing information to residents, local development requirements, support of the North Carolina Coastal Management Program, and support of local beach nourishment programs, including the Carteret County Shore Protection Program.

**Policy 4.1**

All development within the flood hazard areas and ocean hazard area AECs will be coordinated with the County Department of Planning and Development, DCM, FEMA, and the USACE. The County will implement the following measures to mitigate risks:

1. Carteret County will continue to enforce its existing zoning and flood damage prevention and protection ordinances.
2. The County concurs with the CAMA use standards for the ocean hazard AECs. Examples of suitable land uses in these areas include low-density residential and commercial uses,

recreation and beach management activities.

3. The County allows development and redevelopment within the 100-year floodplain subject to the provisions and requirements of the NFIP, CAMA, the County's Flood Damage Prevention and Protection Ordinance, and other local ordinances.
4. The County will implement strategies that address a broad range of natural hazards that apply to Carteret County, as contained in the PSRHMP.
5. The future location of public facilities and structures will take into consideration the existence and magnitude of natural hazards. When location in hazard areas, such as a FEMA defined Special Flood Hazard Area (SFHA), is unavoidable, all facilities, utilities, and structures will be designed and located to comply with requirements of the NFIP, the Carteret County Flood Damage Prevention and Protection Ordinance, and CAMA.
6. Carteret County is supportive of local beach nourishment programs, including the Carteret County Shore Protection Program.

**Policy 4.2**

Carteret County will maintain or improve its NFIP Community Rating System score to allow for continued discounted flood insurance rates for property owners located in the SFHA.

**Policy 4.3**

In order to mitigate risks for older properties and keep communities intact, the County will continue to cooperate with state and federal agencies and property owners to elevate residences and other structures in flood prone areas above the base flood elevation. Funds from the Hazard Mitigation Grant Program and the Community Development Block Grant Program will be used for elevation and reconstruction projects.

**Policy 4.4**

To minimize the impact of high winds, Carteret County will continue to enforce the North Carolina State Building Code on wind resistant construction with design standards of 150-mph for residential construction and wind loads for commercial construction as required by the code.

**Policy 4.5**

The County will implement and regularly update the Carteret County Emergency Operations Plan. This plan addresses/assigns responsibilities following a variety of disasters.

**Policy 4.6**

Reconstruction of damaged properties in Carteret County after a natural disaster will be subject to the following:

1. The Flood Damage Prevention and Protection Ordinance requires that all existing structures comply with requirements related to the 100-year floodplain elevation and flood-proofing (commercial structures only) if they are substantially improved. A substantial improvement is defined as "any repair, reconstruction, or improvement of a building, the cost of

which equals or exceeds 50 percent of the market value of the building either before the improvement or repair is started, or before damage occurred if the building has been damaged."

2. The North Carolina Building Code requires that all new construction meet code requirements. Repairs to damaged structures are also considered to be new construction.

**Policy 4.7**

Carteret County supports measures to mitigate the impacts of aircraft accident potential and elevated noise levels associated with operations at MCALF Bogue. The County has amended the Zoning Ordinance to establish the Bogue Field Air Installation Compatible Use Zones (AICUZ) Overlay District which identifies properties within proximity of the landing field. The following policies have been established for these properties:

1. Disclosure of proximity to Bogue Field is required at the time of property transfers, leases for greater than 90 days, and the issuance of building permits. Disclosure is also required on subdivision plats with any lots located within the AICUZ.
2. Compatible Use Zones (CUZ-1 and CUZ-2) have been included in the Table of Permitted and Special Uses of the Zoning Ordinance. Permitted uses may be developed, provided the use meets the zoning requirements for the underlying zoning district and other requirements of the ordinance. Uses listed as a special use in the CUZ-1 and CUZ-2 require a special use permit from the Zoning Board of Adjustment.
3. The County will not rezone areas within the CUZ to a zoning district that allows higher residential densities than the current district.
4. The County requires property owners and developers within the AICUZ to implement compatible land uses and encourages appropriate construction techniques when developing or redeveloping their property.
5. The County provides property owners with informational brochures and access to maps that can assist them in evaluating the impact of potential accidents or noise on their property. The County has available a sound attenuation construction manual to offer voluntary measures to reduce the impacts of sound within structures within the AICUZ.

**Policy 4.8**

Carteret County will enforce height regulations for areas in the vicinity of the Michael J. Smith Airport.

**Policy 4.9**

Carteret County will coordinate with Morehead City and the North Carolina State Ports Authority on emergency operations and procedures associated with the port facility and its operations.

**Policy 4.10**

With the exception of bulk fuel storage tanks used for retail and wholesale sales, and individual heating fuel storage tanks, Carteret County opposes the bulk storage of hazardous materials in

areas classified as developed and limited transition unless the specific sites are zoned for industrial use. Storage of hazardous materials, other than chemical toxic waste, in low-density areas classified as rural or rural with services will be allowed. In those areas within the County in which federal holdings are located, applicable state and federal regulations shall apply.

**Policy 4.11**

Carteret County is opposed to the establishment of toxic waste dumpsites within the County.

**Policy 4.12**

Carteret County will coordinate the regulation of underground storage tanks with the North Carolina Division of Water Resources (DWR). Carteret County concurs with the state's criteria and standards applicable to underground storage tanks.

**Policy 4.13**

(1) It is the policy of the County that there shall be no net loss of sand from the County's barrier beaches resulting from dredging activities to maintain and deepen navigation channels within tidal inlets and harbors.

(2) Except as provided in section (3) below, all sand originating from dredging in a quantity of 100,000 cubic yards or greater that is beach-quality, as defined by 15A NCAC 07H .0312(3), shall, to the maximum extent practicable, be placed either on the adjacent ocean beaches or, if effective in retaining such sand in the littoral system, in the shallow active nearshore zone where: (i) it is environmentally acceptable and compatible with other uses of the beach or shallow active nearshore zone; and (ii) in a manner that minimizes shoaling and replicates the natural the natural littoral system and avoids detrimental changes in the littoral and sediment transport processes.

(3) The County may approve an alternative plan for the management of sand originating from dredging that is suitable for beach placement which does not require placement of sand on the adjacent ocean beaches or shallow active nearshore zone. Such alternative plan shall require that, to the extent necessary to mitigate any adverse effects caused by the dredging activities, an equivalent quantity of sand from another location be placed either on the adjacent ocean beaches or, if effective in retaining such sand in the littoral system, in the shallow active nearshore zone where: (i) it is environmentally acceptable and compatible with other uses of the beach or shallow active nearshore zone; and (ii) in a manner that minimizes shoaling and replicates the natural the natural littoral system and avoids detrimental changes in the littoral and sediment transport processes.

(4) The determination of whether dredged sand is suitable for beach replenishment shall be made in a manner consistent with the rules and policies of the CRC through its rule and policies.

IMPLEMENTATION: The County will coordinate with federal and state resource agencies

to ensure that dredged material management practices are consistent with this policy and applicable federal and state law.

## 5.0 WATER QUALITY POLICIES

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

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

### Discussion

Carteret County supports management of land uses and development in its coastal shoreline to maintain and enhance water quality, conserve valuable coastal resources, and maintain the aesthetics of the waterfront. The County's wetlands also play a major role in managing stormwater runoff and protecting water quality and are designated by the County as conservation areas. Within these areas, development is required to be consistent with state and federal policies and regulations and with all local ordinances. At a minimum, the County concurs with the CAMA minimum use standards. However, Carteret County will concur and allow uses approved by the CRC through its variance process.

The Carteret County Planning and Development Department, through the central permitting process, identifies areas subject to the CAMA coastal shoreline and NC Environmental Management Commission (EMC) Neuse River buffer requirements. The County implements the CAMA requirements through the Minor CAMA permit program. Property owners are responsible for compliance with the EMC Neuse River buffer rules.

The County recognizes the impact of paved areas, rooftops, and other hard surfaces on water quality. These hard surfaces, known as impervious surfaces, prevent infiltration of water into soil and create runoff that carries pollutants into surface waters. The County is concerned about water quality, but also recognizes existing development patterns, the rights of property owners, and the need to provide affordable housing as considerations in the balance of resource protection and economic development.

The County is supportive of Low Impact Development (LID), an approach to land development that uses various land planning and design practices and techniques to conserve and protect natural systems and reduce infrastructure costs. Carteret County land development ordinances include a PCD option that provides flexibility for plan development around identified conservation areas. This innovative, ecologically friendly approach to land development and stormwater management seeks to mitigate development impacts to land, water, and air and can lower site infrastructure costs, protect water quality, and improve lot and community marketability.

Agriculture and forestry operations are often the source of nonpoint source water pollution. Common agricultural nonpoint source pollutants are sediment, nitrogen, phosphorus, pathogens, and pesticides. However, many agricultural and forestry production activities are exempted from CAMA and state and federal water quality permitting requirements.

Carteret County does not impose additional regulations on agriculture and forestry operations beyond state and federal requirements. The County is supportive of the North Carolina soil erosion and sedimentation and stormwater management programs.

It should be noted that farming operations in the County are continuing to convert to other uses, especially residential development. In 2019, approximately 15 commercial full-time operations cultivate about 46,000 acres. Open Grounds Farm, the largest agriculture operation in the County with approximately 36,000 acres in cropland, has implemented practices that have resulted in improved water quality adjacent its farm area. The former North River Farms (approximately 8,000 acres) adjacent Open Grounds Farm is no longer in operation, having been converted into a wetland restoration project. According to staff of the Soil and Water Conservation District, the smaller established agricultural operations in the County have also been amenable to implementing Best Management Practices (BMPs) to improve on-farm management and reduce the potential for polluting surface and ground water.

**Policy 5.1**

Carteret County supports measures to address drainage concerns and protect water quality. Carteret County will pursue the following specific steps through changes to zoning, subdivision, and other land use ordinances:

1. Limit density in areas adjacent to water bodies, wetlands, and other sensitive areas. In particular, limit development density in areas adjacent to shellfishing waters.
2. Investigate and consider reducing impervious surface limits in areas adjacent to shellfishing waters.
3. Investigate and consider implementing local erosion and sedimentation controls for site disturbances of less than one acre (state regulations require an approved erosion and sedimentation control plan prior to disturbing areas greater than one acre).

**Policy 5.2**

Carteret County will encourage the use of LID to control the volume, rate (velocity), and quality of stormwater into surface waters. LID emphasizes site design and addresses stormwater controls and rate of flow and volume characteristics of stormwater runoff. The County will take the following steps to reduce development impacts:

1. Encourage the use of bio-retention areas, rain gardens and other innovative practices (such as constructed wetlands, infiltration trenches/wells, level spreaders, forested or grassed buffers alongside streams and rivers, and reinforced grassy swales) to help manage and treat stormwater on site.
2. Encourage innovative construction of roadways using the minimum required pavement width to support projected traffic volumes, in compliance with the Subdivision Ordinance.

3. Encourage new road construction to avoid curbs from road designs to allow water from the roadway to sheet flow to adjacent vegetated shoulders.
4. Encourage actions to prevent erosion in construction areas (use appropriate BMPs for controlling sediment, re-grade or use structural controls on steep slopes, seed bare areas or apply a thick layer of leaves, wood chips, or other mulch in barren spots).
5. The County will continue to allow the use of pervious paving materials, where practical, and innovative development techniques to reduce impervious surfaces associated with new development or significant redevelopment. The County encourages the use of alternative types of paving surfaces on individual lots to decrease imperviousness. Porous surfaces include washed stone or gravel, paver blocks and bricks set in sand, grass pavers, and grid pavers. All development must be consistent with local ordinances.

**Policy 5.3**

Carteret County will seek to conserve its surface groundwater resources by supporting CAMA and DWR stormwater run-off regulations. The County will coordinate local development activities involving chemical storage or underground storage tank installation/abandonment with Carteret County Emergency Management personnel and the Groundwater Section of DWR (See Natural and Man-made Hazard Areas, Policies 4.10 and 4.12).

**Policy 5.4**

To preserve conservation areas and avoid water quality impacts due to development, Carteret County encourages private acquisition of these areas by purchase or gift from property owners.

**Policy 5.5**

Carteret County discourages inappropriate disposal of hazardous wastes which may impact water quality. Carteret County will establish, promote, and facilitate periodic hazardous waste collections in areas throughout the County. This effort will be coordinated with the Coastal Regional Solid Waste Management Authority, NC Cooperative Extension Service, and NC Department of Agriculture.

**Policy 5.6**

Carteret County supports design of NC Department of Transportation projects to minimize destruction of wetlands and stormwater runoff into public trust waters.

**Policy 5.7**

Carteret County allows the construction of state-approved package treatment plants in areas not provided with central sewer service. The County supports more effective monitoring by the State of the operation of package treatment plants. If any package plants are approved by the State, Carteret County supports the requirement of a specific contingency plan specifying how ongoing private operation and maintenance of the plant will be provided, and detailing provisions for assumption of the plant into a public system should the private operation fail. Operational plans should also address elimination of package treatment plants when the system owner elects to connect to a central sewer system.

**Policy 5.8**

Carteret County does not impose additional regulations on agriculture and forestry operations beyond state and federal requirements. County water quality policies related to agriculture and forestry operations are as follows:

1. Carteret County agrees with and encourages use of the United States Department of Agriculture Natural Resources Conservation Service BMPs program to limit non-point source pollution of public trust waters. BMPs include vegetative, structural, and management systems that can improve the efficiency of farming operations. The County strongly encourages farmers and timber operators to employ accepted BMPs to minimize the impact of these operations on water quality.
2. Carteret County recommends control of forestry runoff through implementation of forestry BMPs as provided by the North Carolina Division of Forest Resources.
3. Carteret County discourages non-point source, as well as the direct point source discharge, of agricultural runoff into primary nursery areas, productive shellfishing waters, and areas classified as Outstanding Resource Waters.

**Policy 5.9**

When sedimentation and erosion control and stormwater management plans are required by State regulations, Carteret County requires the submission of State-approved plans and proper State permits prior to granting final approval of subdivisions.

**Policy 5.10**

For all waterfront development, parking lots that meet local, state, and federal requirements will be allowed.

**Policy 5.11**

Carteret County will work with staff of the Soil and Water Conservation District to identify strategies to lessen existing drainage problems that impact water quality.

**Policy 5.12**

Carteret County encourages the use of monitored pilot projects using advanced technology and engineered solutions to treat stormwater runoff.

**Policy 5.13**

Carteret County encourages marinas to participate in the “Clean Marina” program. This is a voluntary program administered by DCM and the NC Marine Trades Association to recognize marina operators who use management and operations techniques that exceed regulatory requirements.

# SECTION 7. FUTURE LAND USE MAP

The CAMA Land Use Planning Guidelines include development of a Future Land Use Map (FLUM) that depicts the application of the County's policies for growth and development and the desired future patterns for land use and land development. Consideration of natural system constraints and the County's infrastructure is to be included in the development of the map.

It is important to understand the purpose of the FLUM in the context of the full Land Use Plan. The FLUM is an extension of the County's planning vision and is considered to be part of its planning goals. The map depicts the County's land use policies and desired growth patterns by portraying where the County wants growth to occur and the appropriate density of development and where land should be devoted to conservation or rural and other low-intensity uses. The map also shows the general location of resources the County wishes to protect or conserve. It is not as detailed as a zoning map and does not specify detailed locations of land uses such as residential, commercial, industrial, etc.

The FLUM is an important component of the Land Use Plan that is used by local, state, and federal governments to assist in determining the consistency of projects located within the Carteret County planning jurisdiction. Due to its size and scale, the map contained in this plan is only a guide. It is not to be substituted for on-site investigation or consultation with County staff. A larger copy of the FLUM is available in the office of the Carteret County Planning and Development Department and should be consulted as needed to identify specific parcels and land use classifications.

The Land Use Planning Guidelines provide flexibility to Carteret County decision-makers in designing a land use classification framework that best addresses the County's needs. Previous updates of the Carteret County Land Use Plan incorporated a traditional land classification approach. Since this approach has been useful for the County, the current planning effort continues use of this system with the following land classifications:

- Developed
- Limited transition
- Rural with services
- Rural
- Protected lands
- Conservation

Each of the FLUM categories and the policy intent of each class are described in the section below. The land classifications contained in this section and portrayed on the FLUM are intended to be general guidelines. However, due to the "broad brush" nature of the map, there may be small areas within the mapped categories where different densities may be appropriate, based on the County's land use plan policies and ordinances. Users of the land use plan should refer to both the FLUM and the text descriptions to determine land classifications. In the event of a conflict, text descriptions take precedence over mapped locations of the land classifications.

The densities must be accomplished through land use control ordinances and other tools for managing development that are described later in this section. Descriptions of the land classifications

that apply in Carteret County are provided below.

## DEVELOPED

Areas included in the developed land classification are currently urban in character, with only minimal undeveloped land remaining. Central water service is in place and, in some cases, individual private package treatment plants exist. Land uses include residential (single- and multi-family), commercial, institutional, industrial, and other urban land uses at high or moderate densities. In areas classified as developed, urban development pressures are expected to continue during the planning period. Redevelopment and infill development activities are also expected to continue.

Residential densities are allowed in excess of an average of three dwelling units per acre. In areas served by central water and sewer, minimum single-family residential lot size is 10,000 square feet or 4.4 dwelling units per acre. Areas served only by central water are subject to a minimum single-family residential lot size of 15,000 square feet or 2.9 dwelling units per acre.

For commercial development in zoned areas, minimum lot size is based on availability of services, as well as the zoning district designation. In general, properties served by either central water or sewer must be a minimum of 15,000 square feet (or 2.9 units per acre), while properties served by both water and sewer are allowed to be a minimum of 10,000 square feet (4.4 units per acre). The exceptions are in the B-3 and OP (office/professional) districts that require minimum 30,000 square feet lots (1.5 units per acre) and the B-1A district, which requires a minimum of one acre (1 unit per acre).

Areas of the County planning jurisdiction included in this category include the unincorporated portion of Bogue Banks (Salter Path), the Morehead City/Beaufort causeway and northeast portion of Radio Island.

## LIMITED TRANSITION

The limited transition classification applies to areas that have some urban services, such as central water and individual private package treatment systems, but are suitable for lower densities than those associated with the developed class or are geographically remote from existing towns and municipalities. Areas included in the limited transition category will experience increasing development during the next five to ten years, with the heaviest development occurring in the western portion of the County, and will require some municipal type services. Many areas in this category are found near valuable estuarine waters or other fragile natural systems.

The limited transition classification is intended for predominantly residential use, with minimum lot size based upon the availability of water and sewer services. However, some commercial, institutional, health care, and industrial development occurs in these areas, with the majority located along the major highways. Clustering or development associated with planned unit developments (PUDs) and low impact development discussed in the policy section of the land use plan may be appropriate.

Residential densities at an average of three units per acre or less are acceptable. For those areas with water and sewer service, lot sizes may be as small as 10,000 square feet (4.4 units per acre) but must average three dwelling units per acre or less. When only central water service is available, single-

family residential lots may not be smaller than 15,000 square feet or 2.9 units per acre. For PUD developments, residential densities are no greater than 2.9 units per net acre.

For commercial development in zoned or other areas, minimum lot size is based on availability of services, as well as the zoning district where applicable. In general, minimum lot sizes for areas served by individual wells and septic tanks are 20,000 square feet (or 2.2 units per acre). Properties served by either central water or sewer must be a minimum of 15,000 square feet (2.9 units per acre), while properties served by both water and sewer are allowed to be a minimum of 10,000 (4.4 units per acre). The exceptions are in the B-3 and OP (office/professional) districts that require minimum 30,000 square feet lots (1.5 units per acre), and the B-1A district, which requires parcels that are at least one acre in size (1 unit per acre).

This classification accommodates increasing development and growth pressures in the following areas, all of which are served by central water service:

- north of the Town of Beaufort along the NC 101 and US 70 corridors
- NC 24 corridor from Morehead City to Cape Carteret, including the Town of Bogue
- NC 58 corridor north of Cape Carteret, including the Town of Peletier
- Harkers Island

## RURAL WITH SERVICES

Areas included within the rural with services classification are developed at very low densities. Land uses include residential, public facilities, health care facilities, and scattered commercial and industrial uses. Central water service is provided or may be extended to the areas. Wastewater treatment is by individual septic tanks. Lot sizes are large and the provision of services should not disrupt the primary rural character of the landscape.

Development should remain low density in order to maintain a rural character. Residential densities average two dwelling units per acre, with a minimum lot size of 15,000 square feet. In planned unit developments, residential densities are no greater than 2.1 units per net acre. For commercial development in zoned areas, minimum lot size is based on availability of services, as well as the zoning district classification. In general, minimum lot sizes for areas served by individual wells and septic tanks are 20,000 square feet (2.2 units per acre). Properties served by either central water or sewer must be a minimum of 15,000 square feet (2.9 units per acre). The exceptions are in the B-3 and OP (office/professional) districts that require minimum 30,000 square feet lots, which calculates to 1.5 units per acre, plus the B-1A district which has a minimum one acre lot size (1 unit per acre).

Areas currently classified as rural with services are described as follows:

- Merrimon Road (SR 1300) north of US 70 to Laurel Road (SR 1163); Laurel Road west to NC 101; north on NC 101 to the Atlantic Intracoastal Waterway (AICW)
- N.C. 101 from the AICW west to the Craven County line
- South on Hardesty Loop Road (SR 1160) from the intersection of NC 101 to Hardesty Farm Road (SR 1158) to the Newport River
- Mill Creek Community (Old Winberry Road [SR 1155] from N.C. 101 to Mill Creek Road [SR 1154] and along Mill Creek Road east looping back to Old Winberry Road)

## RURAL

Areas included within the rural classification include lands that are appropriate for or presently used for agriculture, forestry, mineral extraction, and other uses that should be located in a relatively isolated and undeveloped area. The predominant land uses are agricultural and residential. However, public facilities, health care facilities, and scattered industrial and commercial uses are allowed. Areas classified as rural are usually served by individual wells and septic systems. No central water service is anticipated during the planning period.

Residential densities average two dwelling units per acre, with a minimum lot size of 20,000 square feet (2.2 units per acre). Extensive portions of the Down East area are classified as rural, as are areas in northwest Carteret County.

## PROTECTED LANDS

This classification consists of lands that are unavailable for growth and development of the County. Included in this category are federal, state, local, and non-profit property and easements that are managed for conservation and open space. These designations permanently preclude development. Many of these areas are also designated as High Significance Natural Heritage Areas (see Conservation classification). The protected lands category also includes lands under federal ownership used for military purposes.

The County has not designated appropriate uses, nor has the County planned for the provision of infrastructure to serve areas within the boundaries of Protected Lands. Due to the large area of the County comprised of Protected Lands, and the resulting impact on planning for growth and development of the County, these areas are shown on the FLUM.

The protected lands classification includes the following areas:

- Cape Lookout National Seashore
- Cedar Island National Wildlife Refuge
- Croatan National Forest
- Fort Macon State Park
- Wildlife Resources Commission (WRC) Cedar Island Access Area
- WRC Cedar Point-Swansboro Access Area
- WRC Sea Level Access Area
- Sea Level/Snug Harbor Park I
- Shackleford Banks National Wilderness
- Hay Stack Marsh Preserve
- Hoop Hole Creek
- Walkers Millpond
- Jones Island Audubon Sanctuary
- North River Marshes
- WRC New Dump Island
- WRC Sand Bag Island
- Bombing Target 11 Piney Island
- Marine Corps Auxiliary Landing Field Bogue

- Marine Corps Outlying Landing Field Atlantic
- North River Farms
- Large tracts near Cedar Island National Wildlife Refuge
- NC Coastal Land Trust 5,400 acres on Salters Creek

## CONSERVATION CATEGORY

The primary purpose of this classification is to provide protection and long-term management of Carteret County's significant and fragile natural systems. The classification also assists the County to mitigate risks associated with development in areas with significant hazards associated with wind, flooding, and erosion. The conservation classification is applied to areas that due to their unique, productive, limited, cultural, or natural features should either not be developed at all (preserved), or if developed, done so in a limited and cautious manner. Some development activities, as specified in the following sections, are allowed by Carteret County.

The conservation classification in Carteret County includes the following:

1. Areas of Environmental Concern (AECs) designated by the Coastal Resources Commission
2. Non-coastal wetlands (often referred to as "404," "401," or jurisdictional wetlands)
3. High Significance Natural Heritage Areas.

### AECs

AECs present in Carteret County include Estuarine and Ocean System AECs (public trust areas, estuarine waters, coastal shorelines, and coastal wetlands) and Ocean Hazard System AECs (ocean erodible and high hazard flood areas). The general locations of AECs in Carteret County are described in Section 3 of this plan. Due to map size and scale, it is difficult to accurately map the exact location and extent of AECs. Precise determinations of locations must be determined on-site by permitting staff of the Division of Coastal Management. Uses allowed by Carteret County in AECs are those that are consistent with the State's minimum use standards, except when the policies contained in this plan are more restrictive than State standards. Those policies were previously discussed in this plan.

### Non-coastal wetlands

Other areas included in the conservation classification include non-coastal wetlands (often referred to as "404" wetlands, "401" wetlands, or jurisdictional wetlands). Non-coastal wetlands are subject to regulation by the US Army Corps of Engineers (USACE) and the NC Division of Water Quality. Non-coastal wetlands are further discussed in Section 3.

The location of non-coastal wetlands is extensive in Carteret County. Carteret County accepts applicable state and federal regulations regarding development activity in non-coastal wetland areas, with the exception of Land Use Compatibility Policy 2.1 which exceeds state and federal standards.

**High Significance Natural Heritage Areas**

The conservation category also includes lands that support rare plant and animal species, rare or high quality natural communities, or other important ecological features as identified by the Natural Heritage Program (NHP) within the NC Department of Natural and Cultural Resources.

Currently, the NHP identifies 38 sites constituting approximately 118,562 acres as Natural Heritage Areas in Carteret County. Approximately 33 of these sites (approximately 111,857 acres) are classified as Excellent, Very High, or High significance. A table of Natural Heritage Areas located wholly or in part in the Carteret County planning jurisdiction is included as Appendix B.

The NHP is not a regulatory program. Some of these sites may be protected or regulated by other state or federal agencies, although many of these sites are unprotected.

Significant Natural Heritage Areas should be primarily preserved in their natural state with only the development activities listed below allowed. Since the primary purpose of including these areas in the conservation classification is to provide protection, in as much as possible all allowed development activities should be done in such a manner as to protect the fragile nature of these sites. Carteret County allows the following uses in Significant Natural Heritage Areas:

- Public facilities and improvements to provide limited shoreline access
- The use of areas by the USACE as spoil disposal sites
- Development of public facilities by the National Park Service and the State of North Carolina. However, Carteret County requests the opportunity to review and comment on all plans for development of public facilities
- Development of any sound or estuarine island that is consistent with Policy 2.9 (development of sound and estuarine islands) included in this plan.
- Uses consistent with the policies in this plan.

Areas designated as Conservation often overlap other land use classifications. AECs, non-coastal wetlands, and Significant Natural Heritage Areas are present in many areas generally classified as Developed, Limited Transition, Community, Rural, and Rural with Services. Due to their size and scale, these overlapping Conservation areas are not mapped on the FLUM. Their locations must be identified and confirmed in the field by the appropriate state or federal agency. In these situations, the density of the underlying land classification is applied. Development within these Conservation classified areas must also be consistent with applicable local, state, and federal regulations, including applicable Land Use Plan policies.

Within larger areas depicted as Conservation on the FLUM (predominantly wetland areas), there may be high-ground areas that are suitable for development. Development in these high-ground areas may be permitted in accordance with applicable local, state, and federal regulations. -These high-ground areas are not mapped on the FLUM. In areas where there is no underlying land classification, these high ground areas shall be developed consistent with densities and requirements contained in the Rural classification found earlier in this section.

# Carteret County, NC
# CAMA Future Land Use Map

**Legend**

- Roads
- Municipalities
- Conservation
- Developed
- Limited Transition
- Protected Lands
- Rural
- Rural With Services

N

Miles
0 1.25 2.5 5 7.5 10

Carteret County Department of Planning and Development

Carteret County GIS, NC Onemap, NC DOT

# SECTION 8. TOOLS FOR MANAGING DEVELOPMENT

This section of the land use plan provides Carteret County's strategy and action plan for implementing the policies contained in the Land Use Plan. The following components are included:

1. A description of the role of the plan and the status of its policies, including the future land use map, in Carteret County's land use and development decisions.
2. A description of Carteret County's current development management program, including policies, ordinances, codes, and regulations and how it will be employed to implement the County's land use and development policies.
3. Additional tools that will be used to implement the land use plan.
4. An action plan and schedule for implementing the plan.

## ROLE AND STATUS OF PLAN (OR HOW TO USE THE PLAN)

The Carteret County Land Use Plan provides a framework to guide local government officials and citizens as they make day-to-day and long-term decisions affecting development. The land use plan policies and future land use map serve as an overall "blueprint" for development of Carteret County that when implemented, should result in the most suitable and appropriate use of the land and protections of the County's natural resources. In addition to serving as a guide to the overall development of Carteret County, the land use plan will be used by local, state, and federal officials in Coastal Area Management Act (CAMA) permitting decisions, project funding, and project consistency determinations.

The CAMA legislation provides that no permit for development in Areas of Environmental Concern (AECs) as described in Section 3 may be issued unless the proposed development is consistent with the local land use plan. State and local permit officers who implement the CAMA permitting program will evaluate consistency of proposed development with the local government policies and future land use map contained in the plan and will use this information in permit determinations. Policies in the plan will also affect other state and federal consistency and funding decisions.

In addition to its well-known use in CAMA permitting, an equally important use of the Carteret County Land Use Plan is the establishment of policy for both short-term and long-range planning. The plan will be used by the County's administrative staff and elected and appointed boards, as well as property owners and citizens. These uses are described below.

Short-term or day-to-day functions relate primarily to use of the plan by County staff, Planning Commission, and Board of Commissioners in the administration of land use and development ordinances and the public's understanding and use of these ordinances in development decisions affecting their own property.

Property owners and developers will use the policies and future land use map contained in the land use plan to determine the types of land uses and development that is desired by the community. They will use this information to design or formulate development proposals (such as rezoning requests, special use permits, and subdivision approvals) that are consistent with the land use plan, thus increasing the likelihood of approval. The land use plan will also provide information to property owners to help them understand the capabilities and limitations of their property.

Planning and Development staff will review development proposals in light of policies contained in the land use plan. Staff will identify policies that support proposals or that are in conflict, and will point out those policies that carry the most weight. This information will be used by staff to formulate an overall response or recommendation to the Planning Commission.

The general public will use the plan to obtain information that will help them better understand development proposals in developing a position in favor or opposition to proposed development.

The Planning Commission will make individual determinations of the consistency of development proposals with the land use plan policies, including the future land use map. Planning Commission members will consider staff recommendations, but may choose to give different weights to the land use plan policies. The Planning Commission will then make recommendations to the Board of Commissioners for final approval of development requests.

The Board of Commissioners will consider the policy interpretations of the petitioner, Planning and Development staff, Planning Commission, and public comments by citizens in making its own policy interpretations and final decisions regarding proposals.

Long range functions of the land use plan include providing a policy and decision guide to the Carteret County Planning Commission and Board of Commissioners in developing new ordinances (tools) and amendments to existing ordinances to implement the land use and development policies. The land use plan itself is not a local ordinance or code.

Other long-range functions include guidance in planning public expenditures for developing new capital improvement projects, such as new roads, water system extensions, or sewer systems. Additionally, the land use plan will be used to guide development of plans for projects that support implementation of the plan. The Board of Commissioners will periodically review the implementation plan and make necessary adjustments based on changing community needs, budget considerations, and coordination with other projects.

## EXISTING DEVELOPMENT PROGRAM

Carteret County will use its existing development program as the basis for implementing the land use plan. The plans, ordinances, and policies that make up this program are listed below.

The Carteret County Planning and Development Department is responsible for coordinating the administration of the development management program and the implementation of the land use plan. It is also responsible for administering all ordinances related to building and development in areas under County planning jurisdiction and for administering the State Building Code.

The Planning and Development Department works closely with other County departments, including the Parks and Recreation Department, Environmental Health, Emergency Services, and the Transportation Committee to coordinate management of development throughout the County.

. Plans

a. 2005 Carteret County Land Use Plan

The Land Use Plan was adopted by Carteret County on April 20, 2009 and was certified by the Coastal Resources Commission on December 20, 2010. The plan is an update to previous land use plans prepared in 1967, 1978, 1985, 1991 and 1999. The Carteret County Planning and Development Department is responsible for coordinating the implementation of the land use plan.

b. Comprehensive Parks and Recreation Master Plan

The Carteret County Board of Commissioners adopted an updated Comprehensive Parks and Recreation Master Plan (CPRMP) in March of 2019. The CPRMP provides an assessment of the quantity and quality of recreation facilities and services in Carteret County, including public water access. It provides recommendations and a plan of action for meeting future recreation and access needs. The Carteret County Parks and Recreation Department and Board of Commissioners are responsible for implementing this plan.

This plan replaced the 2006 Parks and Recreation Master Plan and Shoreline Access Plan.

c. Comprehensive Transportation Plan

The key planning document for the County's transportation system is the Comprehensive Transportation Plan prepared with assistance of the NC Department of Transportation. The Carteret County Board of Commissioners adopted the plan in 2014 and has appointed a Transportation Committee to advise the Board on implementation.

d. Pamlico Sound Regional Hazard Mitigation Plan

Carteret County participated in development of the Pamlico Sound Regional Hazard Mitigation Plan (PSRHMP) that contains mitigation actions aimed toward reducing vulnerability to all natural hazards that can be addressed in a practical manner at the local level. Mitigation actions contained in the PSRHMP have been determined to be cost effective, environmentally sound, and technically feasible. Mitigation policies fall into six mitigation categories provided by the Federal Emergency Management Agency (FEMA). These include the following: prevention measures, property protection measures, natural resource protection, emergency services, structural projects, and public information activities. The mitigation plan designates the responsible party or governmental department for implementation of the individual plan goals.

Please see the link below to reach the Pamlico Sound Regional Hazard Mitigation Plan on the Carteret County website. It is listed under the heading "Useful Documents." The PSRHMP has been completed, adopted by the participating local governments, and approved by FEMA.

http://nc-carteretcounty.civicplus.com/244/Carteret-County-Flood-Information

e. Cherry Point Regional Joint Land Use Study

Carteret County was a participant in the 2016 Cherry Point Regional Joint Land Use Study (CPRJLUS), a collaborative planning process that brought together military installation personnel, local government officials, and interested members of the community to discuss the relationship of activities of both the military and local communities surrounding it. The study focused on Marine Corps Air Station Cherry Point and outlying/auxiliary facilities (ALF Bogue, OLF Atlantic, BT-9, BT-11, and MCOLF Oak Grove installations).The CPRJLUS built on previous planning initiatives, including the 2002 Eastern Carolina Joint Land Use Study. It included recommendations for both local governments and the military, including timelines for implementation.

2. Regulations and Ordinances

a. Carteret County Subdivision Regulations

The Carteret County Subdivision Regulations were adopted in 1961 and were reviewed and completely rewritten in 1986 and 2001. The ordinance includes shoreline access requirements, Sedimentation and Erosion Control Plan approval requirements, stormwater management permits, and requirements to note presence of 404 wetlands on subdivision plats. The regulations also provide for the Planned Conservation Development option. The purpose of this development option is to provide the developer with greater flexibility and creativity necessary to plan development around identified conservation areas without compromising the economic value of the development, as well as to minimize the total amount of disturbance on the site.

The Carteret County Planning and Development Department staff and a Subdivision Technical Review Committee review subdivision plats to ensure consistency with the subdivision regulations. The technical review team is composed of representatives of all county departments affected by development. The plats are presented to the Planning Commission for preliminary and final approval. Staff may administratively approve some final plats.

b. Carteret County Zoning Ordinance

The Carteret County Zoning Ordinance was originally adopted in 1963. It was revised in 1980 and in 1990 incorporated planned unit development regulations and conditional use overlay. Approximately thirty percent of the County's land area is zoned. All of the zoned areas are in western Carteret County and the central (Beaufort) area.

The Carteret County Planning and Development Department staff reviews all requests to amend the Zoning Ordinance, both for text and map amendments, and presents requests to the Planning Commission. The Planning Commission then considers the requests and makes recommendations to the Board of Commissioners for final action.

c. Manufactured Homes, Manufactured Home Parks, and Recreational Vehicle Parks

Ordinance

Regulations for development of mobile home parks and camp parks were originally adopted by Carteret County in 1972 and amended in 1980, 1997, and 1999. The Manufactured Homes, Manufactured Home Parks, and Recreational Vehicle Parks Ordinance was adopted in 2014 and updates the previous ordinance. The Carteret County Planning and Development Department staff reviews all plans for manufactured home parks and recreational vehicle parks to ensure consistency with the ordinance. The plans are subsequently reviewed and approved by the Carteret County Planning Commission. The Planning and Development staff enforces the ordinance to ensure compliance with the approved plans.

d. Group Housing Ordinance

This ordinance was adopted in 1981 and updated in 2010. The ordinance regulates the construction of condominiums, townhouses, row houses, and apartments. The Carteret County Planning and Development Department reviews all plans to ensure consistency with the ordinance. Site plans are reviewed and approved by the Carteret County Planning Commission.

e. North Carolina State Building, Electrical, Plumbing, and Mechanical Codes

The Carteret County Planning and Development staff enforces all state building codes to ensure compliance with minimum construction standards. The codes were most recently updated in 2018.

f. Septic Tank Regulations

Carteret County adopted state regulations in 1977 that govern the design, construction, installation, cleaning, and usage of sewage disposal systems. The regulations have been updated on several occasions. The county's Environmental Health Department enforces the regulations.

g. National Flood Insurance Program/Flood Damage Prevention and Protection Ordinance

Carteret County began participation in the National Flood Insurance Program (NFIP) in 1980. A Flood Damage Prevention Ordinance was adopted that year. The program is administered locally by the Carteret County Planning and Development Department. In 2003 Carteret County amended the Flood Damage Prevention Ordinance to incorporate updated NFIP Maps. A minor rewrite and update of the ordinance was undertaken in 2020. This action ensures compliance with the minimum NFIP regulations for development within Special Flood Hazard Areas.

h. Carteret County Sign Ordinance

In 1985, the County adopted a sign ordinance to regulate the location, size, and appearance of signs in the unzoned areas of the County's planning jurisdiction. The ordinance was updated in 2014. The County's Planning and Development staff enforces

the ordinance. Signs in the zoned areas of the County are regulated by the Zoning Ordinance. The County intends to revisit the sign ordinance during the planning period, particularly in regards to content neutrality.

i. CAMA Minor Permit Program

Carteret County issues permits for all developments within the planning jurisdiction that meet the CAMA regulatory definition of a minor permit. Carteret County building inspectors serve as the local permit officers.

j. North Carolina Sedimentation Pollution Control Act

Carteret County does not enforce the 1983 Sedimentation Pollution Control Act. However, the County cooperates with the State to ensure that new developments meet the standards of the act. The act is designed to control siltation and surface stormwater runoff.

k. Fire Prevention and Protection Ordinance

Fire prevention and protection regulations were adopted by Carteret County in 1985. The regulations have been updated on several occasions. Carteret County, through the current Fire Prevention and Protection Ordinance adopted in 2014, adopts the current edition of the North Carolina Fire Prevention Code with appendices and the current State Administrative code for the enforcement of the State Building Code. The Carteret County Fire Marshal enforces the fire prevention and protection regulations.

l. "404" Wetlands Regulations

Carteret County does not have any regulatory authority for enforcement of the "404" wetlands program authorized by the Clean Water Act. Regulation is provided by the Regulatory Branch of the U.S. Army Corps of Engineers (USACE) through the Wilmington, North Carolina district office. Anyone who undertakes work in a wetland area is required to obtain a permit. The County coordinates its local planning, and in particular its subdivision review and approval process, with the "404" program. The subdivision plat approval process requires that “404" wetland areas as delineated by the USACE are identified on subdivision plats.

m. Down East Conservation Ordinance (DECO)

In September 2006 Carteret County adopted an ordinance establishing comprehensive conservation regulations for certain areas of the Down East portion of the County. The purpose of the conservation regulations is to protect the sensitive environmental areas located in the Down East area by reducing and controlling future surface water quality degradation to Outstanding Resource Waters and CAMA AECs.

This ordinance governs the development of land and structures in the Down East portion of the County, which includes the following areas: Straits Township, Harkers Island Township, Marshallberg Township, Smyrna Township, Davis Township, Stacy

Township, Sea Level Township, Atlantic Township, and Cedar Island Township. The regulations do not apply to bona fide farms, although nonfarm uses on a farm are subject to the Ordinance.

The DECO regulates building heights, density (lot sizes), and package treatment plants. The ordinance incorporates the 30' CAMA buffer within AECs.

n. Solar Energies Facilities

Carteret County adopted a Solar Energies Facilities Ordinance in 2017 to regulate the operation and maintenance of solar energy facilities. The ordinance addresses siting, construction, installation, and operation of solar energy facilities within the County planning jurisdiction to promote economic development and ensure the protection of the health, safety, and general welfare of the citizens while avoiding adverse impacts to adjacent land uses and property owners. The Carteret County Planning and Development Department is responsible for administering the ordinance.

o. Tall Structures Ordinance

In 2008 Carteret County adopted the Tall Structures Ordinance to govern the development and use of all land and structures for communication towers, wind energy facilities, and similar very tall structures. A major rewrite of the ordinance became effective in January 2014. The Carteret County Planning and Development Department is responsible for administering the ordinance.

## NEW TOOLS

Implementation of the land use and development policies contained in the land use plan will require review and possible amendments to existing ordinances, as well as potential development of new tools (ordinances). These reviews and amendments/ordinances are listed below.

### New Ordinances and Amendments

1. Consider amendments to Subdivision Regulations and Zoning Ordinance to address recommendations contained in the NC 24 Corridor Study, to include :
   - minimizing number of access points for new development, by such techniques as shared driveways and access roads.
   - encouraging development of mixed-use town centers rather than strip shopping centers.

2. Revisit existing sign regulations and consider amendments to address and clarify requirements related to content neutrality.

### Projects and Plans

1. Pursue federal and state funding to assist property owners in identifying and repairing/upgrading faulty septic tanks.
2. Continue participation in the Hazard Mitigation Grant Program and Community

Development Block Grant Program to fund elevation projects in flood prone areas.
3. Implement the Carteret County Emergency Operations Plan.
4. Develop educational materials on:
   - waste reduction and recycling
   - value and use of conservation easements
5. Work with staff of the Soil and Water Conservation District to identify strategies to lessen drainage problems.

## ACTION PLAN AND SCHEDULE

Table 8.1 Implementation Actions for CRC Management Topics and Local Goals provides a description of actions to be taken by Carteret County to implement policies that meet the CRC's management topic goals and objectives and local priorities. The anticipated timeframe is also provided.

It will be necessary to annually evaluate the work plan in terms of funding availability and changing priorities. It may be necessary to adjust the schedule to add or delete projects and to change completion dates.

Citizens will be involved in the implementation of the plan in much the same manner as with the development of the land use plan. All local government meetings involving land use plan implementation will be open to the public and public comment will be solicited. Updates to the County's website and local news releases will be used to keep the public informed as to implementation progress.

Table 8.1 Carteret County CAMA Land Use Plan
Implementation Actions for CRC Management Topics and Local Goals

| ACTION | TIMEFRAME |
|---|---|
| **Public Access Policy 1.2**<br>Carteret County will provide satisfactory access to residents and visitors of all abilities, where feasible. The County will review existing and proposed access sites and take steps to remove barriers. | 2021-2022 |
| **Public Access Policy 1.6**<br>Carteret County will maintain the Salter Path Public Beach Access facility to ensure meeting current USACE access requirements for nourished beaches. | Ongoing |
| **Land Use Compatibility Policy 2.11**<br>Carteret County encourages land owners to consider the Planned Conservation Development (PCD) option in development of their property. This alternative to traditional development practices provides greater flexibility and allows creativity for plan development around identified conservation areas. The PCD aims to avoid compromising the economic value of the development while minimizing the total amount of disturbance of the site. The PCD development option is contained in the County's subdivision regulations.<br>For purposes of the Carteret County PCD, conservation areas include the following features:<br>• Wetlands that meet the definition of the Clean Water Act<br>• Shore land areas<br>• Water bodies<br>• Riparian buffers<br>• Populations of endangered or threatened species or habitat of such species<br>• Archaeological sites<br>• Cemeteries and burial sites<br>• Native forests<br>• Individual existing healthy trees<br>• Other significant natural features and scenic viewsheds<br>• Existing trails or corridors that connect the tract to neighboring areas. | Ongoing |
| **Infrastructure Carrying Capacity Policy 3.2**<br>Carteret County will undertake an educational program that provides information to property owners on proper maintenance of septic tanks and will pursue federal and state funding to assist property owners in identifying, mitigating, and upgrading failing or failed septic tanks. | 2022-2023 |

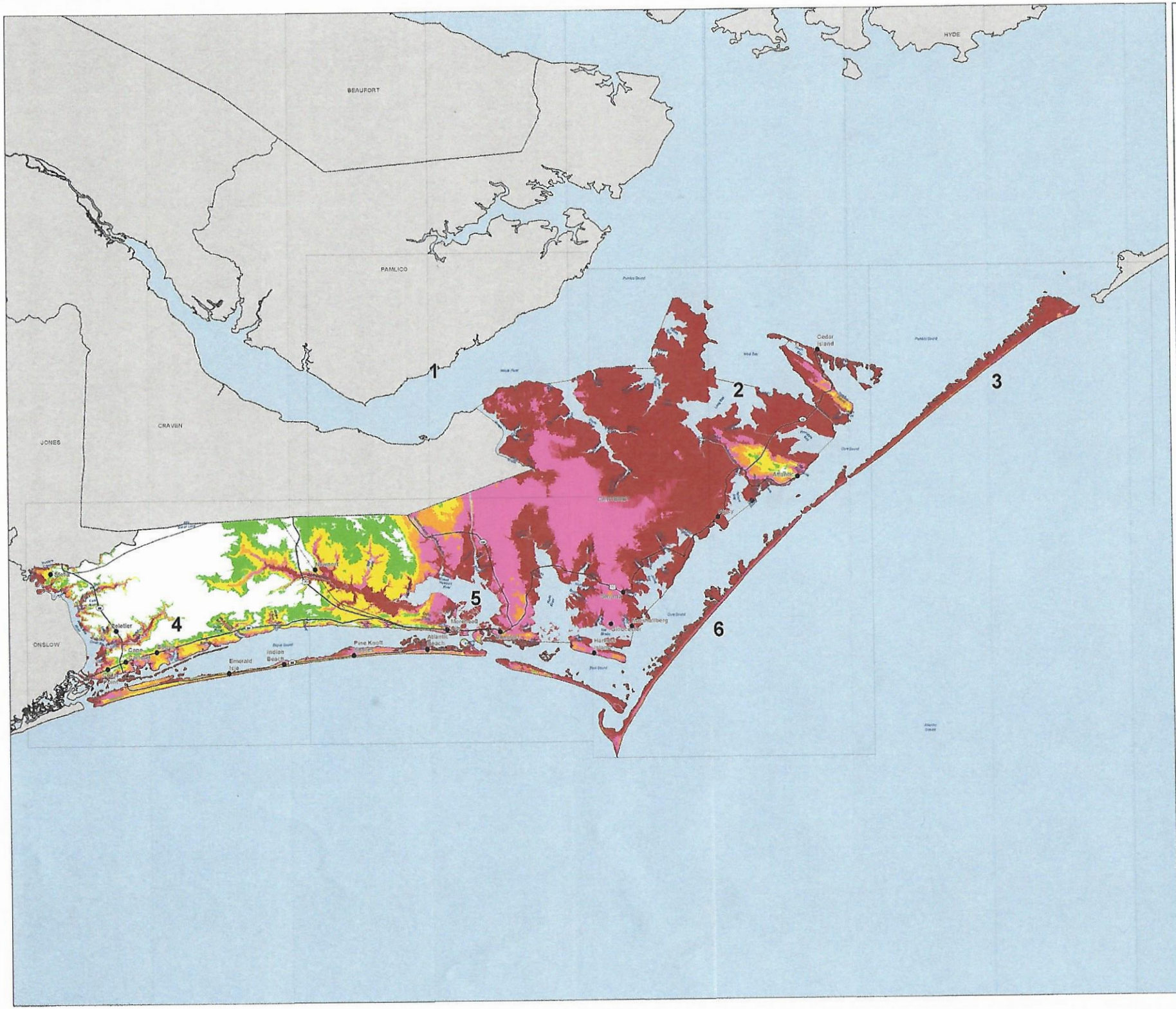
| ACTION | TIMEFRAME |
|---|---|
| **Infrastructure Carrying Capacity Policy 3.4**<br>Carteret County will support the provision of centralized sewer services in areas classified as developed, limited transition, and rural with services when the following conditions are met:<br>• Sewer service will serve to steer dense development away from environmentally sensitive areas, such as fragile coastal ecosystems.<br>• Service will encourage a more compact development pattern in areas adjoining existing urban areas, thereby conserving farmland and other open spaces.<br>• Citizens request service. | Ongoing |
| **Infrastructure Carrying Capacity Policy 3.9**<br>Carteret County will provide education on waste reduction and recycling through postings to the County's website and development of an informational brochure. | 2021-2022 |
| **Natural Hazard Areas Policy 4.1.4**<br>The County will implement strategies that address a broad range of natural hazards that apply to Carteret County, as contained in the Pamlico Sound Regional Hazard Mitigation Plan. | 2021-2022 |
| **Natural Hazard Areas Policy 4.2**<br>Carteret County will maintain or improve its National Flood Insurance Program Community Rating System score to allow for continued discounted flood insurance rates for property owners located in the Special Flood Hazard Area. | Ongoing |
| **Natural Hazard Areas Policy 4.3**<br>In order to mitigate risks for older properties and keep communities intact, the County will continue to cooperate with state and federal agencies and property owners to elevate residences and other structures in flood prone areas above the base flood elevation. Funds from the Hazard Mitigation Grant Program and the Community Development Block Grant Program will be used for elevation projects. | Ongoing |
| **Natural Hazard Areas Policy 4.13**<br>Carteret County will coordinate with federal and state resource agencies to ensure that practices to manage dredged material from activities to maintain and deepen navigation channels within tidal inlets and harbors are consistent the County's policy of no net loss of sand and applicable federal and state law. | Ongoing |

| ACTION | TIMEFRAME |
|---|---|
| **Water Quality Policy 5.1**<br>Carteret County supports measures to address drainage concerns and protect water quality. Carteret County will pursue the following specific steps through changes to zoning, subdivision, and other land use ordinances:<br>1. Limit density in areas adjacent to water bodies, wetlands, and other sensitive areas. In particular, limit development density in areas adjacent to shellfishing waters.<br>2. Investigate and consider reducing impervious surface limits in areas adjacent to shellfishing waters.<br>3. Investigate and consider implementing local erosion and sedimentation controls for site disturbances of less than one acre (state regulations require an approved erosion and sedimentation control plan prior to disturbing areas greater than one acre). | 2022-2023 |
| **Water Quality Policy 5.5**<br>Carteret County discourages inappropriate disposal of hazardous wastes which may impact water quality. Carteret County will establish, promote, and facilitate periodic hazardous waste collections in areas throughout the County. This effort will be coordinated with the Coastal Regional Solid Waste Management Authority, NC Cooperative Extension Service, and NC Department of Agriculture. | Ongoing |
| **Water Quality Policy 5.11**<br>Carteret County will work with staff of the Soil and Water Conservation District to identify strategies to lessen existing drainage problems that impact water quality. | Ongoing |

# APPENDICES

# APPENDIX A

Carteret County Storm Surge Map




**LEGEND**

AREAS OF POSSIBLE FLOODING

- CATEGORY 1 HURRICANES
- CATEGORY 2 HURRICANES
- CATEGORY 3 HURRICANES
- CATEGORY 4 HURRICANES
- CATEGORY 5 HURRICANES

- Panel
- City
- Highway
- Interstate
- Railroad
- Water
- County Boundary

This hurricane storm surge map was produced by the U.S. Army Corps of Engineers, Wilmington District. It is made available for review by the State of North Carolina, local government emergency management agencies, and other interested agencies.

Questions or comments or GIS Data requests should be directed to Allan McDuffie (Allan.E.McDuffie@usace.army.mil; (910) 520-4687) or Jason Glaszner (Jason.G.Glaszner@usace.army.mil; (910) 251-4910).

1 inch = 2.25 miles

0 1.125 2.25 4.5 6.75 Miles

**INDEX**

**NATIONAL HURRICANE PROGRAM STORM SURGE MAPPING**

*Carteret County, North Carolina*

**OCTOBER 2013**

FEMA

# APPENDIX B

Carteret County Natural Heritage Areas

**Appendix B: Carteret County Natural Heritage Areas**

| ID | ACRES | Natural Area Name | Owner | R_RATING | C_RATING | TOP_RATING |
|---|---|---|---|---|---|---|
| 1886 | 8263.27 | Atlantic Natural Area | PRV, USDOD, USFWS | R1 (Exceptional) | C1 (Exceptional) | Exceptional |
| 1556 | 671.81 | Browns Island | PRV | R3 (High) | C4 (Moderate) | High |
| 1812 | 3094.09 | Cedar Island Flatwoods and Bays | USFWS | R3 (High) | C3 (High) | High |
| 1870 | 10471.39 | Cedar Island Marshes | USFWS | R2 (Very High) | C3 (High) | Very High |
| 568 | 1635.37 | Cedar Island/North Bay Barrier Strand | PRV, USFWS | R3 (High) | C3 (High) | High |
| 1665 | 347.2 | Cedar Point/White Oak River Marshes | USFS | R4 (Moderate) | C4 (Moderate) | Moderate |
| 1001 | 11985.73 | Cherry Point Piney Island | USDOD | R2 (Very High) | C3 (High) | Very High |
| 1160 | 23027.97 | Core Banks and Portsmouth Island | PRV, USNPS | R1 (Exceptional) | C1 (Exceptional) | Exceptional |
| 3242 | 30.39 | Emerald Isle Archers Creek | PRV | R4 (Moderate) | C5 (General) | Moderate |
| 2948 | 38.19 | Emerald Isle Woods | LOCAL | R2 (Very High) | C4 (Moderate) | Very High |
| 2085 | 215.84 | Emerald Isle/West End Beach | PRV | R3 (High) | C3 (High) | High |
| 1205 | 689.61 | Fort Macon State Park/Brandt Island | NCDPR, NCPA | R1 (Exceptional) | C1 (Exceptional) | Exceptional |
| 213 | 584.84 | Hadnot Creek Ponds and Longleaf Pine Woods | USFS | R4 (Moderate) | C2 (Very High) | Very High |
| 1271 | 2802.85 | Hibbs Road Pine Ridges | USFS | R2 (Very High) | C2 (Very High) | Very High |
| 2526 | 61.47 | Hidden Savanna | USFS | R2 (Very High) | C4 (Moderate) | Very High |
| 119 | 25.21 | Hoop Hole Creek Maritime Forest | NCCF | R2 (Very High) | C4 (Moderate) | Very High |
| 300 | 424.37 | Hunters Creek Flatwoods | USFS | R4 (Moderate) | C3 (High) | High |
| 2057 | 164.73 | Hunters Creek Upland Forest | USFS | R3 (High) | C4 (Moderate) | High |
| 662 | 1865.88 | Lake Ellis Simon | PRV | R2 (Very High) | C2 (Very High) | Very High |
| 1162 | 3643.87 | Masontown Pocosin | USFS | R3 (High) | C4 (Moderate) | High |
| 1728 | 1392.57 | Millis Road Savannas and Pocosins | USFS | R1 (Exceptional) | C1 (Exceptional) | Exceptional |
| 2063 | 346.19 | Millis Swamp Road Pinewoods | USFS | R2 (Very High) | C3 (High) | Very High |
| 435 | 456.74 | Newport River Marsh | NCCLT | R5 (General) | C5 (General) | General |
| 1526 | 660.31 | Nine Foot Road/Broad Creek Pinewoods | PRV, USFS | R2 (Very High) | C2 (Very High) | Very High |

| | | | | | | |
|---|---|---|---|---|---|---|
| 158 | 736.41 | Nine Foot Road/Roberts Road Limesink Ponds | PRV, USFS | R2 (Very High) | C2 (Very High) | Very High |
| 969 | 2050.03 | North River Brackish Marshes | NCCF, PRV | R3 (High) | C4 (Moderate) | High |
| 1183 | 712.01 | Patsy Pond Limesink Complex | PRV, USFS | R1 (Exceptional) | C1 (Exceptional) | Exceptional |
| 235 | 4465.7 | Pettiford Creek Open Flatwoods | NCFS, NCWRC, USFS | R2 (Very High) | C1 (Exceptional) | Exceptional |
| 671 | 18937.79 | Pocosin Wilderness | USFS | R2 (Very High) | C3 (High) | Very High |
| 1212 | 2475.01 | Pringle Road Bay Rims | USFS | R1 (Exceptional) | C1 (Exceptional) | Exceptional |
| 591 | 31.65 | Salter Path Dunes Natural Area | NCAQU | R2 (Very High) | C4 (Moderate) | Very High |
| 121 | 30.31 | Salter Path Maritime Forest | PRV | R1 (Exceptional) | C4 (Moderate) | Exceptional |
| 1388 | 121.58 | Sea Gate Woods | NCCLT | R5 (General) | C5 (General) | General |
| 24 | 5465.58 | Shackleford Banks | USNPS | R1 (Exceptional) | C1 (Exceptional) | Exceptional |
| 1702 | 300.99 | Theodore Roosevelt State Natural Area | NCDPR | R1 (Exceptional) | C3 (High) | Exceptional |
| 293 | 5747.09 | Union Point Pocosin | USFS | R4 (Moderate) | C4 (Moderate) | Moderate |
| 556 | 767.01 | Walkers Millpond and Black Creek | PRV, USFS | R3 (High) | C4 (Moderate) | High |
| 1980 | 3820.78 | White Oak River Marshes and Swamps | NCWRC, PRV, USFS | R1 (Exceptional) | C3 (High) | Exceptional |
| | 118561.8 | | | | | |
| | | | | | | |
| | | | | | | |

# APPENDIX C

Endangered Species, Threatened Species, Federal Species of Concern, and Candidate Species
Carteret County

# Endangered Species, Threatened Species, and Candidate Species, Carteret County, North Carolina

**Note:**Marine Threatened and Endangered Species information can be found at the National Marine Fiseries Service (NMFS) Endangered and Threatened Species website

**Updated:** 10-08-2020

**Critical Habitat Designations:**

**Piping plover - *Charadrius melodus*** - See the Federal Register for a description of the primary constituent elements essential for the conservation of wintering piping plovers within the designated units. This document also contains a map and a description of each designated unit.
**Federal Register Reference:** July10, 2001, Federal Register, 66:36038?36136.

**Loggerhead Sea Turtle - *Caretta caretta*** - See the Federal Register for a description of the primary constituent elements essential for the conservation of nesting Loggerhead sea turtles within the designated units. This document also contains a map and a description of each designated unit.
**Federal Register Reference:** July10, 2014, Federal Register, 79:51264-51266

| Common Name | Scientific name | Federal Status | Record Status |
|---|---|---|---|
| **Vertebrate:** | | | |
| American alligator | *Alligator mississippiensis* | T (S/A) | Current |
| Bald eagle | *Haliaeetus leucocephalus* | BGPA | Current |
| Black rail | *Laterallus jamaicensis* | T | Current |
| Carolina gopher frog | *Rana capito capito* | ARS | Current |
| Green sea turtle | *Chelonia mydas* | T | Current |
| Hawksbill (=carey) sea turtle | *Eretmochelys imbricata* | E | Historical |
| Kemp's (=Atlantic) ridley sea turtle | *Lepidochelys kempii* | E | Current |
| Leatherback sea turtle | *Dermochelys coriacea* | E | Current |
| Loggerhead sea turtle | *Caretta caretta* | T | Current |
| Northern long-eared bat | *Myotis septentrionalis* | T | Current |
| Piping plover | *Charadrius melodus* | T | Current |

| | | | |
|---|---|---|---|
| Red-cockaded woodpecker | *Picoides borealis* | E | Current |
| Red knot | *Calidris canutus rufa* | T | Current |
| Roseate tern | *Sterna dougallii dougallii* | T | Current |
| Shortnose sturgeon | *Acipenser brevirostrum* | E | Current |
| Southern hognose snake | *Heterodon simus* | ARS | Obscure |
| West Indian manatee | *Trichechus manatus* | E | Current |
| **Invertebrate:** | | | |
| **Vascular Plant:** | | | |
| Raven's seedbox | *Ludwigia ravenii* | ARS | Current |
| Rough-leaved loosestrife | *Lysimachia asperulaefolia* | E | Current |
| Seabeach amaranth | *Amaranthus pumilus* | T | Current |
| Venus' fly-trap | *Dionaea muscipula* | ARS | Current |
| **Nonvascular Plant:** | | | |
| **Lichen:** | | | |

**Definitions of Federal Status Codes:**
E = endangered. A taxon "in danger of extinction throughout all or a significant portion of its range."
T = threatened. A taxon "likely to become endangered within the foreseeable future throughout all or a significant portion of its range."
C = candidate. A taxon under consideration for official listing for which there is sufficient information to support listing. (Formerly "C1" candidate species.)
BGPA =Bald and Golden Eagle Protection Act. See below.
ARS = At Risk Species. Species that are Petitioned, Candidates or Proposed for Listing under the Endangered Species Act. Consultation under Section 7(a)(2) of the ESA is not required for Candidate or Proposed species; although a Conference, as described under Section 7(a)(4) of the ESA is recommended for actions affecting species proposed for listing.
T(S/A) = threatened due to similarity of appearance. A taxon that is threatened due to similarity of appearance with another listed species and is listed for its protection. Taxa listed as T(S/A) are not biologically endangered or threatened and are not subject to Section 7 consultation. See below.
EXP = experimental population. A taxon listed as experimental (either essential or nonessential). Experimental, nonessential populations of endangered species (e.g., red wolf) are treated as threatened species on public land, for consultation purposes, and as species proposed for listing on private land.
P = proposed. Taxa proposed for official listing as endangered or threatened will be noted as "PE" or "PT", respectively.

**Bald and Golden Eagle Protection Act (BGPA):**

In the July 9, 2007 Federal Register( 72:37346-37372), the bald eagle was declared recovered, and removed (de-listed) from the Federal List of Threatened and Endangered wildlife. This delisting took effect August 8,2007. After delisting, the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668-668d) becomes the primary law protecting bald eagles. The Eagle Act prohibits take of bald and golden eagles and provides a statutory definition of "take" that includes "disturb". The USFWS has developed National Bald Eagle Management Guidelines to provide guidance to land managers, landowners, and others as to how to avoid disturbing bald eagles. For mor information, visit http://www.fws.gov/migratorybirds/baldeagle.htm

**Threatened due to similarity of appearance(T(S/A)):**

In the November 4, 1997 Federal Register (55822-55825), the northern population of the bog turtle (from New York south to Maryland) was listed as T (threatened), and the southern population (from Virginia south to Georgia) was listed as T(S/A) (threatened due to similarity of appearance). The T(S/A) designation bans the collection and interstate and international commercial trade of bog turtles from the southern population. The T(S/A) designation has no effect on land management activities by private landowners in North Carolina, part of the southern population of the species. In addition to its official status as T(S/A), the U.S. Fish and Wildlife Service considers the southern population of the bog turtle as a Federal species of concern due to habitat loss.

**Definitions of Record Status:**

Current - Based on NC Natural Heritage Program information, this taxon is considered to be extant in the county.

Historical - Based on NC Natural Heritage Program information, this taxon is considered to be historical in the county, meaning that all recorded occurrences are either extirpated, have not been found in recent surveys, or have not been surveyed recently enough to be confident they are still present.

Obscure - the date and/or location of observation is uncertain.

Incidental/migrant - the species was observed outside of its normal range or habitat.

Probable/potential - the species is considered likely to occur in this county based on the proximity of known records (in adjacent counties), the presence of potentially suitable habitat, or both.

## Endangered and Threatened Species Descriptions

The following descriptions and information regarding endangered and threatened species found in Carteret County was provided by the US Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA) Fisheries.

Any known areas in Carteret County containing these species are identified in the descriptions.

### Red-cockaded woodpecker

The red-cockaded woodpecker (RCW) is currently listed by the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA) as 'endangered' across its range (USFWS, 1970). On October 8, 2020, the USFWS proposed to reclassify the RCW to 'threatened' status (USFWS, 2020). Major threats to the species include deforestation and loss of long-leaf pine forest habitats. The RCW is endemic to open, mature and old growth pine ecosystems. The birds are typically 7 inches (18-20 centimeters (cm)) long with black and white feathers that are barred. The head has a black crown and a white neck. This species can be identified by voice (squeaky or raspy peeps and chatter) and by the black and white barring pattern on their backs and large white cheek patches. Adult male woodpeckers have several red feathers, or *cockades* located on each side of his head between the black crown and white cheek.

In southeastern North Carolina (Brunswick, Carteret, Craven, Jones, New Hanover, Onslow, and Pender Counties), RCWs forage and nest in both xeric and pocosin communities with low site productivity, including mature open pine forests, mainly in longleaf pine. In the southern coastal plain, pines used for foraging and nesting may be smaller and shorter than in other populations. Groups will use wet pine flatwoods, pond pine woodland and high pocosin for foraging and nesting.

### Sea Turtles

The loggerhead sea turtle, which occurs throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian Oceans, was federally listed worldwide as a threatened species on July 28, 1978 (43 Federal Register (FR) 32800). On September 22, 2011, the loggerhead sea turtle's listing under the ESA was revised from a single threatened species to nine Distinct Population Segments (DPS) listed as either threatened or endangered (79 FR 39755). The Northwest Atlantic Ocean DPS is listed as threatened. Loggerheads are named for their relatively large heads, which support powerful jaws and enable them to feed on hard-shelled prey, such as whelks and conch. Bogue Banks is located within Critical Habitat Unit LOGG-T-NC-1 for the Northwest Atlantic Ocean DPS of the Loggerhead sea turtle

The green sea turtle was federally listed on July 28, 1978 (43 FR 32800). On April 6, 2016, the NMFS and Service issued a final rule to list 11 DPSs of the green sea turtle. In North Carolina, the green sea turtle is part of the North Atlantic Ocean DPS and is listed as threatened. The green sea turtle grows to a maximum size of about 4 feet (ft) and a weight of 440 pounds. Hatchling green turtles eat a variety of plants and animals, but adults feed almost exclusively on seagrasses and marine algae.

Leatherbacks have the widest distribution of the sea turtles with nonbreeding animals recorded as far north as the British Isles and the Maritime Provinces of Canada and as far south as Argentina

and the Cape of Good Hope (Pritchard 1992). The adult leatherback can reach 4 to 8 feet in length and weigh 500 to 2,000 pounds. The carapace is distinguished by a rubber-like texture, about 1.6 inches thick, made primarily of tough, oil-saturated connective tissue. Jellyfish are the main staple of its diet, but it is also known to feed on sea urchins, squid, crustaceans, tunicates, fish, blue-green algae, and floating seaweed. ENDANGERED

The Kemp's ridley sea turtle was federally listed as endangered on December 2, 1970 (35 FR 18320). The Kemp's ridley has one of the most geographically restricted distribution of any sea turtle species. The range of the Kemp's ridley includes the Gulf coasts of Mexico and the U.S., and the Atlantic coast of North America as far north as Nova Scotia and Newfoundland. The weight of an adult Kemp's ridley is generally between 70 to 108 pounds. Their diet consists mainly of swimming crabs, but may also include fish, jellyfish, and an array of mollusks.

The hawksbill sea turtle was federally listed as endangered on June 2, 1970 (35 FR 8491). The hawksbill is found in tropical and subtropical seas of the Atlantic, Pacific, and Indian Oceans. Hawksbills typically weigh around 176 pounds or less. Within the continental U.S., hawksbill sea turtle nesting is rare, and nests are only known from Florida and North Carolina.

In North Carolina, sea turtles nest on ocean beaches and occasionally on estuarine shorelines with suitable sand. Females dig nests typically between the high-tide line and the dune front. The nesting season is from May 1 to November 15.

**Piping plover**

Three separate breeding populations of piping plover have been identified: the Northern Great Plains (threatened), the Great Lakes (endangered), and the Atlantic Coast (threatened). Piping plovers in North Carolina include individuals from all three breeding populations. Piping plovers from the federally endangered Great Lakes breeding population, as well birds from the threatened Atlantic Coast and Northern Great Plains breeding populations overwinter on North Carolina beaches.

North Carolina is the only state where the piping plover's breeding and wintering ranges overlap and the birds are present year-round. Piping plovers from the Atlantic Coast breeding population nest above the high tide line on coastal beaches; on sand flats at the ends of sand spits and barrier islands; on gently sloping foredunes; in blowout areas and overwashes behind or between dunes; and in sparsely vegetated dunes. The species requires broad, open, sand flats for feeding, and undisturbed flats with low dunes and sparse dune grasses for nesting.

Breeding and wintering plovers feed on exposed wet sand in swash zones; intertidal ocean beach; wrack lines; washover passes; mud, sand, and algal flats; and shorelines of streams, ephemeral ponds, lagoons, and salt marshes by probing for invertebrates at or just below the surface (Coutu et al. 1990; USFWS 1996a). They use beaches adjacent to foraging areas for roosting and preening. Small sand dunes, debris, and sparse vegetation within adjacent beaches provide shelter from wind and extreme temperatures.

<u>Breeding piping plovers</u>

Piping plovers from the Atlantic Coast breeding population nest in North Carolina. Most nesting pairs are recorded on Cape Hatteras and Cape Lookout National Seashores each year.

Migrating and overwintering piping plovers

Carteret County sites where greater than 10 piping plovers have been observed regularly since 2006 include other portions of Cape Lookout National Seashore (Core Banks, New Drum Inlet, and Shackleford Banks). Developed beaches and inlets that are regularly modified or disturbed are utilized by significantly fewer piping plovers. Unpublished data from NCWRC's PAWS database provide banded piping plover data for most coastal areas of North Carolina. Banded piping plovers from all three breeding populations have been recorded on the National Seashores and south to Masonboro Inlet. This region of North Carolina, from Cape Lookout to Masonboro Inlet, is extremely important to the survival and recovery of the piping plover, particularly the Great Lakes piping plover (which is listed as endangered).

**West Indian manatee**

The West Indian manatee was listed in 1967 as endangered throughout its range, and received federal protection with the passage of the ESA in 1973. West Indian manatees also are protected under the Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1461 et seq.). Adult manatees average 10 feet long and weigh about 2,200 pounds. Manatees are commonly found in fresh, brackish, or marine water habitats, including shallow coastal bays, lagoons, estuaries, and inland rivers of varying salinity extremes. Manatees spend much of their time underwater or partly submerged, making them difficult to detect even in shallow water.

Manatees are seasonal inhabitants of North Carolina, typically from June through October, although some individuals may remain longer during the fall season before traveling south for the winter. Only a few each year are documented along the North Carolina coast, and those that are documented are typically seen along the shoreline, either feeding or seeking sources of fresh water, so it is possible that the numbers of manatees visiting the state each summer is underestimated.

**Shortnose Sturgeon**

Shortnose sturgeon live in rivers and coastal waters from Canada to Florida. They hatch in the freshwater rivers and spend most of their time in the estuaries of these rivers. Shortnose sturgeon tend to spend relatively little time in the ocean.

Shortnose sturgeon were harvested by Native American fishermen some 4,000 years ago and sturgeon is thought to be a primary food source that saved the Jamestown settlers in 1607. In the mid-1800s these species began to support a thriving and profitable fishery for caviar, smoked meat, and oil. By the late-1800s sturgeon were being over exploited. In 1890 over 7 million pounds of sturgeon were caught in a year. By 1920 only 23,000 pounds of sturgeon were caught.

Although shortnose sturgeon are no longer fished, threats remain that affect the recovery of the species. Bycatch in commercial fisheries and increased industrial uses (such as hydropower, nuclear power, treated sewage disposal) of large coastal rivers during the 20$^{th}$ century became the primary barrier to recovery.

Today, the shortnose sturgeon is listed as endangered throughout its range and is listed as endangered under the Endangered Species Act. The primary threats are habitat degradation,

water pollution, dredging, water withdrawals, fisheries bycatch, and habitat impediments (e.g. dams).

Historically, shortnose sturgeon were found in coastal rivers along the East Coast of North America from the Saint John River in New Brunswick, Canada to the St. Johns River in Florida. Shortnose sturgeon can currently be found in 41 bays and river along the East Coast, including the Neuse River and Pamlico Sound.

**Northern long-eared bat**

The northern long-eared bat (NLEB) is listed as threatened. The NLEB is a medium-sized bat with a body length of 3 to 3.7 inches and a wingspan of 9 to 10 inches. Their fur color can be medium to dark brown on the back and tawny to pale-brown on the underside. As its name suggests, this bat is distinguished by its long ears, particularly as compared to other bats in its genus, Myotis. In the colder portions of its range, northern long-eared bats spend winter hibernating in caves and mines. During the summer in cooler climates, and year-round in the North Carolina coastal plain, northern long-eared bats roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees).

In the coastal plain of North Carolina, NLEB roost in trees year-round. NLEB seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices. This bat has also been found rarely roosting in structures, like barns and sheds.

Pregnant females roost in small colonies and give birth to a single pup. Maternity colonies of females and young generally have 30 to 60 bats at the beginning of the summer, although larger maternity colonies have also been seen. Numbers of individuals in roosts typically decreases from pregnancy to post-lactation. Most bats within a maternity colony give birth around the same time, which may occur from late May or early June to late July, depending where the colony is located within the species' range. Young bats start flying by 18 to 21 days after birth. Maximum lifespan for the northern long-eared bat is estimated to be up to 18.5 years.

Like most bats, NLEB emerge at dusk to feed. In the coastal plain, bats do not appear to hibernate, and will emerge and actively feed even during the winter on relatively warm evenings. They feed on moths, flies, leafhoppers, caddisflies, and beetles, which they catch while in flight using echolocation or by gleaning motionless insects from vegetation.

**Eastern black rail**

On October 9, 2018, the Service proposed to list the eastern black rail as threatened. The eastern black rail is a subspecies of black rail that occurs in salt, brackish, and freshwater wetlands in the eastern United States, Mexico, Central America, and the Caribbean. It is the smallest rail in North America, ranging from 10-15 centimeters (cm) in total length with a wingspan of 22-28 cm (Eddleman et al. 1994). Males and females are similar in size and adults are generally pale to blackish gray, with a small blackish bill and bright red eyes.

Eastern black rails are found in a variety of salt, brackish, and freshwater marsh habitats that can be tidally or non-tidally influenced. Within these habitats, the birds occupy relatively high elevations along heavily vegetated wetland gradients, with soils that are moist or flooded to a

shallow depth (Eddleman, Knopf, Meanley, Reid, and Zembal 1988; Nadeau and Conway 2015). Eastern black rails require dense vegetative cover that allows movement underneath the canopy. Plant structure is considered more important than plant species composition in predicting habitat suitability for the subspecies (Flores and Eddleman 1995). Occupied habitat tends to be primarily composed of fine-stemmed emergent plants (rushes, grasses, and sedges) with high stem densities and dense canopy cover (Flores and Eddleman 1995; Legare and Eddleman 2001). Soils are moist to saturated (occasionally dry) and interspersed with or adjacent to very shallow water (1 to 6 centimeters) (Legare and Eddleman 2001). Eastern black rails forage on a variety of small aquatic and terrestrial invertebrates, especially insects, and seeds.

Eastern black rails are present in North Carolina year-round. Overwintering birds may overlap with the breeding population (Watts 2016). Little is known about eastern black rails during migration, including migratory stopover habitat (Eddleman et al. 1994). The eastern black rail is a wetland dependent subspecies. While it can be found in salt, brackish, and freshwater marshes that are tidally or non-tidally influenced, it has a very specific niche habitat. It requires dense herbaceous vegetation to provide shelter and cover and areas for protected nest sites; it is not found in areas with woody vegetation.

The bird requires shallow water or moist soil for its nesting sites. Ideally, the water level is 1 to 6 cm (0.39 to 2.36 in), although less than 3 cm (1.18 in) is ideal for foraging and chick rearing. Water levels must be below the nests during egg laying and incubation for nests to be successful. Eastern black rails require elevated refugia with dense cover to survive high water events, because juvenile and adult black rails prefer to walk and run rather than fly and chicks are unable to fly. Having higher elevation areas with dense vegetation allows the birds to escape flood events during the flightless molt period, and provides shelter from predators.

**Red knot**

On December 11, 2014, the Service listed the rufa red knot as threatened throughout its range (79 FR 73706). The red knot is a medium-sized shorebird about 23 to 28 centimeters (cm) in length. The red knot migrates annually between its breeding grounds in the Canadian Arctic and several wintering regions, including the Southeast U.S., the Northeast Gulf of Mexico, northern Brazil, and Tierra del Fuego at the southern tip of South America. During both the northbound (spring) and southbound (fall) migrations, red knots use key staging and stopover areas to rest and feed. Although North Carolina is not one of the most significant U.S. staging areas, red knots migrate through and overwinter on North Carolina beaches. The term "winter" is used to refer to the nonbreeding period of the red knot life cycle when the birds are not undertaking migratory movements. Red knots are most common in North Carolina during the migration season (mid-April through May and July to Mid-October), and may be present in the state throughout the year (Fussell 1994). Red knots may be found along sandy beaches, tidal mudflats, salt marshes, shallow coastal impoundments and lagoons, and peat banks (Cohen et al. 2010; Cohen et al. 2009; Harrington 2001; Truitt et al. 2001). The supra-tidal (above the high tide) sandy habitats of inlets provide important areas for roosting, especially at higher tides when intertidal habitats are inundated (Harrington 2008; USFWS 2013a).

The red knot is a specialized molluscivore, eating hard-shelled mollusks, sometimes supplemented with easily accessed softer invertebrate prey, such as shrimp- and crab-like organisms, marine worms, and horseshoe crab eggs (Piersma and van Gils 2011; Harrington 2001). The primary prey of the rufa red knot in non-breeding habitats in North Carolina include

*Donax* and *Darina* clams; snails (*Littorina spp.*), and other mollusks, with polychaete worms, insect larvae, and crustaceans also eaten in some locations.

**Bald Eagle**

Forty years ago the Bald Eagle was in danger of extinction. Habitat destruction and degradation, illegal shooting, and the contamination of its food source largely due to the use of DDT had decimated the eagle population. The Bald Eagle has since recovered due to steps taken to protect its habitat through the Endangered Species Act, the banning of DDT by the federal government, and conservation efforts by the American public. Bald Eagles were removed from the endangered species list in August 2007 due to their sufficiently recovered populations. Bald Eagles are now protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Act.

Bald Eagles live near rivers, lakes, and marshes where they can find fish that are its main food. Bald Eagles also feed on waterfowl, turtles, rabbits, snakes, and other small animals. Bald Eagles require a good food base, perching areas, and nesting sites. Their habitat includes estuaries, large lakes, reservoirs, rivers, and some seacoasts. In winter, the birds congregate near open water in tall trees for spotting prey and night roosts for sheltering.

**Roseate tern**

Listed as threatened, the USFWS indicates that the roseate tern in unlikely to be found in Carteret County.

**Breeding and Wintering Shorebirds** (although non-listed, Carteret County is considered important for these species also)

Species include American oystercatcher, short-billed dowitcher, black-bellied plover, semipalmated plover, Wilson's plover, willet, sanderling, killdeer, semipalmated sandpiper, western sandpiper, and marbled godwit. Piping plover and red knot are also included in this category, but discussed above.

American oystercatcher, willet, Wilson's plover, and piping plover (Atlantic Coast breeding population) may nest on beaches and estuarine islands in North Carolina. The other species listed above are migrants or winter residents. Many of the breeding shorebird species nest as isolated pairs in sandy areas of the beach or dune system. Some species may form loose colonies. Nests are typically a simple scrape in the sand, though some nests may be lined with pebbles, pieces of shell, or grass.

Migrating and wintering shorebirds may be found along estuarine, inlet, and ocean shorelines up to 10 months of each year, where they forage along the shoreline for invertebrate prey and roost in adjacent vegetated or unvegetated habitats. These species typically travel thousands of miles from breeding habitats in the American Midwest or farther north in the sub-arctic or arctic circle to reach the coast of North Carolina.

**Rough-leaf Loosestrife**

Rough-leaf loosestrife is listed as endangered. It is a perennial herb that grows 11.8 – 23.6 inches tall. Triangular shaped leaves are often opposite on shorter stems and tend to be arranged in whorls of three or four encircling taller stems. Contrary to the common name, the leaf surfaces

are smooth and not rough to the touch. Yellow flowers are 0.6 inch across with yellow-orange anthers from mid-May through June, with fruits present from July through October.

This species generally occurs in the ecotones or edges between longleaf pine uplands and pond pine pocosins (areas of dense shrub and vine growth usually on wet, peaty, poorly drained soil) on moist to seasonally saturated sands and on shallow organic soils overlaying sand. Rough-leaf loosestrife has also been found on deep peat in the low shrub community of large Carolina bays (shallow, elliptical, poorly drained depressions of unknown origin). The grass-shrub ecotone where the plants are found is fire-maintained, as are the adjacent plant communities of longleaf pine-scrub oak, savanna, flatwoods, and pocosin. Suppressing naturally occurring fires in these ecotones results in shrubs increasing in density and height and expanding to eliminate the open edges required by this plant. Several populations are known from roadsides and power line rights of way where regular maintenance mimics fire and maintains vegetation so that herbaceous species are open to sunlight.

Rough-leaf loosestrife is endemic to the coastal plain and sandhills of North Carolina and South Carolina. North Carolina populations are known in Carteret County. Most of the populations are small, both in extant of area covered and in number of stems.

Fire suppression, wetland drainage, and residential and commercial development have altered and eliminated habitat for this species and continue to be the most significant threats to the continued existence of the species.

**Seabeach Amaranth**

Seabeach amaranth is listed as threatened. It is an annual plant found on the dunes of Atlantic Ocean beaches in nine states from Massachusetts to South Carolina. In North Carolina it is found in several coastal counties, including Carteret County. The stems are fleshy and pinkish-red or red, with small rounded leaves that are 0.5 – 1 inch in diameter. The leaves, with indented veins, are clustered toward the tip of the stem and have a small notch at the rounded tip. Flowers and fruits are relatively inconspicuous, borne in clusters along the stems. Germination occurs over a relatively long period of time, generally from April to July. Upon germination, the species forms a small unbranched sprig, but soon begins to branch profusely into a clump. The species is an effective sand binder, building small dunes where it grows.

Seabeach amaranth occurs on barrier island beaches, where its primary habitat consists of overwash flats at accreting ends of islands and lower foredunes and upper strands of non-eroding beaches. It occasionally establishes small temporary populations in other habitats, including sound-side beaches, blowouts in foredunes, and sand and shell material placed as beach replenishment or dredge spoil. Seabeach amaranth appears to be intolerant of competition and does not occur on well-vegetated sites. The species appears to need extensive area of barrier island beaches and inlets, functioning in a relatively natural and dynamic manner. These characteristics allow it to move around in the landscape as a fugitive species, occupying suitable habitat as it becomes available.

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# APPENDIX D

Soil Characteristics – Carteret County
Sewage Disposal
Dwellings and Small Commercial Buildings
Prime and Other Important Farmlands

# Sewage Disposal

This table shows the degree and kind of soil limitations that affect septic tank absorption fields and sewage lagoons. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

*Septic tank absorption fields* are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches or between a depth of 24 inches and a restrictive layer is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

*Sewage lagoons* are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Saturated hydraulic conductivity (Ksat) is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a Ksat rate of more than 14 micrometers per second are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

Information in this table is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this table. Local ordinances and regulations should be considered in planning, in site selection, and in design.

## Report—Sewage Disposal

[Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| AaA—Altavista loamy fine sand, 0 to 2 percent slopes | | | | | |
| Altavista | 85 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | | |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Ag—Augusta loamy fine sand | | | | | |
| Augusta, drained | 80 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | | |
| Augusta, undrained | 10 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | | |
| Tetotum | 5 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | | |
| Tomotley, undrained | 5 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.68 | | |
| Ap—Arapahoe fine sandy loam | | | | | |
| Arapahoe, drained | 80 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Flooding | 0.40 | Flooding | 0.40 |
| Arapahoe, undrained | 10 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Flooding | 0.40 | Flooding | 0.40 |
| AuB—Autryville loamy fine sand, 0 to 6 percent slopes | | | | | |
| Autryville | 85 | Somewhat limited | | Very limited | |
| | | Depth to saturated zone | 0.99 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 0.72 |
| Muckalee, undrained | 2 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.50 |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Be—Beaches, coastal | | | | | |
| Beaches | 95 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Filtering capacity | 1.00 | | |
| Bf—Beaches, storm tidal | | | | | |
| Beaches | 95 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Filtering capacity | 1.00 | | |
| BH—Belhaven muck, 0 to 2 percent slopes, rarely flooded | | | | | |
| Belhaven, undrained | 90 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 1.00 | Depth to saturated zone | 1.00 |
| | | Flooding | 0.40 | Flooding | 0.40 |
| Pungo, rarely flooded | 7 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Subsidence | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Flooding | 0.40 | Flooding | 0.40 |
| Roper, drained | 3 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Slow water movement | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Flooding | 0.40 | Flooding | 0.40 |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Bn—Beaches-Newhan complex, 0 to 30 percent slopes | | | | | |
| Beaches | 46 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Filtering capacity | 1.00 | Slope | 0.08 |
| Newhan | 44 | Very limited | | Very limited | |
| | | Filtering capacity | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Slope | 0.84 | Flooding | 0.40 |
| | | Flooding | 0.40 | | |
| ByB—Baymeade fine sand, 1 to 6 percent slopes | | | | | |
| Baymeade | 85 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Depth to saturated zone | 0.99 | Depth to saturated zone | 0.72 |
| | | | | Slope | 0.32 |
| Leon | 5 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | | |
| Cd—Corolla-Duckston complex | | | | | |
| Corolla | 50 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Flooding | 0.40 |
| | | Flooding | 0.40 | Slope | 0.08 |
| Duckston | 30 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Flooding | 0.40 |
| | | Flooding | 0.40 | | |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| CH—Carteret sand, frequently flooded | | | | | |
| Carteret, storm tidal | 90 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Filtering capacity | 1.00 | | |
| CL—Carteret sand, low, frequently flooded | | | | | |
| Carteret, tidal | 90 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Filtering capacity | 1.00 | | |
| CnB—Conetoe loamy fine sand, 0 to 5 percent slopes | | | | | |
| Conetoe | 85 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | | | Slope | 0.08 |
| Co—Corolla fine sand | | | | | |
| Corolla | 85 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Flooding | 0.40 |
| | | Flooding | 0.40 | | |
| Duckston | 5 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | | |
| Carteret, high | 2 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | | |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| CrB—Craven loam, 1 to 4 percent slopes | | | | | |
| Craven | 85 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 0.08 |
| Bibb, undrained | 3 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| Johnston, undrained | 2 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Ponding | 1.00 |
| | | Ponding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | | | Depth to saturated zone | 1.00 |
| Muckalee, undrained | 1 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.50 |
| CT—Croatan muck | | | | | |
| Croatan, undrained | 80 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.68 | Seepage | 1.00 |
| Croatan, drained | 10 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.68 | Seepage | 1.00 |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Cu—Corolla-Urban land complex | | | | | |
| Corolla | 46 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Flooding | 0.40 |
| | | Flooding | 0.40 | Slope | 0.08 |
| Urban land | 44 | Not rated | | Not rated | |
| Duckston | 5 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Flooding | 0.40 |
| | | Flooding | 0.40 | | |
| DA—Dare muck | | | | | |
| Dare, drained | 60 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Subsidence | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Flooding | 0.40 | Flooding | 0.40 |
| Dare, undrained | 25 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Subsidence | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Flooding | 0.40 | Flooding | 0.40 |
| De—Deloss fine sandy loam | | | | | |
| Deloss, drained | 80 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | | |
| Deloss, undrained | 10 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | | |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Dm—Deloss mucky loam, frequently flooded | | | | | |
| Deloss, undrained | 90 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | | |
| DO—Dorovan muck, 0 to 2 percent slopes, frequently flooded | | | | | |
| Dorovan, undrained | 90 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Subsidence | 1.00 | Depth to saturated zone | 1.00 |
| | | | | Seepage | 0.50 |
| Chowan, undrained | 6 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | | | Seepage | 1.00 |
| Belhaven, undrained | 4 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 1.00 | Depth to saturated zone | 1.00 |
| | | Flooding | 0.40 | Flooding | 0.40 |
| Du—Duckston fine sand, frequently flooded | | | | | |
| Duckston | 90 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | | |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Fr—Fripp fine sand, 2 to 30 percent slopes | | | | | |
| Fripp | 85 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | | |
| Conaby, undrained | 5 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Flooding | 0.40 | Depth to saturated zone | 1.00 |
| | | | | Flooding | 0.40 |
| GoA—Goldsboro loamy fine sand, 0 to 2 percent slopes | | | | | |
| Goldsboro | 90 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 1.00 |
| Rains, undrained | 5 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.50 |
| Muckalee, undrained | 1 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.50 |
| HB—Hobucken mucky fine sandy loam, frequently flooded | | | | | |
| Hobucken, tidal | 90 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Ponding | 1.00 |
| | | Ponding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | | | Seepage | 1.00 |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| KuB—Kureb sand, 0 to 6 percent slopes | | | | | |
| Kureb | 85 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Slope | 0.08 |
| Leon | 5 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| LF—Longshoal muck, very frequently flooded | | | | | |
| Longshoal, tidal | 90 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Filtering capacity | 1.00 | Seepage | 1.00 |
| | | Subsidence | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | | |
| Ln—Leon sand | | | | | |
| Leon | 85 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| Lu—Leon-Urban land complex | | | | | |
| Leon | 50 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | | | Slope | 0.08 |
| Urban land | 40 | Not rated | | Not rated | |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Ly—Lynchburg fine sandy loam | | | | | |
| Lynchburg, drained | 85 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 1.00 |
| Lynchburg, undrained | 10 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 1.00 |
| Rains, undrained | 3 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.50 |
| Woodington, undrained | 2 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| MA—Masontown mucky loam, frequently flooded | | | | | |
| Masontown, undrained | 85 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Ponding | 1.00 |
| | | Ponding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| Mc—Mandarin-Urban land complex | | | | | |
| Mandarin | 50 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 1.00 |
| Urban land | 40 | Not rated | | Not rated | |
| Mn—Mandarin sand | | | | | |
| Mandarin | 85 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 1.00 |
| Mu—Murville mucky sand | | | | | |
| Murville, undrained | 85 | Very limited | | Very limited | |
| | | Ponding | 1.00 | Ponding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Nc—Newhan-Corolla complex, 0 to 30 percent slopes | | | | | |
| Newhan | 50 | Very limited | | Very limited | |
| | | Filtering capacity | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | Flooding | 0.40 |
| | | Flooding | 0.40 | | |
| Corolla | 45 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Flooding | 0.40 |
| | | Flooding | 0.40 | Slope | 0.08 |
| Duckston | 5 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | | |
| Nd—Newhan fine sand, dredged, 2 to 30 percent slopes | | | | | |
| Newhan | 85 | Very limited | | Very limited | |
| | | Filtering capacity | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | Flooding | 0.40 |
| | | Flooding | 0.40 | | |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Ne—Newhan-Urban land complex, 0 to 8 percent slopes | | | | | |
| Newhan | 50 | Very limited | | Very limited | |
| | | Filtering capacity | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 0.68 |
| | | Flooding | 0.20 | Flooding | 0.20 |
| Urban land | 40 | Not rated | | Not rated | |
| Duckston | 5 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | | |
| Nh—Newhan fine sand, 2 to 30 percent slopes | | | | | |
| Newhan | 85 | Very limited | | Very limited | |
| | | Filtering capacity | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | Flooding | 0.40 |
| | | Flooding | 0.40 | | |
| Beaches | 5 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Filtering capacity | 1.00 | Slope | 0.08 |
| NoA—Norfolk loamy fine sand, 0 to 2 percent slopes | | | | | |
| Norfolk | 85 | Somewhat limited | | Very limited | |
| | | Depth to saturated zone | 0.99 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 0.72 |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| NoB—Norfolk loamy fine sand, 2 to 6 percent slopes | | | | | |
| Norfolk | 85 | Somewhat limited | | Very limited | |
| | | Depth to saturated zone | 0.99 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 0.72 |
| | | | | Slope | 0.32 |
| Woodington, undrained | 3 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| Muckalee, undrained | 1 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.50 |
| On—Onslow loamy sand | | | | | |
| Onslow | 90 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 1.00 |
| Rains, undrained | 5 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.50 |
| Pa—Pantego fine sandy loam | | | | | |
| Pantego, drained | 80 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 1.00 |
| | | Flooding | 0.40 | Flooding | 0.40 |
| Pantego, undrained | 10 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 1.00 |
| | | Flooding | 0.40 | Flooding | 0.40 |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| PO—Ponzer muck | | | | | |
| Ponzer, drained | 80 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Slow water movement | 1.00 | Depth to saturated zone | 1.00 |
| | | Flooding | 0.40 | Flooding | 0.40 |
| | | | | Seepage | 0.32 |
| Ponzer, undrained | 10 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Slow water movement | 1.00 | Depth to saturated zone | 1.00 |
| | | Flooding | 0.40 | Flooding | 0.40 |
| | | | | Seepage | 0.32 |
| Ra—Rains fine sandy loam, 0 to 2 percent slopes, Atlantic Coast Flatwoods | | | | | |
| Rains, undrained | 70 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 1.00 |
| Rains, drained | 16 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 1.00 |
| Lynchburg | 8 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 1.00 |
| Pantego, ponded | 6 | Very limited | | Very limited | |
| | | Ponding | 1.00 | Ponding | 1.00 |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 1.00 |
| | | | | Depth to saturated zone | 1.00 |
| Ro—Roanoke loam | | | | | |
| Roanoke, drained | 80 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | | |
| Roanoke, undrained | 10 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | | |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Se—Seabrook fine sand | | | | | |
| Seabrook | 80 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Filtering capacity | 1.00 | | |
| Dragston, drained | 3 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| Nimmo, undrained | 2 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| Leon | 1 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | | |
| StA—State loamy fine sand, 0 to 2 percent slopes | | | | | |
| State | 85 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Depth to saturated zone | 0.99 | Depth to saturated zone | 0.72 |
| | | Slow water movement | 0.50 | | |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Tm—Tomotley fine sandy loam | | | | | |
| Tomotley, drained | 75 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.68 | | |
| Tomotley, undrained | 10 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Slow water movement | 0.68 | | |
| Arapahoe, undrained | 3 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| Nimmo, undrained | 3 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| Dragston, undrained | 1 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| To—Torhunta mucky fine sandy loam | | | | | |
| Torhunta, drained | 80 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| Torhunta, undrained | 10 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| W—Water | | | | | |
| Water | 100 | Not rated | | Not rated | |

| Sewage Disposal–Carteret County, North Carolina | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| WaB—Wando fine sand, 0 to 6 percent slopes | | | | | |
| Wando | 85 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Slope | 0.08 |
| | | Depth to saturated zone | 0.40 | | |
| Leon | 3 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| Muckalee, undrained | 2 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.50 |
| Ws—Wasda muck | | | | | |
| Wasda, drained | 80 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.50 |
| | | Flooding | 0.40 | Flooding | 0.40 |
| Wasda, undrained | 10 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Organic matter content | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.50 |
| | | Flooding | 0.40 | Flooding | 0.40 |
| WuB—Wando-Urban land complex, 0 to 6 percent slopes | | | | | |
| Wando | 50 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Slope | 0.08 |
| | | Depth to saturated zone | 0.40 | | |
| Urban land | 40 | Not rated | | Not rated | |
| Leon | 3 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | | |

## Data Source Information

Soil Survey Area: Carteret County, North Carolina
Survey Area Data: Version 23, Jun 2, 2020

# Dwellings and Small Commercial Buildings

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. This table shows the degree and kind of soil limitations that affect dwellings and small commercial buildings.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

*Dwellings* are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

*Small commercial buildings* are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Information in this table is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this table. Local ordinances and regulations should be considered in planning, in site selection, and in design.

## Report—Dwellings and Small Commercial Buildings

[Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Dwellings without basements | | Dwellings with basements | | Small commercial buildings | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| AaA—Altavista loamy fine sand, 0 to 2 percent slopes | | | | | | | |
| Altavista | 85 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Depth to saturated zone | 0.39 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.39 |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Map symbol and soil name** | **Pct. of map unit** | **Dwellings without basements** | | **Dwellings with basements** | | **Small commercial buildings** | |
| | | **Rating class and limiting features** | **Value** | **Rating class and limiting features** | **Value** | **Rating class and limiting features** | **Value** |
| Ag—Augusta loamy fine sand | | | | | | | |
| Augusta, drained | 80 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Augusta, undrained | 10 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Tetotum | 5 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Depth to saturated zone | 0.39 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.39 |
| Tomotley, undrained | 5 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Ap—Arapahoe fine sandy loam | | | | | | | |
| Arapahoe, drained | 80 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Arapahoe, undrained | 10 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| AuB—Autryville loamy fine sand, 0 to 6 percent slopes | | | | | | | |
| Autryville | 85 | Not limited | | Somewhat limited | | Not limited | |
| | | | | Depth to saturated zone | 0.61 | | |
| Muckalee, undrained | 2 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Be—Beaches, coastal | | | | | | | |
| Beaches | 95 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Dwellings without basements | | Dwellings with basements | | Small commercial buildings | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Bf—Beaches, storm tidal | | | | | | | |
| Beaches | 95 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| BH—Belhaven muck, 0 to 2 percent slopes, rarely flooded | | | | | | | |
| Belhaven, undrained | 90 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Organic matter content | 1.00 | Subsidence | 1.00 | Organic matter content | 1.00 |
| | | Subsidence | 1.00 | | | Subsidence | 1.00 |
| Pungo, rarely flooded | 7 | Very limited | | Very limited | | Very limited | |
| | | Subsidence | 1.00 | Subsidence | 1.00 | Subsidence | 1.00 |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Organic matter content | 1.00 | | | Organic matter content | 1.00 |
| Roper, drained | 3 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Bn—Beaches-Newhan complex, 0 to 30 percent slopes | | | | | | | |
| Beaches | 46 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Newhan | 44 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Slope | 0.84 | Slope | 0.84 | Slope | 1.00 |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Map symbol and soil name** | **Pct. of map unit** | **Dwellings without basements** | | **Dwellings with basements** | | **Small commercial buildings** | |
| | | **Rating class and limiting features** | **Value** | **Rating class and limiting features** | **Value** | **Rating class and limiting features** | **Value** |
| ByB—Baymeade fine sand, 1 to 6 percent slopes | | | | | | | |
| Baymeade | 85 | Not limited | | Somewhat limited | | Somewhat limited | |
| | | | | Depth to saturated zone | 0.61 | Slope | 0.01 |
| Leon | 5 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Cd—Corolla-Duckston complex | | | | | | | |
| Corolla | 50 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 0.39 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.39 |
| Duckston | 30 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| CH—Carteret sand, frequently flooded | | | | | | | |
| Carteret, storm tidal | 90 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| CL—Carteret sand, low, frequently flooded | | | | | | | |
| Carteret, tidal | 90 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| CnB—Conetoe loamy fine sand, 0 to 5 percent slopes | | | | | | | |
| Conetoe | 85 | Not limited | | Not limited | | Not limited | |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Dwellings without basements | | Dwellings with basements | | Small commercial buildings | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Co—Corolla fine sand | | | | | | | |
| Corolla | 85 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 0.39 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.39 |
| Duckston | 5 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Carteret, high | 2 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| CrB—Craven loam, 1 to 4 percent slopes | | | | | | | |
| Craven | 85 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Shrink-swell | 0.50 | Depth to saturated zone | 1.00 | Shrink-swell | 0.50 |
| | | Depth to saturated zone | 0.39 | Shrink-swell | 0.31 | Depth to saturated zone | 0.39 |
| Bibb, undrained | 3 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Johnston, undrained | 2 | Very limited | | Very limited | | Very limited | |
| | | Ponding | 1.00 | Ponding | 1.00 | Ponding | 1.00 |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Organic matter content | 1.00 | | | Organic matter content | 1.00 |
| Muckalee, undrained | 1 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Dwellings without basements | | Dwellings with basements | | Small commercial buildings | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| CT—Croatan muck | | | | | | | |
| Croatan, undrained | 80 | Very limited | | Very limited | | Very limited | |
| | | Subsidence | 1.00 | Subsidence | 1.00 | Subsidence | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Organic matter content | 1.00 | | | Organic matter content | 1.00 |
| Croatan, drained | 10 | Very limited | | Very limited | | Very limited | |
| | | Subsidence | 1.00 | Subsidence | 1.00 | Subsidence | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Organic matter content | 1.00 | | | Organic matter content | 1.00 |
| Cu—Corolla-Urban land complex | | | | | | | |
| Corolla | 46 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 0.39 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.39 |
| Urban land | 44 | Not rated | | Not rated | | Not rated | |
| Duckston | 5 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| DA—Dare muck | | | | | | | |
| Dare, drained | 60 | Very limited | | Very limited | | Very limited | |
| | | Subsidence | 1.00 | Subsidence | 1.00 | Subsidence | 1.00 |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Organic matter content | 1.00 | | | Organic matter content | 1.00 |
| Dare, undrained | 25 | Very limited | | Very limited | | Very limited | |
| | | Subsidence | 1.00 | Subsidence | 1.00 | Subsidence | 1.00 |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Organic matter content | 1.00 | | | Organic matter content | 1.00 |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Dwellings without basements | | Dwellings with basements | | Small commercial buildings | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| De—Deloss fine sandy loam | | | | | | | |
| Deloss, drained | 80 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Deloss, undrained | 10 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Dm—Deloss mucky loam, frequently flooded | | | | | | | |
| Deloss, undrained | 90 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| DO—Dorovan muck, 0 to 2 percent slopes, frequently flooded | | | | | | | |
| Dorovan, undrained | 90 | Very limited | | Very limited | | Very limited | |
| | | Subsidence | 1.00 | Subsidence | 1.00 | Subsidence | 1.00 |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Organic matter content | 1.00 | Organic matter content | 1.00 | Organic matter content | 1.00 |
| Chowan, undrained | 6 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | | | Organic matter content | 1.00 | | |
| Belhaven, undrained | 4 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Organic matter content | 1.00 | Subsidence | 1.00 | Organic matter content | 1.00 |
| | | Subsidence | 1.00 | | | Subsidence | 1.00 |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Dwellings without basements | | Dwellings with basements | | Small commercial buildings | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Du—Duckston fine sand, frequently flooded | | | | | | | |
| Duckston | 90 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Fr—Fripp fine sand, 2 to 30 percent slopes | | | | | | | |
| Fripp | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| Conaby, undrained | 5 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| GoA—Goldsboro loamy fine sand, 0 to 2 percent slopes | | | | | | | |
| Goldsboro | 90 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Depth to saturated zone | 0.39 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.39 |
| Rains, undrained | 5 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Muckalee, undrained | 1 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| HB—Hobucken mucky fine sandy loam, frequently flooded | | | | | | | |
| Hobucken, tidal | 90 | Very limited | | Very limited | | Very limited | |
| | | Ponding | 1.00 | Ponding | 1.00 | Ponding | 1.00 |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Dwellings without basements | | Dwellings with basements | | Small commercial buildings | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| KuB—Kureb sand, 0 to 6 percent slopes | | | | | | | |
| Kureb | 85 | Not limited | | Not limited | | Not limited | |
| Leon | 5 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| LF—Longshoal muck, very frequently flooded | | | | | | | |
| Longshoal, tidal | 90 | Very limited | | Very limited | | Very limited | |
| | | Subsidence | 1.00 | Subsidence | 1.00 | Subsidence | 1.00 |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Organic matter content | 1.00 | Organic matter content | 1.00 | Organic matter content | 1.00 |
| Ln—Leon sand | | | | | | | |
| Leon | 85 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Lu—Leon-Urban land complex | | | | | | | |
| Leon | 50 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Urban land | 40 | Not rated | | Not rated | | Not rated | |
| Ly—Lynchburg fine sandy loam | | | | | | | |
| Lynchburg, drained | 85 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Lynchburg, undrained | 10 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Rains, undrained | 3 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Woodington, undrained | 2 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Dwellings without basements | | Dwellings with basements | | Small commercial buildings | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| MA—Masontown mucky loam, frequently flooded | | | | | | | |
| Masontown, undrained | 85 | Very limited | | Very limited | | Very limited | |
| | | Ponding | 1.00 | Ponding | 1.00 | Ponding | 1.00 |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Mc—Mandarin-Urban land complex | | | | | | | |
| Mandarin | 50 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Depth to saturated zone | 0.98 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.98 |
| Urban land | 40 | Not rated | | Not rated | | Not rated | |
| Mn—Mandarin sand | | | | | | | |
| Mandarin | 85 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Depth to saturated zone | 0.98 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.98 |
| Mu—Murville mucky sand | | | | | | | |
| Murville, undrained | 85 | Very limited | | Very limited | | Very limited | |
| | | Ponding | 1.00 | Ponding | 1.00 | Ponding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Nc—Newhan-Corolla complex, 0 to 30 percent slopes | | | | | | | |
| Newhan | 50 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| Corolla | 45 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 0.39 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.39 |
| Duckston | 5 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Dwellings without basements | | Dwellings with basements | | Small commercial buildings | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| Nd—Newhan fine sand, dredged, 2 to 30 percent slopes | | | | | | | |
| Newhan | 85 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| Ne—Newhan-Urban land complex, 0 to 8 percent slopes | | | | | | | |
| Newhan | 50 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | | | | | Slope | 0.14 |
| Urban land | 40 | Not rated | | Not rated | | Not rated | |
| Duckston | 5 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Nh—Newhan fine sand, 2 to 30 percent slopes | | | | | | | |
| Newhan | 85 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| Beaches | 5 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| NoA—Norfolk loamy fine sand, 0 to 2 percent slopes | | | | | | | |
| Norfolk | 85 | Not limited | | Somewhat limited | | Not limited | |
| | | | | Depth to saturated zone | 0.61 | | |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Map symbol and soil name** | **Pct. of map unit** | **Dwellings without basements** | | **Dwellings with basements** | | **Small commercial buildings** | |
| | | **Rating class and limiting features** | **Value** | **Rating class and limiting features** | **Value** | **Rating class and limiting features** | **Value** |
| NoB—Norfolk loamy fine sand, 2 to 6 percent slopes | | | | | | | |
| Norfolk | 85 | Not limited | | Somewhat limited | | Somewhat limited | |
| | | | | Depth to saturated zone | 0.61 | Slope | 0.01 |
| Woodington, undrained | 3 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Muckalee, undrained | 1 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| On—Onslow loamy sand | | | | | | | |
| Onslow | 90 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Depth to saturated zone | 0.39 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.39 |
| Rains, undrained | 5 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Pa—Pantego fine sandy loam | | | | | | | |
| Pantego, drained | 80 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Pantego, undrained | 10 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Dwellings without basements | | Dwellings with basements | | Small commercial buildings | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| PO—Ponzer muck | | | | | | | |
| Ponzer, drained | 80 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Subsidence | 1.00 | Subsidence | 1.00 | Subsidence | 1.00 |
| Ponzer, undrained | 10 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Subsidence | 1.00 | Subsidence | 1.00 | Subsidence | 1.00 |
| Ra—Rains fine sandy loam, 0 to 2 percent slopes, Atlantic Coast Flatwoods | | | | | | | |
| Rains, undrained | 70 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Rains, drained | 16 | Not limited | | Very limited | | Not limited | |
| | | | | Depth to saturated zone | 1.00 | | |
| Lynchburg | 8 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Pantego, ponded | 6 | Very limited | | Very limited | | Very limited | |
| | | Ponding | 1.00 | Ponding | 1.00 | Ponding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Ro—Roanoke loam | | | | | | | |
| Roanoke, drained | 80 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Shrink-swell | 0.50 | Shrink-swell | 0.50 | Shrink-swell | 0.50 |
| Roanoke, undrained | 10 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Shrink-swell | 0.50 | Shrink-swell | 0.50 | Shrink-swell | 0.50 |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Map symbol and soil name** | **Pct. of map unit** | **Dwellings without basements** | | **Dwellings with basements** | | **Small commercial buildings** | |
| | | **Rating class and limiting features** | **Value** | **Rating class and limiting features** | **Value** | **Rating class and limiting features** | **Value** |
| Se—Seabrook fine sand | | | | | | | |
| Seabrook | 80 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Depth to saturated zone | 0.39 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.39 |
| Dragston, drained | 3 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Depth to saturated zone | 0.81 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.81 |
| Nimmo, undrained | 2 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Leon | 1 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| StA—State loamy fine sand, 0 to 2 percent slopes | | | | | | | |
| State | 85 | Not limited | | Somewhat limited | | Not limited | |
| | | | | Depth to saturated zone | 0.61 | | |
| Tm—Tomotley fine sandy loam | | | | | | | |
| Tomotley, drained | 75 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Tomotley, undrained | 10 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Arapahoe, undrained | 3 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Nimmo, undrained | 3 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Dragston, undrained | 1 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Depth to saturated zone | 0.81 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.81 |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Map symbol and soil name** | **Pct. of map unit** | **Dwellings without basements** | | **Dwellings with basements** | | **Small commercial buildings** | |
| | | **Rating class and limiting features** | **Value** | **Rating class and limiting features** | **Value** | **Rating class and limiting features** | **Value** |
| To—Torhunta mucky fine sandy loam | | | | | | | |
| Torhunta, drained | 80 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Torhunta, undrained | 10 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| W—Water | | | | | | | |
| Water | 100 | Not rated | | Not rated | | Not rated | |
| WaB—Wando fine sand, 0 to 6 percent slopes | | | | | | | |
| Wando | 85 | Not limited | | Somewhat limited | | Not limited | |
| | | | | Depth to saturated zone | 0.15 | | |
| Leon | 3 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Muckalee, undrained | 2 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Ws—Wasda muck | | | | | | | |
| Wasda, drained | 80 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| Wasda, undrained | 10 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |

| Dwellings and Small Commercial Buildings–Carteret County, North Carolina | | | | | | | |
|---|---|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Dwellings without basements | | Dwellings with basements | | Small commercial buildings | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| WuB—Wando-Urban land complex, 0 to 6 percent slopes | | | | | | | |
| Wando | 50 | Not limited | | Somewhat limited | | Not limited | |
| | | | | Depth to saturated zone | 0.15 | | |
| Urban land | 40 | Not rated | | Not rated | | Not rated | |
| Leon | 3 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |

## Data Source Information

Soil Survey Area: Carteret County, North Carolina
Survey Area Data: Version 23, Jun 2, 2020

# Prime and other Important Farmlands

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

*Prime farmland* is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

*Unique farmland* is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

## Report—Prime and other Important Farmlands

| Prime and other Important Farmlands–Carteret County, North Carolina | | |
|---|---|---|
| **Map Symbol** | **Map Unit Name** | **Farmland Classification** |
| AaA | Altavista loamy fine sand, 0 to 2 percent slopes | All areas are prime farmland |
| Ag | Augusta loamy fine sand | Prime farmland if drained |
| Ap | Arapahoe fine sandy loam | Prime farmland if drained |
| AuB | Autryville loamy fine sand, 0 to 6 percent slopes | Farmland of statewide importance |
| Be | Beaches, coastal | Not prime farmland |
| Bf | Beaches, storm tidal | Not prime farmland |
| BH | Belhaven muck, 0 to 2 percent slopes, rarely flooded | Not prime farmland |
| Bn | Beaches-Newhan complex, 0 to 30 percent slopes | Not prime farmland |
| ByB | Baymeade fine sand, 1 to 6 percent slopes | Farmland of statewide importance |
| Cd | Corolla-Duckston complex | Not prime farmland |
| CH | Carteret sand, frequently flooded | Not prime farmland |
| CL | Carteret sand, low, frequently flooded | Not prime farmland |
| CnB | Conetoe loamy fine sand, 0 to 5 percent slopes | Farmland of statewide importance |
| Co | Corolla fine sand | Not prime farmland |

| Prime and other Important Farmlands–Carteret County, North Carolina | | |
|---|---|---|
| **Map Symbol** | **Map Unit Name** | **Farmland Classification** |
| CrB | Craven loam, 1 to 4 percent slopes | All areas are prime farmland |
| CT | Croatan muck | Not prime farmland |
| Cu | Corolla-Urban land complex | Not prime farmland |
| DA | Dare muck | Not prime farmland |
| De | Deloss fine sandy loam | Prime farmland if drained |
| Dm | Deloss mucky loam, frequently flooded | Prime farmland if drained |
| DO | Dorovan muck, 0 to 2 percent slopes, frequently flooded | Not prime farmland |
| Du | Duckston fine sand, frequently flooded | Not prime farmland |
| Fr | Fripp fine sand, 2 to 30 percent slopes | Not prime farmland |
| GoA | Goldsboro loamy fine sand, 0 to 2 percent slopes | All areas are prime farmland |
| HB | Hobucken mucky fine sandy loam, frequently flooded | Not prime farmland |
| KuB | Kureb sand, 0 to 6 percent slopes | Not prime farmland |
| LF | Longshoal muck, very frequently flooded | Not prime farmland |
| Ln | Leon sand | Farmland of unique importance |
| Lu | Leon-Urban land complex | Not prime farmland |
| Ly | Lynchburg fine sandy loam | Prime farmland if drained |
| MA | Masontown mucky loam, frequently flooded | Not prime farmland |
| Mc | Mandarin-Urban land complex | Not prime farmland |
| Mn | Mandarin sand | Not prime farmland |
| Mu | Murville mucky sand | Farmland of unique importance |
| Nc | Newhan-Corolla complex, 0 to 30 percent slopes | Not prime farmland |
| Nd | Newhan fine sand, dredged, 2 to 30 percent slopes | Not prime farmland |
| Ne | Newhan-Urban land complex, 0 to 8 percent slopes | Not prime farmland |
| Nh | Newhan fine sand, 2 to 30 percent slopes | Not prime farmland |
| NoA | Norfolk loamy fine sand, 0 to 2 percent slopes | All areas are prime farmland |
| NoB | Norfolk loamy fine sand, 2 to 6 percent slopes | All areas are prime farmland |
| On | Onslow loamy sand | All areas are prime farmland |
| Pa | Pantego fine sandy loam | Prime farmland if drained |
| PO | Ponzer muck | Farmland of statewide importance |
| Ra | Rains fine sandy loam, 0 to 2 percent slopes, Atlantic Coast Flatwoods | Prime farmland if drained |
| Ro | Roanoke loam | Farmland of statewide importance |
| Se | Seabrook fine sand | Not prime farmland |
| StA | State loamy fine sand, 0 to 2 percent slopes | All areas are prime farmland |
| Tm | Tomotley fine sandy loam | Prime farmland if drained |
| To | Torhunta mucky fine sandy loam | Prime farmland if drained |
| W | Water | Not prime farmland |
| WaB | Wando fine sand, 0 to 6 percent slopes | Not prime farmland |

| Prime and other Important Farmlands–Carteret County, North Carolina | | |
|---|---|---|
| **Map Symbol** | **Map Unit Name** | **Farmland Classification** |
| Ws | Wasda muck | Prime farmland if drained |
| WuB | Wando-Urban land complex, 0 to 6 percent slopes | Not prime farmland |

## Data Source Information

Soil Survey Area: Carteret County, North Carolina
Survey Area Data: Version 23, Jun 2, 2020

# APPENDIX E

Final 303(d) List – Carteret County

| Name | Description |
|---|---|
| Intracoastal Waterway | From the southwest mouth of Queen Creek to the west side of the Whiteoak River Restricted Area |
| WHITE OAK RIVER | DEH closed area from Hunters Creek to DEH closure line. |
| WHITE OAK RIVER | DEH closed area from Hunters Creek to DEH closure line. |
| Bogue Sound (Including Intracoastal Waterway) | From Bogue Inlet (from a line running from the eastern mouth of Bogue Inlet to SR 1117 on the mainland) to a line across Bogue Sound from the southwest side of mouth of Gales Creek. Area between ICWW and North Shore of Bogue Sound |
| Bogue Sound (Including Intracoastal Waterway) | From Bogue Inlet (from a line running from the eastern mouth of Bogue Inlet to SR 1117 on the mainland) to a line across Bogue Sound from the southwest side of mouth of Gales Creek. Cedar Point Villas Marina |
| Bogue Sound (Including Intracoastal Waterway) | From Bogue Inlet (from a line running from the eastern mouth of Bogue Inlet to SR 1117 on the mainland) to a line across Bogue Sound from the southwest side of mouth of Gales Creek. Dolphin Street Park Dockage |
| Bogue Sound (Including Intracoastal Waterway) | From Bogue Inlet (from a line running from the eastern mouth of Bogue Inlet to SR 1117 on the mainland) to a line across Bogue Sound from the southwest side of mouth of Gales Creek. Bayshore Park Dockage |
| Bogue Sound (Including Intracoastal Waterway) | From Bogue Inlet (from a line running from the eastern mouth of Bogue Inlet to SR 1117 on the mainland) to a line across Bogue Sound from the southwest side of mouth of Gales Creek. Old Ferry Dock at Cape Carteret |
| Bogue Sound (Including Intracoastal Waterway) | From Bogue Inlet (from a line running from the eastern mouth of Bogue Inlet to SR 1117 on the mainland) to a line across Bogue Sound from the southwest side of mouth of Gales Creek. Island Harbor Marina |
| Bogue Sound (Including Intracoastal Waterway) | From Bogue Inlet (from a line running from the eastern mouth of Bogue Inlet to SR 1117 on the mainland) to a line across Bogue Sound from the southwest side of mouth of Gales Creek. Salty Shores Marina |
| Bogue Sound (Including Intracoastal Waterway) | From Bogue Inlet (from a line running from the eastern mouth of Bogue Inlet to SR 1117 on the mainland) to a line across Bogue Sound from the southwest side of mouth of Gales Creek. Bogue Sound Yacht Club |
| Bogue Sound | DEH closed area at mouth of Hunting Island Creek |
| Bogue Sound | DEH closed area at mouth of Hunting Island Creek |
| Bogue Sound | DEH closed area at mouth of Sanders Creek |
| Bogue Sound | DEH closed area 870 meters west of mouth of Broad Creek |
| Bogue Sound | DEH closed area 870 meters west of mouth of Broad Creek |
| Bogue Sound (Including Intracoastal Waterway) | From a line across Bogue Sound from the southwest side of mouth of Gales Creek to Rock Point to Beaufort Inlet excluding the DEH Conditionally Approved Closed area near Jumping Ru. Salter Path |
| Bogue Sound (Including Intracoastal Waterway) | Prohibited Area at Fish n Lake |
| Bogue Sound (Including Intracoastal Waterway) | From a line across Bogue Sound from the southwest side of mouth of Gales Creek to Rock Point to Beaufort Inlet excluding the DEH Conditionally Approved Closed area near Jumping Ru. |
| Bogue Sound (Including Intracoastal Waterway). Brandywine Bay I | Prohibited area in sound extending from Brandywine Bay Inc. |
| Bogue Sound (Including Intracoastal Waterway) | From a line across Bogue Sound from the southwest side of mouth of Gales Creek to Rock Point to Beaufort Inlet excluding the DEH Conditionally Approved Closed area near Jumping Ru. Morehead City Port |
| Bogue Sound (Including Intracoastal Waterway) | From a line across Bogue Sound from the southwest side of mouth of Gales Creek to Rock Point to Beaufort Inlet excluding the DEH Conditionally Approved Closed area near Jumping Ru. Bogue Sound Atlantic Beach Area |
| Bogue Sound (Including Intracoastal Waterway) | From a line across Bogue Sound from the southwest side of mouth of Gales Creek to Rock Point to Beaufort Inlet excluding the DEH Conditionally Approved Closed area near Jumping Ru. Triple S Marina |
| Bogue Sound (Including Intracoastal Waterway) | From a line across Bogue Sound from the southwest side of mouth of Gales Creek to Rock Point to Beaufort Inlet excluding the DEH Conditionally Approved Closed area near Jumping Ru. Pine Knoll Shores Area |
| Bogue Sound (Including Intracoastal Waterway) | From a line across Bogue Sound from the southwest side of mouth of Gales Creek to Rock Point to Beaufort Inlet excluding the DEH Conditionally Approved Closed area near Jumping Ru. Bogue Pines Boat Basin |
| Bogue Sound (Including Intracoastal Waterway to Beaufort Inl | DEH prohibited area adjacent to Salter Path on sound side of outer banks |
| Bogue Sound (Including Intracoastal Waterway to Beaufort Inl | DEH Conditionally Approved Closed area near Jumping Run Creek |
| Bogue Sound (Including Intracoastal Waterway to Beaufort Inl | DEH Conditionally Approved Closed area near Jumping Run Creek |
| Bogue Sound (Including Intracoastal Waterway to Beaufort Inl | DEH closed area in unnamed bay approximately 2500 meters east of line across Bogue Sound from the southwest side of mouth of Gales Creek to Rock Point |
| Bogue Sound (Including Intracoastal Waterway to Beaufort Inl | DEH closed area in unnamed bay approximately 3500 meters east of line across Bogue Sound from the southwest side of mouth of Gales Creek to Rock Point |
| Bogue Sound (Including Intracoastal Waterway) | DEH closed area in unnamed bay area near Hoophole Woods approximately 7400 meters east of line across Bogue Sound from the southwest side of mouth of Gales Creek to Rock Point |
| Bogue Sound (Including Intracoastal Waterway to Beaufort Inl | DEH closed area at mouth of Spooner Creek |
| Bogue Sound (Including Intracoastal Waterway to Beaufort Inl | DEH closed area at mouth of Peltier Creek |
| Bogue Sound (Including Intracoastal Waterway to Beaufort Inl | DEH closed area near Hoophole Creek west of Atlantic Beach |
| Bogue Sound (Including Intracoastal Waterway to Beaufort Inl | DEH closed areas west at Atlantic Beach Bridge and Cedar Hammock |
| Bogue Sound (Including Intracoastal Waterway to Beaufort Inl | DEH closed area from Newport River Restricted area to Fort Macon Creek |
| Deer Creek | From source to Bogue Sound |
| Spooner Creek | From source to Bogue Sound |
| Money Island Slough | From source to Money Island Bay |
| Money Island Bay | Closed DEH area in western portion of Bay |
| Money Island Bay | DEH approved area near Allen Slough in eastern portion of Bay. Bogue Banks Atlantic Beach Area |
| Fort Macon Creek | From source to Bogue Sound |
| Hunting Island Creek | From source to Bogue Sound |
| Taylor Bay | Entire Bay |
| Sanders Creek (Goose Creek) | From source to Goose Creek (0.75 S Miles) |
| Goose Creek | From source to DEH closure line Bogue Sound |
| Goose Creek | From DEH closure line to Bogue Sound |
| Archer Creek (Piney Cr.) | From source to Bogue Sound |
| East Prong Sanders Creek | From source to Sanders Creek |
| Sikes Branch | From source to East Prong Sanders Creek |
| Sanders Creek | From source to Bogue Sound |
| Sanders Creek | From source to Bogue Sound |
| West Prong Broad Creek | From source to Broad Creek |
| Hannah Branch | From source to West Prong Broad Creek (0.8 S Miles) |
| Sandy Branch | From source to Hannah Branch (0.7 S Miles) |
| Wolf Branch | From source to West Prong Broad Creek (1 S Miles) |
| East Prong Broad Creek | From source to Broad Creek |
| Broad Creek | From source to Bogue Sound |

| | |
|---|---|
| Broad Creek | From source to Bogue Sound |
| Gales Creek | From source to Bogue Sound |
| East Prong Gales Creek | From source to Gales Creek (0.8 S Miles) |
| Jumping Run | From source to Bogue Sound |
| Newport River | From source to Black Creek Little Creek Swamp |
| Newport River | From Black Creek to Little Creek Swamp |
| Newport River | From Little Creek Swamp to DEH closure line |
| Newport River | From DEH closure line to DEH Conditionally Approved Closed line |
| Newport River | From DEH closure line to DEH Conditionally Approved Closed line |
| Newport River | From DEH Conditionally approved closed line to DEH Conditionally approved open line extending from Penn Point to west mouth of Core Creek |
| Newport River | From DEH conditionally approved open line extending from Penn Point to the west shore of Core Creek to the Atlantic Ocean excluding closed areas around Morehead City and Beaufort |
| Newport River | Prohibited Area at mouth of Russel Creek |
| Newport River | From DEH conditionally approved open line extending from Penn Point to the west shore of Core Creek to the Atlantic Ocean excluding closed areas around Morehead City and Beaufort. Deerfield Shores Marina |
| Newport River | DEH closed area north of Morehead City Harbor restricted area including Crap Point Thorofare and Calico Creek Marsh to Hwy 70 Bridge. |
| Newport River | From DEH conditionally approved open line extending from Penn Point to the west shore of Core Creek to the Atlantic Ocean excluding closed areas around Morehead City and Beaufort |
| Newport River | DEH closed area from Hwy 70 Bridge to a line extending form the south point of Radio Island to Fort Macon including Morehead City Channel |
| Newport River | DEH closed area around Gallant Point south to Hwy 70 Bridge including Beaufort Channel |
| Newport River | DEH closed area around Gallant Point south to Hwy 70 Bridge including Beaufort Channel |
| Newport River | Deh closed area south of Hwy 70 Bridge and west of Pivers Island including Bulkhead Channell |
| Little Creek Swamp | From source to Newport River (0.41878944557934 S Miles) |
| Mill Creek | From source to Newport River (0.279973970025746 S Miles) |
| Big Creek | From source to Newport River |
| Little Creek | From source to Newport River (0.5 S Miles) |
| Harlowe Canal | From Neuse River Basin Boundary (at Craven-Carteret County Line) to Harlowe Creek (at N.C. Hwy. # 101) |
| Alligator Creek | From source to Harlowe Creek |
| Harlowe Creek | DEH closed area from source (at N.C. Hwy. # 101) to DEH closure line south of mouth of Alligator Creek |
| Harlowe Creek | From DEH closure line south of mouth of Alligator Creek to DEH Conditionally Approved Closed line near Newport River |
| Harlowe Creek | From DEH closure line south of mouth of Alligator Creek to DEH Conditionally Approved Closed line near Newport River |
| Harlowe Creek | From DEH closure line south of mouth of Alligator Creek to DEH Conditionally Approved Closed line near Newport River |
| Harlowe Creek | From DEH Conditionally Approved Closed line near Newport River to Newport River |
| Oyster Creek | From source to Newport River |
| Oyster Creek | From source to Newport River |
| Eastman Creek | From source to Core Creek |
| Bell Creek | From source to DEH closed line |
| Bell Creek | From DEH closed line to Core Creek |
| Core Creek (Intracoastal Waterway - Adams Creek Canal) | From Neuse River Basin boundary to DEH closed line |
| Core Creek (Intracoastal Waterway - Adams Creek Canal) | From DEH closed line to DEH Conditionally Approved Closed line |
| Core Creek (Intracoastal Waterway - Adams Creek Canal) | From DEH closed line to DEH Conditionally Approved Closed line |
| Core Creek (Intracoastal Waterway - Adams Creek Canal) | From DEH Conditionally Approved Closed line to Newport River |
| Ware Creek | From source to Newport River |
| Russell Creek | From source to Newport River |
| Russell Creek | From source to Newport River |
| Wading Creek | From source to Newport River |
| Gable Creek | From source to Newport River |
| Gable Creek | From source to Newport River |
| Willis Creek | From source to Newport River |
| Crab Point Bay | Entire Bay |
| Calico Creek | From source to Ut on south side of creek 0.35 miles west of SR1176 bridge. |
| Calico Creek | From source to Ut on south side of creek 0.35 miles west of SR1176 bridge. |
| Calico Creek | From source to Ut on south side of creek 0.35 miles west of SR1176 bridge. |
| Calico Creek | From source to Ut on south side of creek 0.35 miles west of SR1176 bridge. |
| Calico Creek | From Ut on south side of creek 0.35 miles west of SR1176 bridge to Newport River |
| Taylor Creek | From source to Newport River (The mouth of Taylor Creek is defined as beginning at a point of land on the north shore at Lat. 34 43' 07" Long. 76 40' 13" thence across the creek |
| Back Sound | Portion of the following in subbasin 030504 From Newport River to a point on Shackleford Banks at lat. 34 40'57" and long 76 37'30" north to the western most point of Middle Marsh |
| Back Sound | DEH closed area at west mouth of Taylor Creek around Pivers Island |
| Back Sound | Portion of the following in subbasin 030504 From Newport River to a point on Shackleford Banks at lat. 34 40'57" and long 76 37'30" north to the western most point of Middle Marsh |
| Back Sound | Portion of the following in subbasin 030504 From Newport River to a point on Shackleford Banks at lat. 34 40'57" and long 76 37'30" north to the western most point of Middle Marsh |
| Back Sound | DEH closed areas in and around Carrot Island |
| Back Sound | Portion of the following in subbasin 030504 From a point on Shackleford Banks at lat. 34 40'57" and long 76 37'30" north to the western most point of Middle Marshes and along the. Harkers Island Fishing Center |

| | |
|---|---|
| Back Sound | Portion of the following in subbasin 030504 From a point on Shackleford Banks at lat. 34 40'57" and long 76 37'30" north to the western most point of Middle Marshes and along the. Barbours Harbor Marina |
| Feltons Creek | From source to North River |
| Gibbs Creek | From source to North River |
| Turner Creek | From source to Davis Bay |
| Davis Bay (Cheney Bay) | DEH closed area in southern part of bay |
| Davis Bay (Cheney Bay) | DEH Conditionally Approved Closed area northern part of bay |
| Davis Bay (Cheney Bay) | DEH Conditionally Approved Closed area northern part of bay |
| Sleepy Creek | From source to The Straits |
| Sleepy Creek | From source to The Straits. Marshallberg Boat Harbor |
| Whitehurst Creek | From source to The Straits |
| Henry Jones Creek | From source to Westmouth Bay. Erwins Marina |
| Henry Jones Creek | From source to Westmouth Bay. Calvin Rose Boat Dockage |
| Westmouth Bay | DEH closed area on south side of Bay. Taylors Boat Dock and Railway |
| Westmouth Bay | Entire Bay with the exception of DEH closed area on south side of Bay. NC Shellfish Enterprises |
| The Straits | From Core Sound to North River excluding conditionally approved open section in north west portion adjacent to North River |
| The Straits | Conditionally approved open section in north west portion adjacent to North River |
| Brooks Creek | From source to North River. Hnuckles Landing Harbor |
| Deep Creek | From source to North River |
| Crabbing Creek | From source to North River |
| Lynch Creek | From source to North River |
| Thomas Creek | From source to North River |
| Thomas Creek | From source to North River |
| Fulcher Creek | From source to DEH closure line From DEH closure line to North River |
| Fulcher Creek | From source to DEH closure line From DEH closure line to North River |
| Fulcher Creek | From DEH closure line to North River |
| Fulcher Creek | From DEH closure line to North River |
| Fulcher Creek | From DEH closure line to North River |
| Gilliklin Creek | From source to Ward Creek |
| North Leopard Creek | From source to Ward Creek |
| North Leopard Creek | From source to Ward Creek |
| South Leopard Creek | From source to Ward Creek |
| Ward Creek | From source to North River |
| Ward Creek | From source to North River |
| Ward Creek | From source to North River |
| Newby Creek | From source to DEH closure line |
| Newby Creek | From source to DEH closure line |
| Goose Bay | Entire Bay |
| North River | From source to DEH closure line south of Crabbing Creek |
| North River | From source to DEH closure line south of Crabbing Creek |
| North River | From DEH closure line south of Crabbing Creek to Back Sound excluding DEH conditionally approved closed and closed areas between Davis Bay and North River Marsh. Fishermans Island Marina and Coats Landing Harbor on west side of Harkers Island |
| North River | From DEH closure line south of Crabbing Creek to Back Sound excluding DEH conditionally approved closed and closed areas between Davis Bay and North River Marsh. CAC area at mouth of Thomas Creek |
| North River | From DEH closure line south of Crabbing Creek to Back Sound excluding DEH conditionally approved closed and closed areas between Davis Bay and North River Marsh |
| North River | From DEH closure line south of Crabbing Creek to Back Sound excluding DEH conditionally approved closed and closed areas between Davis Bay and North River Marsh |
| North River | From DEH closure line south of Crabbing Creek to Back Sound excluding DEH conditionally approved closed and closed areas between Davis Bay and North River Marsh. Canal on west of river |
| North River | Area on east side of Hwy 70 Bridge |
| North River | Area on east side of Hwy 70 Bridge |
| North River | DEH conditionally approved closed area between Davis Bay and North River Marsh |
| North River | DEH conditionally approved closed area between Davis Bay and North River Marsh |
| North River | DEH closed area between Davis Bay and North River Marsh |
| North River | DEH closed area between Davis Bay and North River Marsh |
| North River | DEH conditionally approved closed area ato mouth of Newby Creek |
| Nelson Bay | From a line extending from mouth of Broad Creek due east across Nelson Bay to Core Sound |
| Nelson Bay | From a line extending from mouth of Broad Creek due east across Nelson Bay to Core Sound |
| Ditch to Broad Creek | Drainage network to Broad Creek |
| Lewis Creek | From source to Nelson Bay |
| Lewis Creek | From source to Nelson Bay |
| Pasture Creek | From source to Nelson Bay |
| Willis Creek | From source to Core Sound |
| Maria Creek | From source to Brett Bay |

| | |
|---|---|
| Fork Creek | From source to Brett Bay |
| Brett Bay | Entire Bay |
| Oyster Creek | From source to Core Sound |
| Spit Bay | Entire Bay |
| Jump Run | From source to Core Sound |
| Middens Creek | From source to DEH closure line |
| Middens Creek | From DEH closure line to Core Sound |
| Tush Creek | From source to Core Sound |
| Great Marsh Creek | From source to Core Sound |
| Glover Creek | From source to Styron Bay |
| Cedar Creek | From source to Styron Creek |
| Styron Creek | From source to DEH closure line at mouth of Cedar Creek |
| Core Sound | Luther Smith and Sons Fish House |
| Core Sound | Willlis Texaco Marina |
| Core Sound | Portion of the following in subbasin 030504 from northern boundary of White Oak River Basin (a line from Hall Point to Drum Inlet) to Back Sound excluding conditionally approved |
| Core Sound | Portion of the following in subbasin 030504 from northern boundary of White Oak River Basin (a line from Hall Point to Drum Inlet) to Back Sound excluding conditionally approved.  Morris Marina |
| Core Sound | Portion of the following in subbasin 030504 from northern boundary of White Oak River Basin (a line from Hall Point to Drum Inlet) to Back Sound excluding conditionally approved.  Clayton Fulchers Fish House |
| Core Sound | Conditionally approved open area at the mouth of Nelson Bay |
| Core Sound | Conditionally approved open area at the mouth Oyster Creek |
| NEUSE RIVER Estuary | DEH Conditionally approved-open  area at mouth of the South River |
| Clubfoot Creek | From source to Neuse River |
| Harlowe Canal | From White Oak River Basin Boundary (Craven-Carteret County Line) to Clubfoot Creek (0.639999985694885 S Miles) |
| Jerry Bay | From source to Adams Creek |
| Adams Creek Canal (Intracoastal Waterway) | From the White Oak River Basin Boundary 0.4 miles north of boundary |
| Adams Creek Canal (Intracoastal Waterway) | From 0.4 miles north of  White Oak River Basin Boundary  to Adams Creek |
| Isaac Creek | From source to Adams Creek |
| Back Creek (Black Creek) | From source to Adams Creek excluding swimming area near mouth |
| Back Creek (Black Creek) | Swimming area near mouth |
| Dumpling Creek | From source to 0.1 miles upstream of Adams Creek |
| Adams Creek | DEH conditionally approved-closed area from source to a line crossing Adams Creek at a point 406 meters south of mouth of Kellum Creek to a point 637 meters north of mouth of Beck Creek |
| West Fork South River | From source to South River |
| Eastman Creek | From source to South River |
| Little Creek | From source to South River |
| Royal Creek | From source to South River |
| Dixon Creek | From source to South River |
| Old House Creek | From source to South River |
| Mulberry Creek | From source to South River |
| Big Creek | From source to DEH prohibited area line |
| Big Creek | From DEH prohibited area line to South River |
| Hardy Creek | From source to South River |
| Horton Bay | From source to South River |
| East Fork South River | From source to South River |
| Rich Island Gut | From source to East Fork South River (9.16916579008102E-02 S Miles) |
| Miry Gut | From source to South River |
| Elisha Creek | From source to South River |
| Neal Creek | From source to South River |
| Duck Creek | From source to South River |
| Buck Creek | From source to South River |
| Doe Creek | From source to South River |
| Southwest Creek | From source to South River |
| South River | From source to a line crossing the South River at a point 97 meters north of mouth of Southwest Creek to a point 418 meters north of mouth of Doe Creek |
| Pitman Creek | From source to Broad Creek |
| PAMLICO SOUND | DEH prohibited area at Cedar Island Ferry Harbor in southern portion Pamlico within Neuse River Basin subbasin 030414 |
| Golden Creek | From source to Long Bay |
| West Thorofare Bay | From source 0.4 miles downstream of source |
| Thorofare | From West Thorofare Bay to Thorofare Bay |
| Great Pond | From source to Cedar Island Bay |
| Atlantic Ocean | From Ocean Drive in Emerald Isle to Seagull Road in Emerald Isle |