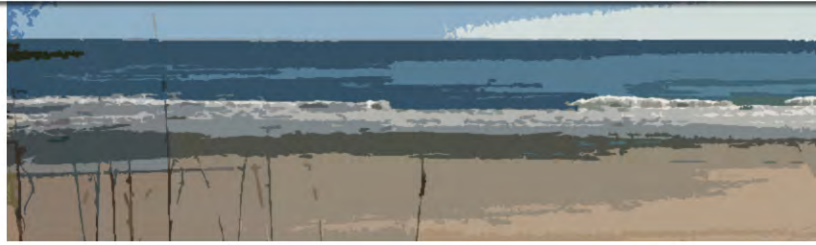


Pender County, NC

Pender 2.0: Comprehensive Land Use Plan



Adopted: August 20, 2018
CRC Certification: December 10, 2018



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Board of Commissioners

George R. Brown, Jr., Chairman
Archibald "Fred" McCoy, Vice Chairman
Jaqueline A. (Jackie) Newton
David A. Piepmeyer
J. David Williams, Jr.

County Manager
Randell K. Woodruff

County Attorney
Carl W. "Trey" Thurman

RESOLUTION OF THE BOARD OF COMMISSIONERS OF PENDER COUNTY, NORTH CAROLINA, ADOPTING THE PENDER 2.0 COUNTY COMPREHENSIVE LAND USE PLAN

WHEREAS, from January 2017 through October 2017, the County drafted the Pender 2.0 Comprehensive Land Use Plan, and conducted a series of public workshops and meetings as part of a comprehensive public participation program; and

WHEREAS, the Pender 2.0 Comprehensive Land Use Plan was unanimously recommended for approval by the Commissioners Advisory Committee and the County's Planning Board on October 26, 2017 and February 6, 2018 respectively; and

WHEREAS, the Division of Coastal Management's (DCM) Wilmington District Planner found the Pender 2.0 Comprehensive Land Use Plan to be consistent with the rules of the Coastal Resources Commission ; and

WHEREAS, at a duly advertised meeting on August 20, 2018 the County Board of Commissioners held a public hearing on the draft Pender 2.0 Comprehensive Land Use Plan; and

WHEREAS, the adopted Plan will be sent to the Coastal Resources Commission and the Division of Coastal Management for certification.

NOW, THEREFORE, BE IT RESOLVED THAT the Board of Commissioners of Pender County have adopted the draft Pender 2.0 Comprehensive Land Use Plan; and

BE IT FURTHER RESOLVED that the Planning Director of Pender County is hereby authorized to submit the adopted Pender 2.0 Comprehensive Land Use Plan to the State for certification as described above.

Adopted this 20th day of August 2018.

George R. Brown, Chairman
Pender County Board of Commissioners

ATTEST:

Melissa Long
Clerk to the Board



ACKNOWLEDGEMENTS

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George Brown, Chairperson (District 3)
Fred McCoy, Vice-Chairperson (District 5)
Jackie Newton (District 4)
David Piepmeyer (District 2)
David Williams (District 1)

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(A) Organization of the Plan: Include a matrix in the land use plan or comprehensive plan that shows the location of the required elements.	ix
(B) Community Concerns and Aspirations. The purpose of this element is to provide an understanding of the underlying planning needs and desires of the community.	1-21
(1) Significant existing and emerging conditions: Describe the dominant growth-related conditions that influence land use, development, water quality, and other environmental concerns in the planning area.	1-7 to 1-21
(2) Key issues: Describe the land use and development topics most important to the future of the planning area. At a minimum, this description shall include public access, land use compatibility, infrastructure carrying capacity, natural hazard areas, water quality, and may also include local areas of concern as described in Subparagraph (D)(2) (Land Use Plan Management Topics) of the Rule.	1-7 to 1-21
(3) A community vision: Describe the general physical appearance and form that represents the local governments plan for the future. Include objectives to be achieved by the plan and identify changes that may be needed to achieve the planning vision.	1-22
(C) Existing and Emerging Conditions. The purpose of this element is to provide a sound factual base necessary to support the land use and development policies included in the plan. Describe the following:	2-1 to 2-25
(1) Population, Housing and Economy. Include discussion of the following data and trends:	2-1 to 2-25
(a) Population:	2-1 to 2-8
(i) Permanent population growth trends using data from the two most recent decennial Censuses;	2-2 to 2-3
(ii) Current Permanent and Seasonal Estimates;	2-2 to 2-5
(iii) Key population characteristics;	2-2 to 2-8
(iv) Age;	2-6 to 2-8
(v) Income; and	2-15 to 2-16
(vi) Thirty Year Projections of Permanent and Seasonal Population in five years increments.	2-6
(b) Housing stock: Estimate current housing stock, including permanent and seasonal units, tenure, and types of units (single-family, multifamily, and manufactured).	2-8 to 2-15
(c) Local economy: Describe employment by major sectors and community economic activity.	2-17 to 2-20
(2) Natural Systems. Describe the natural features and discuss the environmental conditions of the planning jurisdiction to include:	3-1
(a) Natural features	3-1
(i) Areas of Environmental Concern (AECs);	3-1 to 3-6

(ii) Soil characteristics, including limitations for septic tanks, erodibility, and other factors related to development;	3-20 to 3-21; 3-29 to 3-31; 3-33 to 3-34
(iii) Environmental Management Commission (EMC) water quality classifications (SC, SB, SA, HQW, and ORW) and related use support designations, and Division of Marine Fisheries (DMF) shellfish growing areas and water quality conditions;	3-14 to 3-21
(iv) Flood and other natural hazards;	3-6 to 3-12
(v) Storm surge areas;	3-13 to 3-14
(vi) Non-coastal wetlands including forested wetlands, shrub-scrub wetlands and freshwater marshes;	3-22 to 3-24
(vii) Water supply watersheds or wellhead protection areas;	3-21 to 3-22
(viii) Primary nursery areas;	3-19 to 3-20
(ix) Environmentally fragile areas, such as, but not limited to wetlands, natural heritage areas, areas containing endangered species, prime wildlife habitats, or maritime forests; and	3-4 to 3-5; 3-24 to 3-29
(x) Additional natural features or conditions identified by the local government.	N/A
(b) Environmental Conditions	
(i) Water quality:	3-14 to 3-22
(I) Status and changes of surface water quality, including impaired streams from the most recent N.C. Division of Water Resources Basin Planning Branch Reports, Clean Water Act 303 (d) List and other comparable data;	3-16 to 3-17
(II) Current situation and trends on permanent and temporary closures of shellfishing waters as determined by the Report on Sanitary Survey by the Shellfish Sanitation and Recreational Water Quality Section of the N.C. Division of Marine Fisheries;	3-16 to 3-20
(III) Areas experiencing chronic wastewater treatment system malfunctions; and	3-18
(IV) Areas with water quality or public health problems related to non-point source pollution.	3-18
(ii) Natural hazards:	
(I) Areas subject to recurrent flooding, storm surges and high winds; and	3-6 to 3-14
(II) Areas experiencing significant shoreline erosion as evidenced by the presence of threatened structures or public facilities.	3-2 to 3-4
(iii) Natural resources:	

(I) Environmentally fragile areas or areas where resource functions are being impacted as a result of development; and	3-2 to 3-6; 3-14 to 3-21; 3-24 to 3-26
(II) Valuable natural resource areas that are being impacted or lost as a result of incompatible development. These may include, but are not limited to the following: coastal wetlands, protected open space, and agricultural land.	3-4 to 3-5; 3-26 to 3-29; 3-31 to 3-34
(3) Existing Land Use and Development. Include a map and descriptions of the following:	
(a) Existing land use patterns, which may include the following categories: Residential, commercial, industrial, institutional, public, dedicated open space, vacant, agricultural, and forestry. Land use descriptions shall include estimates of the land area allocated to each land use and characteristics of each land use category.	5-1 to 5-14
(b) Historic, cultural, and scenic areas designated by a state or federal agency or by local government.	4-24 to 4-27
(4) Community Facilities. Evaluate existing and planned capacity, location, and adequacy of community facilities that serve the community's existing and planned population and economic base; that protect important environmental factors such as water quality; and that guide land development in the coastal area. These shall include:	4-1 to 4-30
(a) Public and private water supply and wastewater systems. Describe existing public and private systems, including existing condition and capacity. Describe any documented overflows, bypasses, or other problems that may degrade water quality or constitute a threat to public health. Indicate future needs based on population projections. Map existing and planned service areas.	4-1 to 4-5; Map-End of Chapter 4
(b) Transportation systems. Map the existing and planned multimodal systems and port and airport facilities. Describe any highway segments deemed by the North Carolina Department of Transportation (NCDOT) as having unacceptable service levels. Describe highway facilities on the current thoroughfare plan or facilities on the current transportation improvement plan. Describe the impact of existing facilities on land use patterns.	4-5 to 4-23; Map-End of Chapter 4
(c) Stormwater systems. Describe the existing public stormwater management system. Identify existing drainage problems and water quality issues related to point-source discharges of stormwater runoff.	3-7; 3-18; 3-20 to 3-21
(D) Future Land Use. This element of the plan is intended to guide the development and use of land in a manner that achieves the goals of the CAMA through local government land use and development policies, including a future land use map.	5-15 to 5-25; Maps – End of Chapter 5
(I) Policies	

(a) Community Concerns and Aspirations and Existing and Emerging Conditions shall be considered in the development of local government land use plan policies as required in 7B .0702 (b) and (c).	1-21 to 1-23
(b) Policies shall be consistent with the goals of the CAMA, shall address the CRC management topics for land use plans, and comply with all state and federal rules.	1-1 to 1-4
(c) Policies that exceed use standards and permitting requirements found in Subchapter 7H, State Guidelines for Areas of Environmental Concern, shall be identified in the plan.	5-27 to 5-35
(2) Land Use Plan Management Topics. The purposes of the CRC management topics are to ensure that land use plans support the goals of the CAMA, define the CRC's expectations for land use policies, and provide a basis for land use plan review and certification. In addition to the management topics outlined below, plans may also include policies to address local areas of concern. Each management topic includes two components: a management goal and planning objectives.	3-36 to 3-44; 4-32 to 4-44; 5-27 to 5-35
(a) Public Access:	4-39 to 4-40
(i) Management Goal: Maximize public access to the public trust waters of the coastal region for residents and visitors.	4-39
(ii) Planning Objective: Implement policies and recommendations that assure satisfactory access to public trust waters for all Pender County residents and visitors.	4-39
(b) Land Use Compatibility:	5-27 to 5-33
(i) Management Goal: Manage the physical growth and development of Pender County by encouraging more intensive land uses in key locations identified for such growth while preserving and protecting the unique physical character and social assets of the rural heritage and coastal habitat that makes the County a unique place to live.	5-27
(ii) Planning Objective: Ensure that development and use of resources balances protection of natural resources and agricultural lands with economic development, avoids risks to public health and welfare, and is consistent with the capability of the land.	5-27
(c) Infrastructure Carrying Capacity:	4-32 to 4-35
(i) Management Goal: Ensure that public infrastructure systems are sized, located, and managed to provide service to residents and businesses and so the quality and productivity of Areas of Environmental Concern (AECs) and other fragile areas are protected or restored.	4-32
(ii) Planning Objective: Ensure that the location and capacity of public infrastructure systems are consistent with the County's growth and development goals.	4-32

(d) Natural Hazard Areas:	3-41 to 3-42
(i) Management Goal: Conserve and maintain barrier dunes, beaches, flood plains, coastal wetlands, and other coastal features for their natural storm protection functions and their natural resources giving recognition to public health, safety, and welfare issues.	3-41
(ii) Planning Objective: The County shall be proactive in its efforts to minimize damage and threats to public health and safety associated with hurricanes, severe weather, and other hazards and work to implement the <i>Southeastern NC Regional Hazard Mitigation Plan (2016)</i> .	3-41
(e) Water Quality:	3-36 to 3-41
(i) Management Goals: Maintain, protect and where possible enhance the natural environment and water quality in all coastal wetlands, rivers, streams, and estuaries.	3-36
(ii) Planning Objective: The County shall take actions designed to protect and where possible enhance and restore the water quality and sensitive natural resources located in and adjacent to the County's Planning Jurisdiction.	3-36
(3) Future land use map. Depict the policies for growth and development, and the desired future patterns of land use and land development with consideration given to natural system constraints and infrastructure. Include designations with descriptions of land uses and development.	Map – End of Chapter 5
(E) Tools for Managing Development. The purpose of this element is to describe the management tools and actions the local government will use to implement the land use plan.	6-1 to 6-17
(1) Guide for land use decision-making. Describe the role of the land use plan policies, including the future land use map, in local decisions regarding land use and development.	6-1 to 6-3
(2) Existing development program. Describe the community's existing development management program, including local ordinances, codes, plans, and policies.	6-3 to 6-4
(3) Action plan and implementation schedule. Describe the actions that will be taken by the local government to implement policies that meet the CRC's Management Topic goals and objectives. Specify the fiscal year(s) in which each action is anticipated to start and finish. Describe the specific steps the local government plans to take to implement the policies, including the adoption and amendment of local ordinances, plans, and special projects. The action plan shall be used to prepare the implementation status report for the land use plan.	6-4 to 6-17

CHAPTER 1: INTRODUCTION

PREFACE

Growth in Pender County is representative of what is happening throughout much of coastal North Carolina, where traditionally rural, agrarian communities are being challenged and transformed by substantial development and land use change. Areas close to the Atlantic Ocean, and the scenic rivers of eastern North Carolina are experiencing enormous development interest and pressure. Transportation impacts, demands on the school system, and the need for more public infrastructure and recreational opportunities have made handling growth a significant procedural and budgetary challenge for the County. These various community facilities, infrastructure, and services are all related to land use change and growth management.

Over the next 20 to 30 years, Pender County leaders will be continuously confronted with land use decisions that impact citizens and business owners. This plan should play an important role in guiding officials and staff through those decisions.

INTRODUCTION TO THE LAND USE PLAN PROCESS

The comprehensive planning process provides the County the opportunity to assess where it is today, where it wants to go in the future, and a means to identify growth challenges and opportunities, while developing the tools to help manage development to achieve a more predictable future. Pender 2.0, as the plan is referred to, is an update and modernization of the 2010 Comprehensive Land Use Plan.

Specifically, the land use planning process intends to:

- Establish goals, policies, and recommended actions based upon public input
- Provide the basis for development standards and regulations
- Establish the need for coordination among County departments, neighboring Counties, NCDOT, Wilmington Urban Area Metropolitan Planning Organization (WMPO), and with other local units of government on land use issues, transportation impacts, and capital improvement projects

WHAT IS A COMPREHENSIVE LAND USE PLAN?

A comprehensive land use plan is the official land use policy document for the County and should be used faithfully and consistently to facilitate orderly growth and development. As a roadmap for growth, the plan should be used by County leaders, staff, citizens, private land owners, and developers as the basis for evaluating short-term actions against long-term goals. The plan should be used as a guide in developing and approving land development proposals and for setting capital improvement plans and priorities. Overall, the plan seeks to convey

community-based values that set the framework for ever-evolving challenges, decisions, and conflicts that arise from land development.

Assuming responsibility for the future is the first step in encouraging the kind of quality development that will help ensure Pender County's long term value as a place to live, work, and play.

Having a plan improves the County's ability to create more livable communities with significant environmental, ecological, social, recreational, and economic benefits. To that end, plan goals and policies seek to provide a balance of private and public interests in a coordinated, cooperative, and fair manner.

COMPREHENSIVE LAND USE PLAN AND ZONING REGULATIONS

The comprehensive plan is not a regulatory document – it is a policy document containing non-binding guidance and recommendations. In 2005, the state legislature amended planning general statutes to strengthen the role of adopted plans in the consideration of zoning amendments. North Carolina General Statutes (§ 153A-341) require county planning boards to include written comments on the consistency of any proposed zoning map or text amendment with the comprehensive plan and any other relevant plans (such as a small area plan, a corridor plan, or a transportation plan) adopted by the governing board. A statement from the planning board that the proposed amendment is inconsistent with a plan; however, does not preclude the governing board from adopting the amendment.

The county governing board must also approve a statement on consistency with the comprehensive plan before adopting or rejecting any proposed zoning amendment. The board decision does not have to be consistent with the comprehensive plan, but any inconsistency must be identified and explained. The board statement must also explain why the board believes that the action taken is reasonable and in the public interest. In essence, this statutory procedure implies that local governments across North Carolina must engage in comprehensive planning if they wish to administer zoning regulations – though current legislation does not explicitly state such. Within coastal counties; however, Coastal Area Management Act (CAMA) land use plans are a statutory requirement.

COMPREHENSIVE LAND USE PLAN AND

COASTAL AREA MANAGEMENT ACT (CAMA) REGULATIONS



The Coastal Area Management Act (CAMA) of 1974 mandates all 20 coastal counties to have a land use plan and requires permits for any development in specially designated areas called Areas of Environmental Concern (AEC). Upon adoption, this plan serves as the County's official CAMA land use plan. Regarding CAMA permitting, in Pender County, AECs are generally those areas that are in close proximity to

water (ocean, ICWW, creeks, etc.) or marsh (wetlands). A CAMA permit must be acquired if a development project meets all of the following conditions:

- The project is located within one of the 20 coastal counties of North Carolina
- The project is considered "development" under CAMA
- The project is within, or affects, an Area of Environmental Concern established by the Coastal Resources Commission
- The project does not qualify for an exemption

WHAT QUALIFIES AS A CAMA REGULATED DEVELOPMENT PROJECT?

Besides construction of residential and commercial buildings in an Area of Environmental Concern, "development" also generally includes activities such as dredging or filling coastal wetlands or waters, and construction of marinas, piers, docks, bulkheads, oceanfront structures and roads. The Coastal Area Management Act (§ 113A-103(5)(a)) defines a development project as: "any activity in a duly designated area of environmental concern involving, requiring or consisting of the construction or enlargement of a structure; excavation; dredging; filling; dumping; removal of clay, silt, sand, gravel or minerals; bulkheading; driving of pilings; clearing or alteration of land as an adjunct of construction; alteration or removal of sand dunes; alteration of the shore, bank or bottom of the Atlantic Ocean or any sound, bay, river, creek, stream, lake or canal."

WHAT IS AN AREA OF ENVIRONMENTAL CONCERN (AEC)?

According to the Division of Coastal Management's (DCM) CAMA Handbook for Development, protecting and managing Areas of Environmental Concern is the basis for the CAMA permitting program. As stated previously, in Pender County, the AECs are generally those areas that are in close proximity to water (ocean, ICWW, creeks, etc.) or marsh (wetlands) See **Map 3.1: Areas of Environmental Concern (AECs)** for more information.



A development project is likely in an AEC if it is:

- In, or on the shore of, navigable waters within the 20 coastal CAMA counties
- On a marsh or wetland
- Within 75 feet of the normal high water line along an estuarine shoreline
- Near the ocean beach (e.g. within 60'-120')
- Near an inlet
- Within 30 feet of the normal high water level of areas designated as inland fishing waters by the N.C. Marine Fisheries Commission and the N.C. Wildlife Resources Commission
- Near a public water supply

- Within 575 feet of Outstanding Resource Waters defined by the Environmental Management Commission

For more information on the CAMA Handbook for Development in Coastal North Carolina, and for mitigating steps required during development, please visit the Division of Coastal Management website or contact the Pender County Planning and Zoning Department.

LOCATION

Pender County, the 5th largest in North Carolina based on total land area, is located on the southern coast of the State. Pender County covers 556,624 acres (approximately 870 square miles) of land area. Municipal corporate limits account for only 12,365 acres – 2.2% of total county acreage. Combined municipal planning jurisdictions including corporate limits and extraterritorial jurisdictions (ETJs) account for 24,492 acres – 4.5% of total county acreage. The County planning jurisdiction (that area outside municipal corporate limits and ETJs) covers 531,682 acres (831 square miles) – 95.5% of total County acreage. See **Map 1.1: Location** for more information.



Pender County boundaries are defined by the Atlantic Ocean and seven surrounding counties: Duplin County to the north; Sampson and Bladen Counties to the west; Columbus, Brunswick, and New Hanover counties to the south; and Onslow County to the east. The Town of Burgaw serves as the county seat.

The topography of Pender County is level to gently rolling with predominantly flat upland areas. Elevations range from sea level on the coastline to 110 feet in the northern portion of the County. The coastal portion of the County is traversed by the Atlantic Intracoastal Waterway.

The proximity of eastern Pender County to the Atlantic Ocean and Intracoastal Waterway, the City of Wilmington, and the interstate highway system has spurred significant growth in the coastal portion of the County.

HISTORY

The first explorers discovered what is now Pender County in 1524. It was not until 1663 that the Barbados commissioners explored the northeast branch of the Cape Fear River. They named the community “Rocky Point,” which still remains today. While the area was settled by 1725, the County was not officially formed from New Hanover County until 1875. The Moores settled the area to the south at New Brunswick. The Lord proprietors, looking for good bottom land and tidal river transportation, settled a tract to the north for Welsh settlers. Commercial success followed and large plantations were built during this time.

The people of the Pender area were fervent patriots during the Revolution and it was at Moore's Creek that they defeated the Scottish Highlanders/British Loyalists. President Washington is said to have eaten dinner under the old live oak just south of Hampstead on his way from New Bern to Wilmington. The old road that Washington followed was nothing more than a carriage trail through the woods from Comfort and Richlands south.

After the Civil War, the County was still a part of New Hanover. The plantation system had been destroyed during the Reconstruction years, but it was out of those politics that the County was created in 1875. Burgaw, the current county seat, was chartered shortly thereafter in 1879. In the 1870s, the majority of residents worked in farming, clamming, fishing, milling, salt making, and shingling.



During the 1890s, a railroad line was constructed between New Bern and Wilmington, roughly parallel to what would become US Highway 17. The railroad company named the Coastal Pender County stations Annandale and Hampstead. All manner of goods were transported to and from the area by rail and residents could travel into Wilmington or New Bern for shopping and trading.

The highway between Wilmington and New Bern was paved in 1927 and the Intracoastal Waterway was dredged by 1930, offering new transportation options for Coastal Pender County. Hoover Road was widened to a cart trail during President Hoover's term and paved in the late 1940s. NC 210 was paved during World War II in order to better connect Camp Lejeune and Fort Bragg. Passenger service on the rail line between Wilmington and New Bern operated until 1939; however, freight service continued until the 1980s.

PUBLIC INVOLVEMENT

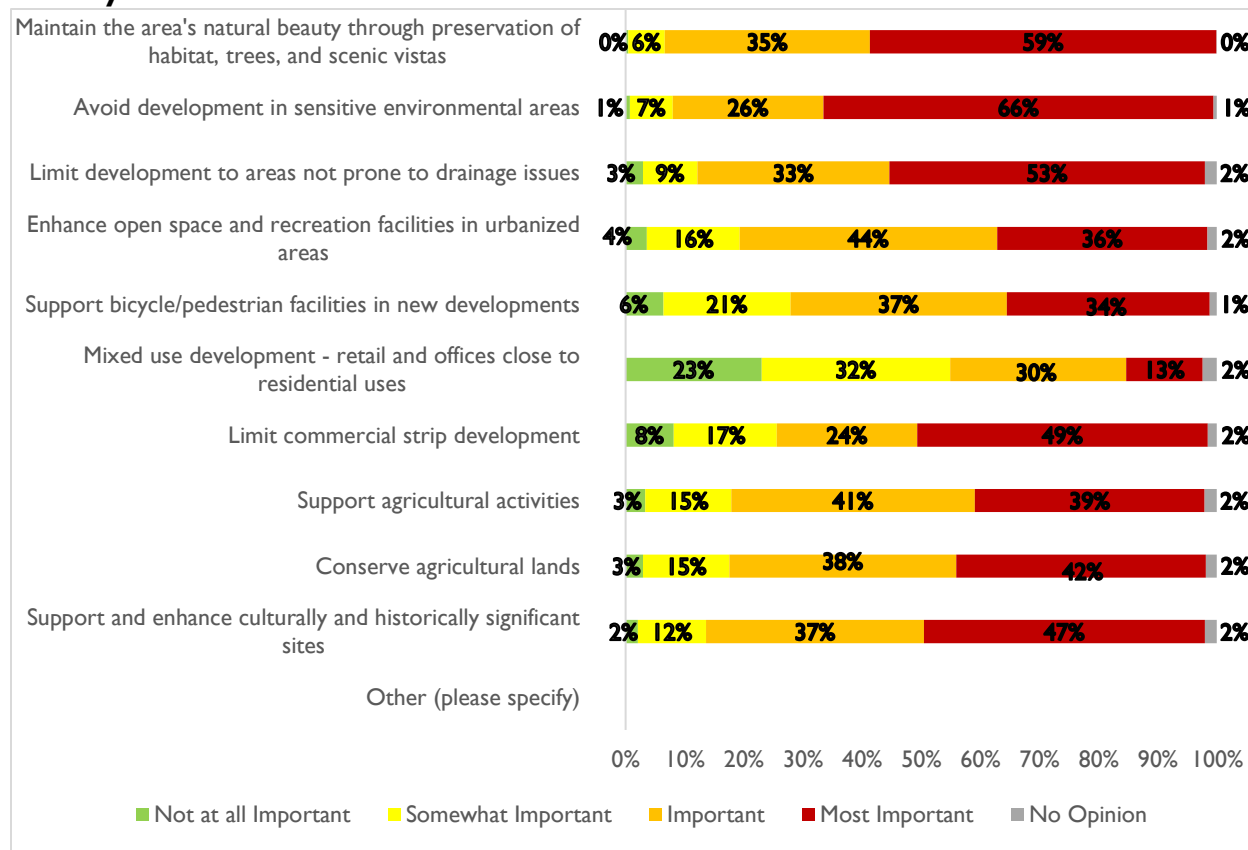
Public involvement is vital to any land use planning process by ensuring that citizens and stakeholders have the opportunity to express their concerns and aspirations regarding growth and development in the County. Community involvement aids in formulating policies that are consistent with the public's wants, needs, and desires, and helps local leaders determine the most important issues facing the County. A land use plan also conveys the importance of long-range planning, the role the local government plays in managing development, the possible impacts of unmanaged development, and the importance of preserving natural resources.

In total, seven public input meetings were held during the planning process – one per planning area, with the exception of the Topsail Planning Area, where two meetings were held. The input meetings established the public's vision on key elements to include in the goals and policies for managing growth and development. Aside from the public input meetings, multiple meetings were held with the Commissioner's Advisory Committee to discuss the land use planning process, the necessary components of the plan, provide updates on the plan, and receive input and comments. A third source of input came from interviews with stakeholders throughout the County. The goal of these interviews was to gain an understanding on how organizations believe future growth and development will affect Pender County's communities, future residents, and local business owners.

COMMUNITY SURVEY RESULTS

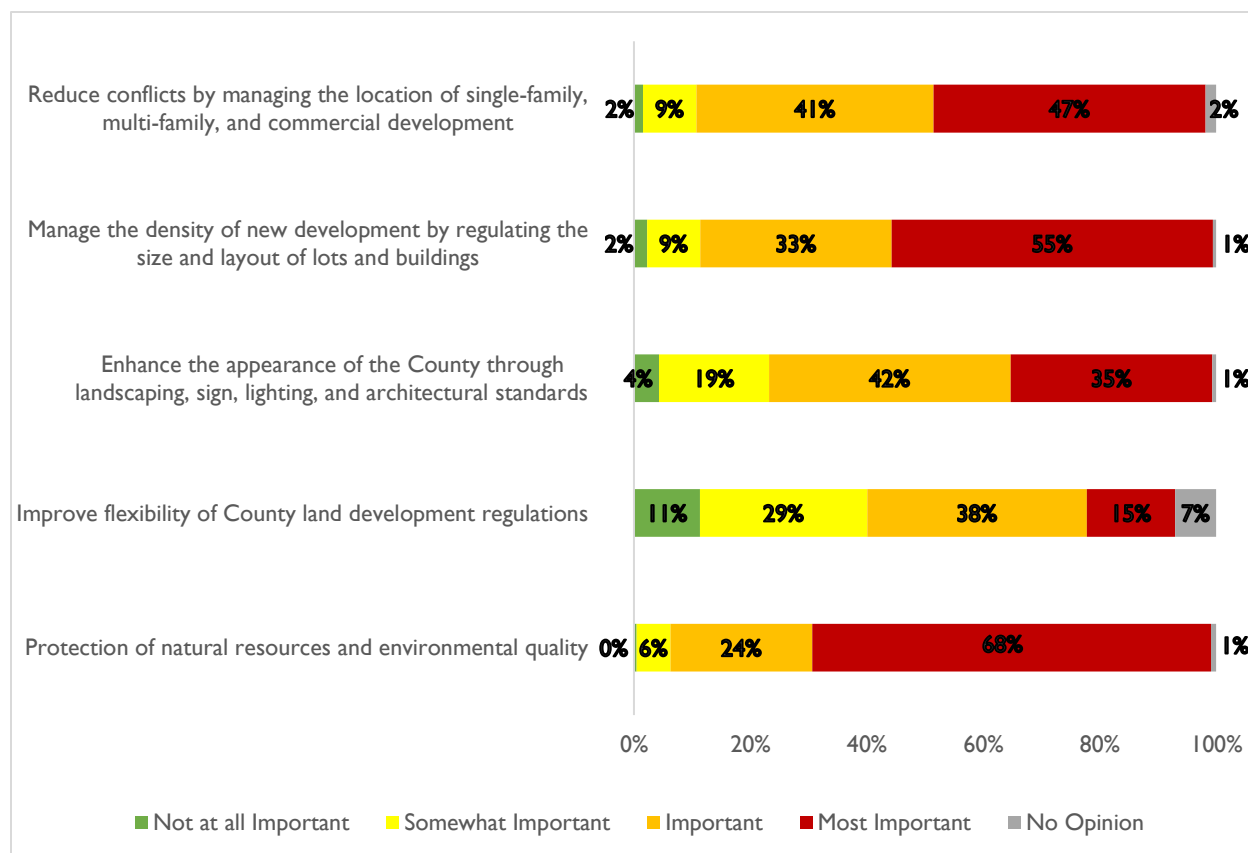
A significant source of public input came as a result of the community survey. The survey was distributed to Pender County property owners and non-residents. It was made available primarily online, but was also available in hard copy format. The survey was designed to determine significant priorities for Pender County and to understand the public's opinion regarding growth management and development. The survey was made available in March of 2017 and remained open until August of 2017. In total, there were 1,374 responses to the survey. Nearly 80% of the respondents were residents of unincorporated Pender County. The results indicate that the respondents concerns focus on growth and development patterns and preserving and protecting the natural environment. Survey responses are provided on the following pages and the top ten priorities were developed based upon the 671 additional comments that survey participants provided. Please note that the two colors used to represent the results to Question 7 indicate the top three answers in red. The remaining results are blue.

Question 1: Please indicate your priorities for land use and development in Pender County.



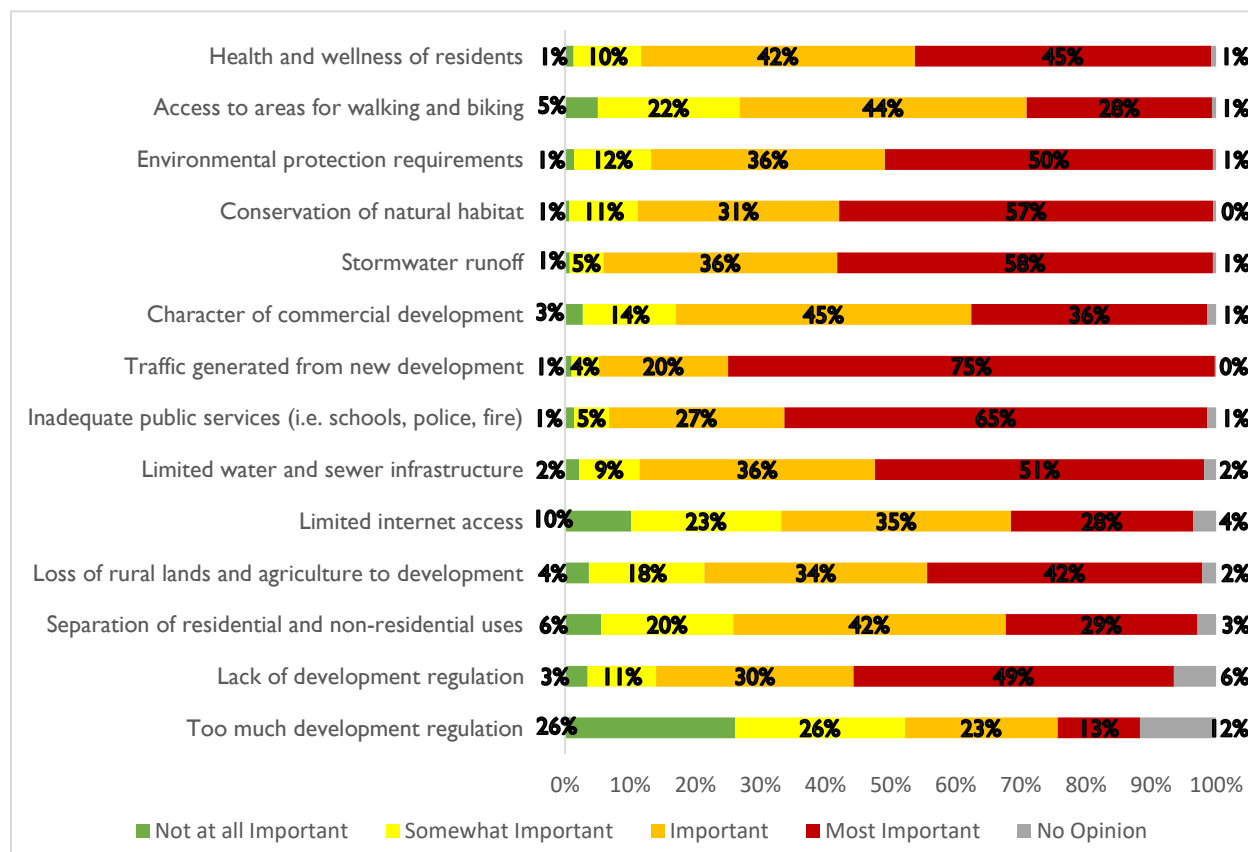
Based upon the 1,374 responses to the survey, the majority of respondents believe that avoiding development in sensitive environmental areas (66%) and maintaining the area's natural beauty through the preservation of habitat, trees, and scenic vistas (59%) are the most important priorities for land use and development in Pender County. Respondents also believe that it is important to limit development to areas without drainage issues. The results from this question also indicate that participants do not feel that mixed use development, such as retail and offices close to residential uses, are important priorities for land use and development throughout the County.

Question 2: What do you consider to be the most important role for the County to play in influencing the character of development in the unincorporated areas of the County?



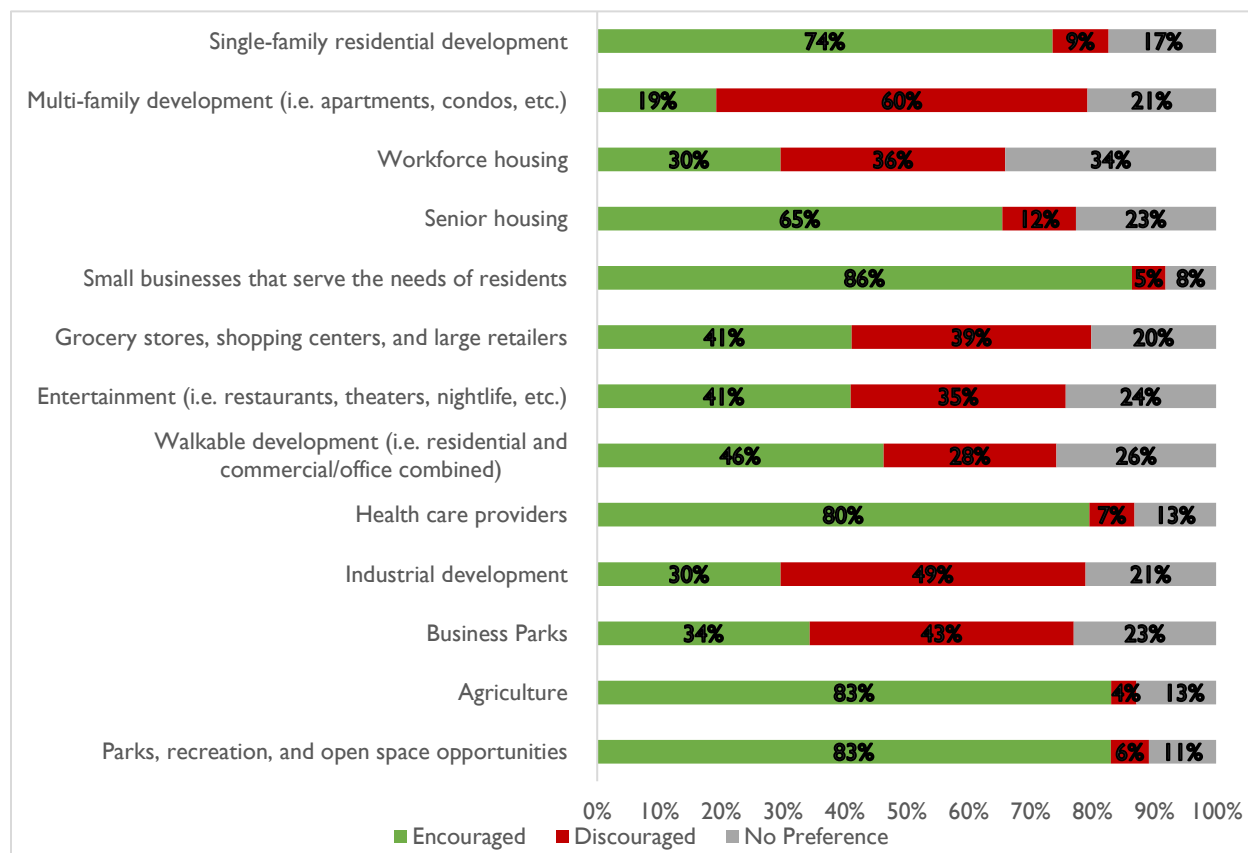
Similar to the results of Question 1, respondents believe that protection of natural resources and environmental quality are the most important factors for the County to consider when influencing the character of development in the unincorporated areas of the County. The second most important response expressed by survey participants is for the County to manage the density of new development by regulating the size and layout of lots and buildings. Based upon the results to this question, the respondents are relatively satisfied with the current land development regulations – approximately 40% of participants believe that improving the flexibility of County land development regulations is either not at all important or somewhat important.

Question 3: What do you think are the most important issues regarding growth and development in Pender County?



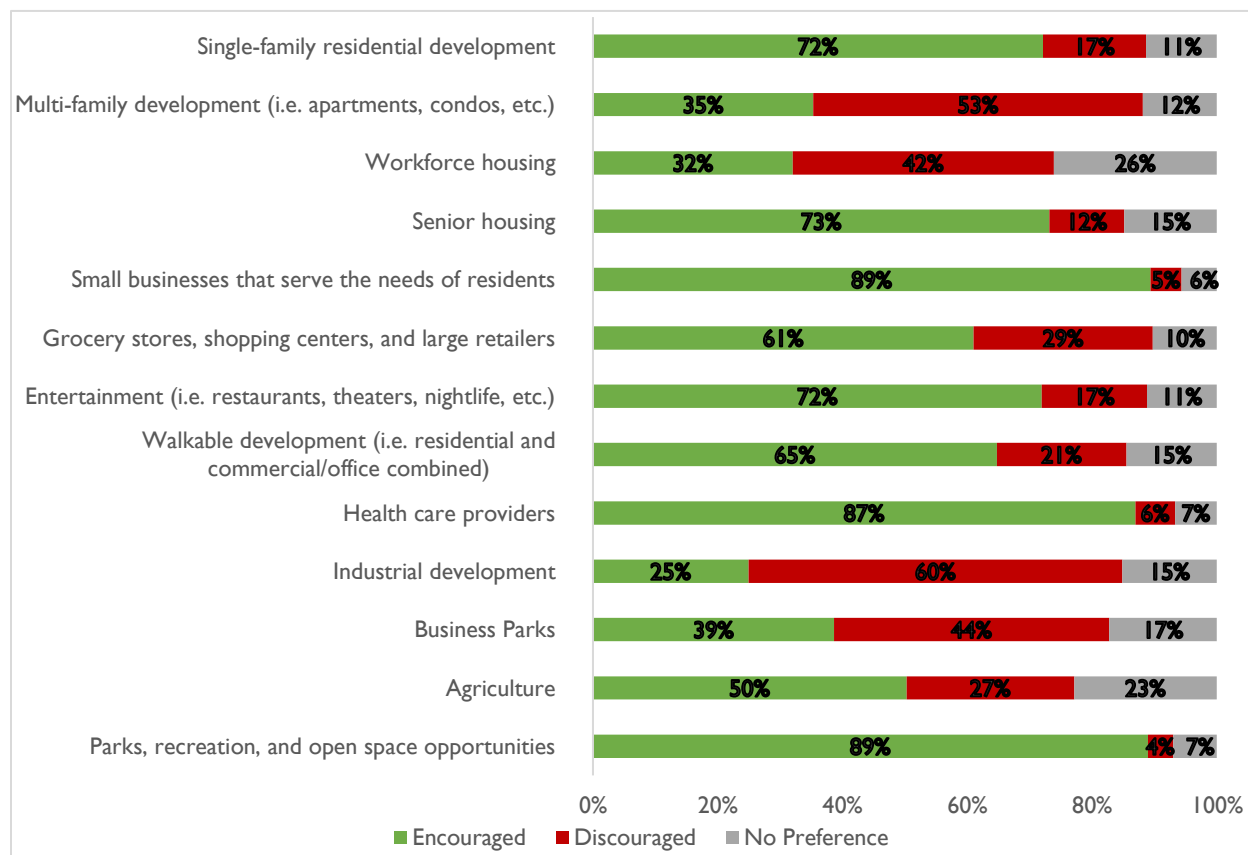
When asked about the most important issues regarding growth and development in Pender County, the respondents believe that traffic and access to public services are of the highest concern. Approximately 75% of responses demonstrate that mitigating traffic generated from new development is the most important issue regarding growth and development in the County. The second most important issue indicated by the results is the inadequacy of public services, such as schools, police, and fire (65%). As suggested in Question 2, respondents do not believe there is too much development regulation occurring within the County and there is no need to improve the flexibility of land development regulations. Over 50% of the respondents believe that burdensome development regulation is of no concern. Further, nearly 50% of respondents believe that lack of development regulation is one of the most important growth and development issues in Pender County.

Question 4: The County is made up of RURAL (i.e. Atkinson, Maple Hill, Currie) and URBAN (i.e. US HWY 17, Burgaw, Rocky Point) areas. What type of development should be encouraged or discouraged in the RURAL areas?

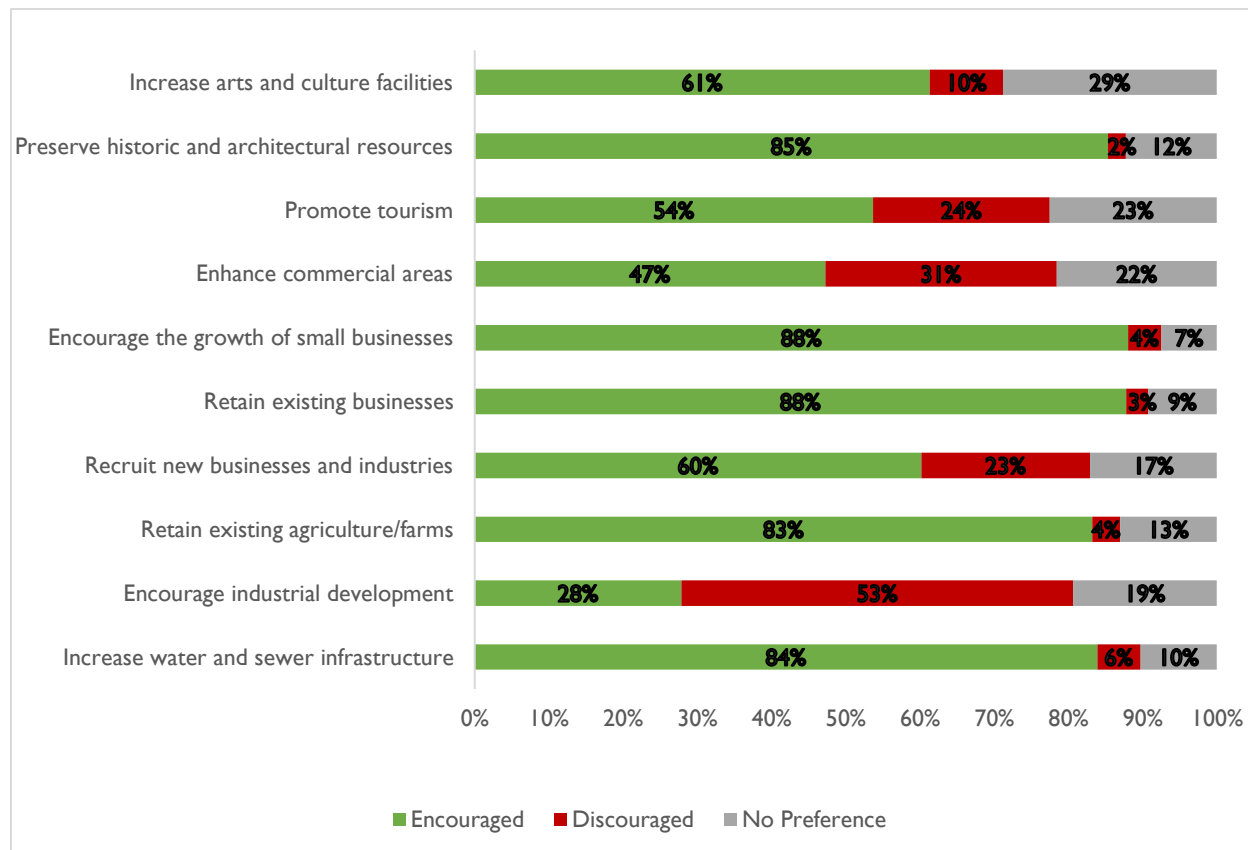


Because Pender County has characteristics of both rural and urban areas, it is important to gauge how the public feels about the types of development in each of these respective areas. Approximately 86% of the respondents encourage the development of small businesses that serve the needs of residents in the rural areas of the County. Closely following is the encouragement of parks, recreation, and open space opportunities, as well as continuing the development/preservation of agricultural lands in the rural areas. Responses indicate that participants would like to see single-family residential development, but discourage multi-family development in the rural areas of the County.

Question 5: The County is made up of RURAL (i.e. Atkinson, Maple Hill, Currie) and URBAN (i.e. US HWY 17, Burgaw, Rocky Point) areas. What type of development should be encouraged or discouraged in the URBAN areas?

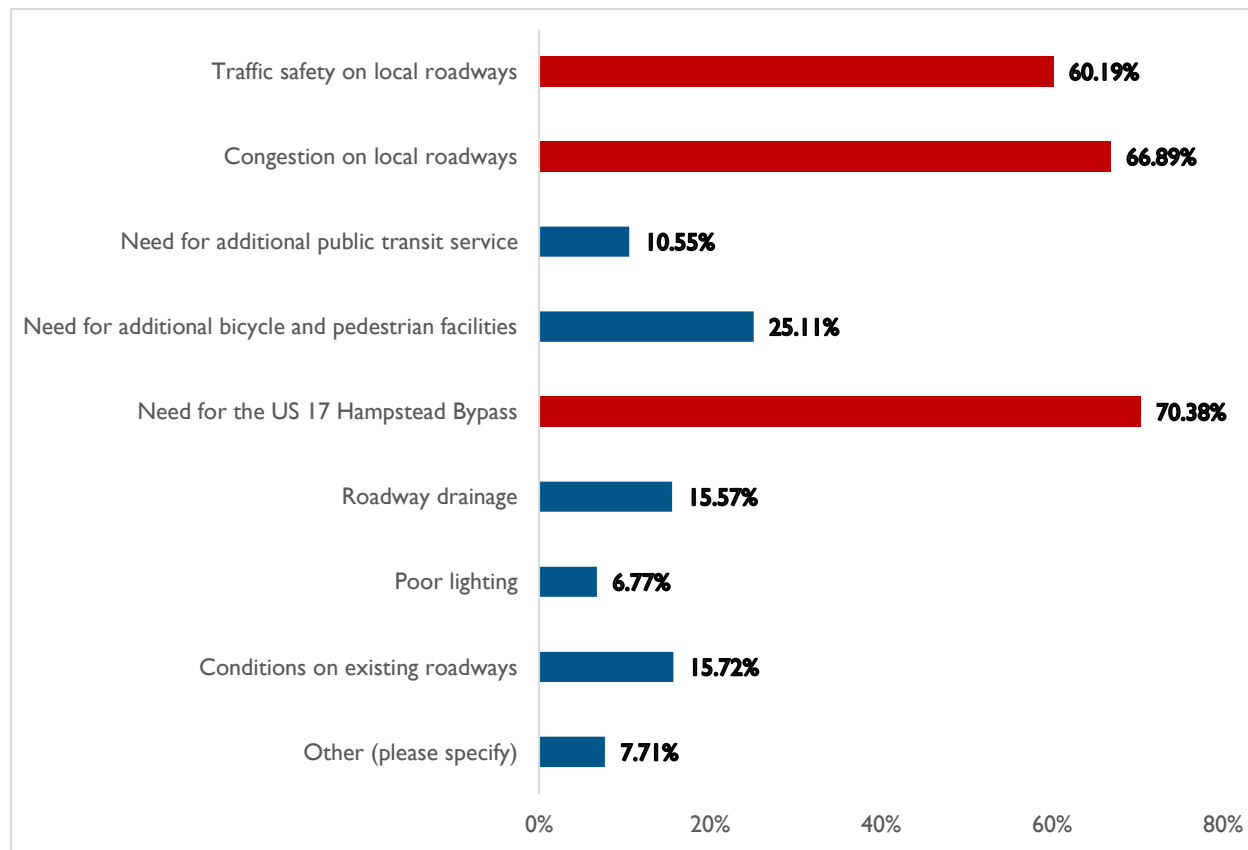


When considering how development should occur in the urban areas of Pender County, respondents encourage the construction of parks, recreation, and open space opportunities, in conjunction with supporting small businesses to serve the needs of residents. Nearly 90% of respondents felt these two types of development are the most important in the urban areas of the County. This percentage is slightly higher than the responses regarding the rural areas of the County, but are still the top two responses to Questions 4 and 5. In regards to agricultural development, the respondents do not encourage such as strongly as in urban areas. Finally, the approximately 87% of participants encourage the expansion of health care providers within the urban areas of Pender County. Industrial and multi-family development are the most discouraged land use types in both the rural and urban areas of the County.

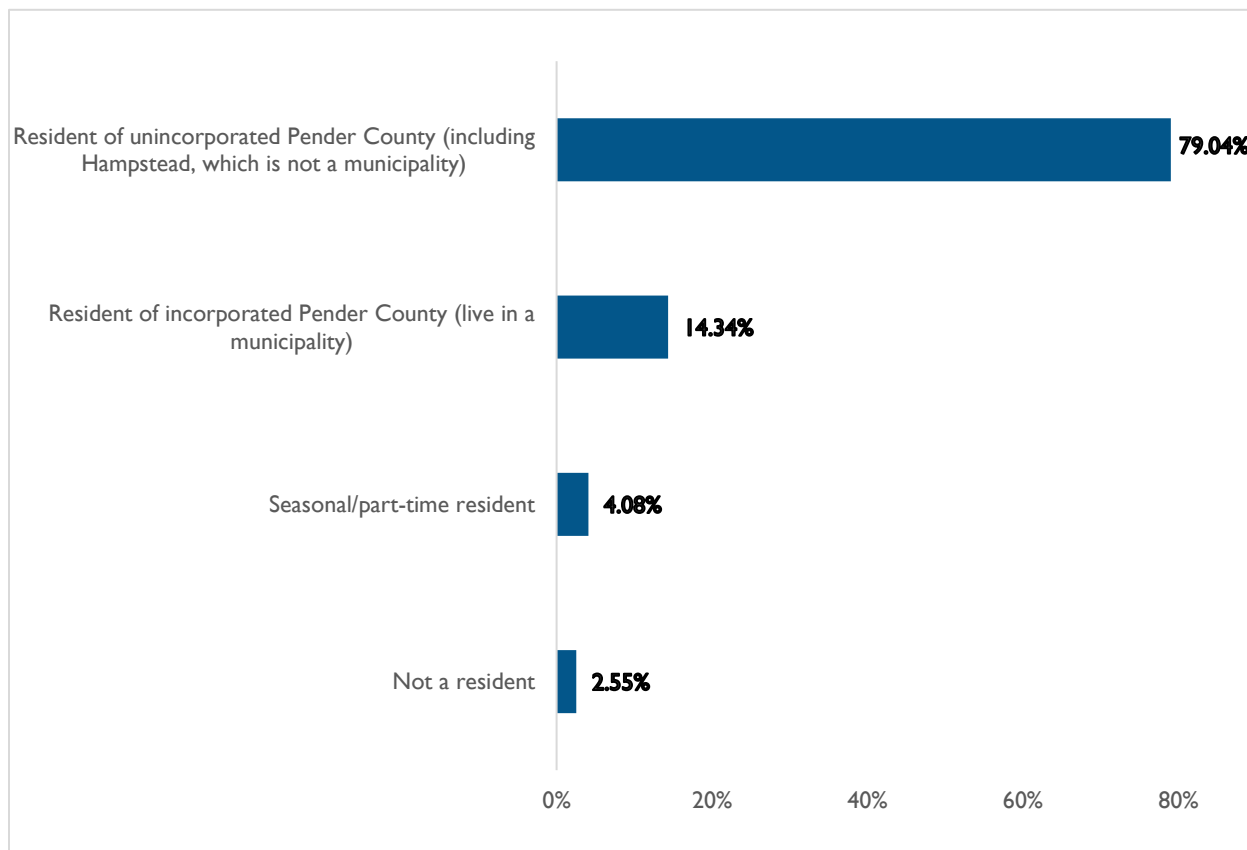
Question 6: Please indicate your priorities for economic growth in Pender County.

Respondents believe the growth of small businesses and retaining existing businesses are the highest priorities for economic growth in Pender County. Closely following is preserving historic and architectural resources and increasing water and sewer infrastructure. The results express that industrial development is a low priority for economic growth and is discouraged. Results were mixed from the Scotts Hill and Rocky Point area respondents regarding industrial development, but there was an overwhelming discouragement of industrial development from respondents in the Hampstead area. Over 50% of respondents discourage industrial development and approximately 28% encourage this type of development.

Question 7: What are the most important areas for improvement regarding transportation? (Please select as many as three)



When asked about the most important areas for improving transportation throughout the County, over 70% of respondents expressed the need for the US 17 Hampstead Bypass. This is also supported by additional comments provided by survey participants. Respondents also believe that congestion and traffic safety on local roadways are both important areas for improvement regarding transportation. The least important area to focus on is lighting on roadways. Of the other responses, individuals expressed the need for sidewalks and bicycle lanes along many of the roadways throughout the County. Respondents also expressed concerns about the US 17 speed limit as being too high, which they feel contributes to the number of accidents along the roadway. Another common response was that speed limit enforcement needs to be increased.

Question 8: Which statement best describes your relationship to Pender County?**Question 9/10: What is your zip code? In what Township do you live?**

Questions 8 through 10 of the survey ask participants to describe their relationship to Pender County (residency status), provide their zip code, and provide the Township in which they reside. Of all of the responses to the survey, over 79% of the respondents are residents of unincorporated Pender County, while only 14% are residents of incorporated Pender County. There was a very small percentage of responses from individuals that are seasonal/part-time residents and non-residents. The largest amount of survey participants live within the Scotts Hill, Burgaw, Hampstead, Holly Ridge/Surf City, and Rocky Point zip codes. The responses from Question 10 indicate that over 50% of respondents live within the Topsail Township, nearly 8% live within the Rocky Point Township, and approximately 6% live within the Burgaw Township. However, over 25% of respondents were unsure of the Township in which they live.

PUBLIC INPUT MEETINGS

One public input meeting was held in each planning area of the County, with the exception of the Topsail Planning Area where two meetings were held. The meetings serve to gather input about the public's concerns and aspirations for the future of Pender County. The results of the facilitated discussion and public input exercise are provided in **Table 1.1: Pender County Public Input Meeting Results**. Individuals in attendance participated in a group exercise where they voiced their planning area's assets, issues, and desires. The public input responses are sorted by the number of times mentioned, starting with the responses that were mentioned most. All comments from the seven public meetings are included in Appendix C.

The Union Planning Area Public Input Meeting was held on May 18, 2017 in the Penderlea Homestead Museum Annex Building. Nearly 15 citizens and steering committee members attended in total. The public indicated their greatest assets, listed by importance, are the preservation of the natural setting, Penderlea School, their culture, presence of wildlife, and their community feeling. They indicated that issues within the planning area include poor drainage of creeks and ditches, lack of/poor internet service, and increased flooding caused by beavers. Finally, the public desires to continue preserving agricultural lands and to widen and resurface roadways.

The Holly Shelter Planning Area Public Input Meeting was held on August 10, 2017 at the Maple Hill Resource Center. Approximately 35 citizens and steering committee members attended this meeting. Citizens ranked their major assets consider them to be the closeness of the community, the quiet natural setting, access to churches, the access to water and sewer facilities, fire and EMS services, and medical clinics. They also believe an asset is home ownership. The issues within this planning area include poor drainage, limited job availability, lack of activities for children, limited shopping options, and taxes. Residents desire an increase in senior housing, an increase in job availability, a recreation center, and a lesser distance to schools.

The Caswell Planning Area Public Input Meeting was held on August 24, 2017 at the Moores Creek Missionary Baptist Church. There were 35 citizens and steering committee members in attendance. The assets of this planning area are Moores Creek National Battlefield, access to the Black River and Cape Fear River, and the new retail stores that have recently been constructed. Attendees noted that the issues deal with roadway width and maintenance. Finally, residents desire the expansion of internet and cable services, a community center, increased law enforcement and fire departments, grocery stores, and family services and activities.

The first Topsail Planning Area Public Input Meeting was held on June 1, 2017 at the Alston W. Burke Center at Cape Fear Community College Surf City Campus. There were approximately 10 citizens and steering committee members in attendance. Based upon the group exercise results, the individuals view the availability of land and quality of schools as their top assets. With the projected increase in population over the next ten to twenty years, they believe their greatest issue is traffic congestion and connectivity. The residents of the Topsail Planning Area

desire additional parks and recreational opportunities, entertainment options, and the construction of bicycle and pedestrian facilities.

The second Topsail Planning Area Public Input Meeting was held on June 15, 2017 in the Hampstead Annex Auditorium. This meeting had the highest attendance with approximately 60 citizens and steering committee members present. Attendees believe that the quality of schools, the natural setting (waterways and gamelands), recreational opportunities, sense of community safety and feeling, the rural character of the area, and the low cost of living are all their top assets. It was expressed that there are issues with stormwater runoff, limited school system capacity, roadway network quality, traffic congestion, and access to County services. Residents of the Topsail Planning Area desire the construction of the Hampstead Bypass, retaining the “small town feel”, the construction of bicycle and pedestrian facilities, and increased roadway and safety.

The Long Creek Planning Area Public Input Meeting was held on July 27, 2017 at Heide Trask High School and The Burgaw Planning Area Public Input Meeting was held on September 7, 2017 in the Board of County Commissioners Meeting Room, located in the Administration Building. Despite significant advertising and notification, neither meeting garnered any attendance.

See **Table 1.1** for a summary of input received during the community meetings.

Table 1.1: Pender County Public Input Meeting Results

Source: Cape Fear Council of Governments and Pender County

Score	Assets – What is important to residents
11	Natural Setting Preservation
10	Quality of Schools
9	Community Feeling and Safety
9	Recreational Opportunities and Water Access
5	Wildlife, Habitat, and Diversity
3	Water and Sewer Facilities
3	Access to Churches
3	Medical Clinic Availability
2	Rural Character
2	Culture of County
2	Fire & EMS Services
2	Land Availability
2	Low Cost of Living
2	Home Ownership
2	Access to New Retail Stores
1	Access to Public Services
1	Existing Structures
1	Roadway Network and Low Traffic
1	Natural Setting and Gamelands
1	Tourism

1	Housing Values
1	Shellfish Waters
1	Low Crime Rate
1	County Annex
1	Privacy
1	Communication
1	Parade
1	Agricultural assets
1	Slow Development Pace
1	Taxes
1	Post Office
1	Rosenwald Schools
1	Water plant
1	US HWY 421 Development
Score	Issues – Concerns of residents
15	Drainage, Stormwater Runoff, and Flooding
9	Roadway Quality and Traffic Congestion
7	School System Capacity, Growth Preparation, and Distance from Schools
4	Lack of Employment Opportunities and Poverty Rate
3	Lack of Youth Activities
2	Inadequate Internet Service
2	2015 Property Tax Increase
2	Limited County Services
1	High Taxes and Insurance Prices
1	Lack of Park, Public Facilities, and Beach and Water Access
1	Limited Access to Shopping Centers
1	Solar Farm Development
1	Intersection of Union Rescue and Crooked Run
1	Quality and Pace of Development
1	Too Many Dollar Stores
1	Fear of Change
1	Public Water Supply and Water Treatment
1	Limited Law Enforcement, Fire Service, EMS Services, and Healthcare Options
1	Public Transportation
1	Gas Prices
1	Pedestrian Facilities
1	Business Losses with Lack of Planning
1	Unincorporated Areas
1	Rental housing
1	Beavers Increasing Flooding
1	Limited Internet service
1	Grants for children
1	Isolation during natural events
1	County commissioners
1	Seasonal traffic
1	Funding for area needs Hurricane Matthew response
1	Community cooperation

1	Land use for needs of residents
1	Landing area for emergency services
1	Trucks on roads
1	Commercial Farming and Related Pollution
1	Racing
Score	Desires – Wishes of residents
7	Increase Roadway Capacity and Safety, including the Construction of the Hampstead Bypass
6	Provide/Expand Bicycle and Pedestrian Facilities
5	Increase Parks & Recreational Opportunities
5	Expand Internet and Cable Services
4	Increase the Number of Community Centers
3	Preserve Agricultural Lands
3	Increase Law Enforcement
3	Increase Job Availability
3	Additional Schools/Increase School System Capacity
3	Provide Additional Entertainment Services
2	Retain “Small Town Feel”
2	Construct Additional Fire Departments
2	Increase Senior Housing Availability
2	Increase the Number of Grocery Stores
1	Control Property Taxes
1	Large Residential Lots for Developments
1	Preservation of School History
1	Historic Preservation, Cultural Preservation, and Land Conservation
1	Improve Drainage and Mitigate Stormwater Regulations
1	Limit Hog Farming
1	Access to Waterways
1	Retail/Outlets and Diverse Shopping Options While Encouraging Local Businesses
1	Comprehensive/Modern Traffic Plan
1	Public Service Centers (Not Linear Growth on US 17)
1	Emphasize Farming Community and Link Produce to Production
1	Public Transit and Public Parking
1	Healthcare options
1	Housing options beyond single-family
1	Town Center
1	Holly Shelter event center
1	Hotels/Motels
1	Stricter Pollution Regulations
1	No multi-family dwellings, unless they are spread out
1	Livestock restrictions in neighborhoods
1	Increase library services
1	Development moratorium
1	Increase Law Enforcement, Fire Service, EMS Services, and Healthcare Options
1	Mowing roadsides
1	Trash and Recycling Services
1	Notification of meetings
1	Rezoning US HWY 17 corridor to all commercial
1	Revision of Collector Streets (commercial)
1	More public recreation/water access
1	Preservation of wildlife habitats

I	Buffers between housing and wetlands
I	Community wastewater
I	Incorporation of Hampstead
I	Public Roads for new neighborhoods
I	Economic development plan/committee
I	SOS program
I	Agricultural processing center
I	Vocational programs
I	Form a committee to work with NCDOT for drainage issues
I	Upgrade the community center
I	Community Center Upgrades (More lighting Surrounding)
I	Better understanding of tax money usage and control
I	Country store
I	Educational Services and Tutoring center
I	Adult programs
I	Resource center for seniors
I	Updated medical center
I	Youth programs
I	Commercial development (Blueberry Rd./US HWY 421)
I	Industry
I	Walking trails
I	Restaurants

COMMUNITY CONCERNS AND ASPIRATIONS

Top 10 Public Input Priorities

The survey results and comments provided by respondents indicate important elements that residents of Pender County would like to see addressed. Based on all public input, the top ten public input priorities were developed and prioritized by importance. It should be noted that these priorities are goals and intentions of the survey respondents and are to serve merely as a resource. These priorities are by no means a mandate for future funding or policy change. The priorities are listed in order of significance.

1. Preserve, enhance, and maintain Pender County's coastal habitat and agricultural landscape.
2. Prioritize traffic congestion reduction and improve/increase connectivity along the US 17 corridor to support residential communities and businesses.
3. Ensure there is adequate school capacity to accommodate the projected increase in population and continue to prioritize high-quality education.
4. Manage development in coordination with existing and future roadway networks to provide safe and uncongested travel within and outside of the County.
5. Prioritize enhanced stormwater management and retention for new development, while supporting programs to rectify drainage concerns in existing communities.
6. Expand current water and wastewater services to better serve the existing community, future residents, and local business owners of Pender County.
7. Support development that retains the County's quaint, small-town feel and history.
8. Develop and expand broadband internet service access to better serve the citizens and local business owners of the County.
9. Provide bicycle and pedestrian facilities that promote the safety of both motorized and non-motorized users.
10. Increase the number of parks, recreational opportunities, and public trust water access locations to promote a high quality of life for the County's residents.

VISION STATEMENT

The Vision Statement for Pender County is intended to be a general and brief statement about the County's main preferences for future growth. The Vision Statement is based on a consensus of the views of community citizens and community representatives.

To maximize the utility and scope of the Vision Statement, community priority issues, local citizen input, and the preferences of the local government were all considered during the statement creation process.

2017 Vision Statement

Protect Pender County's coastal and agricultural heritage through strategic growth management by focusing development in key locations to minimize impacts to transportation systems, natural habitats, and existing neighborhoods. Continue to support and offer exceptional schooling to all Pender County students and provide services to enhance local employment opportunities that will reduce commute times and traffic congestion for the County's workforce. Lastly, maintain the quality of life that makes Pender County a community that is a desirable place for visitors and residents alike.

HOW TO USE THIS PLAN

Pender County's Comprehensive Land Use Plan, Pender 2.0, serves a variety of functions and the plan for the future contains a broad range of:

- **Goals:** A general statement indicating a desired end or the direction the County will follow to achieve that end.
- **Objectives:** Direction toward the attainment of a particular goal.
- **Policies:** A statement identifying the County's position regarding the pursuit of a goal or objective.
- **Recommended Actions:** A statement outlining a specific course of action the County may pursue to implement goals and policies. Recommended actions are not used in review of development proposals, text amendments, and/or rezoning requests.

Collectively, the goals, policies, and recommended actions provide a long range planning function, but also help to guide day to day operations. The daily functions relate primarily to the decisions of actions of elected and appointed officials and administrative staff.

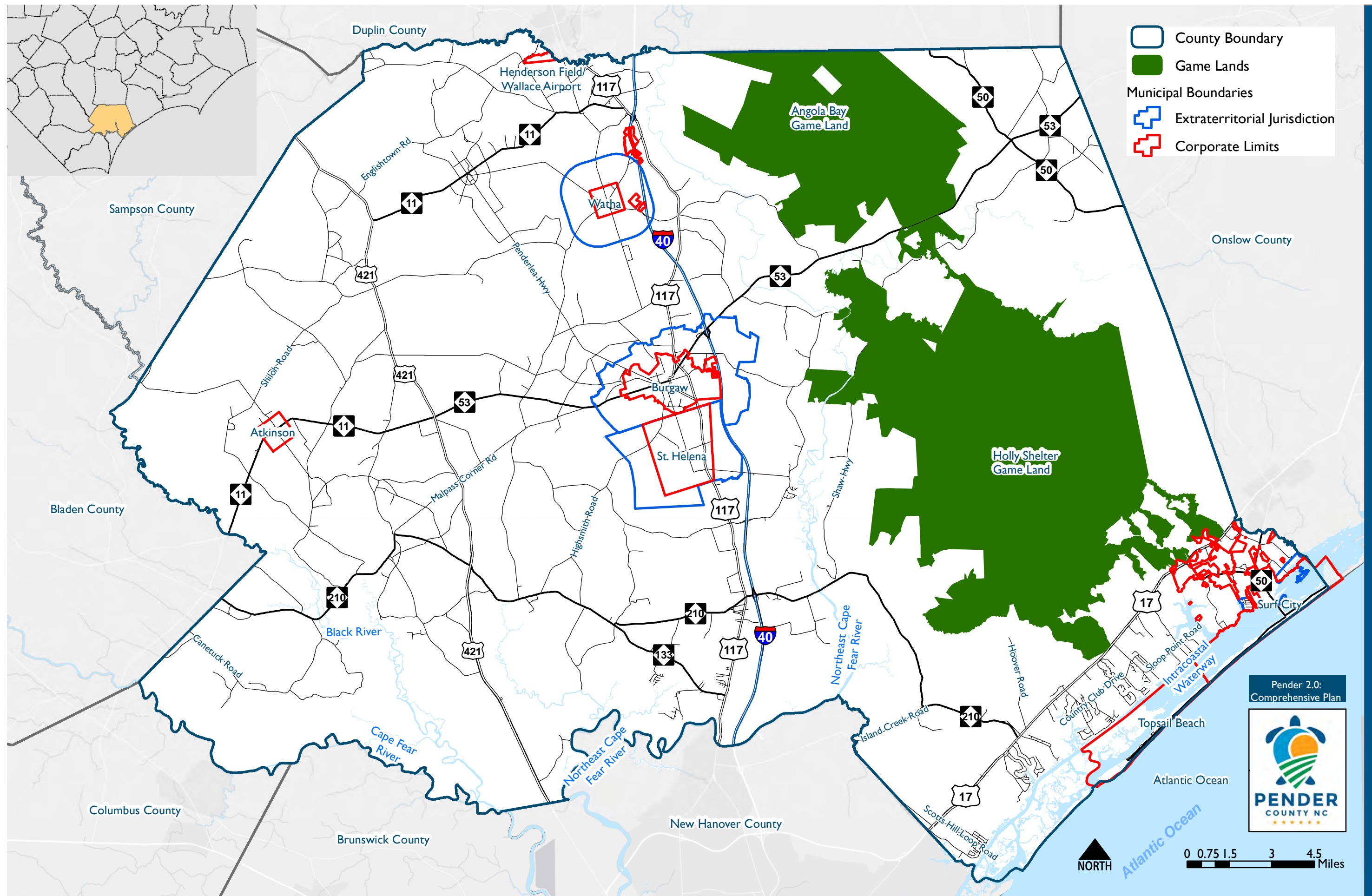
For the Board of Commissioners, the comprehensive land use plan contains County policies and provides guidance when making decisions regarding future land use and development, public access, protecting the environment, mitigating natural and manmade hazards, or ensuring that infrastructure and services are adequate to serve residents and seasonal visitors. While the plan's policies do not have the same status as zoning regulations, except in matters related to development or land uses within Areas of Environmental Concern (AECs), the policies and recommended actions and the future land use map help guide decisions on future ordinances and zoning decisions.

In addition to guiding development decisions, the Board of Commissioners may use the plan's policies and recommended actions when making decisions on the County's capital improvement

plan (CIP) and its annual operating budgets. The County Planning Board will use the plan and its policies to determine the consistency of project plans and development proposals with community goals and objectives. Its policies will also guide decisions on whether to grant or deny requests for such things as ordinance amendments, conditional zoning amendments, special use permits, or the approval of site plans.

Another important use of the plan is for consistency determinations by the Division of Coastal Management (DCM) for major permits issued pursuant to CAMA regulations. Other state and federal agencies will use the plan to determine the consistency of their projects and programs with the policies contained in this plan.

Lastly, the plan is a useful tool for developers and property owners because it provides guidance on the types of land use and development that are desired within the community. The plan's policies and recommendations may help developers craft proposals that are consistent with the County's goals, thereby increasing the likelihood that these projects will be approved. The plan also provides information that will help owners and developers better understand the capabilities and limitations of their property or may assist community members in supporting or opposing projects within the community.



Map 1.1: Location

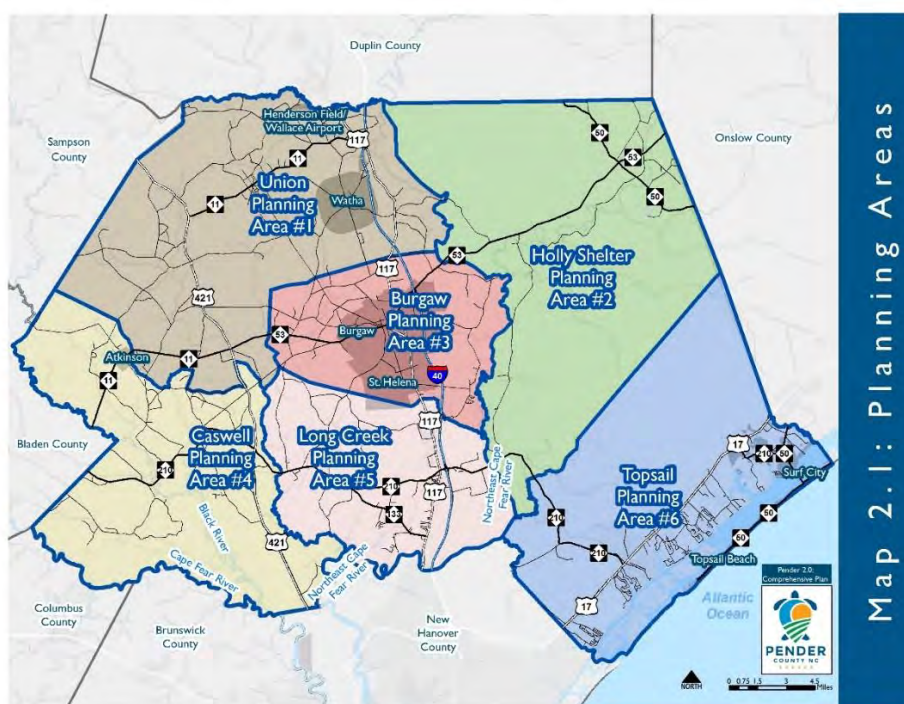
CHAPTER 2: COMMUNITY PROFILE

INTRODUCTION

This chapter of the land use plan identifies important community characteristics and demographic trends that warrant consideration when formulating policies and long-term growth strategies. The following analysis provides information on the population, housing, and economic characteristics of Pender County. Such information is intended to allow staff and officials to make growth management decisions based on an understanding and knowledge of where the County has come from, where it is today, and where it may be heading. Because the County spans such a large area, and contains a diverse array of community types, demographic figures and statistics were developed for planning areas that encompass specific geographic locations within the County. Six planning areas were developed to allow for more detailed analysis of trends and characteristics throughout the county. See **Figure 2.1** for more information. These data were administered by a special private data provider. Moreover, three counties – Brunswick County, New Hanover County, and Duplin County – were selected to provide a comparative analysis to demographics within Pender County. The three counties were selected due to their similarities to Pender County, with Brunswick County exhibiting a comparable rural to urban transition and exponential growth, New Hanover County that of a more developed/urban coastal community, and Duplin County representative of the rural heritage found throughout much of Pender County.

Figure 2.1: Pender County Planning Areas

Source: Cape Fear Council of Governments and Pender County



The current population size, both permanent and seasonal, and the level to which it will change during the planning period can help estimate the development pressure that may impact fragile environmental ecosystems, rural heritage landscapes, prime farmland, and coastal resources. In addition, demands placed on infrastructure (roads, sewer, stormwater, community services, etc.) are directly related to growth in population and development. As a result, staff and officials can use the information contained herein as a resource for decision making.

NOTE: Data and statistics contained in this chapter are derived from a number of sources. Figures for years beyond 2015 are considered projections. Statistics are sourced from the US Census Bureau/American Community Survey, PCensus, NC Office of State Budget and Management (NCOSBM), and NC Commerce among others (sources are provided with each respective table and/or figure). It should be noted that the North Carolina Office of State Budget and Management provides annual population figures for each local government jurisdiction in the state. Typically, this number differs from the population figure sourced from the US Census Bureau's American Community Survey and PCensus, which is software/data that allows for demographic analysis of unique features such as the Planning Areas contained within this land use plan. For example, the County's 2015 population according to the NCOSBM is 57,941, while the US Census Bureau reports the population to be 57,611, and PCensus estimates the population at 56,569. Statistics, facts, and figures related to housing, income, and employment will be sourced from the US Census Bureau's American Community Survey, PCensus (Planning Areas), and NC Commerce. The NCOSBM does not provide statistics relating to housing, income, or employment.

POPULATION CHARACTERISTICS AND TRENDS

PERMANENT POPULATION

Table 2.1: Pender County Incorporated & Unincorporated Population (2010 & 2015)

Source: NCOSBM

Jurisdiction	April 2010	July 2015	Amount	Percent
Town of Atkinson	299	329	30	10.03%
Town of Burgaw	3,872	4,050	178	4.60%
Town of St. Helena	389	420	31	7.97%
Town of Surf City(Part)	1,561	1,753	192	12.30%
Town of Topsail Beach	368	401	33	8.97%
Town of Wallace(Part - Airport)	0	0	0	0%
Town of Watha	190	214	24	12.63%
Total Incorporated Jurisdictions	6,679	7,167	488	7.3%
Total Unincorporated County	45,522	50,775	5,253	11.54%
Total Countywide	52,201	57,941	5,740	11.17%

From 2010 to 2015, Pender County's population increased dramatically - a trend that has continued since the 1970s when fewer than 20,000 residents called the county home. In fact, since 1970, the County's population has more than tripled, with much of the growth occurring

in the coastal areas. According to the NC Office of State Budget and Management, population growth in the unincorporated portion of the County was greater than that experienced in the municipal jurisdictions from 2010 to 2015. This is especially important to note as it further clarifies and confirms the tremendous growth and development pressures experienced in the Hampstead area/US 17 corridor over the last five years. Nevertheless, even the more rural municipalities of Atkinson, Watha, and St. Helena all experienced growth.

Table 2.2: Pender County Planning Area & Comparative County Population

Source: US Census Bureau/2015 American Community Survey, PCensus, & NCOSBM

Population Estimates	Union Planning Area #1	Holly Shelter Planning Area #2	Burgaw Planning Area #3	Caswell Planning Area #4	Long Creek Planning Area #5	Topsail Planning Area #6	Pender County	Brunswick County	New Hanover County	Duplin County
2015	6,608	2,388	8,939	4,474	9,917	24,243	57,941*	115,926	213,091	59,453
2010	6,391	2,298	8,540	4,233	9,441	21,303	52,205	107,431	202,667	58,505
2000	5,965	2,168	7,589	3,886	7,573	13,898	41,079	73,143	160,307	49,063
Growth 2010-2015 (%)	3.40%	3.92%	4.67%	5.70%	5.05%	13.80%	10.98%	7.91%	5.14%	2%
Growth 2000-2010 (%)	7.14%	5.98%	12.53%	8.92%	24.66%	53.29%	27.08%	46.88%	26.42%	19%

*As mentioned previously, the county population total is derived from PCensus differs from that of NCOSBM/US Census. Accordingly, when totaling the Planning Area populations it does not equal 57,941.

As shown in **Table 2.2**, population growth in the County outpaced that of New Hanover, Brunswick, and Duplin Counties from 2010 to 2015. Of particular note, is the finding that within all of the County's Planning Areas, population growth occurred from 2000 to 2015. This statistic contrasts much of what has occurred in the more rural communities across North Carolina, where population decline, rather than population growth, has been the norm. Accordingly, the five Planning Areas northwest of the Topsail Planning Area all exhibit characteristics more akin to a rural, rather than urban, community. Population growth is projected to continue throughout the county and southeastern North Carolina. From 2010 to 2015, the County population growth rate was nearly twice that of North Carolina as a whole, notwithstanding the significant population growth experienced statewide. Moreover, more than 90% of the population growth experienced from 2010 to 2015 came as a result of migration to the County – people moving to the area and becoming new residents.

SEASONAL POPULATION ESTIMATES

When planning for infrastructure, housing, commerce, and recreation, it is important to consider the impact of vacationers, visitors, and temporary residents visiting the area on a seasonal basis. While only a portion of the unincorporated County is likely impacted by seasonal residents it is still important to note. Typically, the seasonal population has the greatest impact on services and resources from Memorial Day to Labor Day.

Persons who reside in the County for the majority of the year, or refer to it as their primary residence, make up the permanent population. Whereas, persons who temporarily vacation or visit for at least one night in the area during the peak season comprise the seasonal population. The permanent population plus the seasonal population (including day-trippers) make up the peak population. The seasonal overnight population accounts for only the permanent and seasonal population and not day-trip visitors. While there is no standard method for tabulating seasonal population for a given jurisdiction, there are few methods that can be used to estimate the population. Refer to **Table 2.3** for additional information.

SEASONAL ESTIMATE BY HOUSING & VACATION UNIT

According to 2015 Census data, there were an estimated 3,826 vacant units occupied for seasonal use throughout all of Pender County, including the beach towns of Surf City and Topsail Beach. To establish the seasonal overnight population for the entire County, average household size or persons per unit must be utilized. Based on Census data, there are approximately 2.5 persons per household in the County for permanently occupied housing units. Typically, in seasonal housing units, the person per household total is more than double that of the permanent rate and even higher for beachfront communities with rental housing. As such, the additional seasonal population estimate is based upon 5 persons per household in the unincorporated County and 8 persons per household in the beach towns.

Table 2.3: 2015 Seasonal Population Estimates – Pender County

Source: US Census Bureau, NCDOT, & Cape Fear Council of Governments

2015 Seasonal Population Estimates		
Housing Units	Persons per Unit	Total Population
Seasonal Housing – Surf City & Topsail Beach (2,953)*	8**	22,443
Seasonal Housing – County with Beach Towns Excluded (873)*	5	4,147
Total Seasonal Overnight Population Estimate		26,590
Peak Annual Daily Traffic Increase (US 17)	Persons per Vehicle	Total Population
4,500 (varies)	3***	13,500
Total Peak Seasonal Population Estimate (seasonal overnight + day visitors)		40,090
2015 Countywide Total Seasonal Population (permanent + seasonal overnight + day-trip visitors)		
98,031 persons (57,941 + 26,590 + 13,500)		
2015 Unincorporated County Total Seasonal Population (permanent + seasonal overnight + day-trip visitors)		
68,422 persons (50,775 + 4,147 + 13,500)		

*The estimated number of seasonal units is based on the percentage established in the 2010 Census. Seasonal housing estimates are not available for 2015.

**This persons per household figure (8), was calculated based on a report of the Greater Topsail Island Area seasonal population estimates from the UNC Carolina Population Center.

***This estimate is based on average vehicle occupancy between 2 and 4 persons and should not be viewed as exact. As such, the day trip visitor estimation may vary depending on the number of occupants per vehicle.

The peak seasonal overnight estimate is derived by assuming 95% occupancy of the vacant seasonal housing units and does not include estimates for hotel/motel occupancy. Again, this estimate should not be viewed as exact. Calculating seasonal population figures is an imperfect science at best. Additionally, it is estimated by the NC Department of Transportation (NCDOT) that traffic counts along US 17 increase by roughly 4,500 vehicles a day. In effect, these additional vehicles capture some of the day trip visitors traveling through or visiting the county and is used to calculate such. It should be noted the peak seasonal population is more likely to occur on summer holidays such as Memorial Day, July 4th, and Labor Day.

According to the figures calculated for seasonal overnight population, when added to the permanent population, there are approximately 84,531 persons in Pender County during the summer months – equating to a 45% increase in population. When excluding the estimated seasonal population in the beach towns (Surf City and Topsail Beach), it is estimated that more than 4,000 additional residents inhabit the coastal areas (Hampstead/US 17 corridor) of unincorporated Pender County – an increase of nearly 20%.

When accounting for day-trip visitors and traffic, it is estimated that throughout the entire County – on a peak day in the summer – there is nearly 100,000 persons living in or visiting the area. However, the total seasonal population is reduced when estimated for only the unincorporated County at 68,422 persons. Nevertheless, both figures still amount to a substantial population increase – nearly doubling throughout the entire County. Again, these figures should not be viewed as exact, but rather should be used as an estimate to determine the potential impacts on services and infrastructure during the seasonal months or timeframe.

POPULATION PROJECTIONS

Much like seasonal population estimates, population projections can vary widely due to intervening factors such as the strength of the economy, availability of jobs, and housing prices. Population projections identify potential challenges and needs that may confront a local government in the near future. This is especially true in Pender County, where the NCOSBM and US Census has determined it to be the fifth fastest growing county in state from 2010 to 2015 and the 92nd fastest growing County in the country (there are 3,241 counties in the US). The County's abundant natural resources, low cost of living, and proximity to Wilmington and Jacksonville/Camp Lejeune will continue to drive population growth for years to come. Yet, just how much growth can be expected can only be estimated.

The NCOSBM provides twenty-year population projections for each County in North Carolina through the State Demographer (population projections are not available for smaller geographies such as municipalities or townships). The State Demographer's population growth estimate for Pender County indicates population increase will occur primarily from migration into the County, while natural growth from births will be minimal. The Division of Coastal Management (DCM) requires as part of the land use planning process a population projection for thirty, rather than twenty years. To account for the additional ten years of population projections, the NCOSBM/State Demographer's linear projection is applied through the year 2045.

Table 2.4: 2045 Population Projections

Source: NCOSBM & Cape Fear Council of Governments

2045 Population Projections				
Population Estimates	Pender County	Brunswick County	New Hanover County	Duplin County
2045 Projection	93,846	216,691	318,058	59,867
2040 Projection	87,941	201,058	300,947	59,867
2035 Projection	82,566	186,128	278,612	59,866
2030 Projection	76,410	170,230	264,016	59,866
2025 Projection	70,254	154,332	249,424	59,866
2020 Projection	64,102	138,430	234,826	59,866
2015 Population	57,941	115,926	213,091	59,453
2010 Population	52,205	107,431	202,667	58,505
2000 Population	41,079	73,143	160,307	49,063
Population Growth/Projections				
Growth 2015-2045 (%)	61.97%	86.92%	49.26%	0.70%
Growth 2015-2020 (%)	10.63%	19.41%	10.20%	0.69%

*2045 Unincorporated County Population Projection: 83,578.

According to the population projections provided in **Table 2.4**, Pender County is anticipated to experience a population growth rate of nearly 62% or an increase of more than 35,000 residents by 2045. It should be noted, however, that this projection applies to the entirety of the County.

To estimate the approximate increase of population in the unincorporated County, we can assume that a similar ratio of incorporated to unincorporated population will exist in 2045. Thus, approximately 88% of the population growth will be allocated to the unincorporated portion of the County – equating to an increase of 32,803 persons or the addition of nearly three new unincorporated County residents per day for the next thirty years. Even still, growth in Pender County is anticipated to fall behind that of Brunswick County where the population is projected to nearly double by 2045. New Hanover County is projected to trail both Pender and Brunswick County in terms of population growth over the next thirty years, while all three counties are forecasted to add population at a much higher rate than the state as a whole. More rural Duplin County is not projected to grow over the next thirty years. Such a trend could also be similar for communities in the northern portion of Pender County as the majority of population growth is anticipated south of Burgaw and along the US 17 corridor.

POPULATION BY AGE

The age of a community's population is important in determining future health care needs, school facility expansion requirements, and economic development considerations among other things. In Pender County, the median age is slightly over 42, whereas in North Carolina as a whole, that number is 38.4 years of age. In Pender County, the state, and nationwide, median age figures have shown an increase over the last decade. Pender County's median age is only

slightly above that of the state and is generally in line with neighboring counties of New Hanover and Duplin County. Within Pender County, the Long Creek Planning Area has the lowest median age and Topsail the highest.

Figure 2.2: Median Age (2015)

Source: US Census Bureau & PCensus

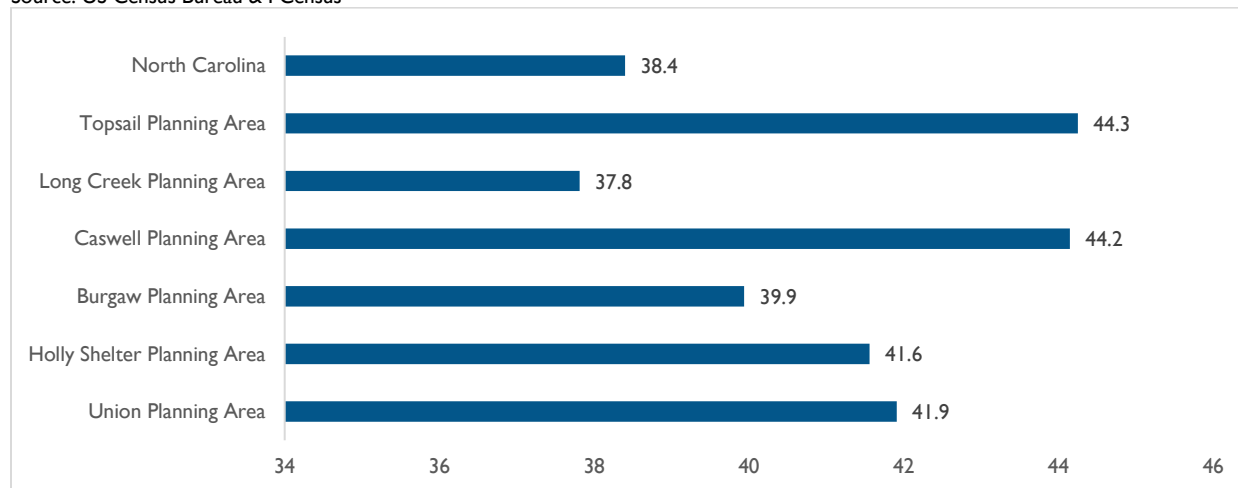
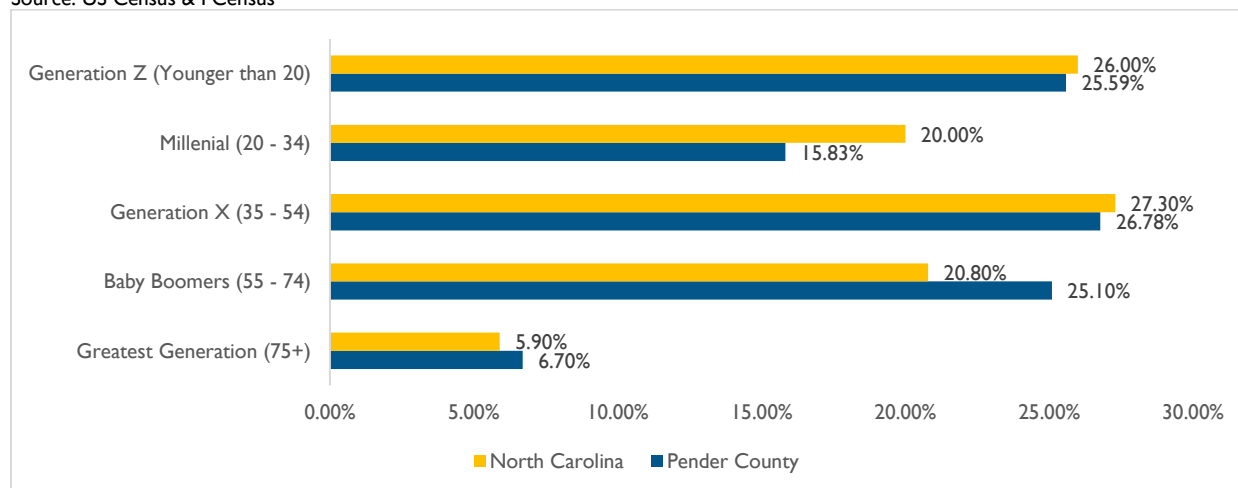


Figure 2.2 displays the 2015 Pender County and North Carolina population distributed by age. Population throughout the County is distributed fairly evenly and generally consistent with that of the state overall. Surprisingly, despite a large influx of retirement-age residents, the Baby Boomer age cohort does not account for the largest age group, but is significantly higher than that of North Carolina overall. The County also has a smaller percentage of its population in the millennial age group than does the state, indicating out-migration for college graduates and young workers.

Figure 2.3: Population by Age (2015)

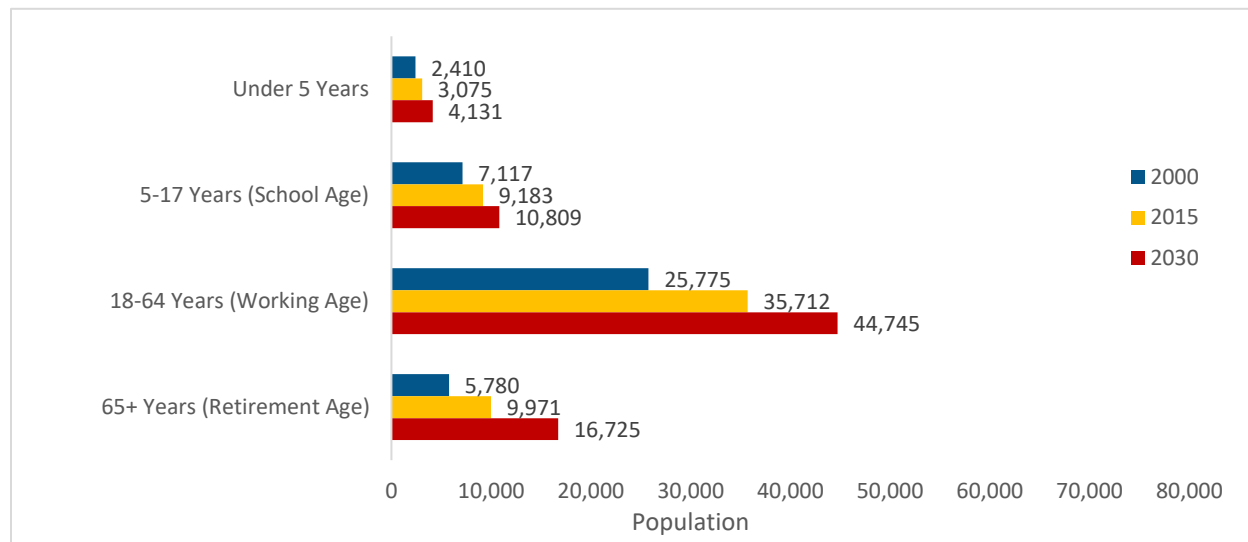
Source: US Census & PCensus



Over the next ten to fifteen years, the County is forecasted to have a substantial increase in the number of residents above the age of 65 (see **Figure 2.4**). This trend is also projected to occur in Brunswick and New Hanover Counties. According to the NCOSBM, the increase in school age children is only moderate and below that of the population increase for persons aged 18 to 64. As median age of the population continues to increase over the next thirty years, this segment of the County's population will demand specialized services to meet retirement needs, including independent and assisted facilities, high quality health care, and both passive and active recreational opportunities.

Figure 2.4: Population by Age Projections (2000-2030)

Source: NCOSBM



HOUSING CHARACTERISTICS AND TRENDS

Analyzing the existing housing stock enables the community, elected officials, and planners to get an overall picture of the range of housing opportunities available or needed in the jurisdiction. Other housing attributes such as the age of the structure, owner versus renter occupation, and housing value, act as indicators to the nature and characteristic of the existing housing stock and can be considerations when formulating development policies.

HOUSING UNITS BY TYPE

From 2000 to 2015, the total number of single-family homes increased by 5,353 units – accounting for the most significant share of the housing unit growth over those 15 years (see **Table 2.5**). Additionally, the share of housing units that are classified as manufactured homes decreased from 2000 to 2015 and no growth of such was experienced, implying that certain areas of the county may have been redeveloped with stick-built or modular single-family homes.

Table 2.5: Pender County Housing Units by Type (2000 & 2015)

Source: US Census Bureau

Housing Unit Type	Year 2000		Year 2015		Percent Growth/Decline from 2000 to 2015
	Number	Percentage	Number	Percentage	
1-unit, detached (Single-family home)	12,235	58.80%	17,588	64.97%	43.75%
1-unit, attached (Duplex)	256	1.20%	563	2.08%	119.92%
Manufactured home	7,328	35.20%	7,260	26.82%	-0.93%
Boat, RV, van, etc.	37	0.14%	36	0.13%	-2.70%
Multi-family					
2 units	198	1.00%	323	1.19%	63.13%
3 or 4 units	197	0.90%	133	0.49%	-32.49%
5 to 9 units	189	0.90%	526	1.94%	178.31%
10 to 19 units	164	0.80%	322	1.19%	96.34%
20 or more units	194	0.90%	320	1.18%	64.95%
Total	20,798	100%	27,071	100%	30.16%

Throughout the Pender County Planning Areas and neighboring jurisdictions, single-family homes account for the greatest percentage of housing units. Compared with Brunswick and New Hanover County, Pender County has a higher percentage of manufactured homes and a smaller percentage of multi-family housing. As mentioned previously, the share of manufactured housing in the County appears to be declining in favor of stick-built or modular single-family homes. The Topsail and Union Planning Areas have the greatest percentage of housing classified for single-family use.

Regarding multi-family housing, the Burgaw and Topsail Planning Areas have the greatest percentage of such. This is for two reasons; (1) the availability of wastewater infrastructure to support more dense housing and (2) the condo/apartment housing demand along the coast, particularly in the Surf City area. However, the percentage of multi-family housing is still less than 10% of the total. New Hanover County, in which the City of Wilmington and three beach towns are located, has over quarter of its housing units dedicated to a multi-family use. See **Table 2.6** for more information.

Table 2.6: Housing Units by Type (2015)

Source: US Census Bureau & PCensus

Housing Unit Type	Union Planning Area #1	Holly Shelter Planning Area #2	Burgaw Planning Area #3	Caswell Planning Area #4	Long Creek Planning Area #5	Topsail Planning Area #6	Pender County	Brunswick County	New Hanover County	Duplin County
1 Unit Detached (Single-family home)	64.40%	55.81%	64.30%	57.76%	55.36%	66.16%	64.97%	63.76%	60.74%	57.00%
Boat, RV, Van, etc.	0.03%	0.00%	1.48%	0.00%	0.00%	0.00%	0.13%	0.10%	0.01%	0.23%
Manufactured Home	35.53%	39.18%	25.44%	41.32%	42.21%	21.05%	26.82%	23.02%	4.82%	36.68%
Multi-family										
2 Units	0.00%	0.22%	0.04%	0.82%	0.01%	3.67%	1.19%	1.37%	3.04%	1.18%
3 or 4 Units	0.01%	0.00%	1.01%	0.00%	0.00%	0.95%	0.49%	2.66%	3.57%	2.24%

5 to 19 Units	0.00%	4.33%	5.81%	0.00%	0.92%	3.71%	3.13%	4.92%	12.89%	0.32%
20 to 49 Units	0.00%	0.47%	1.88%	0.00%	0.05%	1.45%	1.18%	1.67%	6.38%	1.70%
Multi-family Subtotal	0.01%	5.02%	8.74%	0.82%	0.98%	9.78%	5.99%	10.62%	25.88%	5.44%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

HOUSING TENURE

In Pender County, nearly 75% of the total housing units are occupied year-round. Of the occupied housing units, the vast majority are owned and only a small percentage are occupied as year-round rental housing units. The high percentage of vacant housing units is due primarily to seasonal housing units utilized for vacation purposes. As such, the Topsail Planning Area has the greatest percentage and total number of vacant housing units. Of the 6,941 vacant units, it is estimated that 3,826 units in the County are used for seasonal vacation uses, with the remaining 3,115 classified as vacant for other reasons (see **Table 2.7**).

The Holly Shelter Planning area has the second lowest occupancy rate at 80.85%, which may be an indication of potential dilapidated housing issues as vacant seasonal housing is likely not the cause for such. In Brunswick County, the presence of six coastal communities is the primary cause for the high number of vacant housing units – accounting for more than 31,000 or nearly 40% of the total housing stock.

Table 2.7: Year Round Housing Units by Tenure (2015)

Source: US Census Bureau & PCensus

Count	Union Planning Area #1	Holly Shelter Planning Area #2	Burgaw Planning Area #3	Caswell Planning Area #4	Long Creek Planning Area #5	Topsail Planning Area #6	Pender* County	Brunswick County	New Hanover County	Duplin County
Occupied Housing Units (Owner & Renter)	2,652	967	3,290	1,829	3,587	9,668	20,130	49,193	88,403	21,946
Owner-Occupied	2,103	755	2,232	1,490	2,746	7,689	15,490	37,423	50,638	14,911
Renter-Occupied	549	212	1,058	339	841	1,979	4,640	11,770	37,765	7,035
Vacant	388	229	437	366	383	4,611	6,941	31,219	15,738	3,638
Total	3,040	1,196	3,727	2,195	3,970	14,279	27,071	80,412	104,141	25,584
Percentage	Union Planning Area #1	Holly Shelter Planning Area #2	Burgaw Planning Area #3	Caswell Planning Area #4	Long Creek Planning Area #5	Topsail Planning Area #6	Pender County	Brunswick County	New Hanover County	Duplin County
Occupied Housing Units (Owner & Renter)	87.24%	80.85%	88.27%	83.33%	90.35%	67.71%	74.36%	61.18%	84.89%	85.78%
Owner-Occupied**	69.18%	63.13%	59.89%	67.88%	69.17%	53.85%	57.20%	46.54%	48.62%	58.28%

Renter-Occupied**	18.06%	17.73%	28.39%	15.44%	21.18%	13.86%	17.14%	14.64%	36.26%	27.50%
Vacant	12.76%	19.15%	11.73%	16.67%	9.65%	32.29%	25.64%	38.82%	15.11%	14.22%
Total**	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

*Housing unit totals for Pender County are based upon US Census Bureau estimates.

**Percentages of owner-occupied and renter-occupied housing are based upon the total number of housing units.

***The percent total calculation is the sum of owner-occupied, renter-occupied, and vacant housing units.

HOUSING TRENDS

Since 1980, Pender County has experienced a dramatic increase in the number of housing units, with each decade seeing an acceleration in the number of new housing units constructed. In fact, as shown in **Table 2.8**, more than 70% of the County's housing stock has been built since 1980. From 2000 to 2009, more than 7,000 new housing units were built in Pender County despite the economic downturn that occurred in the latter half of the decade. Of the 3,607 new housing units built from 2000 to 2009 in the Topsail Planning Area, only 1,496 were constructed in the beach towns of Surf City and Topsail Beach. Accordingly, along the US 17 corridor and Hampstead area more than 2,000 housing units were constructed during that time (see **Table 2.8**).

Housing unit growth has also been significant within the Long Creek Planning Area where more than 2,000 units have been built since 1990. More moderate growth rates have been experienced throughout the other Planning Areas, but growth in housing units has occurred nonetheless (see **Table 2.8** and **Figure 2.5**). When compared to other southeastern NC counties, it is clear that Pender County is having similar development pressures. Astoundingly, in Brunswick County, nearly 30,000 housing units were built from 2000 to 2009 – a number greater than the entirety of the Pender County housing stock. Similar to the Planning Areas in the northern portion of the county, Duplin County saw only modest housing development growth over the last few decades and actually experienced a decline in housing growth in the 2000s when compared to the 1990s.

Table 2.8: Year Structure Built (2015)

Source: US Census Bureau & PCensus

Year Built	Union Planning Area #1	Holly Shelter Planning Area #2	Burgaw Planning Area #3	Caswell Planning Area #4	Long Creek Planning Area #5	Topsail Planning Area #6	Pender County	Brunswick County	New Hanover County	Duplin County
2010 or later*	113	54	224	110	150	1,238	694	2,176	1,778	36
2000 to 2009	370	251	488	340	767	3,607	7,078	28,820	22,137	3,828
1990 to 1999	687	321	856	467	1,243	3,527	6,911	19,036	26,392	5,576
1980 to 1989	530	189	530	447	588	2,954	4,515	14,936	17,342	3,819
1970 to 1979	446	142	612	298	526	1,353	3,045	8,183	12,967	4,421
1960 to 1969	221	88	489	194	242	741	1,458	4,141	7,691	2,278

1950 to 1959	237	57	194	99	170	683	1,403	1,626	5,589	2,360
1940 to 1949	125	58	112	105	76	101	719	773	4,173	1,227
1939 or earlier	311	35	222	134	208	76	1,248	721	6,072	1,539
Total	3,040	1,196	3,727	2,195	3,970	14,279	27,071**	80,412	104,141	25,584

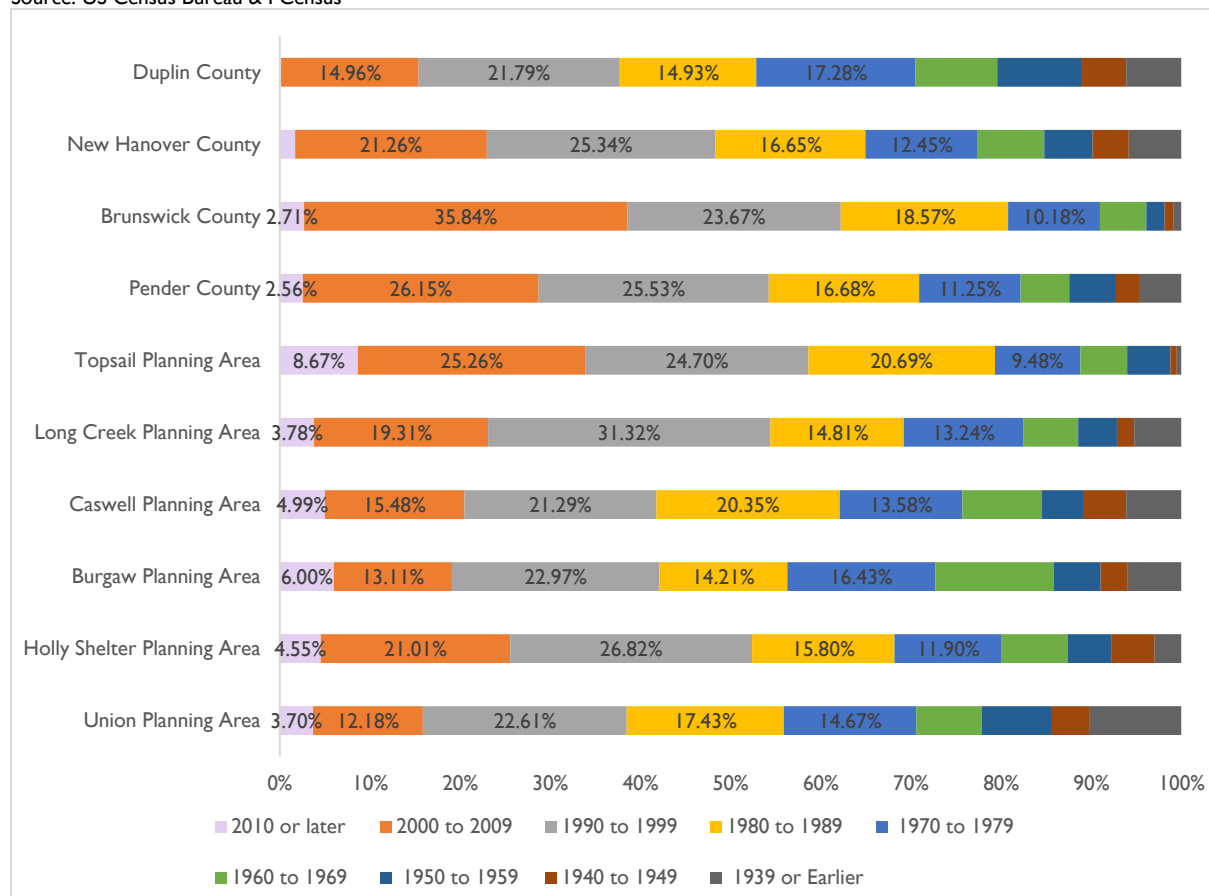
*The number of housing units within the “2010 or later” category does not capture the true number of housing units constructed since 2010. Lag time involved in data updates results in a lower total unit count.

**Housing unit totals for Pender County are based upon US Census Bureau estimates.

As shown in **Figure 2.5**, it is clear that tremendous housing growth has occurred over the last thirty years in Pender County and southeastern NC – particularly along the coast. It should be noted that some lag time occurs in Census data that may not capture a true picture of recent housing development, specifically for units built after 2010. To supplement this data, building permit information was acquired for the unincorporated portion of the County from 2006 to 2016.

Figure 2.5: Year Structure Built (2015)

Source: US Census Bureau & PCensus

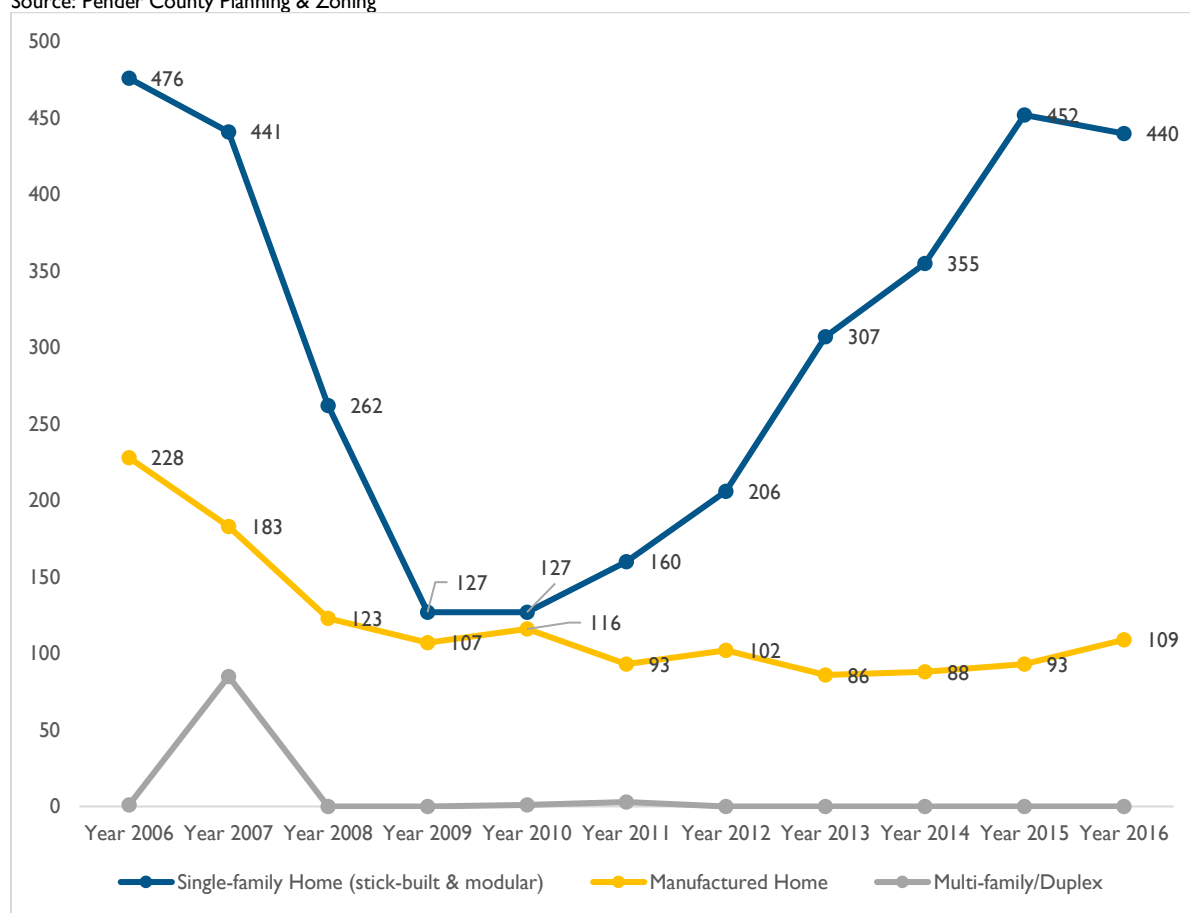


According to data obtained from the Pender County Planning and Community Development Department, building permit activity for new construction residential uses varied significantly

from 2006 to 2016 (see **Figure 2.6**). Prior to the housing downturn, nearly 500 new single-family homes were permitted in 2006. In 2009 and 2010, that number dropped to 127 before seeing a steady year over year increase in new housing starts. In 2015, 452 new single-family housing units were permitted, clearly indicating the strength of the new construction housing market in the County. From 2006 to 2016, the County experienced an overall reduction in permits for new manufactured housing, another indication of the strength of the housing market for stick-built and/or modular housing. While the trend showing a reduction in manufactured housing can be viewed overall as positive, it should be mentioned that the loss of such housing options increase barriers to homeowners and renters looking for more affordable options.

Figure 2.6: Building Permit Activity: Residential – Unincorporated Pender County (2006 - 2016)

Source: Pender County Planning & Zoning

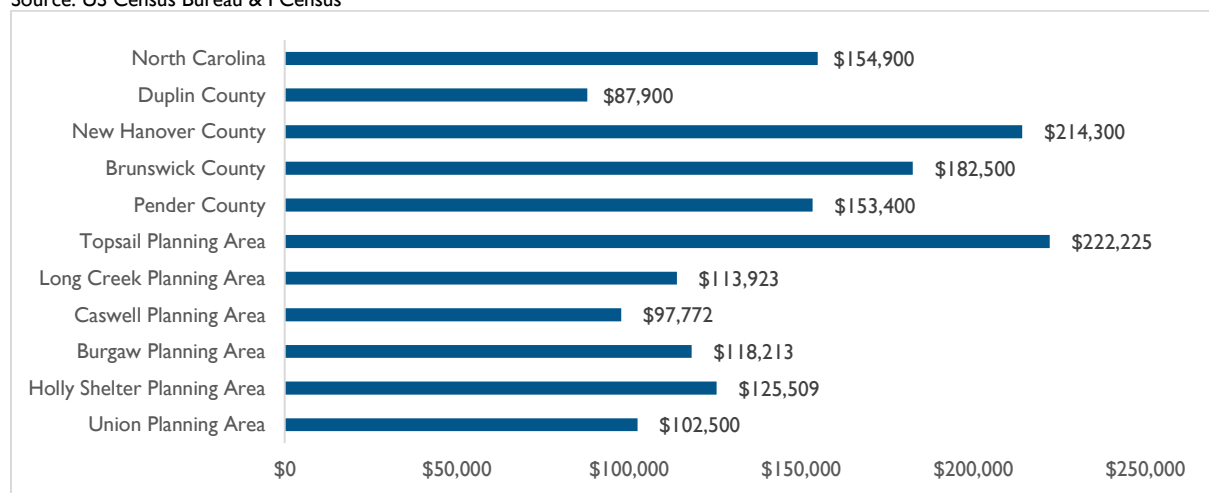


HOUSING VALUE

According to Census data, and as shown in **Figure 2.7**, housing values in Pender County are in line with the state as a whole and generally much less than neighboring coastal counties. Across the Planning Areas, housing values vary significantly. The Caswell Planning Area, which encompasses the southwest portion of the county, has the lowest median housing values in the County at \$97,772, whereas the highest housing values are found in the Topsail Planning Area. Similar to other demographic characteristics of the Planning Areas in the northern portion of the County, Duplin County has a significantly lower median housing value than the Topsail Planning Area and the County as a whole.

Figure 2.7: Median Value of Owner-Occupied Housing (2015)

Source: US Census Bureau & PCensus



HOUSING AFFORDABILITY

Housing affordability is an increasing concern nationwide. For home buyers, cost of living may be a key component in a decision to locate within a particular community. For analysis purposes, it is difficult to obtain a precise picture of housing affordability in any jurisdiction. However, most measures of housing affordability consider 30% of gross income an allowable/affordable expenditure for housing. For homeowners, the cost includes mortgage payments, taxes, insurance, and utilities. For renters, the cost only includes rent and utilities. Compared with North Carolina, in Pender County the incidence of cost-burdened homeowners is much higher than the state overall (see **Table 2.9**). In most jurisdictions across the state, renters have a higher occurrence of affordability burdens than do homeowners. However, in Pender County nearly 60% of homeowners allocated more than 30% of their income to housing costs compared with less than 50% of renters. Nevertheless, both statistics are troubling as residents in nearly 6,500 of the County's housing units (4,621 homeowners & 1,828 rental units) are currently experiencing housing costs which may limit their ability to save for retirement, purchase medical or child care, and/or spend money on leisure activities. In

general, since 2000 the incidence of cost burdened homeowners and renters has increased dramatically across the country.

Table 2.9: Housing Cost (2015)

Source: US Census Bureau

Monthly Cost as Percentage of Household Income		
Owner-Occupied Housing		
Percent of Income	Pender County	North Carolina
30% or more	58.1%	43.1%
Renter-Occupied Housing		
Percent of Income	Pender County	North Carolina
30% or more	48.8%	50.6%

ECONOMIC INDICATORS

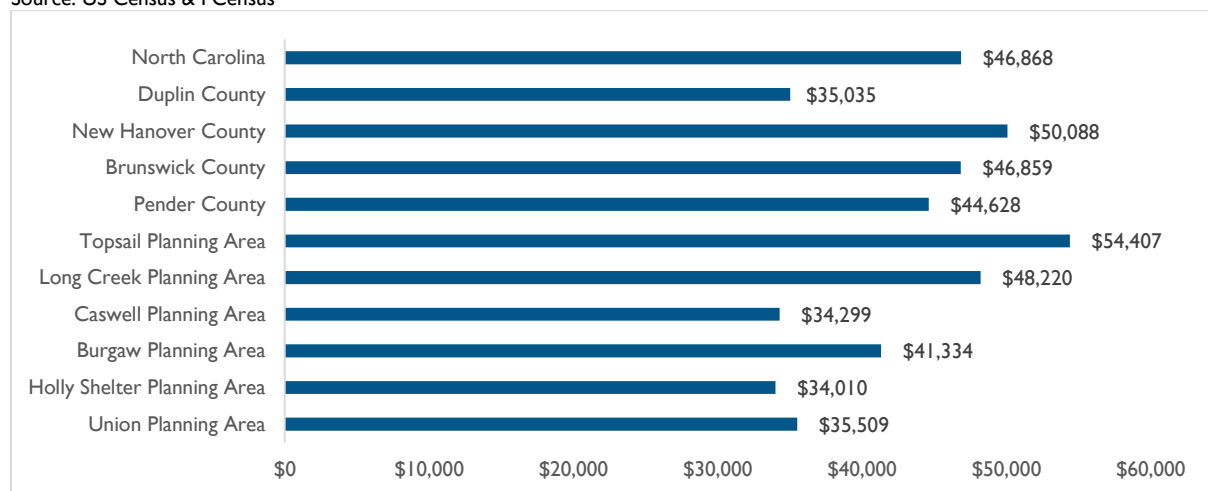
Economic factors such as household income, poverty level, educational attainment, and employment are key indicators in a community's economic vitality and growth potential. Those factors are further expounded in this section of Chapter 2.

INCOME & POVERTY LEVEL

Median household income in Pender County, \$44,628, compares favorably to that of the state overall. However, within several of the Planning Areas income levels fall significantly behind that of the state and the County as a whole. The median household income in the Topsail Planning Area is higher than the County and the state overall. The Long Creek, Holly Shelter, and the Union Planning Area all have median household incomes that are more indicative of a rural community and are all similar to the median household income figure for Duplin County - \$35,035. Lastly, median household incomes in Brunswick and New Hanover County are both higher than that of Pender County. See **Figure 2.8** for more information.

Figure 2.8: Median Household Income (2015)

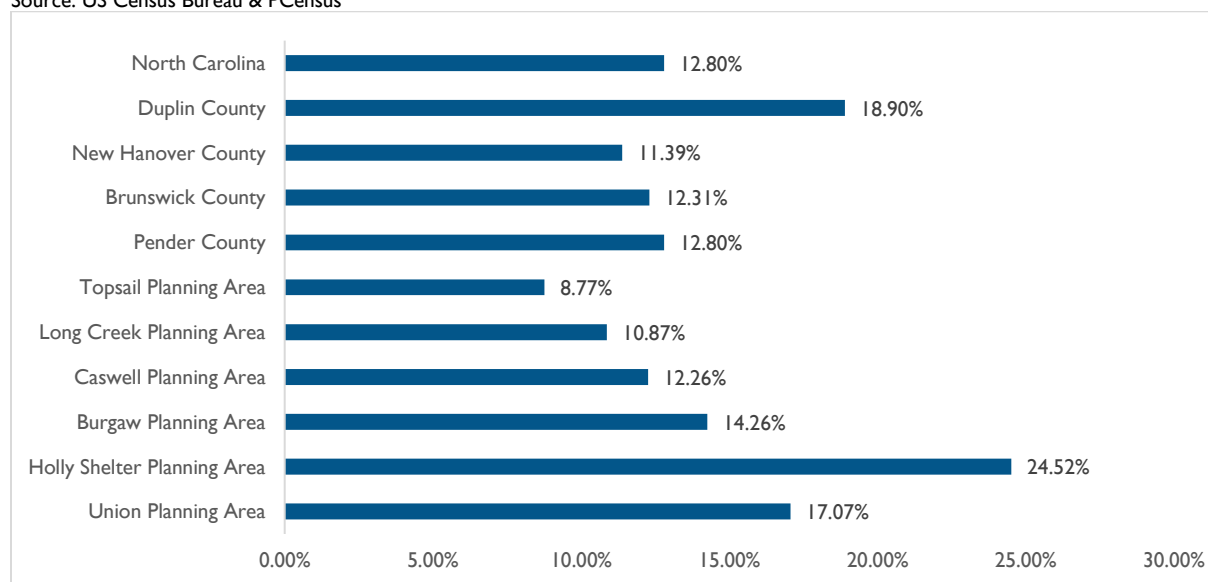
Source: US Census & PCensus



The number of families living below the poverty level is also a key indicator for the economic wellbeing of a given community. Similar to income statistics, Pender County overall has a similar percentage of families living below the poverty as the state. According to 2015 U.S. Census data, North Carolina's poverty line is approximately \$17,357 per year. These figures vary more significantly at the Planning Area scale, where the Holly Shelter area has nearly twice the percentage of families living below the poverty level as the County overall, indicating economic hardships of residents in that Planning Area. The poverty rate for families in Brunswick County is similar to that of Pender County, whereas Duplin County has a much higher percentage of families living below the poverty level at 18.9%. Again, similarities between Duplin County and the non-coastal Planning Areas are evident in the poverty statistics. See **Figure 2.9** for more information.

Figure 2.9: Families Below Poverty Level (2015)

Source: US Census Bureau & PCensus



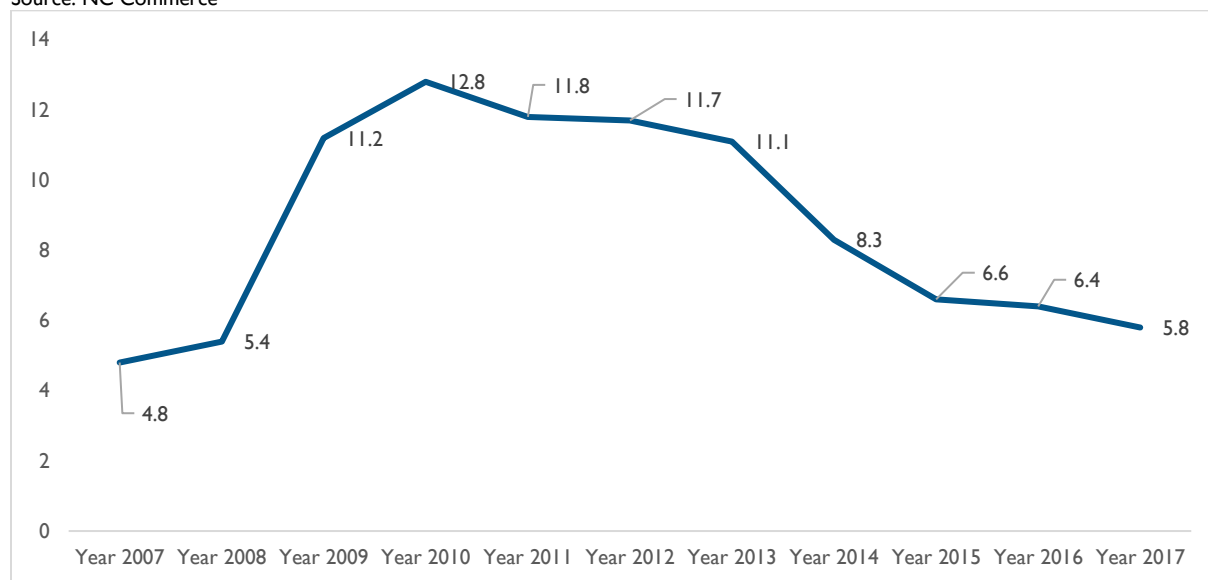
EMPLOYMENT

Pender County has labor force participation rate of 59%, which means that of the residents above the age of 16, approximately 60% are part of the labor force. In this statistic, the County compares favorably with the state overall as North Carolina has a labor force participation rate of 62.8%. Additionally, for Pender County, there are a much larger number of workers who live in the County than there are jobs – these residents commute to another location for employment. In fact, there are nearly twice as many workers as jobs in the County¹. As a result, commute times are typically longer and transportation impacts are more substantial, particularly for workers commuting to New Hanover County, where more than a third of the County's labor force is employed.

According to NC Commerce statistics, since the economic downturn in 2008, the unemployment rate in Pender County has slowly improved from a high of 12.8% in 2010, to 5.8% as of early 2017. Despite the significant improvement, the unemployment rate still has not fallen to the pre-recession level of less than 5% (see **Figure 2.10**).

Figure 2.10: Unemployment Rate (%) (2007 - 2017)

Source: NC Commerce



As of the second quarter of 2016, the top employer in the County in the Pender County school system followed by the Pender County government. This finding is similar to that of other rural counties across the state where often the top employers are the school system and/or local government. The largest private employer in the county is the 86-bed Pender Memorial Hospital located in Burgaw.

¹ There are 23,242 workers that live in Pender County compared with 10,432 jobs in the county (Source: US Census).

Table 2.10: Top Employers (2016 – Quarter 2)

Source: NC Commerce

Rank	Company Name	Industry	Employment Range
1	Pender County Schools	Education & Health Services	500-999
2	Pender County NC	Public Administration	250-499
3	NC Dept. Of Public Safety	Public Administration	250-499
4	Pender Memorial Hospital Inc.	Education & Health Services	250-499
5	Gomez Harvesting LLC.	Natural Resources & Mining	100-249
6	Pender EMS And Fire Inc.	Education & Health Services	100-249
7	LL Building Products (A Corp)	Manufacturing	100-249
8	Caroline's Blueberries LLC.	Natural Resources & Mining	100-249
9	Food Lion	Trade, Transportation, & Utilities	100-249
10	Wal-Mart Associates Inc.	Trade, Transportation, & Utilities	100-249

According to 2015 Census data and as shown in **Table 2.11**, retail trade was the industry with the greatest number of employees closely followed by healthcare/social assistance and construction. The industry with the highest median salary in 2015 was Utilities. The lowest paying industry in the County is Accommodation/food services, which accounts for 6.5% of the total employment base. From 2010 to 2015, the number of County residents employed in the Construction industry declined by more than 7%, even with a significant increase in residential building activity during that time. Also of note is the more than 20% decline in the number of residents employed in the agriculture, forestry, fishing, and hunting industry.

Generally, when compared with the state, median salary figures in Pender County are roughly consistent – with some industries having a higher salary than the state and others a lower rate of pay. This statistic is generally positive for the County, as more counties in eastern North Carolina are seeing salary improvements that place them in line with the state median.

Table 2.11: Employment by Industry (2010 to 2015)

Source: US Census Bureau

Industry	Pender County (2010)	Pender County (2015)			Pender County Employment Change (2010 to 2015)	North Carolina (2015)	
	Employees	Employees	% Total Employees	Median Yearly Salary	% Change	% Total Employees	Median Yearly Salary
Agriculture/Forestry/Fishing/Hunting	572	442	1.90%	\$18,418	-22.73%	1.27%	\$21,527
Mining	33	2	0.01%	-	-93.94%	0.11%	\$49,980
Utilities	375	466	2.00%	\$62,446	24.27%	0.87%	\$55,849
Construction	3,018	2,795	12.03%	\$27,086	-7.39%	6.71%	\$28,790
Manufacturing	2,378	2,273	9.78%	\$45,774	-4.42%	12.47%	\$36,299
Wholesale Trade	683	643	2.77%	\$31,311	-5.86%	2.70%	\$40,367
Retail Trade	3,568	3,317	14.27%	\$20,297	-7.03%	11.79%	\$21,002
Transportation/Warehousing	580	780	3.36%	\$39,394	34.48%	3.40%	\$38,293
Information	308	268	1.15%	\$37,399	-12.99%	1.82%	\$42,427
Finance/Insurance	443	504	2.17%	\$33,125	13.77%	4.53%	\$51,415

Real Estate/Rental/Leasing	698	466	2.00%	\$33,775	-33.24%	1.75%	\$34,085
Professional/Technical Services	886	1,093	4.70%	\$45,436	23.36%	5.89%	\$55,486
Management of Companies and Enterprises	10	0	0.00%	-	-100.00%	0.09%	\$65,825
Administrative/Waste Services	845	1,308	5.63%	\$20,670	54.79%	4.33%	\$21,572
Educational Services	1,449	1,470	6.32%	\$34,382	1.45%	9.28%	\$33,767
Healthcare/Social Assistance	2,582	2,819	12.13%	\$30,381	9.18%	14.20%	\$32,254
Arts/Entertainment/Recreation	234	442	1.90%	\$23,534	88.89%	1.78%	\$18,387
Accommodation/Food Services	1,185	1,503	6.47%	\$10,575	26.84%	7.66%	\$12,673
Other Services (Excluding Public Administration)	850	1,426	6.14%	\$20,220	67.76%	4.89%	\$22,076
Public Administration	1,052	1,225	5.27%	\$43,880	16.44%	4.47%	\$41,956
Total	21,749	23,242	100%	N/A	6.86%	100%	N/A

Based upon data prepared by NC Commerce for the Southeast Sub-region– which includes Brunswick County, New Hanover County, and Pender County – by 2024 the two occupations projected to have the greatest increase in jobs are food preparation/service and retail salespersons (see **Table 2.12**). Both employment types are low-skill and low wage. The number of registered nurses are also anticipated to increase by nearly 30% or 885 employees by 2024. This occupation requires a bachelor degree and pay is much higher than the other top five job-growth occupations. General Managers and nursing assistants are the only other occupations which require higher education. The other occupations included in **Table 2.12** only require minimal to moderate on-the-job training and a high school diploma or less. Please note only occupations projected to have the most job growth (top 15) are included in **Table 2.12**.

Table 2.12: Projected Employment Growth 2014 to 2024 – Brunswick, New Hanover, & Pender County (Southeast Sub-Region)

Source: NC Commerce

Occupation Title	2014 Employment Estimate	2024 Employment Estimate	Net Change	Percent Change	Annual Median Wage	Education Level Required
Combined Food Preparation and Serving Workers, Including Fast Food	6,796	8,882	2,086	30.69	\$17,864	No formal educational credential
Retail Salespersons	6,423	7,537	1,114	17.34	\$21,869	No formal educational credential
Home Health Aides	2,112	3,207	1,095	51.85	\$20,537	No formal educational credential
Registered Nurses	3,165	4,050	885	27.96	\$56,973	Bachelor's degree
Waiters and Waitresses	3,949	4,786	837	21.2	\$18,128	No formal educational credential
Cashiers	4,665	5,392	727	15.58	\$18,162	No formal educational credential
Customer Service Representatives	3,164	3,887	723	22.85	\$30,596	High school diploma or equivalent
Nursing Assistants	2,036	2,703	667	32.76	\$21,996	Postsecondary non-degree award

Cooks, Restaurant	1,827	2,470	643	35.19	\$20,903	No formal educational credential
Office Clerks, General	2,914	3,393	479	16.44	\$27,112	High school diploma or equivalent
First-Line Supervisors of Food Preparation and Serving Workers	1,560	2,017	457	29.29	\$31,128	High school diploma or equivalent
Childcare Workers	1,528	1,971	443	28.99	\$20,129	High school diploma or equivalent
General and Operations Managers	1,870	2,295	425	22.73	\$95,843	Bachelor's degree
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	1,923	2,339	416	21.63	\$20,416	No formal educational credential
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	2,245	2,641	396	17.64	\$30,987	High school diploma or equivalent
Total	46,177	57,570	11,393	N/A	N/A	N/A

EDUCATIONAL ATTAINMENT

The level of training and education of a community's workforce is a vital component of economic development efforts. The educational attainment of a community – the highest level of education completed – can be highly indicative of a population's health, employment, and income level. A more educated community tends to have increased workforce productivity and involvement in society. In Pender County, outside of the Topsail Planning Area, the percentage of residents with a Bachelor's Degree or higher is much lower. As shown in **Table 2.13**, the Caswell Planning Area has the highest percentage of residents without a high school diploma or GED as nearly 30% of the population above the age of 25 did not finish high school. Compared with Brunswick County and New Hanover County, Pender County has a less educated workforce overall. However, in the more rural Duplin County, educational attainment figures are much more dire, where more than a quarter of residents over the age of 25 are without a high school diploma or GED.

Table 2.13: Educational Attainment for Population 25 Years or Older (2015)

Source: US Census Bureau & PCensus

Education	Union Planning Area	Holly Shelter Planning Area	Burgaw Planning Area	Caswell Planning Area	Long Creek Planning Area	Topsail Planning Area	Pender County	Brunswick County	New Hanover County	Duplin County
Less than 9th grade	359	65	457	348	568	248	2,091	3,691	3,911	5,527
Some High School, no diploma	719	192	607	552	520	946	3,430	8,148	8,019	5,515
High School Graduate (or GED)	1,734	574	2,165	1,172	2,645	4,609	12,032	24,226	31,718	11,886
Some College, no degree	948	450	1,630	574	1,554	4,285	9,156	20,707	33,134	8,712
Associate Degree	367	143	536	256	687	1,441	3,666	8,744	13,899	3,638

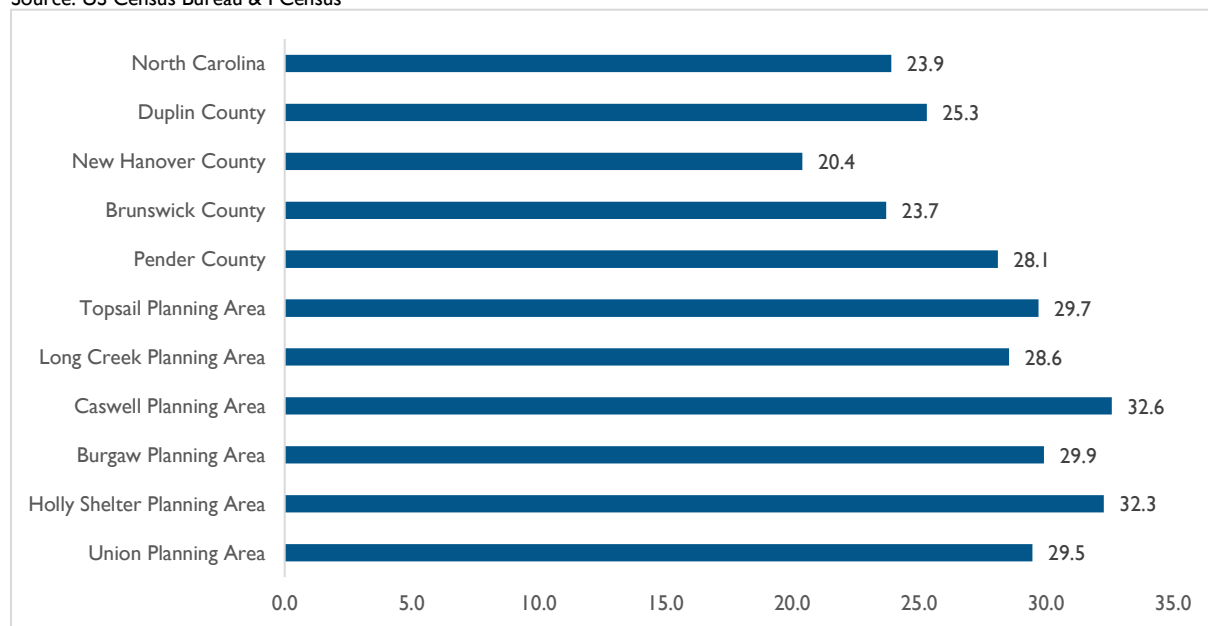
Bachelor's Degree	322	143	604	156	476	4,069	5,408	14,935	35,433	2,867
Graduate or Professional Degree	92	73	206	98	154	1,643	2,760	8,228	17,596	1,356
Total	4,541	1,638	6,208	3,156	6,604	17,242	38,543	88,679	143,710	39,501
Percent Less than High School	23.74%	15.69%	17.14%	28.52%	16.47%	6.92%	14.32%	13.35%	8.30%	27.95%
Percent Bachelor's Degree or Higher	9.1%	13.2%	13.0%	8.0%	9.5%	33.1%	21.2%	26.1%	36.9%	10.7%

TRAVEL TO WORK

As shown in **Figure 2.11**, Pender County workers travel more than 28 minutes to reach their place of employment on average. Compared with North Carolina and nearby counties, Pender County has a higher travel time to work. Within the county, workers in the Caswell Planning Area have the longest commute time at more than 32 minutes.

Figure 2.11: Mean Travel Time to Work (2015)

Source: US Census Bureau & PCensus



As discussed previously, the majority of Pender County's labor force is employed outside of the County. According to Census data, nearly 15,000 of the County's more than 23,000 workers travel to another county for employment (see **Table 2.14**). Conversely, in neighboring New Hanover County, nearly 90% of the labor force works within the County boundary. See Chapter 4 for a more detailed discussion of commute patterns.

Table 2.14: Commuting Patterns (2015)

Source: US Census Bureau

Place of Work	Pender County		New Hanover County	
	Count	% of Total	Count	% of Total
Worked in county of residence	8,541	36.75%	91,588	89.60%
Worked outside county of residence	14,433	62.10%	9,318	9.12%
Worked outside state of residence	268	1.15%	1,318	1.29%
Total	23,242	100.00%	102,224	100.00%

Similar to neighboring counties and the state overall, the vast majority of workers in Pender County drove alone to their place of employment (see **Table 2.15**). Where the County does differ from the state is in the number of commuters that choose to carpool at 14.4% compared with only 10% across North Carolina. Though not shown in **Table 2.15**, within the Planning Areas the means of transportation to work is rather similar, except for the Holly Shelter Planning Area, in which more than 20% of workers choose to carpool.

Table 2.15: Means of Transportation to Work (2015)

Source: US Census Bureau

Transportation Mode	Pender County	Brunswick County	New Hanover County	Duplin County	North Carolina
Drove Alone	78.50%	79.63%	78.42%	77.49%	81.10%
Car Pooled	14.40%	13.26%	9.30%	17.58%	10.00%
Public Transportation	0.10%	0.40%	0.99%	0.02%	1.10%
Walked	1.10%	0.73%	1.87%	1.48%	1.80%
Bicycle	0.30%	0.02%	0.99%	0.00%	0.20%
Other Means	1.30%	1.19%	1.60%	0.96%	1.10%
Worked at Home	4.30%	4.77%	6.84%	2.48%	4.70%
Total	100%	100%	100%	100%	100%

AGRICULTURAL ECONOMY

Agriculture continues to make a major contribution to the local economy in Pender County. According to the NC Department of Agriculture, the agricultural industry contributed over \$162 million dollars to the local economy in 2015 and ranked 22nd out of 100 counties in agricultural economic output (See **Table 2.16**). Refer back to **Table 2.11** to see the percentage of total agricultural employment in the County. Primary agricultural products produced in the County include hay, tobacco, and wheat. Other agricultural sectors include the production of livestock including broilers (poultry), cattle, beef cows, turkeys, hogs and pigs.

Table 2.16: Agriculture Economic Statistics (2015)

Source: NC Department of Agriculture

Cash Receipts	Dollars	State Rank
Livestock, Dairy, and Poultry	\$124,752,117	20
Crops	\$37,999,76	42
Government Payments*	\$170,405	62
Total	\$162,922,290	22

*The Census of Agriculture defines government payments as payments received from the Conservation Reserve Program (CRP), Wetlands Reserve Program (WRP), Farmable Wetlands Program (FWP), or Conservation Reserve Enhancement Program (CREP) plus government payments received from Federal, State, and local programs other than the CRP, WRP, FWP, and CREP, and Commodity Credit Corporation loans.

From 2002 to 2012, Pender County was the only county in southeastern North Carolina to increase the number of operating farms (2012 is the latest available year in the Census of Agriculture). During that time, the size of the farms decreased in size, highlighting greater interest in smaller boutique farm operations. From 2002 to 2012, the total number of farms operating on less than 50 acres increased from 43 to 172, or by 300%. In addition, the market value of products sold per farm increased from 2002 to 2012.

Table 2.17: Pender County Census of Agriculture Statistics (2002 & 2012)

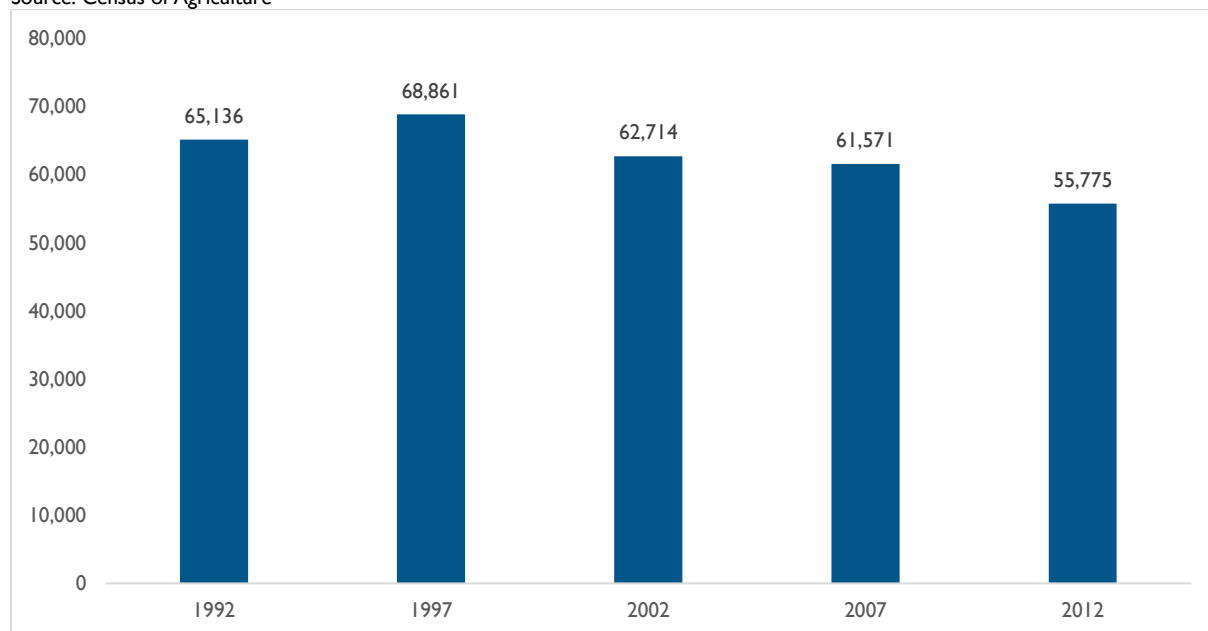
Source: Census of Agriculture

Market Value of Agricultural Products Sold per Farm (2002 & 2012)		
Year 2002	Year 2012	% Change
\$343,451	\$518,068	50.84%
Number of Farms		
Year 2002	Year 2012	% Change
296	335	13.18%
Acres in Farms		
Year 2002	Year 2012	% Change
62,714	55,775	-11.06%
Average Size of Farm		
Year 2002	Year 2012	% Change
212	166	-21.70%

The loss of farmland over the last thirty years in Pender County is consistent with the tremendous amount of growth and development that has been experienced. From 1992 to 2012, the County lost more than 9,300 acres of farmland an amount roughly equivalent to more than 7,200 football fields (see **Figure 2.12**).

Figure 2.12: Total Land in Pender County in Farms (Acres) (1992 - 2012)

Source: Census of Agriculture



As shown in **Table 2.18**, from 1992 to 2012 the number of primary occupation farmers has not significantly increased or decreased. Accordingly, NC Commerce has listed farming as one of the few occupations projected to decline over the next ten years. Moreover, the average age of farmers in Pender County is 55.7, thus creating a potential void in the number of future farm operators as current farmers approach retirement. According to the 2012 Census of Agriculture, primary occupation is broken up into two classifications: Farming and other. Farming is defined as the operator spent 50% or more of his/her worktime during 2012 in farming operations. Other is defined as the operator spent less than 50% of his/her worktime during 2012 in farming operations.

Table 2.18: Pender County Census of Agriculture Statistics (1992 to 2012)

Source: Census of Agriculture

Primary Occupation	1992	1997	2002	2007	2012
Farming	186	165	183	163	167
Other Occupation	145	118	113	194	168

RETAIL SALES

Another major indicator of the economic vitality of a community is retail sales activity. According to NC Commerce, there are 365 retail business in Pender County. The capture of

retail sales dollars is essential to local government fiscal stability and growth. The combined sales tax rate for Pender County is 6.75%. This is the total of state and county sales tax rates. The North Carolina state sales tax rate is currently 4.75%. The Pender County sales tax rate is 2%. Since the economic downturn in 2008, gross retail sales in Pender County have steadily increased. From fiscal year 2008/09 to fiscal year 2015/16, gross sales increased by 85%. It should be noted that sales tax revenues only make up a small portion of the County's revenue, but are a vital source nonetheless.

Table 2.19: Pender County Retail Sales (2000 to 2016)

Source: NC Department of Revenue

Fiscal Year	Total Gross Sales	Annual Change	Percent Change
2000-2001	\$237,452,326	*	*
2001-2002	\$246,350,309	\$8,897,983	3.70%
2002-2003	\$263,564,643	\$17,214,334	7.00%
2003-2004	\$291,638,318	\$28,073,675	10.70%
2004-2005	\$359,339,939	\$67,701,621	23.20%
2005-2006	\$227,022,142	(\$132,317,797)	-36.80%
2006-2007	\$244,815,739	\$17,793,597	7.80%
2007-2008	\$241,845,086	(\$2,970,653)	-1.20%
2008-2009	\$217,794,180	(\$24,050,906)	-9.94%
2009-2010	\$243,046,719	\$25,252,539	11.59%
2010-2011	\$263,642,919	\$20,596,200	8.47%
2011-2012	\$286,409,398	\$22,766,479	8.64%
2012-2013	\$294,332,860	\$7,923,462	2.77%
2013-2014	\$313,074,552	\$18,741,692	6.37%
2014-2015	\$359,173,557	\$46,099,005	14.72%
2015-2016	\$403,279,198	\$44,105,641	12.28%

SUMMARY

Pender County is currently experiencing tremendous growth and development pressures along the coast and the US 17 corridor. This area is in the midst of growing pains that result from the transition from a rural to urban/suburban community. Conversely, while change along the coastal Pender is swift, and appears excessive to many residents, the more rural areas of the County north and west of US 17 are experiencing minimal development. As a result, County staff and officials are forced to manage growth in one area of the County while simultaneously supporting efforts to bolster economic development in the other. This dynamic is evident when analyzing and cataloging demographic data throughout the County.

Perhaps the most similar comparable depiction of the County, from a demographic standpoint, is the state of North Carolina as a whole. Similar to North Carolina, the County has both urban and rural areas that suffer from entirely different issues related to population growth and

economic development. Both issues require unique solutions that must be tailored to meet the needs of current and future Pender County residents.

STATISTICS OF NOTE:

Population Characteristics and Trends

- Since 1970, the Pender County's population has more than tripled, with much of the growth occurring in the coastal areas.
- Population growth in Pender County outpaced that of New Hanover, Brunswick, and Duplin Counties from 2010 to 2015.
- From 2010 to 2015, the County population growth rate was nearly twice that of North Carolina as a whole, notwithstanding the significant population growth experienced statewide.
- According to the figures calculated for seasonal overnight population, when added to the permanent population, there are approximately 84,531 persons in Pender County during the summer months – equating to a 45% increase in population.
- When accounting for day-trip visitors and traffic, it estimated that throughout the entire County – on a peak day in the summer – there is nearly 100,000 persons living in or visiting the area.
- Pender County is anticipated to experience a population growth rate of nearly 62% or an increase of more than 35,000 residents by 2045.
- Approximately 88% of population growth will be allocated to the unincorporated portion of the County – equating to an increase of 32,803 persons or the addition of nearly three new unincorporated County residents per day for the next thirty years.
- Pender County has a smaller percentage of its population in the millennial age group (20 to 34) than does the state, indicating out-migration for college graduates and young workers.
- Over the next ten to fifteen years, the County is forecasted to have a substantial increase in the number of residents above the age of 65.

Housing Characteristics and Trends

- The share of manufactured housing in the County appears to be declining in favor of stick-built or modular single-family homes.
- From 2000 to 2009, more than 7,000 new housing units were built in Pender County despite the economic downturn that occurred in the latter half of the decade.
- The Caswell Planning Area, which encompasses the southwest portion of the county, has the lowest median housing values in the County at \$97,772, whereas the highest housing values are found in the Topsail Planning Area at \$222,225.
- Residents in nearly 6,500 of the County's housing units (4,621 homeowners & 1,828 rental units) are currently experiencing housing costs which may limit their ability to save for retirement, purchase medical or child care, and/or spend money on leisure activities.

Economic Indicators

- Median household income in Pender County, \$44,628, compares favorably to that of the state overall. However, within several of the Planning Areas income levels fall significantly behind that of the state and the County as a whole.
- The Holly Shelter area has nearly twice the percentage of families living below the poverty level as the County overall, indicating economic hardships of residents in that Planning Area.
- There are nearly twice as many workers as jobs in Pender County. As a result, commute times are typically longer and transportation impacts are more substantial, particularly for workers commuting to New Hanover County, where more than a third of the County's labor force is employed.
- According to NC Commerce statistics, since the economic downturn in 2008, the unemployment rate in Pender County has slowly improved from a high of 12.8% in 2010, to 5.8% as of early 2017.
- The lowest paying industry in the County is accommodation/food services, which accounts for 6.5% of the total employment base.
- Generally, when compared with the state, median salary figures in Pender County are roughly consistent – with some industries having a higher salary than the state and others a lower rate of pay. This statistic is generally positive for the County, as more counties in eastern North Carolina are seeing salary improvements that place them in line with the state median.
- Compared with Brunswick County and New Hanover County, Pender County has a less educated workforce overall.
- According to Census data, nearly 15,000 of the County's more than 23,000 workers travel to another county for employment. Conversely, in neighboring New Hanover County, nearly 90% of the labor force works within the County boundary.
- According to the NC Department of Agriculture, the agricultural industry contributed over \$162 million dollars to the local economy in 2015 and ranked 22nd out of 100 counties in agricultural economic output.
- From 2002 to 2012, Pender County was the only county in southeastern North Carolina to increase the number of operating farms.
- The average age of farmers in Pender County is 55.7, thus creating a potential void in the number of future farm operators as current farmers approach retirement.
- Since the economic downturn in 2008, gross retail sales in Pender County have steadily increased. From fiscal year 2008/09 to fiscal year 2015/16, gross sales increased by 85%.

Please see **Table 2.20** for a comparative analysis of demographic statistics across the Planning Areas, neighboring counties, and North Carolina.

Table 2.20: Comparative Community Profile Statistics

Source: US Census Bureau, PCensus, and NCOSBM.

Planning Areas	% Population Growth 2000 -2015	2015 Median Age	2015 % of Single Family Housing	2015 % of Manufactured Housing	2015 % of Multi-family Housing	% Structure Built 2000 - 2009	Median Value of Owner-Occupied Housing 2015	2015 Median Household Income	2015 Families Below Poverty
Union Planning Area #1	10.78%	41.9	64.40%	35.53%	0.01%	12.18%	\$102,500	\$35,509	17.07%
Holly Shelter Planning Area #2	10.15%	41.6	55.81%	39.18%	5.02%	21.01%	\$125,509	\$34,010	24.52%
Burgaw Planning Area #3	17.79%	39.9	64.30%	25.44%	8.74%	13.11%	\$118,213	\$41,334	14.26%
Caswell Planning Area #4	15.13%	44.2	57.76%	41.32%	0.82%	15.48%	\$97,772	\$34,299	12.26%
Long Creek Planning Area #5	30.95%	37.8	55.36%	42.21%	0.98%	19.31%	\$113,923	\$48,220	10.87%
Topsail Planning Area #6	74.44%	44.3	66.16%	21.05%	9.78%	25.26%	\$222,225	\$54,407	8.77%
Pender County	41.05%	42.1	64.97%	26.82%	5.99%	26.15%	\$153,400	\$44,628	12.80%
Brunswick County	58.49%	50.0	63.76%	23.02%	10.62%	35.84%	\$182,500	\$46,859	12.31%
New Hanover County	32.93%	37.8	60.74%	4.82%	25.88%	21.26%	\$214,300	\$50,088	11.39%
Duplin County	21.18%	38.8	57.00%	36.68%	5.44%	14.96%	\$87,900	\$35,035	18.90%
North Carolina	22.31%	38.4	65.23%	13.37%	17.50%	20.63%	\$154,900	\$46,868	12.80%

CHAPTER 3: NATURAL SYSTEMS ANALYSIS

INTRODUCTION

Preserving the quality of life of Pender County residents and visitors is an important factor to consider as the population increases and development occurs throughout the area. To do so, a coordinated balance between development, preservation of agricultural working lands, and environmentally sensitive areas must be a goal for the County. The purpose of this chapter is to describe and analyze the natural resources, environmental conditions, and agricultural lands as they exist today in Pender County. The chapter concludes with goals, policies, and recommended actions for preserving quality of life principles for County residents. More specific land use goals and policies are included in Chapter 5.

North Carolina's Coastal Area Management Act (CAMA) establishes provisions for rational and integrated coastal resource management. County wide land use plans utilize the regulation of Areas of Environmental Concern (AECs) to set the foundation for North Carolina's coastal resource management program. These set forth actions allow state and local governments to retain and complement the state's coastal resources. Local governments, however, are granted significant flexibility when developing policies and taking actions to protect them. Moreover, the majority of Pender County is not impacted by CAMA AECs, thus requiring local land use regulation for the desired level of preservation for environmentally sensitive or prime agricultural lands. The following sections in this chapter provide an overview of the unique and varied natural systems throughout the County.

AREAS OF ENVIRONMENTAL CONCERN

The State Guidelines for Areas of Environmental Concern (15A NCAC 7H, or regulations governing development for AECs) require that local land use plans give special attention to the protection of AECs. CAMA charges the Coastal Resources Commission (CRC) with the responsibility for identifying the areas—water and land—in which undisciplined or conflicting development might result in irreversible damage to the environment. An AEC is an area of natural importance designated by the CRC that may be easily destroyed by erosion or flooding. It may also have environmental, social, economic, or aesthetic values worthy of protection.

There are four categories of AECs:

- Estuarine and Ocean Systems
- Ocean Hazard Systems
- Public Water Supplies
- Natural and Cultural Resource Areas

Estuarine and Ocean Systems are found throughout the unincorporated areas of Pender County. Ocean Hazard Systems are only found in the Town of Surf City and the Town of

Topsail Beach and therefore are not included as part of this plan. Public Water Supplies and Natural and Cultural Resource Areas are not found in Pender County and are also excluded.

The need for CAMA planning and regulations is essential to preserving the quality of life of the County's residents and visitors because of the ever-changing coastline and its fragile wetlands and soils. The transition from aquatic habitats to uplands are fragile wetland areas that can be easily erodible through storm and weather events. Such events naturally exert strong forces on the coastal system. These wetland systems and the wildlife and plants they support, clean the water and provide for the fishing and tourism industry. If managed correctly, these dynamic coastal wetlands, beaches, and dunes can protect the County's communities from storm damage.

ESTUARINE AND OCEAN SYSTEMS

The Estuarine and Ocean Systems AEC is a broad category that includes the County's brackish sounds, marshes, and surrounding shorelines. The system includes the following components:

- Estuarine waters;
- Estuarine/coastal shorelines;
- Coastal wetlands; and
- Public trust areas.

ESTUARINE WATERS

Estuaries are typically found where rivers and streams flow into the Atlantic Ocean and/or the Intracoastal Waterway (ICWW). They are unique and essential for coastal life because they serve as transition zones between fresh and salt water. Barrier islands protect estuaries from wind and wave energy. Estuaries also serve as a water filtration system by removing sediments, nutrients, and pollutants before they reach the ocean. The resulting cleaner water benefits marine life and the people that inhabit the surrounding area. Estuaries also assist in flood control, with porous salt marsh soils and grasses absorbing flood waters and dissipating storm surges. They provide natural barriers between the land and the ocean.

Estuarine waters include all waters of the Atlantic Ocean within the boundary of North Carolina, and all waters of the bays, sounds, rivers, and tributaries seaward of the dividing line between coastal fishing waters and inland fishing waters (NCGS 113A-113(b)(2)). Pender County's estuarine waters include the ICWW, and portions of the Cape Fear River, Northeast Cape Fear River, Black River, and others. Estuaries are extremely productive natural systems that are vital to marine life, coastal tourism, and recreation. See **Map 3.1: Areas of Environmental Concern (AECs)**.

Estuarine waters in and around the County provide important habitat for a diverse range of shellfish, birds, and other forms of marine wildlife. Mud and sand flats, eel grass beds, salt marshes, submerged vegetation flats, and clam and oyster beds are important habitat features of an estuarine system. They provide nursery areas and serve as habitat for a variety of marine and

benthic species. The North Carolina Wildlife Resources Commissions (NCWRC) defines benthic as relating to, or of the bottom surfaces of bodies of water. Generally speaking, development activities which are water dependent and require water access and cannot function elsewhere (e.g. simple access structures, structures to prevent erosion, boat docks, marinas, wharves, and mooring piling) may be allowed within this AEC. **Figure 3.1** provides an example of a natural estuary.

Figure 3.1: An Example of a North Carolina Natural Estuary

Source: North Carolina Division of Coastal Management



ESTUARINE/COASTAL SHORELINE

The estuarine shoreline is the non-ocean shoreline, extending from the normal high water level or normal water level along the estuarine waters, estuaries, sounds, fresh and brackish waters, and public areas (15NCAC 7H.0209). For areas not located in Outstanding Resource Waters (ORW), the estuarine shoreline is defined as 75 feet landward from mean high water line (MHWL). These areas are highly susceptible to wind, water, and development erosion. Development in these areas pose a threat to water quality and can increase the chance of shorefront erosion. **Figure 3.2** is a picture of the ICWW from within a 75 foot Estuarine Shoreline AEC in Hampstead. For ORW waters, the distance is 575 feet. In Pender County, there are three locations where ORWs are found. Specifically, development within estuarine shoreline AECs may not exceed an impervious coverage limit of 30% (25% for ORW AECs) or be located within 30 feet of the normal high water level. CAMA permits control development within the shoreline areas. There are approximately 15.2 square miles of estuarine shorelines in Pender County. See **Map 3.1: Areas of Environmental Concern (AECs)**.

Figure 3.2: 75 Foot Estuarine Shoreline AEC, Pender County, NC

Source: Cape Fear Council of Governments



COASTAL WETLANDS

CAMA specifically defines coastal wetlands as any salt marsh or other marsh subject to regular or occasional flooding by lunar tides and contains some, but not necessarily all of the following marsh plant species: Cord Grass, Black Needlebrush, Glasswort, Salt Grass, Sea Lavender, Bulrush, Saw Grass, Cat-tail, Salt Meadow Grass, and Salt Reed Grass. This definition does not include flooding by tides associated with hurricanes, tropical storms, or severe weather events (15A NCAC 07H.0206). Refer to page 3-22 for a description of non-coastal wetlands.

The U.S. Army Corps of Engineers (USACE)/Clean Water Act defines wetlands as those areas inundated and saturated by surface or ground water at a frequency and duration to support a prevalence of vegetation typically adapted for life in saturated soil conditions (this includes CAMA defined coastal wetlands). Wetlands include a variety of natural systems such as marshes, swamps, and pocosins. While they may not all look the same, they share certain characteristics such as wetland vegetation, hydric soils, and hydrologic features. The United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS) defines hydric soils as soils formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions. Wetlands have significant values that support the unique lifestyle and quality of life enjoyed by Pender County residents and visitors. These values include:

- *Water Storage:* Wetlands are able to store heavy rain, surface runoff, and flood waters, thereby reducing downstream flooding.
- *Shoreline Stabilization:* Ground cover and roots of wetland plants help hold soil in place and prevent sedimentation and nutrient transport.
- *Water Quality:* Wetlands plants can enhance water quality by removing pollutants from surface water runoff.

- *Wildlife and Aquatic Habitat:* The variety of plants, hydrologic, and soil conditions associated with wetlands provide abundant food and cover for animal populations and support a number of endangered species and other rare plants and animals.
- *Recreation and Education:* The rich array of plants and animals supported by wetlands provide significant consumptive and non-consumptive use values such as hunting, fishing, bird watching, kayaking, etc.

Conserving wildlife habitat and maintaining as much mature, swamp, bottomland, and floodplain forest as possible will reduce the severity of natural hazards and the extent of inland flooding. In Pender County, the conservation of the natural habitats in and around the Angola Bay and Holly Shelter Game Lands reduces the severity of flooding in the Cape Fear and the Northeast Cape Fear Rivers. According to the United States Environmental Protection Agency (US EPA), conserving one acre of wetlands prevents three acres of flooding.

According to mapping developed by the Division of Coastal Management (DCM), Pender County has coastal wetlands of the brackish saltwater variety. Throughout the County, coastal wetlands cover 7,476 acres. They are mostly found along the ICWW and Topsail Island Sound. Coastal wetlands are considered to be unsuitable for all development activities and other land uses that alter their natural functions.

PUBLIC TRUST AREAS

Public trust areas include coastal waters and the submerged tidal lands below the mean high water line (MHWL). The water and submerged tidal lands are held in trust for the public to use through activities such as fishing, swimming, and boating. These areas will often overlap with estuarine waters, but they also include many inland fishing waters. As general guidance, the following lands and waters are considered to be public trust areas:

- All waters of the Atlantic Ocean and the lands underneath, from the MHWL seaward to the state's official boundary three miles offshore;
- All tidally influenced waters and associated submerged lands below the MHWL;
- All navigable natural water bodies and the lands underneath from the normal high water line seaward (Navigable waters include anything you can float a canoe in). This does not include 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.

Accordingly, Pender County's public trust waters include all estuarine waters, their tributaries, and the Atlantic Ocean. It is the state's policy to ensure that the public is able to maintain access to these submerged tidal waters since they are held in trust. All development, structures, and land uses that interfere with the public's right to the access and use of these waters is inconsistent with state policy. Throughout the state's coastal communities, the degree

to which development is required to provide access to public trust areas varies significantly. Ultimately, the provision or requirement for such falls to the local government and is codified within zoning or subdivision regulations. In Pender County, there are no regulations in place to require public access to public trust areas. Navigation channels, piers, marinas, and bulkheads to control erosion are examples of uses that are frequently considered to enhance the public's use of these public trust areas.

HAZARDS

Due to its geographic location, the coastal region is susceptible to a variety of natural hazards such as flooding, hurricanes, and storm surge. These hazards are summarized in the following sections.

SPECIAL FLOOD HAZARD AREAS

The Special Flood Hazard Area is defined as an area of land that has a 1% chance of being inundated by a flood in any given year. The 100-year floodplain is the accepted benchmark for defining flood hazard areas. Approximately 37% of Pender County's housing units lie within the 100-year flood plain. See **Map 3.2: Special Flood Hazard Areas (SFHAs)**. The floodplain in Pender County is mapped including:

- **AE zones:** Special flood hazard areas inundated by the 100-year flood (one percent chance of a hundred year flood event in alluvial plains or riverine systems);
- **VE zones:** Special flood hazard areas inundated by the 100-year flood (one percent chance of a hundred year flood event); coastal floods with velocity hazards (typically 3 foot wave action); and
- **500-year Floodplain:** Areas subject to a 0.2 percent chance of flooding in any given year.

Preliminary flood maps have been prepared for the County and are anticipated to be adopted in the near future. (Note: Upon adoption, all facts and figures related to the SFHAs will be updated.)

Table 3.1: Housing Units Within Special Flood Hazard Areas (SFHAs), Pender County, NC

Source: Cape Fear Council of Governments GIS, Pender County GIS, NC Flood Maps, US Census Bureau

Special Flood Hazard Areas*	Countywide Housing Units	Percentage of Countywide Housing Units
500-year Floodplain	794	2.60%
AE Zone	3,690	12.08%
VE Zone	1,749	5.72%
Total in SFHAs	6,223	20.40%
Special Flood Hazard Areas*	Number of Incorporated Housing Units	Percentage of Incorporated Housing Units
500-year Floodplain	367	4.67%
AE Zone	2,474	31.46%
VE Zone	1,666	21.18%
Total in SFHAs	4,507	57.30%

Special Flood Hazard Areas*	Number of Unincorporated Housing Units	Percentage of Unincorporated Housing Units
500-year Floodplain	427	1.88%
AE Zone	1,216	5.36%
VE Zone	83	0.37%
Total in SFHAs	1,726	7.61%

* Current flood maps.

Table 3.1 presents the incorporated and the unincorporated housing units that are situated within various flood zones. The housing unit totals presented above utilize Pender County GIS address point data, which indicates there are 30,558 housing units, 7,865 in the incorporated areas and 22,693 in the unincorporated areas (Note: these numbers differ from the US Census data housing unit total). Of these housing units, over 12% or 3,690 are located in the AE zone and nearly 6% or 1,749 are located in the VE flood zone. Approximately 20.5% or 6,223 housing units in the incorporated and the unincorporated areas of Pender County are susceptible to flooding.

According to preliminary flood maps prepared for Pender County along the coastal areas and creeks adjoining the ICWW, the Special Flood Hazard Areas are projected to increase in many locations. Low lying areas throughout the inland portion which are not currently in Special Flood Hazard Areas are projected to see an increase in the extent in which they cover.

FLOODING HOT SPOTS & DRAINAGE CONCERNS

Within the flood hazard areas, some portions of the County have experienced a greater frequency of flooding than others. Based on past flood events throughout the County, the Northeast Cape Fear River tends to flood more frequently than the Black River. Whitestocking Road and Shaw Highway are two roads in the County that typically experience flooding from the Northeast Cape Fear River. However, the riverine flooding effects of Hurricane Matthew were most significant along the Black River in southwest Pender County. The Black River is a 50 mile long tributary of the Cape Fear River. This area is a portion of the County that many major streams converge.

Prior to the enactment of the 1972 Clean Water Act, and subsequent adoption of North Carolina stormwater rules and regulations, development was generally not subject to any particular requirements for the mitigation of stormwater. Many developments, however, were constructed with drainage easements and the like to prevent localized flooding and convey stormwater. A stormwater drainage easement is typically denoted on a recorded plat showing where stormwater runoff must be allowed to flow across the property, either through open ditches or through an underground pipe system. Accordingly, over time drainage ditches, easements, and mechanisms to mitigate stormwater in developments constructed prior to the 1970s have been modified, filled, or outright forgotten. As a result, even minor rain events can impact these areas. In the future, the County desires to educate residents, real estate agents, developers, and Homeowners Associations (HOAs) about this important topic and potential solutions to prevent localized drainage issues and flooding.

Figure 3.3: Localized Flooding following Minor Rain Event, Pender County, NC

Source: Cape Fear Council of Governments



FEMA FLOOD INSURANCE

According to the Federal Emergency Management Agency (FEMA), there are 4,406,664 flood insurance policies nationwide. Flood insurance is available in 19,859 participating communities nationwide. Pender County has 4,938 policies in force valued at over \$1.2 billion. Since 1978, there have been 3,970 documented losses with payments exceeding \$37,250,170 in the incorporated areas, and 783 documented claims with payments exceeding \$15,274,495 in the unincorporated areas. Documented claims for incorporated areas include the municipalities of Burgaw, Surf City, and Topsail Beach. Pender County has accounted for more than 5% of the total documented flood claims experienced statewide since 1978. **Tables 3.2 and 3.3** present these findings.

Table 3.2: Flood Insurance Policies for Pender County & North Carolina (As of February 28, 2017)

Source: FEMA, Insurance Policies: <https://bsa.nfipstat.fema.gov/reports/1011.htm>

Jurisdiction	Policies In-Force	Insurance In-Force
Atkinson	2	\$385,000
Burgaw	62	\$13,562,000
Saint Helena	1	\$110,000
Surf City	2,167	\$520,087,000
Topsail Beach	1,130	\$293,306,100
Watha	2	\$205,400
Total Incorporated	3,364	\$827,655,500
Total Unincorporated	1,574	\$406,712,600
Total Pender County	4,938	\$1,234,368,100
North Carolina	130,104	\$31,979,619,600

Table 3.3: Loss Statistics for Pender County & North Carolina (1978 – September 2016)Source: FEMA, Loss Statistics: <http://bsa.nfipstat.fema.gov/reports/1040.htm#37>

Jurisdiction	Total Claims	Total Payment
Burgaw	18	\$189,762
Surf City	1,779	\$15,512,241
Topsail Beach	2,173	\$21,548,167
Total Incorporated	3,970	\$37,250,170
Total Unincorporated	783	\$15,274,495
Total Pender County	4,753	\$52,524,665
North Carolina	83,119	\$1,206,076,029.15

One way to help minimize flood claims and lower insurance premiums is to participate in the National Flood Insurance Program's (NFIP) Community Rating System (CRS). The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Any community in full compliance with the minimum NFIP requirements may apply to join the CRS. As a result, flood insurance premiums are discounted to reflect the reduced flood risk resulting from the community meeting the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance.

For CRS participating communities, flood insurance premiums are discounted in increments of five percent. A class I community receives a 45 percent premium discount, while a Class 9 community receives a 5 percent discount (a Class 10 is not participating in the CRS and receives no discount). The CRS classifications for local communities are based on 18 creditable activities, organized under four categories: (i) public information; (ii) mapping and regulations; (iii) flood damage reduction; and (iv) flood preparedness. There are 994 communities receiving flood insurance premium discounts based on their implementation of local mitigation, outreach, and educational activities that go beyond minimum NFIP requirements. While premium discounts are one benefit of participating in the CRS, the real benefit is that these activities help save lives and reduce property damage. The Town of Topsail Beach is the only incorporated area in Pender County that participates in the CRS. Their CRS class is 6, meaning flood insurance premium rates are discounted by 20%. Pender County does not participate in the CRS.

HURRICANES

Due to the geographic location of Pender County, hurricanes pose a significant threat to the residents and visitors of the County. A hurricane is a cyclonic storm that originates in tropical ocean waters. As a hurricane develops, barometric pressure at its center falls while winds increase. Winds at or exceeding 39 miles per hour result in a named tropical storm that is closely monitored by the National Oceanic and Atmospheric Administration's (NOAA's) National Hurricane Center. When winds exceed 74 miles per hour, it becomes a hurricane.

Hurricanes are judged by their power according to the Saffir-Simpson Scale. This measure of

the power of a hurricane classifies hurricanes according to a sliding scale from 1 to 5 (with category 5 storms as the most severe). Since hurricanes derive their strength from warm ocean waters, they generally deteriorate in intensity when they make landfall. The forward momentum at the time of landfall can range from just a few miles per hour to upwards of 40 miles per hour. The forward motion, combined with the counterclockwise surface flow make the front right quadrant of the hurricane the most dangerous in terms of damaging winds and storm surge. **Table 3.4** describes each category of hurricanes, their respective wind speed, the types of damages to expect, and the storm surge heights associated with each category.

Table 3.4: Hurricanes & the Saffir-Simpson Scale

Source: National Hurricane Center: <http://www.nhc.noaa.gov/aboutsshws.php> & HurricaneZone.net
<http://www.hurricanezone.net/articles/saffirsimpsonscale.html>

Category	Wind Speed (mph)	Types of Damage	Storm Surge
1	74-96	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.	Storm surge 3 to 5 feet above normal. Low lying roads inundated. Minor pier damage.
2	96-110	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.	Storm surge 6 to 8 feet above normal. Low lying roads inundated. Low lying escape routes cut by rising water two to four hours before storm's arrival. Considerable pier damage. Marinas flooded. Evacuation of some shoreline and low lying areas required.
3	111-129	Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.	Storm surge 8 to 12 feet above normal. Serious flooding at coast and many smaller structures near the coast destroyed. Larger structures near the coast damaged by battering waves and floating debris.
4	130-156	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.	Storm surge 13 to 18 feet above normal. Major damage to lower floors of structures near the shore due to flooding and battering by waves and floating debris. Major beach erosion.
5	157+	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.	Storm surge possibly greater than 18 feet above normal. Major damage to lower levels of all structures less than 15 feet above mean sea level

SIGNIFICANT STORM EVENTS

In the past 20 years, Pender County has been impacted by significant hurricane events. In particular, Hurricanes Floyd and Matthew resulted in catastrophic flooding and property damage that the County and affected residents are still recovering from.

On September 16, 1999, Hurricane Floyd, a category 2 hurricane, made landfall near southeastern, North Carolina. On September 15, 1999, federal resources and funds were made available to support hurricane response efforts in North Carolina under an emergency declaration issued by President Clinton. Floyd's torrential rains produced record-breaking flooding and caused rivers to rise over 20 feet above flood stage. It has been estimated that over 7,000 homes were destroyed, 56,000 homes were damaged, 17,000 homes were deemed unlivable, and nearly 87,000 individuals registered for financial assistance from FEMA. This storm was a 500-year flood event that has been named The Flood of the Century. To date, Hurricane Floyd remains the single greatest disaster in North Carolina's history. Some residents of Pender County, impacted by Floyd, are still in the final stages of mitigation efforts experienced as a result of the extreme flooding experienced throughout the County.

On October 8, 2016, Pender County experienced catastrophic flooding as a result of Hurricane Matthew. Over the course of October 8 and October 9, Hurricane Matthew brought more than 15 inches of rainfall to areas of North Carolina. Governor McCrory requested FEMA assistance on October 9, 2016, and FEMA declared a major disaster (DR-4285) for 50 North Carolina counties on October 10, 2016. Preliminary estimates reveal approximately 88,000 homes were damaged and more than 4,400 were completely destroyed throughout the state. **Figures 3.4** and **3.5** depict areas in Pender County that were affected by flooding from Hurricane Matthew.

Figure 3.4: Flooding in Burgaw Resulting from Hurricane Matthew

Source: Pender County



Figure 3.5: Flood Waters Resulting from Hurricane Matthew

Source: Pender County



FEMA's Individual Assistance (IA) and Individuals and Households Program (IHP) help the public directly following a Presidential disaster declaration by providing financial help or direct services to those who have necessary expenses and serious needs if unable to provide for themselves. In North Carolina, nearly 82,000 households applied for help from FEMA. These funds help individuals, families, and small business owners recover from Hurricane Matthew. As of May 16, 2017, 962 households in Pender County applied for financial assistance from FEMA.

FEMA's Public Assistance (PA) grant program provides federal assistance to government organizations and certain private nonprofit (PNP) organizations following a Presidential disaster declaration. The PA grant program allows communities to promptly respond to and recover from major disasters. Specifically, grant assistance for debris removal, life-saving emergency protective measures, and the repair, replacement, or restoration of disaster-damaged publicly-owned facilities, and the facilities of certain PNP organizations is available through this program. As of May 12, 2017, Pender County has submitted 10 PA projects.

Much of Pender County received up to 6 inches of rainfall during the two week span of Hurricane Matthew, while the southwest portion of the County received up to 15 inches of rainfall. Aside from the increased amount of rainfall, this area is known for severe drainage issues, and this characteristic led to serious home and small business damages. These drainage issues can be attributed to the relatively low elevations and the merging of major riverine systems. Due to drainage issues, southwest Pender County experienced several road closures from water overtopping, including sections of NC-210, NC-53, and several secondary roads.

The County is particularly active in the Hazard Mitigation Grant Program (HMGP). The purpose of the HMGP is to help communities implement hazard mitigation measures following a Presidential Major Disaster Declaration and reduce the risk of loss of life and property from future disasters. A substantial number of homes and structures located in the Special Flood

Hazard Area and impacted by storm events have been elevated, relocated, or mitigated through buyout programs to lessen the impacts of future flood damage in the County.

STORM SURGE AREAS

Since more than 20% of Pender County's housing units are located within flood zones, certain areas of the incorporated and unincorporated areas of the County are particularly vulnerable to storm surges and corresponding erosion, wave action, flooding, high winds, and beach washover associated with hurricanes. NOAA's National Hurricane Center defines storm surge as an abnormal rise of water generated by a storm, over and above the predicted tides. Storm surge is water pushed toward the shore by the force of winds swirling around the hurricane or low-pressure meteorological system. The advancing surge combines with the normal tides to create the hurricane storm tide otherwise known as the storm surge. As a result, the mean high water line (MHWL) can rise by 15 feet or more. The rise in water level causes severe flooding in coastal areas, particularly when a storm surge coincides with high tide. Wind and wave action is then superimposed on this storm surge water level.

The speed and strength of a storm is important in estimating the impact of the storm and can be determined by the National Oceanic and Atmospheric Administration (NOAA) Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model. Waves and currents associated with storm surge may cause extensive damage as water weighs approximately 1,700 pounds per cubic yard. Periods of prolonged wave action can demolish any structure not specifically designed to withstand such forces. **Table 3.5** displays the acreage of land and percentage of the County impacted by storm surge for a fast moving hurricane at various storm levels. The areas subject to storm surges are depicted graphically on **Map 3.3: Storm Surge from Hurricanes (Fast Moving Storm)**.

Table 3.5: Approximate Impact of Various Storm Levels (Acres Impacted) for Fast Moving Storms

Source: NOAA National Hurricane Center; Cape Fear Council of Governments GIS

Storm Category	Countywide Land Impacted (Acres)	Countywide Percentage
1-2	63,737	11.30%
3	83,154	14.75%
4-5	115,280	20.44%
Total	262,171	46.49%
Storm Category	Incorporated Land Impacted (Acres)	Percentage of Incorporated County
1-2	30,171	5.35%
3	36,644	6.50%
4-5	56,437	10.01%
Total	123,252	21.86%
Storm Category	Unincorporated Land Impacted (Acres)	Percentage of Unincorporated County
1-2	33,566	5.95%
3	46,510	8.25%
4-5	58,843	10.43%
Total	138,919	24.63%

In efforts to protect the coast from storm surge related damage, oyster beds and marsh vegetation can be placed along the living shoreline. Restoring oyster reefs and vegetation complexity can promote sediment accretion that builds up wetlands and uplands. These complex substrates and diverse wetland vegetation trap sediments and can lead to eventual upland expansion.

WATER QUALITY

The relative condition of surface water and its ability to support marine life and recreational activities is an important contributing factor to quality of life for County residents.

Development has a direct impact on surface water quality as any increase in impervious surface can increase the amount of runoff that terminates in adjacent waterbodies. Surface waters should contain a balanced amount of nutrients and have normal fluctuations in salinity and temperature. They should also have plenty of oxygen and little suspended sediment so that marine life can breathe and receive enough sunlight to grow. Monitoring changes in North Carolina's water quality is important because of the impacts it has on the ecosystem, tourism, and quality of life. Nationwide, the tourism industry loses close to \$1 billion dollars each year, mainly through losses in fishing and boating activities, as a result of water bodies that have been affected by nutrient pollution and harmful algal blooms. In 2015, the overall tourism economic impact in Pender County alone – mostly attributed to coastal recreational tourism supported by pristine natural habitat and clean waters – exceeded \$90 million dollars and resulted in a tax savings per resident of nearly \$200 dollars (Source: NC Department of Commerce).

Data collected by the NC Department of Environment Quality (NCDEQ) helps scientists and regulatory agencies evaluate changing water quality conditions. Factors affecting water quality include:

- *Nutrients:* While essential for plants and animals, they can be harmful if there is an overabundance;
- *Sediments:* Can cloud the water and hamper the growth or even kill aquatic plants;
- *Water temperature:* Changes in normal water temperatures can affect when animals and plants feed, reproduce and migrate;
- *Salinity:* Changes in salinity can adversely affect a wide range of marine life;
- *Dissolved oxygen:* Is essential for animals living within the water body. Reduced levels of dissolved oxygen (e.g., due to an algae bloom or eutrophic conditions) can adversely affect marine life; and
- *Contaminants and other pollutants:* There are a variety of other contaminants and pollutants that can adversely affect the growth, survival, and reproduction of marine and benthic organisms.

As a strategy for the management of North Carolina's waters, the NCDEQ's Division of Water Resources (DWR) assigns classifications to all surface water bodies which identifies the supported uses. See **Map 3.4: Surface Water Classifications** and **Map 3.5: Coastal Surface Water Classifications & Fish Nursery Areas**. The primary classifications are:

- **C:** Waters protected for uses such as 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.
- **B:** Waters protected for all Class C uses in addition to primary recreation. Primary recreational activities include swimming, skin diving, water skiing, and similar uses involving human body contact with water where such activities take place in an organized manner or on a frequent basis.
- **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.
- **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 human body contact with water where such activities take place in an organized manner or on a frequent basis.
- **SA:** Tidal salt waters that are used for commercial shellfishing or marketing purposes and are also protected for all Class SC and Class SB uses. All SA waters are also High Quality Waters (HQW) by supplemental classification.

Additional supplemental water quality classifications include:

- *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, primary nursery areas designated by the Marine Fisheries Commission, and other functional nursery areas designated by the Marine Fisheries Commission.
- *Outstanding Resource Waters (ORW):* All outstanding resource waters are a subset of High Quality Waters. 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.
- *Swamp Waters (SW):* Supplemental classification intended to recognize those waters which have low velocities and other natural characteristics which are different from adjacent streams.
- *Nutrient Sensitive Waters (NSW):* Supplemental classification intended for waters needing additional nutrient management due to being subject to excessive growth of microscopic or macroscopic vegetation.
- **+**: A plus (+) sign identifies waters that are subject to a special management strategy specified in 15A NCAC 2B .0225, the Outstanding Resource Waters (ORW) rule.

Water quality classifications vary slightly within Pender County. **Table 3.6** provides a listing of water bodies within Pender County that are classified by the NC Division of Environmental Quality, along with their assigned classifications and water quality issues. Twelve of the water bodies are currently listed as High Quality Waters (HQWs) and three as Outstanding Resource

Waters (ORWs). **Map 3.4: Surface Water Classifications** and **Map 3.5: Coastal Surface Water Classifications and Fish Nursery Areas** provide the locations of these water bodies.

Table 3.6: Water Bodies, Classifications, and Water Quality Issues

Source: NC Division of Environmental Quality & Cape Fear Council of Governments GIS

Stream Name	Description	Class	Water Quality Issues
Banks Channel	From New Topsail Inlet to Topsail Sound	SA; HQW	Shellfish Growing Area-Prohibited (Fecal, SH, SA)
Batts Mill Creek (Barlow Creek)	From source to Intracoastal Waterway	SA; HQW	Shellfish Growing Area-Conditionally Approved Closed (Fecal, SH, SA)
Beckys Creek (Bishops Creek)	From 0.5 miles inland of ICWW to Intracoastal Waterway	SA; HQW	Shellfish Growing Area-Conditionally Approved Open (Fecal, SH, SA)
Black River	From source to Cape Fear River	C; Sw, ORW:+	N/A
Burgaw Creek	From Osgood Branch to Northeast Cape Fear River	C; Sw	Copper (7 g/l, AL, FW)
Cape Fear River	From raw water supply intake at Federal Paper Board corporation (Riegelwood) to Bryant Mill Creek	C; Sw	Benthos Fair (Nar, AL, FW)*
County Line Branch	From source to Batts Mill Creek	SA; HQW	Shellfish Growing Area-Conditionally Approved Closed (Fecal, SH, SA)
Futch Creek	From 0.35 miles inland of Intracoastal Waterway to ICWW	SA; HQW	Shellfish Growing Area-Prohibited (Fecal, SH, SA)
Intracoastal Waterway	From Morris Landing to the eastern mouth of Old Topsail Creek	SA; ORW	Shellfish Growing Area-Conditionally Approved Open (Fecal, SH, SA)
Lillington Creek	From source to Northeast Cape Fear River	C; Sw	pH (4.3 su, AL, Sw)
Long Creek	From source to Cypress Creek	C; Sw	Benthos Severe (Nar, AL, FW)*
Mill Creek (Betts Creek)	From source to Intracoastal Waterway	SA; HQW	Shellfish Growing Area-Prohibited (Fecal, SH, SA)
Mill Pond	From source to Holly Shelter Creek	C; Sw	pH (4.3 su, AL, Sw)
Mullet Run	From source to Virginia Creek	SA; HQW	Shellfish Growing Area-Conditionally Approved Closed (Fecal, SH, SA)
Nixons Creek	From source to Intracoastal Waterway	SA; HQW	Shellfish Growing Area-Conditionally Approved Open (Fecal, SH, SA)
Old Mill creek	From source to Intracoastal Waterway	SA; HQW	Shellfish Growing Area-Conditionally Approved Open (Fecal, SH, SA)
Old Topsail Creek	From 0.5 miles inland of Intracoastal Waterway to ICWW	SA; HQW	Shellfish Growing Area-Conditionally Approved Open (Fecal, SH, SA)
Topsail Sound	Conditional area at Surf City marina	SA; HQW	Shellfish Growing Area-Conditionally Approved Closed (Fecal, SH, SA)
Topsail Sound and Middle Sound ORW Area	North of ICWW	SA; ORW	Shellfish Growing Area-Conditionally Approved Open (Fecal, SH, SA)

Stream Name	Description	Class	Water Quality Issues
Virginia Creek	From 0.75 miles inland of ICWW to Intracoastal Waterway	SA; HQW	Shellfish Growing Area-Conditionally Approved Closed (Fecal, SH, SA)

*Refer back to page 3-3 for the definition of benthic.

Water Quality Issues Descriptions:

- *Shellfish Growing Area – Prohibited:* Based fecal coliform criteria to protect shellfish harvesting in Class SA waters. No Sanitary Survey; point source discharges; marinas; data do not meet criteria for Approved, Conditionally Approved or Restricted Classification.
- *Shellfish Growing Area – Conditionally Approve Open:* Based fecal coliform criteria to protect shellfish harvesting in Class SA waters. Sanitary Survey indicates an area can meet approved area criteria for a reasonable period of time, and the pollutant event is known and predictable and can be managed by a plan. These areas tend to be open more frequently than close.
- *Shellfish Growing Area – Conditionally Approve Closed:* Based fecal coliform criteria to protect shellfish harvesting in Class SA waters. Sanitary Survey indicates an area can meet approved area criteria for a reasonable period of time, and the pollutant event is known and predictable and can be managed by a plan. These areas tend to be closed more frequently than open.
- *Copper (7 g/l, AL, FW):* Numeric water column criteria to protect aquatic life in all NC fresh waters
- *Benthos Fair (Nar, AL, FW):* Based on narrative criteria to protect aquatic life in fresh water
- *pH (4.3 su, AL, Sw):* Numeric water column criteria to protect aquatic life in waters with Swamp supplemental classification
- *Fecal:* presence of fecal coliform
- *SH:* Shellfish harvesting
- *SA:* SA Water Classification
- *Nar:* Narrative Standard
- *AL:* Aquatic life
- *FW:* Fresh water
- *su:* Salinity units
- *Sw:* Swamp waters

SHELLFISHING

There are a number of waters in and adjacent to coastal Pender County that are closed to shellfishing. These closures are due primarily to stormwater runoff and other non-point sources of pollution, both from within Pender County and surrounding counties located within the watershed. Closed shellfish areas are locations where shellfish harvesting is prohibited by law due to unsafe levels of pollutants caused by conditions such as wastewater discharge and non-point source stormwater runoff. Within the proximity of Topsail Island, shellfishing is prohibited in portions of the Intracoastal Waterway and also in many of the estuaries. Conditional areas are typically open to shellfishing, but may be closed following a significant rainfall event because of the resultant runoff. There are also several prohibited shellfishing sites located in Hampstead. NCDEQ's Division of Marine Fisheries website provides maps depicting prohibited shellfishing locations in Pender County.

Figure 3.6 displays a cluster of oysters that continuously filters the surrounding water and helps enhance water quality. Oyster reefs create important feeding grounds and nursery areas for many other commercially and recreationally important fish species. Shellfish not only enhance North Carolina's waters, but also provide economic impacts such as business revenue and jobs for contractors, fishermen, and freight workers. In 2016, over 40 million pounds of shellfish were harvested in North Carolina, valuing at approximately \$61.4 million. Of the all shellfish species, approximately 654,000 pounds of oysters were landed, with an economic value over \$4 million, and nearly 25.5 million pounds of hard, soft, and peeler blue crab were landed, with an economic value over \$24 million. However, oyster landings and blue crab landings were negatively affected by poor water quality and shellfishing closures following Hurricane Matthew. Oyster landings decreased by approximately 25.3% and hard blue crabs, soft blue crabs, and peeler blue crabs experienced a decrease of 20.4%, 25.1%, and 36.9%, respectively (NCDEQ). Even without the effects of Hurricane Matthew, the oyster fisheries are 15% of what they were in 2000 (NCWRC).

Figure 3.6: A Cluster of Oysters Improving the Water Quality of the Surrounding Waters

Source: North Carolina Oyster Blueprint



PRIMARY NURSERY AREAS

Salt marshes and estuaries along the North Carolina coast also serve as nursery grounds for 90 percent of fish species. North Carolina was the first state to protect these fragile ecosystems. The nursery system in North Carolina contains three categories:

- Primary nursery areas;
- Secondary nursery areas; and,
- Special secondary nursery areas.

Primary nursery areas are found within Topsail Island, Lea-Hutaff Island, Surf City, and southern sections of both the Cape Fear River and Northeast Cape Fear River. Primary nursery areas are generally located in the upper portions of creeks and bays. These areas are usually shallow with soft, muddy bottoms and are surrounded by marshes and wetlands. See **Map 3.5: Coastal Surface Water Classifications & Fish Nursery Areas**. Low salinity levels and abundance of food make these areas ideal for young fish and shellfish. To protect juveniles, many commercial fishing activities are prohibited in primary nursery areas including the use of trawl nets, seine nets, dredges, or any mechanical devices used to harvest clams and oysters. Violators face substantial penalties if these prohibited areas are not taken into consideration. There are approximately 15,598 acres of primary fish nursery areas within Pender County.

Secondary nursery areas are generally located in the lower portions of creek and bays. Young fish and shellfish (primarily blue crabs and shrimp) move into these waters as they grow and develop. Trawling is not allowed in secondary nursery areas either. There are approximately

119 acres of permanent secondary nursery areas in Pender County, which are located in Mill Creek (Betts Creek), Virginia Creek, and Old Topsail Creek.

Special secondary nursery areas are located adjacent to secondary nursery areas but are closer to open waters of sounds and the ocean. When juvenile species are abundant, these waters are closed to trawling for a majority of the year. There is one special secondary nursery area located in Pender County. This area is located within the ICWW, from the Topsail Island Bridge to the Pender County/Onslow County boundary and covers approximately 252 acres. Each of these three nursery areas are shown on **Map 3.5: Coastal Surface Water Classifications & Fish Nursery Areas**.

CAPE FEAR AND WHITE OAK RIVER BASINS

The Cape Fear River Basin is North Carolina's largest river basin and is one of four river basins located entirely within the state. The basin originates in Chatham County where the Deep and Haw Rivers combine, which is below the B. Everett Jordan Dam. The river, streams, and tributaries drain over 9,000 square miles of land. Prior to 2009, Pender County was completely within the Cape Fear River Basin, however, the boundary of the basin has been altered to reflect the natural flow of water, rather than following political boundaries. Currently, the Cape Fear River Basin is located within the inland areas of Pender County and White Oak River Basin is located within coastal areas of the County. These river basins are displayed on **Map 3.4: Surface Water Classifications** and **Map 3.5: Coastal Surface Water Classifications & Fish Nursery Areas**.

LAND USE IMPACTS ON SURFACE WATER QUALITY

Almost all land uses, which are in close proximity and drain to surface water bodies, can have an effect on water quality. Impervious surfaces such as streets, parking lots, curbs, gutters, ditches and swales all convey stormwater (non-point source pollution) to local surface waters. Piped outfalls and drainage systems convey untreated stormwater from existing impervious surfaces to area surface waters. In order to mitigate these impacts, several coastal communities in southeastern NC are retrofitting their stormwater outfall pipes and drainage systems to allow water to convey into the ground – rather than into adjacent surface waters – by perforating piping systems and installing rain gardens to increase groundwater infiltration. The NC Coastal Federation is currently working with the Town of Wrightsville Beach on a similar project. **Figure 3.7** shows an example of existing turf areas that have been re-purposed into garden areas that capture polluted stormwater before it reaches the adjacent recreational surface waters.

Figure 3.7: An Example of a Rain Garden

Source: United States Environmental Protection Agency



Infill development of individual residential lots also contributes to the untreated volume of stormwater runoff conveyed to surface waters. While retro-fitting existing stormwater systems by engineered solutions can be expensive and difficult to apply equitably among existing development (i.e. having to evaluate what type of pollutant load in the stormwater comes off different properties and at what volume), there are steps the County can take to inform citizens of already developed properties how to better contain stormwater runoff on a site by site basis. Such homeowner practices could include simple steps such as having “rain barrels” at the ends of roof gutters to collect rain water, or diverting gutter spouts to drain over grass or other vegetated areas rather than onto driveways or other impervious surfaces. Homeowner landscaping practices, if applied at a sufficient scale, could have a beneficial impact on the volume and pollutant load of stormwater runoff entering local surface waters. These Low Impact Development (LID - a land planning and engineering design approach to manage stormwater runoff through the use of on-site natural features to protect water quality) practices can be utilized throughout the County. A customized approach to the use of LID techniques can be identified as part of a Watershed Restoration Plan. Such a plan would identify appropriate mitigation measure to reduce runoff volumes as a means to enhance water quality. Funding is available annually to complete such plans through the NCDEQ.

Fertilizers and pesticides used on the local golf courses may also reach local surface waters if not properly managed and applied. Land uses along waterfronts which do not have engineered stormwater retention or vegetated buffers of at least 30 feet can also contribute to surface water pollution by allowing stormwater runoff to reach surface waters untreated.

PUBLIC WATER SUPPLY AND WELLHEAD PROTECTION AREAS

There is one public water supply watershed in Pender County located along the Cape Fear River in Southwest Pender County. Within this watershed, the State restricts septic tank permits to lots that are a minimum of 40,000 square feet (15 NCAC 18C 1211). **Map 3.4:** Surface Water Classifications depicts this area. The Safe Drinking Water Act Amendments of 1986 set forth requirements for states to develop Wellhead Protection Programs (WHPPs). These programs serve as a pollution prevention and management program implemented to protect underground drinking water sources. Even though WHPPs are not mandatory for

North Carolina, they are viewed as a valuable supplement to existing state groundwater protection programs. The Safe Drinking Water Act defines a Wellhead Protection Area as, “the surface and subsurface area surrounding a water well, or wellfield, supplying a public water system, through which contaminants are reasonable likely to move toward and reach such water well or wellfields.” The Towns of Burgaw and Topsail Beach are the only portions of Pender County that have wellhead protection areas.

NON-COASTAL WETLANDS

Section 404 of the Federal Water Pollution Control Act (“the Clean Water Act”) defines wetlands as “areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation adapted to life in saturated soil conditions.”

“Any person, firm, or agency (including Federal, State, and local government agencies) planning to work in navigable waters of the United States, or discharge (dump, place, deposit) dredged or fill material in waters of the United States, including wetlands, must first obtain a permit from the Army Corps of Engineers (USACE).” If an activity requires a USACE ‘404’ permit, the state of North Carolina requires that a ‘401’ water quality certification be obtained as well. The ‘401’ certification is basically a verification by the State that a given project will not degrade waters of the State or otherwise violate water quality standards.

Within Pender County, there are 302,976 acres of non-coastal wetlands. The largest type of non-coastal wetland is pocosin, which makes up approximately 35% of the total non-coastal wetlands. Pocosins are often referred to as Carolina Bays, which are elliptical depressions in the land. Managed pinelands are the second largest non-coastal wetland in Pender County, which make up approximately 25% of the non-coastal wetlands in the area. The remaining types of non-coastal wetlands and their acreage can be found in **Table 3.7**. A description of the types of wetlands found in Pender County is below and can be seen on **Map 3.6: Coastal and Non-Coastal Wetlands**.

Bottomland Hardwood/Riverine Swamp Forest – Riverine forested or occasionally scrub/shrub communities usually occurring in floodplains, that are semi-permanently to seasonally flooded. In bottomland hardwood systems, typical species include oaks (overcup, water, laurel, and swamp chestnut), sweet gum, green ash, cottonwoods, willows, river birch, and occasionally pines. In swamp forest systems, typical species include cypress, black gum, water tupelo, green ash, and red maple.

Human Impacted Wetlands – Areas of human impact have physically disturbed the wetland, but the area is still a wetland. Impoundments and some cutovers are included in this category, as well as other disturbed areas such as power lines.

Depressional Swamp Forest – Very poorly drained non-riverine forested or occasionally scrub/shrub communities that are semi-permanently or temporarily flooded. Typical species include cypress, black gum, water tupelo, green ash, and red maple. These are

distinguished from riverine swamp forests in the data by having a hydrogeomorphic (hgm) class of flat (f).

Estuarine Shrub/Scrub – Any shrub/scrub vegetation dominated habitat subject to occasional flooding by tides, including wind tides (whether or not the tidewaters reach the marshland areas through natural or artificial watercourses).

Hardwood Flat – Poorly drained interstream flats not associated with rivers or estuaries. Seasonally saturated by a high water table or poor drainage. Species vary greatly but often include sweet gum and red maple.

Headwater Swamp – Wooded, riverine systems along first order streams. These include hardwood dominated communities with moist soil most of the year. Channels receive their water from overland flow and rarely overflow their own banks.

Managed Pineland – Seasonally saturated, managed pine forests occurring on hydric soils. This wetland category may also contain non-managed pine forests occurring on hydric soils. Generally these are areas that were not shown on National Wetland Inventory maps. These areas may or may not be jurisdictional wetlands.

Pine Flat – Palustrine (non-tidal), seasonally saturated pine habitats on hydric (saturated) soils that may become dry for part of the year, generally on flat or nearly flat areas that are not associated with a river or stream system. This category does not include managed pine systems.

Pocosin – Palustrine (non-tidal) scrub/shrub communities (i.e. non-Estuarine Scrub/Shrub) dominated by evergreen shrubs, often mixed with pond or loblolly pines. Typically occur on saturated, acid, nutrient poor, sandy or peaty soils; usually removed from large streams; and subject to periodic burning.

Freshwater Marsh – Herbaceous areas which are flooded for extended periods during the growing season. Included in this are marshes within lacustrine systems, some managed impoundments, some Carolina Bays, and non-tidal other non-tidal marshes (i.e. marshes which do not fall into the Salt/Brackish Marsh category). Typical communities include species of sedges, millets, rushes and grasses not specified in the coastal wetland regulations.

Table 3.7: Types of Wetlands in Pender County, NC

Source: US Fish & Wildlife Service National Wetlands Inventory

Types*	Acres	Percent of Total
Pocosin	109,572	35.29%
Managed Pineland	76,820	24.74%
Bottomland Hardwood & Riverine Swamp Forest	60,934	19.93%
Pine Flat	33,893	10.92%
Depressional Swamp Forest	9,828	3.17%
Hardwood Flat	8,319	2.68%
Headwater Swamp	1,246	0.40%
Freshwater Marsh	872	0.28%
Estuarine Shrub/Scrub	854	0.27%
Human Impacted	637	0.21%
Salt/Brackish Marsh (Coastal Wetlands)	7,481	2.41%
Total	310,457	100%

*Determination of permit requirements is subject to on-site field visit.

NATURAL HERITAGE NATURAL AREAS

The North Carolina Natural Heritage Program (NCNHP) compiles the NCDEQ's list of natural areas as required by the Nature Preserves Act. The NCNHP inventories, catalogues, and facilitates protection of the rarest and most outstanding elements of the natural diversity of our state and are given priority ranks that indicate the degree of their importance for conservation. This includes plants and animals that are rare, or natural communities that merit special consideration as land use decisions are made. The information generated by this program supports informed evaluations of the trade-offs between biological diversity and development projects before plans are finalized. The information also facilitates the establishment of priorities for protecting North Carolina's most significant natural heritage areas. Further, it provides planners, landowners, developers, and other decision-makers with information and maps to focus incentives to conserve wildlife habitats and corridors.

Pender County contains 40 Natural Heritage Natural Areas (NHNAs), spanning nearly 140,000 acres. Of these 140,000 acres of NHNAs, approximately 27,643 acres are within private lands and approximately 42,143 acres are within public lands. The remaining 70,214 acres are within Managed Areas throughout the County. See **Table 3.8** and **Map 3.7: Natural Heritage Natural Area Locations** for the complete list of Natural Heritage Areas in Pender County. For more detailed information on the NHNAs, refer to the Natural Heritage Inventory of Pender County, North Carolina.

There are several natural heritage natural areas of exceptional and very high importance identified within Pender County. There are 107,908 acres of significant natural areas with exceptional importance and 22,246 acres of significant natural heritage areas with very high importance.

Table 3.8: List of Natural Heritage Natural Areas in Pender County, NC

Source: North Carolina Natural Heritage Program

Site Name	Acres	Percent Acreage	Rating
421 Sand Ridge	5,388	3.88%	1 - Exceptional
Angola Bay	29,105	20.93%	1 – Exceptional
Angola Creek Flatwoods	254	0.18%	2 – Very High
B.W. Wells Savanna	121	0.09%	2 – Very High
Bear Garden	3,928	2.83%	3 – High
Big Colly Swamp	505	0.36%	4 – Moderate
Black River Aquatic Habitat	209	0.15%	6 – Unranked
Black River Cypress Swamp	1,360	0.98%	1 – Exceptional
Blake Savannah	108	0.08%	5 – General
Bryant Mill (Greenbank) Bluff	2	0.002%	1 – Exceptional
Canetuck Loop Road Sandhills	480	0.35%	5 – General
Clarks Landing Coastal Goldenrod Site	677	0.49%	2 – Very High
Colvins Bay	2,224	1.60%	5 – General
Colvins Creek Sand Ridge Mesic Slopes	59	0.04%	2 – Very High
Cones Folly	2,929	2.11%	2 – Very High
Futch and Foy Creeks Natural Area	61	0.04%	5 – General
Holly Shelter Game Land	48,552	34.92%	1 – Exceptional
Lea Island/Hutaffs Beach	4,851	3.49%	2 – Very High
Lower Black River Swamp	10,342	7.44%	2 – Very High
Maple Hill School Road Savannah	34	0.02%	3 – High
McLean Savannah	904	0.65%	1 – Exceptional
Moores Creek Floodplain	162	0.12%	1 – Exceptional
Moores Creek National Battlefield	38	0.03%	2 – Very High
Neils Eddy Landing	0.33	0.0002%	2 – Very High
Northeast Cape Fear River Floodplain	16,645	11.97%	1 – Exceptional
Parkers Savannah	19	0.01%	2 – Very High
Rocky Point Marl Forest	653	0.47%	1 – Exceptional
Rocky Point Sandhills	218	0.16%	2 – Very High
Sandy Run Swamp and Savannahs	785	0.56%	1 – Exceptional
Shaken Creek Savannah	1,262	0.91%	1 - Exceptional
Shaky Bay Sandhills	294	0.21%	2 – Very High
Shelter Swamp Creek Flatwoods	2,668	1.92%	1 – Exceptional
Sidbury Road Savannah	2	0.001%	3 – High
Southwest Ridge Savannah	1,198	0.86%	3 – High
Surf City Maritime Forest	108	0.08%	4 – Moderate
The Neck Savannah	393	0.28%	1 – Exceptional
Topsail Sound Maritime Forests	2,179	1.57%	2 – Very High
Upper Black River Bottomlands	29	0.02%	1 – Exceptional
Watkins Savannah	265	0.19%	2 – Very High
Webbtown Road Savannah	20	0.01%	4 - Moderate
Total	139,028	100%	

Note: Natural Heritage Natural Areas include both public and privately owned properties.

AREAS CONTAINING ENDANGERED SPECIES

Endangered species describe plant or animal species in danger of extinction within the foreseeable future throughout a significant portion of its range. The term “threatened species” is used when a plant or animal is deemed likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Areas that contain, or are likely to contain, endangered species in the Pender County include the dry sand areas of the oceanfront beach, dunes, and the marshes along the estuarine shoreline, as well as within the Holly Shelter and Angola Bay Game Lands. Areas adjacent to the Cape Fear River and Northeast Cape Fear River are also classified as areas containing endangered species. Endangered animals identified within Pender County include various types of birds, including the Piping plover and the Red-cockaded woodpecker, and a variety of sea turtles, including the Leatherback sea turtle and Loggerhead sea turtle. In order to help preserve endangered wildlife, turtle nesting areas are marked each year in order to protect the nests. It is important to keep in close contact with state and local agencies charged with protecting endangered species, and sightings of rare and endangered plants and animals should be reported.

PRIORITY UPLAND HABITATS IN PENDER COUNTY

The North Carolina Wildlife Resources Commission (NCWRC), along with several other federal and state agencies, conservation organizations, and stakeholders, developed a comprehensive planning tool to help conserve and enhance the state’s full array of fish and wildlife species and their habitats. Throughout the development process, the NCWRC worked with expert biologists to identify fish and wildlife Species of Greatest Conservation Need (SGCN). A few species that are included in the SGCN category and found in Pender County are the Atlantic sturgeon, Shortnose sturgeon, West Indian manatee, Diamondback terrapin, Wilson’s plover, and American oystercatcher.

Aside from the species previously stated, Pender County is home to more than 100 land-living wildlife Species of Greatest Conservation Needs. Because there is an abundance of conservation land throughout the County, focus should be placed on conserving Conservation Need Priority Habitat types that are not protected. The North Carolina Wildlife Action Plan Conservation Opportunity Areas Tool demonstrates that the highest priority habitats of Conservation Need, in Pender County, are maritime forests and dry longleaf pine forests that connect with floodplain and wetland systems. Pender County contains one of the top five places to conserve unprotected maritime forest blocks and unprotected beaches. The area northeast of Burgaw and adjacent to the Game Lands is one of the five best places to conserve dry longleaf pine forest on the coastal plain. These habitats and areas, floodplain forests, and wetlands should be a focus of resource conservation policies. The remaining priority upland habitat type in the County is mesic hardwood forest.

The primary habitats of greatest conservation need south of US 17 are upland maritime forests, coastal wetlands, and estuaries. The Painted bunting depends entirely on the maritime forest trees and shrubs for breeding on the North Carolina coast. The species requires at least five

acres of diverse shrub layer to breed. Ten acres is ideal. According to the NCWRC, their populations have decline by approximately 60% in the last thirty years. As development occurs, landscaping comprised of wax myrtles and other native coastal shrubs will aid in protecting the Painted bunting population.

SMOKE AWARENESS AREAS AND MANAGED AREAS

Smoke awareness areas are locations that are most likely to experience smoke from prescribed burning. These areas are indicated by a half mile buffer around the perimeter of lands managed with fire. Prescribed burning is used to reduce hazardous fuel buildups, which provides increased protection to the County's residents, homes, and natural habitats. This method is also useful in controlling disease among young pines, improving wildlife habitat, and preserving endangered plant and animal species. The Florida Forest Service finds that for every one dollar spent on prescribed burning to prevent wildfires, over two dollars in taxes are saved in reduced fire emergency response. Most prescribed burns occur on smaller units within larger tracts of managed lands and are conducted by agencies and organizations to protect communities from wildfire and to restore managed wildlife habitat. Managed areas are a diverse collection of properties and easements where conservation of biodiversity and ecosystem function are among the goals of the land management programs. This collection of conservation areas are useful when making decisions about conservation, land management, land use planning, and recreation. There are approximately 155,000 acres of managed areas throughout Pender County. Prescribed burning is conducted only under conditions that favor maximum vertical smoke dispersion, thus minimizing any impacts to public safety. The majority of smoke awareness areas in Pender County are within Holly Shelter Games Land and a half mile outside of its boundaries. There are several smaller areas in the south and southwestern portion of the County that are designated smoke awareness areas. See **Map 3.8: Smoke Awareness Areas & Managed Areas**.

Since prescribed burning takes place throughout the County, it is important to note and define the Wildland/Urban Interface (WUI). A WUI is the area where homes and communities meet undeveloped wildland vegetation. These areas have an increased chance of experiencing wildfires, which can be dangerous or destructive to lives and property. To reduce the potential for wildfire damage, firewise landscaping can be implemented to create survivable space by selecting, placing, and maintaining plants around one's home to make it less vulnerable to such. Survivable space is the area extending outward from the home 30 feet or more to serve as a buffer to slow or stop a wildfire.

BIODIVERSITY AND WILDLIFE HABITAT ASSESSMENT

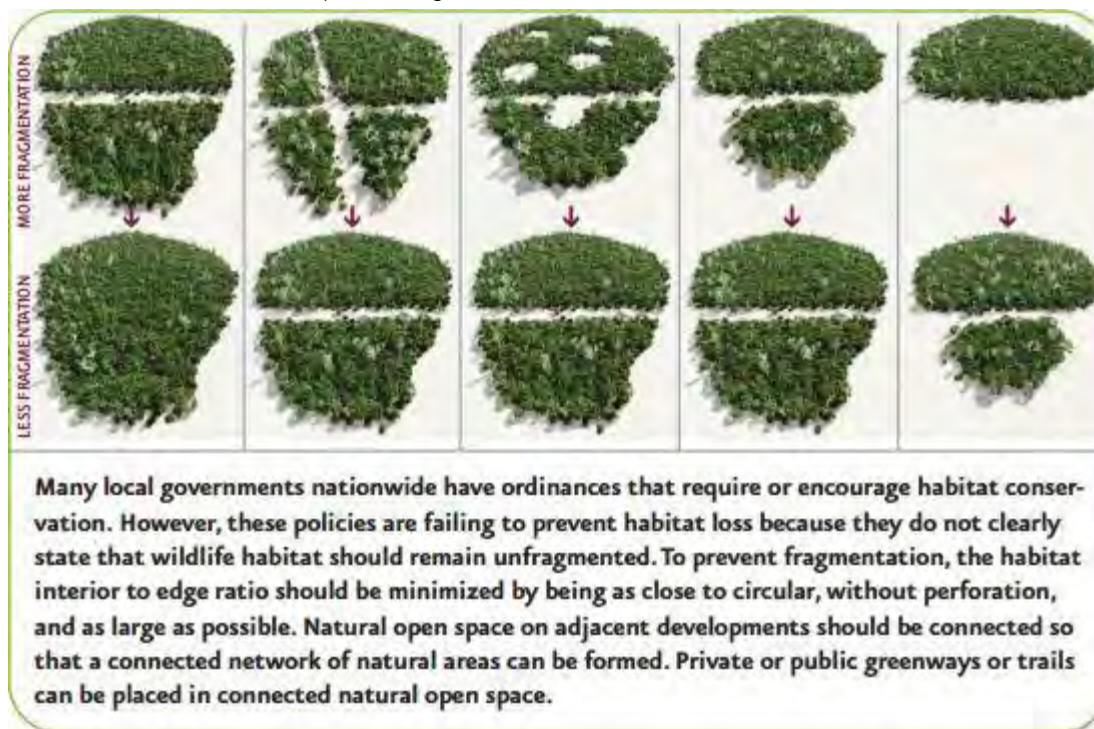
Biodiversity describes the variation of life forms within a given ecosystem and is used to measure the health of the ecosystem. Both terrestrial and aquatic ecosystem are made up of co-dependent communities of organisms and environments that provide important ecosystem and economic services to the residents and visitors of Pender County. Some key ecosystem functions include supporting the hydrologic cycle, the cycling of nutrients, filtering pollutants,

fixing carbon, producing oxygen, supporting plants, animals, and fungal species, pollination and gene dispersal, and generating soils. The main focus areas for biodiversity and wildlife habitat are terrestrial and aquatic habitats, landscape function, habitat connectivity, wetlands, and stream buffers. Habitat connectivity is decreasing across Pender County due to habitat fragmentation, which occurs when connected natural areas are disjointed by habitat removal, land use changes and development, and increased infrastructure. When any of these processes occur, the landscape is bisected into smaller, more isolated habitat resulting in population level changes to native species. For areas where more development is desired near sensitive habitat areas, built areas should be placed outside of and at least 350 feet from habitats.

The most important biodiversity areas in Pender County are Angola Bay Game Land, Holly Shelter Game Land, Topsail Island's South End, Lea-Hutaff Island, the Black River, the Cape Fear River, and the Northeast Cape Fear River. See **Map 3.9: Biodiversity and Wildlife Habitat Assessment**. The areas in green also correspond with the Natural Heritage Natural Areas, as shown on **Map 3.7: Natural Heritage Natural Area Locations**. **Figure 3.8** depicts examples of habitat fragmentation and describes habitat fragmentation in greater detail.

Figure 3.8: Depiction and Description of Habitat Fragmentation

Source: 1000 Friends of Florida, Benjamin Pennington and the NC Wildlife Commission Green Growth Toolbox



SOIL CHARACTERISTICS

The last detailed soil survey for Pender County was created in 1985 by the Soil Conservation Service. That report, *Soil Survey of Pender County, North Carolina*, identifies 43 soil series located within the County. The soil classifications and suitability can be found in **Table 3.9** and **Map 3.10: Septic System Suitability**.

Soils series found throughout Pender County include Murville, Croatan, and Bohicket. The Murville soil series makes up approximately 11% of Pender County's soils. Murville soils are nearly level and are on flat or slight depressional areas on Coastal Plain uplands and stream terraces. They are formed in wet sandy marine or fluvial sediments with less than 2 percent slopes. Murville soils can be found adjacent to the Game Lands and in the southwestern and southeastern areas of the County. Murville soils are very limited for small commercial development and septic tank absorption fields. The Croatan soil series makes up approximately 10% of Pender County's soils and can be found on the lower and middle Coastal Plain at elevations above 25 feet. The soils are formed under very poorly drained conditions that contain herbaceous and woody aquatic plant remains, with a slope range from 0 to 2 percent. Croatan soils can be found mainly in the Game Lands and a few areas in the southwestern portion of the County. These soils are also very limited for small commercial development and septic tank absorption fields.

Rains soil series makes up roughly 8.5% of Pender County's soils and located in the lower, middle, and upper coastal plains on flats, depressions, or Carolina bays. In Pender County, Rains soils can be found in the southwestern and western areas. Tidal marsh soils are Bohicket silty clay loam, are nearly level, and are very poorly drained. Bohicket soils make up approximately 0.2% of the soils in Pender County and can be found in Scotts Hill, Hampstead, Topsail Beach, and Surf City. Generally, tidal marsh areas have very limited suitability for development. Soil scientists with the Natural Resources Conservation Service (NRCS) have developed a list of soil properties that are known to be important for septic tank filter fields. These soil properties include depth to water table, depth to bedrock, soil permeability, slope and susceptibility to downslope movement, and flooding and ponding. **Map 3.10: Septic System Suitability** depicts areas that may pose constraints for permitting of septic systems.

Table 3.9: Pender County Soil Characteristics and Suitability

Source: National Resource Conservation Service; Cape Fear Council of Governments

Soil Type	Hydric Soil	Acres	Percent Acreage	Small Commercial Development	Septic Tank Absorption Fields	Composite Rating
Alpin	No	19,001	3.37%	Not Limited	Very Limited	Somewhat Limited
Altavista	No	887	0.16%	Very Limited	Very Limited	Very Limited
Autryville	Yes	16,140	2.86%	Not Limited	Somewhat Limited	Somewhat Limited
Aycock	Yes	1,379	0.24%	Not Limited	Somewhat Limited	Somewhat Limited
Aycock	Yes	2,600	0.46%	Not Limited	Somewhat Limited	Somewhat Limited
Baymeade	Yes	10,620	1.88%	Not Limited	Very Limited	Not Limited

Soil Type	Hydric Soil	Acres	Percent Acreage	Small Commercial Development	Septic Tank Absorption Fields	Composite Rating
Bohicket, tidal	No	1,047	0.19%	Very Limited	Very Limited	Very Limited
Carteret, tidal	Yes	6,446	1.14%	Very Limited	Very Limited	Very Limited
Chewacla & Chastain	Yes	10,408	1.85%	Very Limited	Very Limited	Very Limited
Croatan	Yes	57,403	10.18%	Very Limited	Very Limited	Very Limited
Dorovan	Yes	11,364	2.02%	Very Limited	Very Limited	Very Limited
Exum	Yes	11,613	2.06%	Somewhat Limited	Very Limited	Very Limited
Exum - Urban	Yes	764	0.14%	Somewhat Limited	Very Limited	Very Limited
Foreston	Yes	22,429	3.98%	Somewhat Limited	Very Limited	Somewhat Limited
Goldsboro	No	29,946	5.31%	Somewhat Limited	Very Limited	Somewhat Limited
Grantham	Yes	11,107	1.97%	Very Limited	Very Limited	Very Limited
Grifton	Yes	8,143	1.44%	Very Limited	Very Limited	Very Limited
Invershiel/ Pender	Yes	1,088	0.19%	Very Limited	Very Limited	Very Limited
Johns	Yes	3,845	0.68%	Very Limited	Very Limited	Very Limited
Kalmia	No	771	0.14%	Not Limited	Very Limited	Somewhat Limited
Kenansville	Yes	2,501	0.44%	Not Limited	Very Limited	Somewhat Limited
Kureb	Yes	3,579	0.63%	Not Limited	Very Limited	Somewhat Limited
Leon	Yes	30,360	5.38%	Very Limited	Very Limited	Very Limited
Liddell	Yes	25,225	4.47%	Very Limited	Very Limited	Very Limited
Lumbee	Yes	4,271	0.76%	Very Limited	Very Limited	Very Limited
Mandarin	Yes	4,566	0.81%	Somewhat Limited	Very Limited	Somewhat Limited
Marvyn & Craven	Yes	6,164	1.09%	Very Limited	Somewhat Limited	Somewhat Limited
Meggett	No	1,780	0.32%	Very Limited	Very Limited	Very Limited
Muckalee	Yes	34,493	6.12%	Very Limited	Very Limited	Very Limited
Murville	Yes	61,322	10.87%	Very Limited	Very Limited	Very Limited
Newhan	Yes	612	0.11%	Very Limited	Very Limited	Very Limited
Corolla	Yes	678	0.12%	Very Limited	Very Limited	Very Limited
Corolla - Urban	Yes	1,232	0.22%	Very Limited	Very Limited	Very Limited
Norfolk - 0 to 2% slope	No	8,108	1.44%	Not Limited	Somewhat Limited	Not Limited
Norfolk - 2 to 6% slope	Yes	13,177	2.34%	Not Limited	Very Limited	Somewhat Limited
Onslow	Yes	3,170	0.56%	Somewhat Limited	Very Limited	Somewhat Limited
Pactolus	Yes	18,336	3.25%	Very Limited	Very Limited	Very Limited
Pantego	Yes	6,530	1.16%	Very Limited	Very Limited	Very Limited

Soil Type	Hydric Soil	Acres	Percent Acreage	Small Commercial Development	Septic Tank Absorption Fields	Composite Rating
Pits, marl	No	1,323	0.23%	Not Rated	Not Rated	Not Rated
Rains	Yes	46,856	8.31%	Very Limited	Very Limited	Very Limited
Torhunta	Yes	23,087	4.09%	Very Limited	Very Limited	Very Limited
Water	No	10,520	1.87%	Not Rated	Not Limited	Not Rated
Woodington	Yes	29,050	5.15%	Very Limited	Very Limited	Very Limited
Total		563,938	100%			

AGRICULTURAL LANDS ASSESSMENT

Agriculture land is important for economic development and environmental stability of Pender County. The North Carolina Department of Agriculture and Consumer Services (NCDA&CS) administer the Agricultural Development and Farmland Preservation Trust Fund (ADFP) to support the purchase of agricultural conservation easements and transaction costs, fund private and public enterprise programs that promote profitable and sustainable farms through the development and implementation of plans for food and fiber products, agritourism activities, marketing and sales of agricultural products, and fund farmland conservation agreements targeted at the active production of food, fiber, and other agricultural products. In order to administer the funds, the ADFP Trust Fund Advisory Board developed an agricultural assessment tool to help prioritize the preservation of important agricultural lands in North Carolina. This data and tool is displayed on **Map 3.11: Agricultural Lands Assessment & Voluntary Agricultural Districts**.

Figure 3.9: Penderlea Agricultural Land

Source: Pender County



The Overall Agricultural Score is made up of three separate evaluations: Government Policy, Agribusiness Infrastructure, and Soils. The Overall Agricultural Score is based upon a Tier system from Tier I through Tier V. The points for each respective evaluations are summed and

parcels in Tier I are considered the highest priority for conservation of working farmland. Pender County received Overall Agricultural Scores in Tiers II through V. Of the 4,750 parcels identified in the Agricultural Lands Assessment, approximately 80% are Tier II lands, signifying the high value of an abundance of farmlands throughout the County. Generally, the Tier II lands can be found in the northwestern, north eastern, and central portions of the County. Most of the Tier III lands can be found in the southwestern, and south central portions of the County, while some can be found intermittently throughout Tier II lands in the northern portion of the County. Due to minimal Tier IV and Tier V lands, these parcels can be difficult to see on **Map 3.11**. There are 2 Tier IV parcels which are located southeast of the I-40/NC 210 interchange in Rocky Point. The 9 Tier V parcels can be found in Hampstead, near County Club Drive, Sloop Point Road, as well as near Surf City's Corporate Limits boundary.

VOLUNTARY AGRICULTURAL DISTRICTS

The purpose of the Voluntary Agricultural District (VAD) Program is to encourage and promote the preservation and protection of farmland from non-farm development. In 2008, the Pender Soil and Water Conservation District (SWCD) submitted a formal request for the Pender County Board of Commissioners to instruct the SWCD to begin developing a VAD Ordinance and an Agricultural Advisory Board to implement the provisions of the ordinance. The Pender County Board of Commissioners approved the VAD ordinance in December of 2010 and appointed five members to the Agricultural Advisory Board. The Board holds public hearings on public projects likely to have an impact on agricultural operations, reviews and approves applications for qualifying farmland, establishes the agricultural districts, and performs other related tasks or duties assigned by the County. VAD members may be eligible for farmland preservation funds, present-use tax value assessments, waived water and sewer assessment, and increased protection from nuisance suits. VADs are primarily located in the western and central portions of Pender County. Locations of VADs in Pender County can be seen on **Map 3.11: Agricultural Lands Assessment & Voluntary Agricultural Districts**.

FARMLAND CLASSIFICATIONS

PRIME FARMLAND

The United States Department of Agriculture's Natural Resources Conservation Service defines prime farmland as land with the best physical and chemical composition for producing food, feed, forage, fiber, and oilseed crops. The land is characteristic of soil quality, growing season, and moisture supply necessary to produce economically consistent high yields of crops. Generally, prime farmlands have sufficient and stable water supply from precipitation or irrigation, acceptable acidity or alkalinity, acceptable salt and sodium content, minimal rocks, and a favorable temperature and growing season. Pender County contains 72,739 acres of prime farmland, which are generally found in the western and northwestern portions of the County. See **Table 3.10** for the prime farmland soil types and **Map 3.12: Farmland Classifications** for the locations of prime farmland throughout the County.

Table 3.10: Prime Farmland in Pender County, NC

Source: United States Department of Agriculture's Natural Resources Conservation Service

Prime Farmland Soil Type	Acres	Percent of Total
Altavista fine sandy loam, 0-3% slopes	887	1.22%
Aycock loam, 0-3% slopes	1,379	1.90%
Aycock loam, 3-6% slopes	2,600	3.57%
Exum loam, 0-2% slopes	11,613	15.97%
Goldsboro fine sandy loam, 0-2% slopes	29,946	41.17%
Invershiel-Pender complex, 0-2% slopes	1,088	1.50%
Kalmia loamy fine sand, 0-2% slopes	771	1.06%
Norfolk loamy fine sand, 0-2% slopes	8,108	11.15%
Norfolk loamy fine sand, 2-6% slopes	13,177	18.12%
Onslow loamy fine sand	3,170	4.36%
Total	72,739	100%

FARMLAND OF STATEWIDE IMPORTANCE

Farmland of statewide importance lands include lands that are characteristic of producing economically consistent high yields of crops, such as food, feed, fiber, forage, and oil seed crops. The criteria used to classify farmland of statewide importance is determined by appropriate state agencies. There are 59,634 acres of farmland of statewide importance within Pender County, which are generally located in the southeastern, northeastern, central portions of the County, as well as intermittently among prime farmlands. See **Table 3.11** for farmland of statewide importance soil types and **Map 3.12: Farmland Classifications** for locations of farmland of statewide importance.

Table 3.11: Farmland of Statewide Importance in Pender County, NC

Source: United States Department of Agriculture's Natural Resources Conservation Service

Farmland of Statewide Importance Soil Type	Acres	Percent of Total
Autryville fine silt, 1-4% slopes	16,140	27.07%
Baymeade fine sand, 1-4% slopes	10,620	17.81%
Foreston loamy fine silt	22,429	37.61%
Kenansville fine silt, 0-4% slopes	2,501	4.19%
Marvyn and Craven soils, 6-12% slopes	6,164	10.34%
Meggett loam	1,780	2.98%
Total	59,634	100%

SUMMARY

Listed below is a summary of findings for Pender County.

- According to the US Fish and Wildlife Service National Wetlands Inventory, approximately 55% of land in Pender County has wetland characteristics.
- According to the North Carolina Flood Mapping Program, approximately 20.4% or 6,223 of Pender County's housing units lie within the Special Flood Hazard Areas.
- Pender County has accounted for more than 5% of the total documented losses experienced statewide since 1978.
- Hurricane Matthew made landfall in North Carolina on October 8, 2016 and resulted in approximately 6-15 inches of rainfall in certain areas of the County. As of May 16, 2017, 962 households in Pender County applied for financial assistance from FEMA.
- Of the 20 major water bodies within Pender County, twelve are currently listed as High Quality Waters (HQW) and three as Outstanding Resource Waters (ORW).
- There are a number of waters in and adjacent to coastal Pender County that are closed to shellfishing due primarily to stormwater runoff and other non-point sources of pollution.
- Pender County contains 40 Natural Heritage Natural Areas, spanning nearly 140,000 acres. Of these areas, there are 107,906 acres of significant natural areas with exceptional importance.
- Endangered animals identified within Pender County include various types of birds, including the Piping plover and the Red-cockaded woodpecker, and a variety of sea turtles, including the Leatherback sea turtle and Loggerhead sea turtle.
- Pender County contains approximately 155,000 acres of managed areas and are typically areas considered for prescribed burning where conservation of biodiversity and ecosystem function are among the goals of the land management programs.
- Based upon soil characteristics, there may be constraints for permitting septic systems in Pender County.
- Of the 4,750 parcels identified in the NC Agricultural Lands Assessment, approximately 80% are Tier II lands, signifying the high value of an abundance of farmlands throughout the County.
- Pender County contains 72,739 acres of prime farmland and 59,634 acres of farmland of statewide importance.

GOALS, OBJECTIVES, AND POLICIES

INTRODUCTION

The County has established a set of land use and development related policies to act as guidelines during any official decision making process. These policies and goals reflect the comments and concerns received during the public involvement process and provide citizens, property owners, and developers with a predictability of official actions. Goals, policies, and recommended actions in this chapter relate to natural systems including water quality, natural hazards, and agricultural lands. Two CAMA management topics are covered in the policy section herein: Water Quality and Natural Hazard Areas. It should be noted that these topic areas are developed as part of the Division of Coastal Management's 7B Land Use Planning Guidelines.

Please note the following concerning the usage and definition of a Goal, Objective, Policy, and Recommended Action. Each of these terms are intended for a specific component of the implementation and utility of this land use plan. See below for more information:

- **Goal:** A general statement indicating a desired end or the direction the County will follow to achieve that end.
- **Objective:** Direction toward the attainment of a particular goal.
- **Policy:** A statement identifying the County's position regarding the pursuit of a goal or objective.
- **Recommended Action:** A statement outlining a specific course of action the County may pursue to implement goals and policies. Recommended actions are not used in review of development proposals, text amendments, and/or rezoning requests.

Refer to Appendix A for Definitions of actions words contained within the policy section.

WATER QUALITY AND NATURAL ENVIRONMENT

Goal 3.1: Maintain, protect and where possible enhance the natural environment and water quality in all coastal wetlands, rivers, streams, and estuaries.

Objective 3.1: Protect the Water Quality and Natural Environment of Pender County: The County shall take actions designed to protect and where possible enhance and restore the water quality and sensitive natural resources located in and adjacent to the County's Planning Jurisdiction.

Policy 3.1.A: Surface Water Quality: The County shall continue to protect and enhance the water quality of the estuarine and riverine system.

Recommended Action 3.1.A.1: Monitor NC DEQ Surface Water Classifications for any changes that identify a degradation of water bodies. When a change results in a lower surface water quality designation, the County in

partnership with applicable agencies or municipalities, will take steps to study and identify the reason for such change.

Policy 3.1.B: Outstanding Resource Waters: The County shall continue to enforce the use standards outlined in 15A NCAC 07H .0209 (f) for Outstanding Resource Waters.

Recommended Action 3.1.B.1: Consider establishing an overlay district for the CAMA 575 foot Outstanding Resource Waters AEC buffer to encourage enhanced mitigation of stormwater runoff and preservation of tree canopy.

Policy 3.1.C: Riparian Buffers: The County supports the preservation and/or installation of vegetated buffers adjacent to all streams, rivers, marshes, and estuarine waters in the County, with the intent of reducing the flow of nutrients and other contaminants into area surface waters.

Recommended Action 3.1.C.1: Consider identifying incentives for new subdivisions whereby riparian buffers are increased in size from the standard 30 foot buffer and identify strategies to limit land disturbance and tree removal within these areas.

Policy 3.1.D: Stormwater Runoff: The County shall continue to enforce the stormwater management requirements contained in the UDO.

Recommended Action 3.1.D.1: Explore opportunities to increase the requirements for stormwater management for all types of development. In doing so, the County should adopt stormwater regulations to account for fill (including standalone lots), impervious coverage limits, and the designation of a design storm year. Such requirements should identify regulations for the construction phase (i.e. erosion and sedimentation control) and post-construction phase (i.e. stormwater control).

Recommended Action 3.1.D.2: Consider modifying applicability requirements for stormwater management that are more stringent than those outlined by 15A NCAC 02H .1019, whereby 10,000 square feet of impervious surface or greater than an acre of disturbance triggers stormwater mitigation.

Recommended Action 3.1.D.3: Consider establishing a stormwater/ditch maintenance program coordinated through the County Public Works Department and with the NC Department of Transportation.

Recommended Action 3.1.D.4: Consider establishing a percent reduction goal in overall stormwater runoff volume. For example, the County will reduce stormwater runoff volumes by 10% by 2025.

Recommended Action 3.1.D.5: Develop a Stormwater Management Master Plan with a principle focus on reduction of stormwater runoff volumes. Partnership with regional local governments or agencies may be required.

Policy 3.1.E: Stormwater Discharges from County Sources: Where practicable, the County shall eliminate stormwater discharges resulting from county activities. Where elimination is not possible, the County shall mitigate the sources of stormwater discharges to the maximum extent practicable.

Recommended Action 3.1.E.1: Expand efforts to identify and eliminate stormwater discharges resulting from County building, facilities, and activities. For example, downspout disconnection to impervious surfaces and the installation of rain gardens can substantially reduce stormwater runoff discharges.

Policy 3.1.F: Watershed Restoration: Where practicable, the County shall encourage protection and enhancement of surface water quality through implementation of Watershed Restoration Plans. As stated previously, water-based recreation helps to support the \$90 million dollar economic impact of tourism in Pender County.

Recommended Action 3.1.F.1: Establish partnerships with Pender County municipalities (if necessary) to develop a Watershed Restoration Plan(s). Partnership with regional local governments or agencies may be required.

Recommended Action 3.1.F.2: Pursue grant funds to assist in developing a Watershed Restoration Plan. Pursuant to Section 205(j)/604(b) of the Clean Water Act, the Division of Water Resources will award grant funds to Regional Commissions and Councils of Government for to carry out water quality management and planning projects, including, but not limited to:

- Identifying most cost effective and locally acceptable facility and non-point source measures to meet and maintain water quality standards;
- Developing an implementation plan to obtain state and local financial and regulatory commitments to implement measures developed to meet water quality standards; and
- Determining the nature, extent, and cause of water quality problems in various areas of the state.

Recommended Action 3.1.F.3: Ensure that the Watershed Restoration Plan contains the nine minimum elements required to receive EPA Section 319 funds for implementation of capital improvements projects.

Policy 3.1.G: Water Supply Watersheds: The County shall continue to enforce the Water Supply Watershed Overlay Districts contained in the UDO.

Policy 3.1.H: Low Impact Development (LID): The County supports Low Impact Development practices. Such LID practices may include retaining/infiltrating most of the runoff on-site, maximizing the use of permeable pavements, reducing the amount of impervious coverage, and clustering housing to allow a profitable development density while maximizing open space and minimizing wildlife habitat fragmentation.

Recommended Action 3.1.H.1: Explore options for implementing incentives for developers that utilize low-impact development (LID) techniques to manage the potential impacts of stormwater runoff.

Recommended Action 3.1.H.2: Consider requiring LID techniques for development located within the CAMA 575 foot Outstanding Resource Waters AEC.

Policy 3.1.I: Prime Wildlife Habitats: The County shall continue to protect its prime wildlife habitats, where possible, by enforcing the CAMA permitting program, open space requirements, and the Flood Damage Prevention Ordinance.

Recommended Action 3.1.I.1: The County shall consider requiring all rezoning/conditional zoning petitions to be reviewed in relation to the Biodiversity/Wildlife Habitat Assessment and the NC Wildlife Resources Commission Habitat Conservation Recommendations.

Policy 3.1.J: Environmental Planning: The County shall continue to require the inclusion of environmental features in the development review.

Recommended Action 3.1.J.1: Consider expanding the definition of “environmental features” to include Areas of Environmental Concern (AECs), Significant Natural Heritage Areas (SNHAs), Natural Heritage Element Occurrences (NHEOs), Smoke Awareness Areas, and Prime Farmland soils.

Recommended Action 3.1.J.2: Consider providing the information referenced in Recommended Action 3.1.K.1 on the County’s GIS website.

Recommended Action 3.1.J.3: Consider developing a green infrastructure plan that identifies a network of natural lands and open spaces and provides ecosystem conservation as well as alternative transportation modes through trails and greenways. Such a plan should guide the preservation of open space for new development where identified.

Recommended Action 3.1.J.4: Consider establishing a green infrastructure committee composed of local government staff and natural resource professionals whose main purpose is to implement the green infrastructure plan and coordinate natural resources conservation among all local plans, ordinances, and departments.

Policy 3.1.K: Open Space: The County shall continue to require the designation of Open Space in accordance with the subdivision of land.

Recommended Action 3.1.K.1: Consider revising the density calculations to remove preserved open space from the calculation.

Recommended Action 3.1.K.2: Consider including a minimum passive open space requirement where environmental features are present and remove the 50% maximum designation.

Recommended Action 3.1.K.3: Consider providing specific standards for the provision of open space to include such things as habitat connectivity and tree preservation. Habitat connectivity should encourage the dedication of large contiguous tracts of land, typically 10 acres at a minimum, with a minimum average width of 500 feet and separation from building activity of at least 350 feet and conservation of natural open space that is at least 300 feet wide between environmental features will be encouraged to better ensure that wildlife can travel between core wildlife habitats. Where such cannot be reasonably provided, a payment in-lieu fee should be provided to the County for the future dedication of park land that will protect wildlife habitat, while also providing an amenity for the general public and residents of the subject development.

Recommended Action 3.1.K.4: Consider establishing a 'Resource Conservation Incentive District' located to the south of US 17, in and adjacent to floodplain forests along streams and rivers and adjacent to and between Game Lands. South of US 17, maritime forest blocks of five to ten acres should be set-aside from development and connected to wetlands and forest in the floodplain where practicable.

Recommended Action 3.1.K.5: In concert with NC Wildlife Resources Commission, consider evaluating a program to rezone rural areas to a base density of no greater than one unit per three or more acres. A density of one unit per three acres has been shown to raise property values in rural areas. Within these areas consider allowing for a density bonus to conserve at least 50 percent of the site.

Recommended Action 3.1.K.6: Compile a GIS database of all designated open space and consider providing such on the County's GIS website or available through the Planning and Community Development Department.

Policy 3.1.L: Tree Preservation: The County shall continue to require tree preservation for significant trees.

Recommended Action 3.1.L.1: Consider expanding the applicable development types – rather than zoning districts – that require tree preservation.

Recommended Action 3.1.L.2: Consider removing the exemption for tree surveys/preservation in Special Flood Hazard Area (SFHAs), Areas of Environmental Concern (AECs), wetland buffers, and stream buffers.

Recommended Action 3.1.L.3: Consider a provision that allows for an applicant to display a tree protection area without the individual designation of each tree species and size.

Recommended Action 3.1.L.4: Consider enhancing mitigation for the removal of significant trees, as defined in the UDO, such that the caliper of trees removed is equivalent to that replaced.

Policy 3.1.M: Forestry: The County shall continue to support forestry as a means to maintain prime wildlife habitat areas, provided significant adverse impacts on natural resource systems are fully mitigated.

Recommended Action 3.1.M.1: Encourage the use of the NC Division of Forestry, *Forestry Best Management Practices Manual to Protect Water Quality*.

Policy 3.1.N: Protection of Wetlands: The County shall continue to protect freshwater wetlands, marshes, and 404 wetlands within its planning jurisdiction in accordance with applicable laws and regulations.

Policy 3.1.O: Commercial and Recreational Fisheries: The County supports federal and state projects which increase the productivity of coastal and estuarine waters. Projects such as dredging to increase flushing along tidal waters, oyster reseeding programs, and properly constructed artificial reefs will be supported.

Policy 3.1.P: Shellfishing Waters: The County supports and promotes the activities of the State's Shellfish Management Program. The County promotes estuarine water quality through its soil erosion and sedimentation provisions and by supporting the CAMA permitting regulations.

Policy 3.1.Q: Marsh Damage from Bulkhead Installation: The County encourages minimizing damage to existing marshes by maintaining the natural living shoreline instead of bulkhead installation or seawalls where possible.

Recommended Action 3.1.Q.1: Consider providing outreach and education to homeowners regarding the impacts of failing bulkheads to surface waters and property damage.

NATURAL HAZARD AREAS

Goal 3.2: Conserve and maintain barrier dunes, beaches, flood plains, coastal wetlands, and other coastal features for their natural storm protection functions and their natural resources giving recognition to public health, safety, and welfare issues.

Objective 3.2: Protect Against Damage from Hurricanes, Severe Weather or Other Hazards: The County shall be proactive in its efforts to minimize damage and threats to public health and safety associated with hurricanes, severe weather, and other hazards and work to implement the *Southeastern NC Regional Hazard Mitigation Plan (2016)*.

Policy 3.2.A: Hazard Mitigation Planning: The County supports proactive hazard mitigation planning. The Comprehensive Land Use Plan and the Hazard Mitigation Plan should be consistent with one another. The *Southeastern NC Regional Hazard Mitigation Plan* policies are formally included as reference herein as part of the policy of the County's Comprehensive Land Use Plan.

Policy 3.2.B: Discouragement of Hazardous Development: The County shall use a variety of methods, including CAMA setback requirements, the Flood Damage Prevention Ordinance, and the Flood Hazard Overlay to discourage the development of property that can be reasonably foreseen as potentially hazardous.

Policy 3.2.C: Flood Prone Areas: The County shall permit development in the 100-year flood zones, provided that all new construction and substantial improvements comply strictly to the County's Flood Damage Prevention, which has been adopted in conjunction with County's participation in the National Flood Insurance Program.

Policy 3.2.D: Flood Insurance: The County shall take actions necessary to reduce the cost of flood insurance to property owners by maintaining or improving the Community Rating System Status (CRS). Note: The County is not a current participant in CRS.

Recommended Action 3.2.D.1: Consider participating in the Community Rating System Status (CRS) as a means to reduce flood insurance rates. As part of this participation, County staff should be continuously trained on the steps that can be taken to improve the CRS rating.

Policy 3.2.E: Land Acquisition: The County supports the acquisition of property that is unsuitable for development due to flooding hazards when such acquisition serves a useful public purpose such as for land preservation, access to public trust areas, or as a community resource.

Recommended Action 3.2.E.1: Consider establishing a formalized procedure for evaluating potential land acquisition projects, which also considers wildlife habitat conservation, prior to such.

Policy 3.2.F: High Winds: The County supports enforcement of the NC State Building Code. The County shall continue to require construction design standards to meet the minimum required wind loads.

Policy 3.2.G: Manmade Hazards: Pender County strives to reduce the hazards of the Henderson Field/Wallace Airport through implementation of its airport minimum standards ordinance which restricts land uses and building heights in the surrounding vicinity.

Policy 3.2.H: Minimize Potential Fire Damage: The County supports controlled burn operations to reduce the risk of damage from wildfires.

Recommended Action 3.2.H.1: Consider establishing an overlay district within Smoke Awareness Areas and/or the Wildland/Urban Interface zone to require Firewise Landscaping practices.

Policy 3.2.I: Public Education: The County supports provisions to ensure that the public is aware of the risks of different types of natural hazards in order to reduce their personal exposure to natural hazards.

Recommended Action 3.2.I.1: Consider establishing a public education program designed to help inform the public about their exposure to natural hazards and actions they can take to mitigate potential damage to public health, safety, and property from natural disasters. This includes, but is not limited to:

- Ensure the local library maintains documents about flood insurance, flood protection, floodplain management, and natural and beneficial functions of floodplains. Many documents are available free of charge from the Federal Emergency Management Agency (FEMA);
- Encourage builders, developers, and architects to become familiar with the NFIP's land use and building standards;
- Provide local real estate agents with handouts advising potential buyers to investigate potential flood hazards for the property they are considering purchasing;
- Advertise the availability of flood insurance on an annual basis; and,
- Post hazard related information on the County's website and distribute appropriate educational materials and other social media outlets.

AGRICULTURAL LANDS

Goal 3.3: Ensure that those who depend upon working lands for their living are able to continue working the land and that prime farmland is preserved where possible (Please note: additional policies and recommended actions addressing agriculture are included in Chapter 5: Land Use & Growth Management).

Objective 3.3: The County shall be proactive in developing policies and recommendations that allow for the continued operation of working farms and preservation of prime agricultural lands.

Policy 3.3.A: Voluntary Agricultural Districts: The County shall continue to support and expand the Voluntary Agricultural District (VAD) program. VAD members may be eligible for farmland preservation funds, present-use tax value assessments, waived water and sewer assessments, and increased protection from nuisance suits.

Policy 3.3.B: Present Use Tax Value: The County shall continue to support the present use tax value program.

Recommended Action 3.3.B.1: Consider partnering with NC State or an appropriate agency or consultant to prepare a Return on Investment (ROI) analysis for the various land use types that exist in the County, including agricultural lands.

Policy 3.3.C: Agricultural Preservation: The County shall continue to support the preservation of agricultural working lands.

Recommended Action 3.3.C.1: Pursue grant funds available through the NC Department of Agriculture Development and Farmland Preservation Trust to complete a farmland preservation plan.

Recommended Action 3.3.C.2: Explore options for the creation of a Prime Agricultural Land Overlay district to help preserve and protect agricultural lands for future use.

Recommended Action 3.3.C.3: Consider establishing a guidance manual for the siting and/or installation of solar panels/farms that will address such things as incentives, prime farmland soils, land clearing, stormwater management and decommissioning.

Recommended Action 3.3.C.4: Consider investing in a consumer education campaign that highlights the benefits of buying local produce, beef, poultry, pork, and fish. The County should also inform consumers of the locations where they can purchase these products.

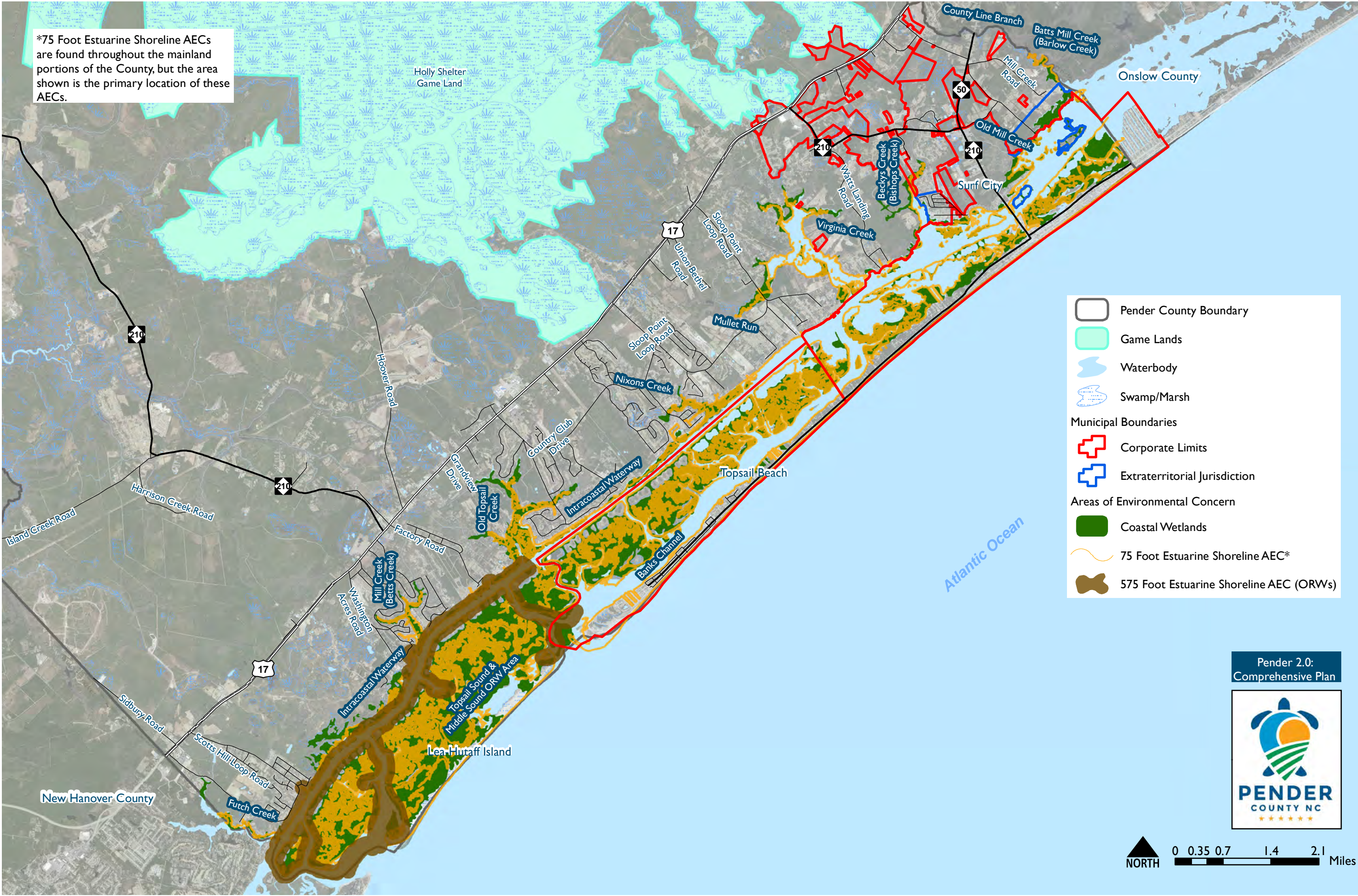
Policy 3.3.D: Cooperative Extension: The County shall continue to support NC Cooperative Extension efforts in development of alternative crops including promoting new farm crops, developing alternate farming methods, making effective use of farmlands; encouraging local restaurants to utilize local crops and supporting farmers' markets and heritage tourism.

Recommended Action 3.3.D.1: Consider providing resources to help develop, promote, and support alternative farming methods in identified prime agricultural areas.

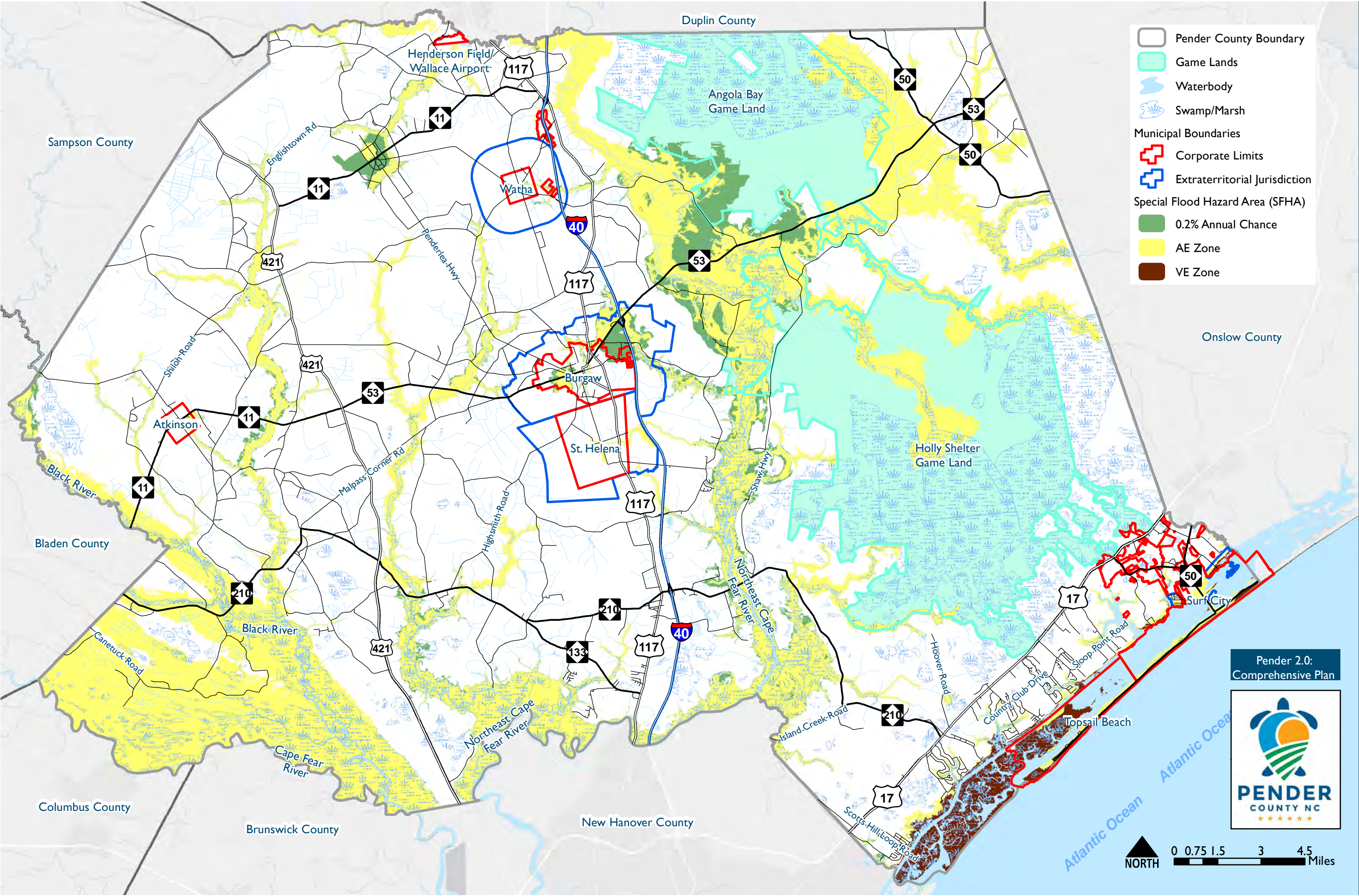
Policy 3.3.E: USDA Beaver Management Assistance Program: The County shall continue to support the USDA Beaver Management Assistance Program as a means to protect and preserve agriculture and forestry.

Recommended Action 3.3.E.1: Consider developing a public outreach program to educate residents about the potential benefits of the Beaver Management Assistance Program.

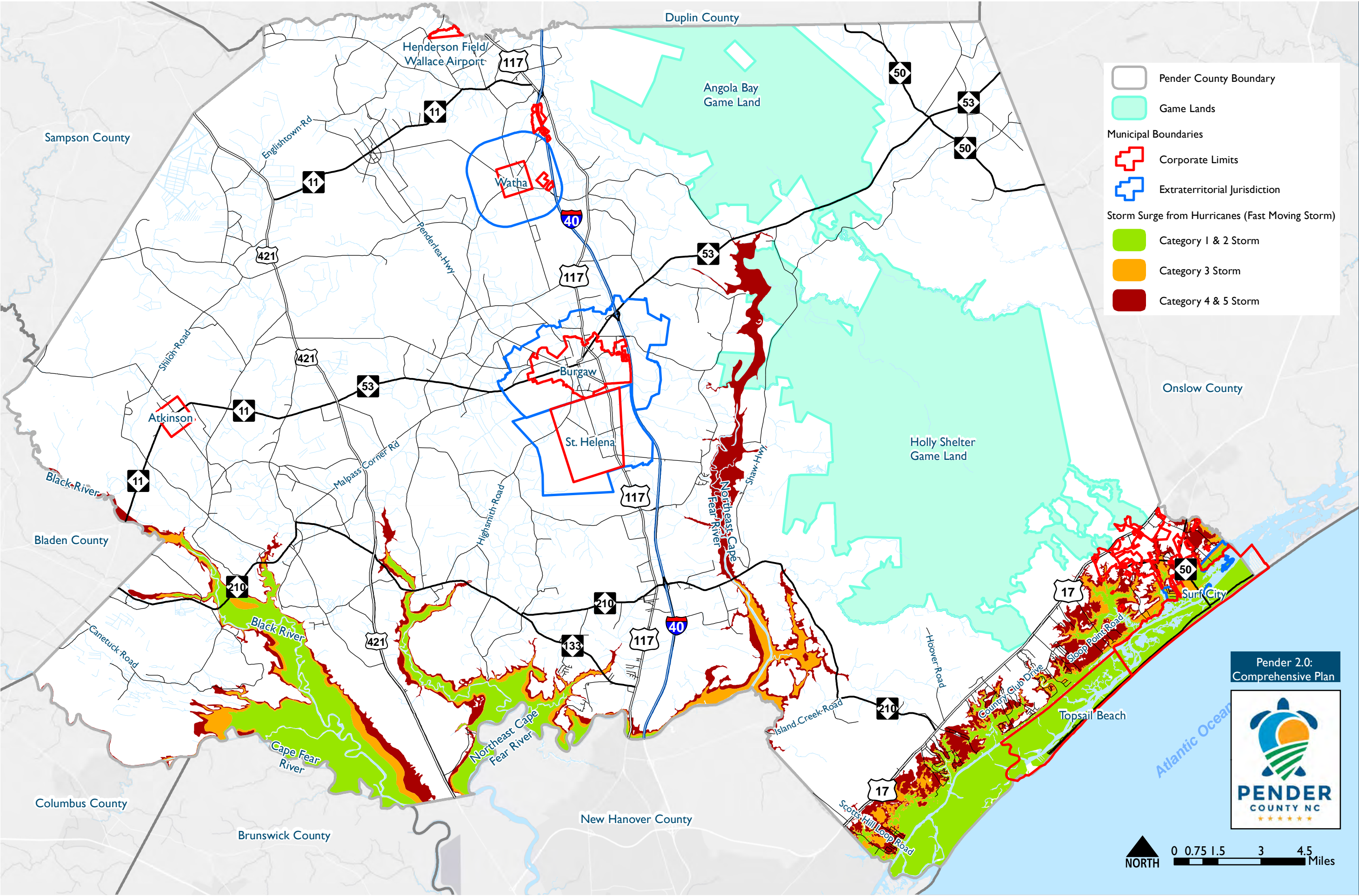
Recommended Action 3.3.E.2: Consider developing a map to identify known beaver issue areas to assist with targeted outreach for the program.



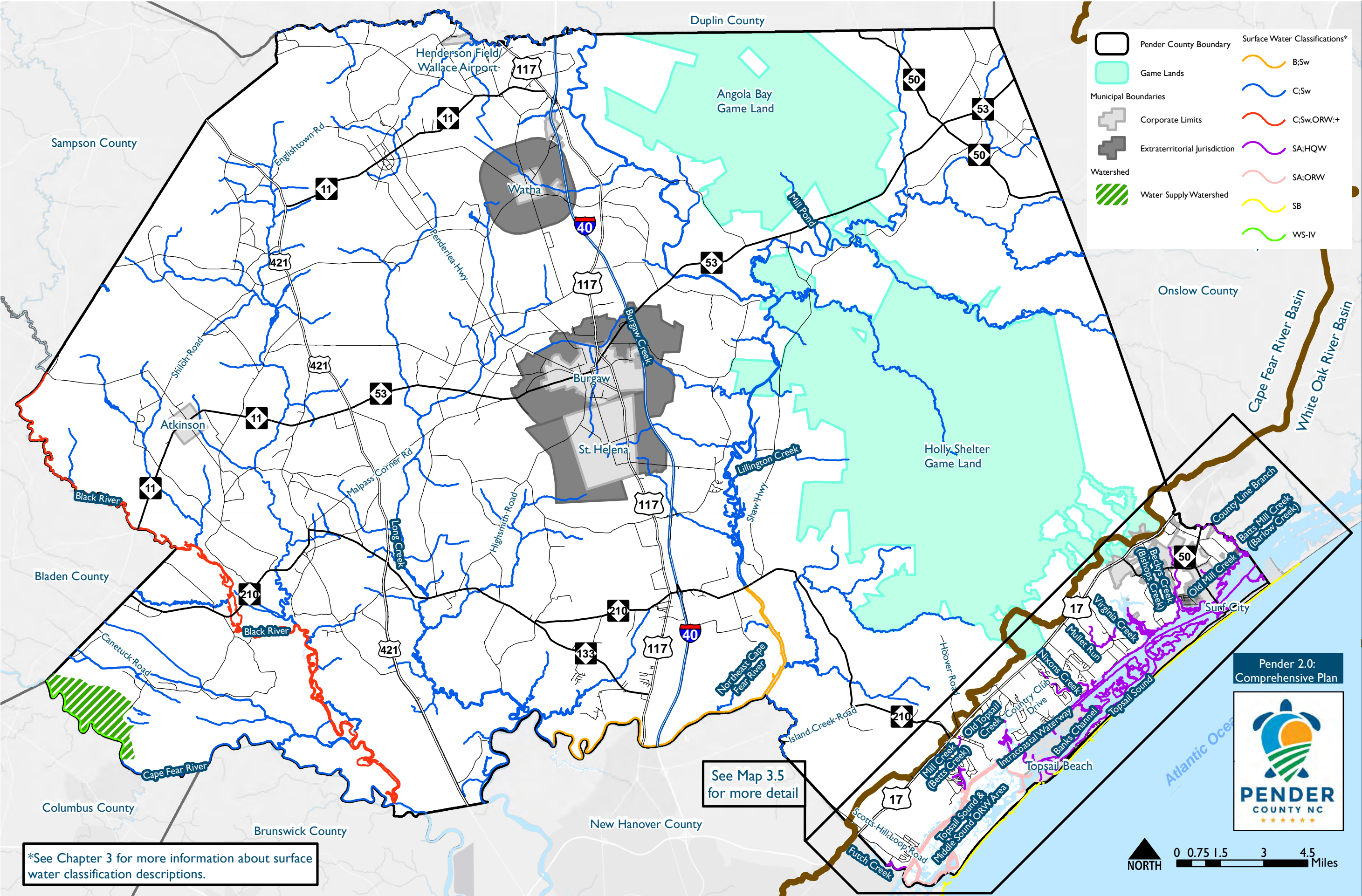
3.1: Areas of Environmental Concern (AECs)



Map 3.2: Special Flood Hazard Areas (SFHAs)

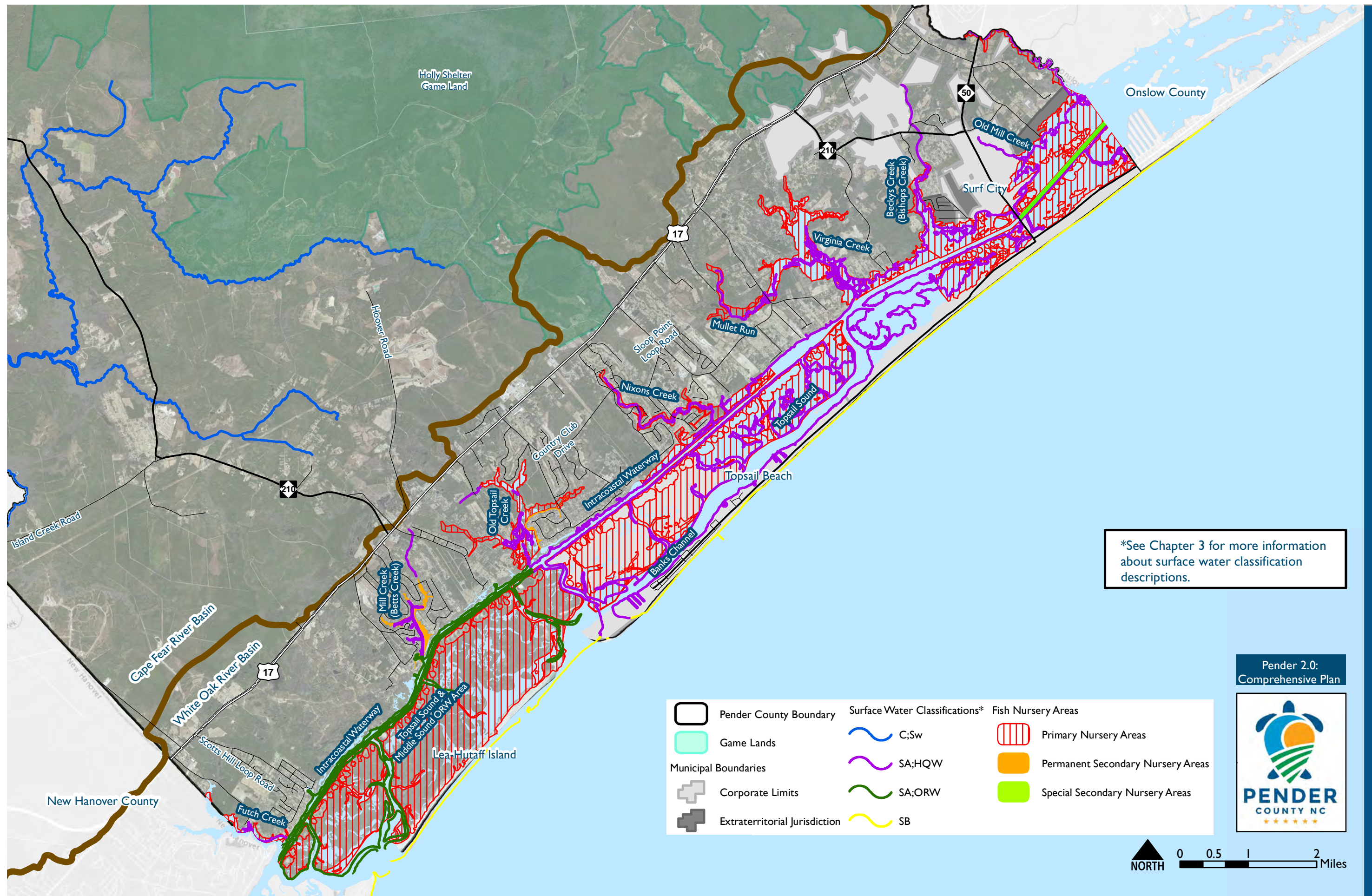


3.3: Storm Surge from Hurricanes (Fast Moving Storm)

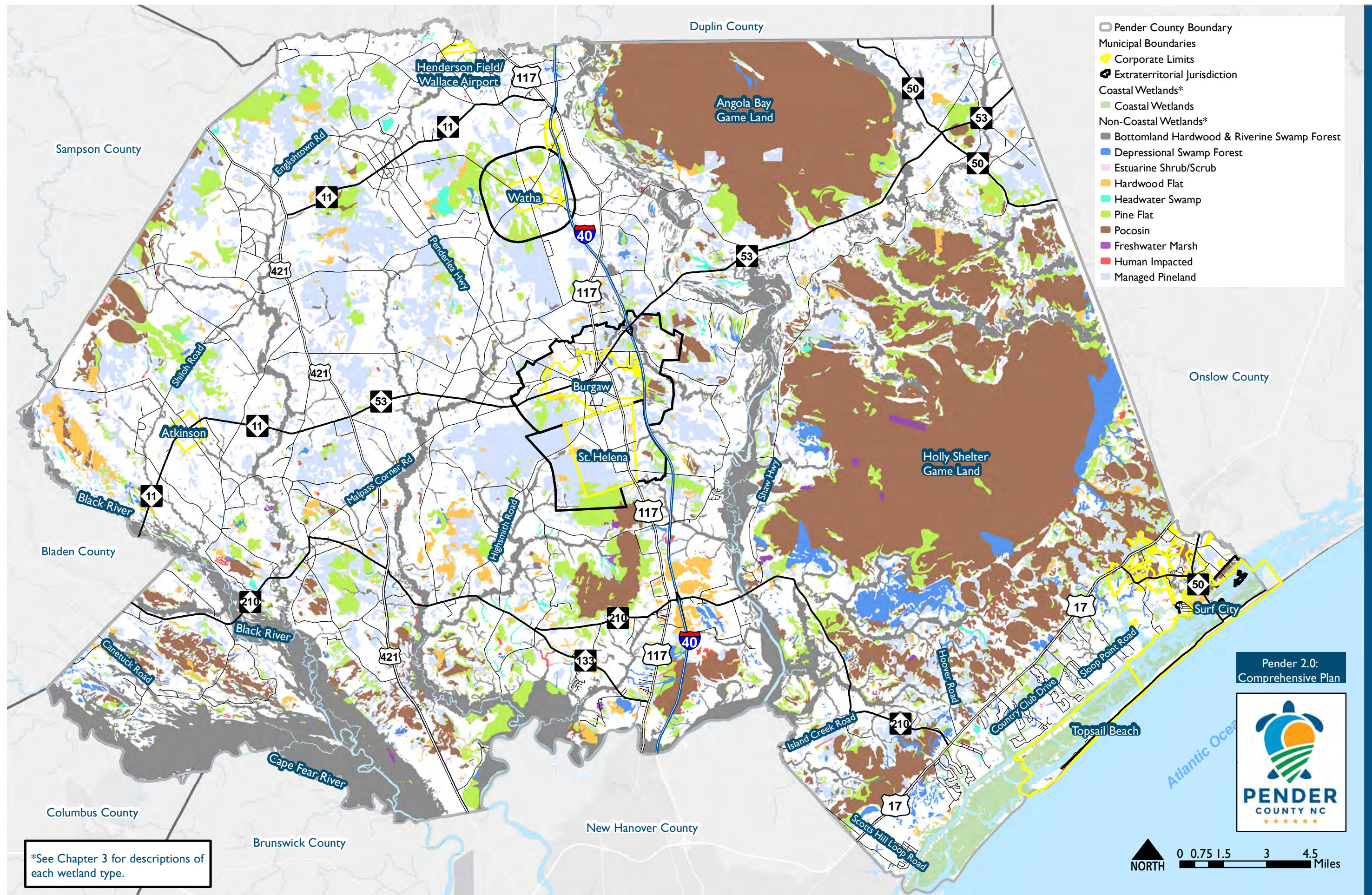


*See Chapter 3 for more information about surface water classification descriptions.

3.4: Surface Water Classifications

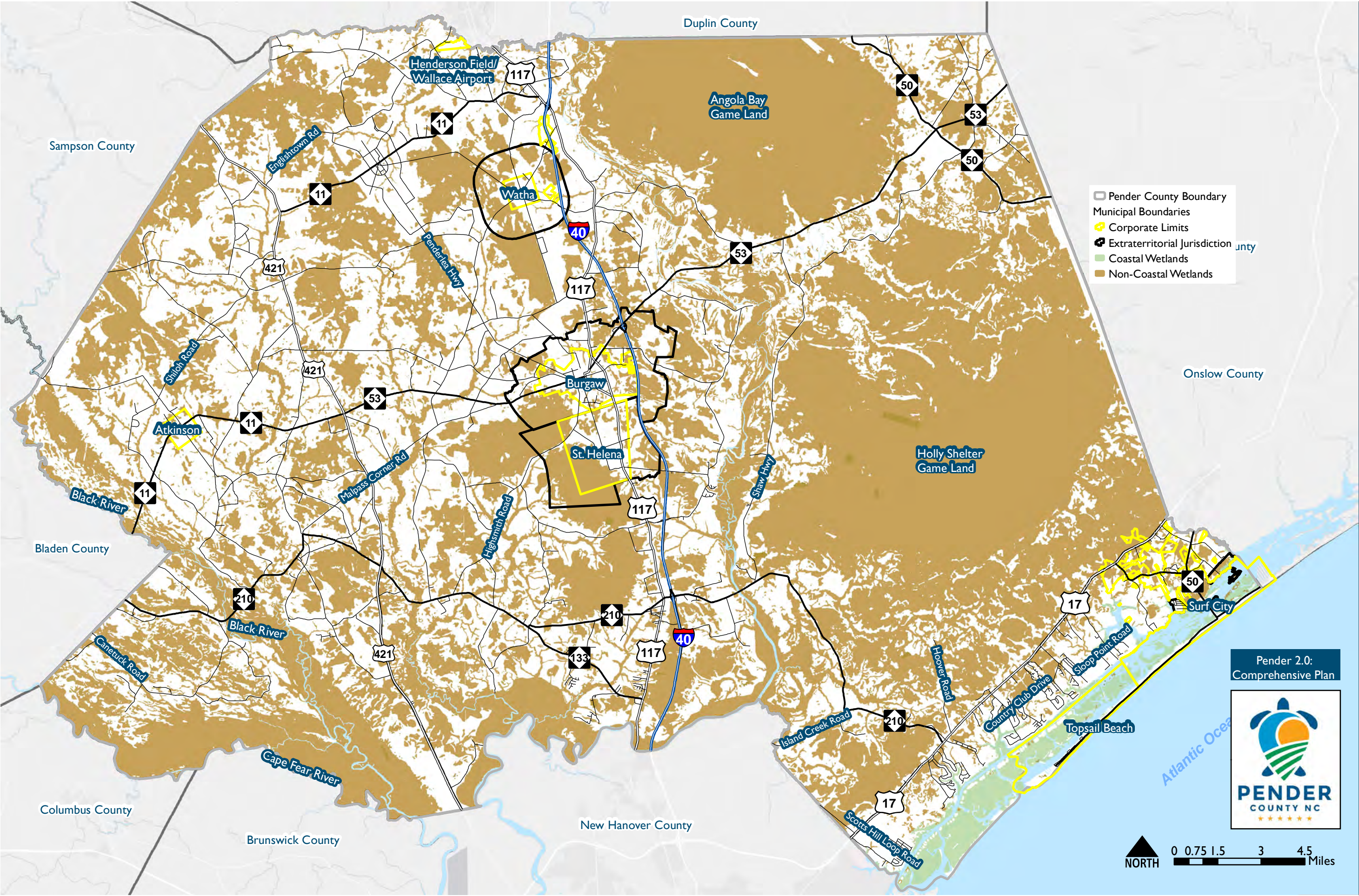


3.5: Coastal Surface Water Classifications & Fish Nursery Areas

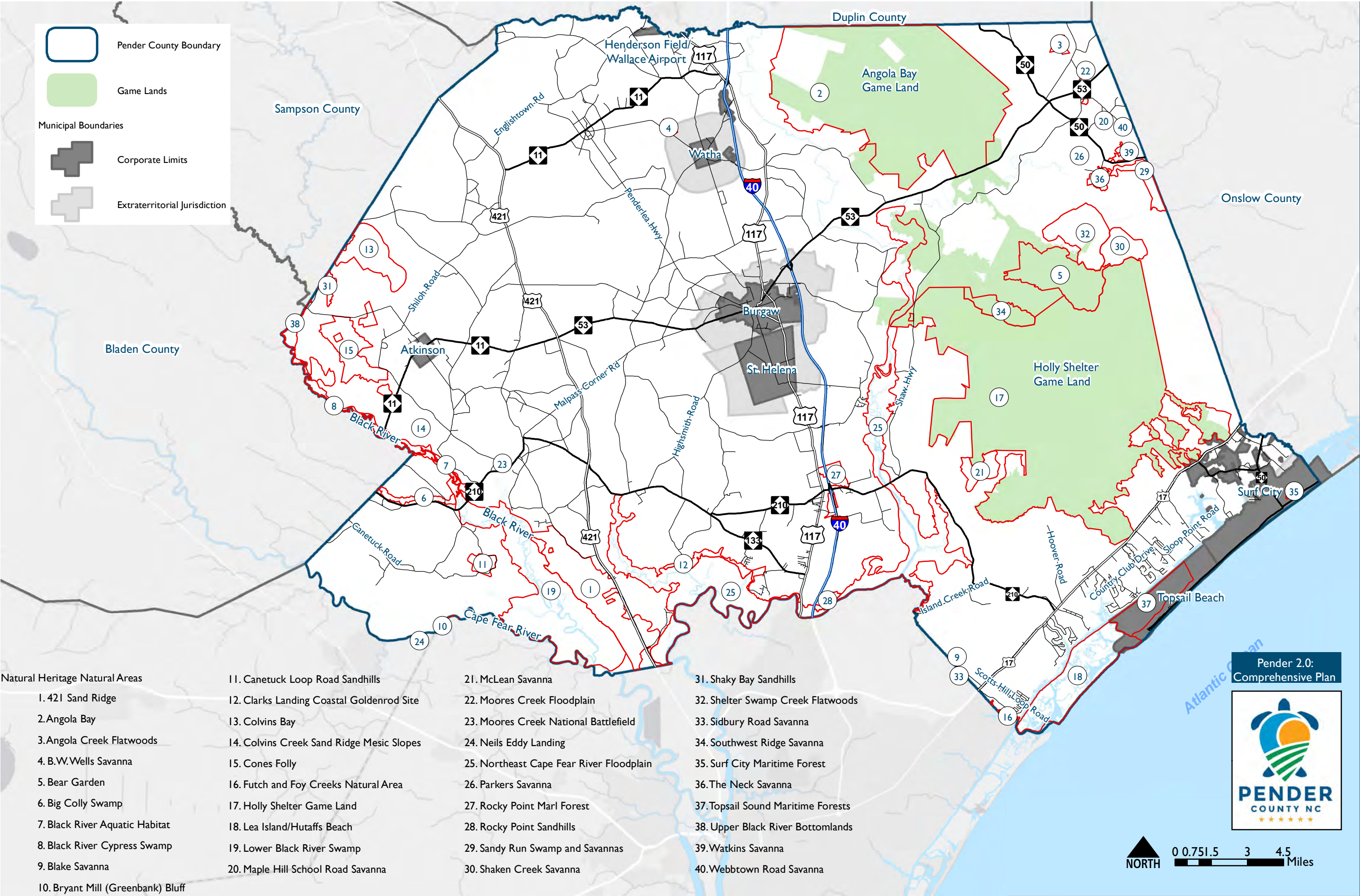


*See Chapter 3 for descriptions of each wetland type.

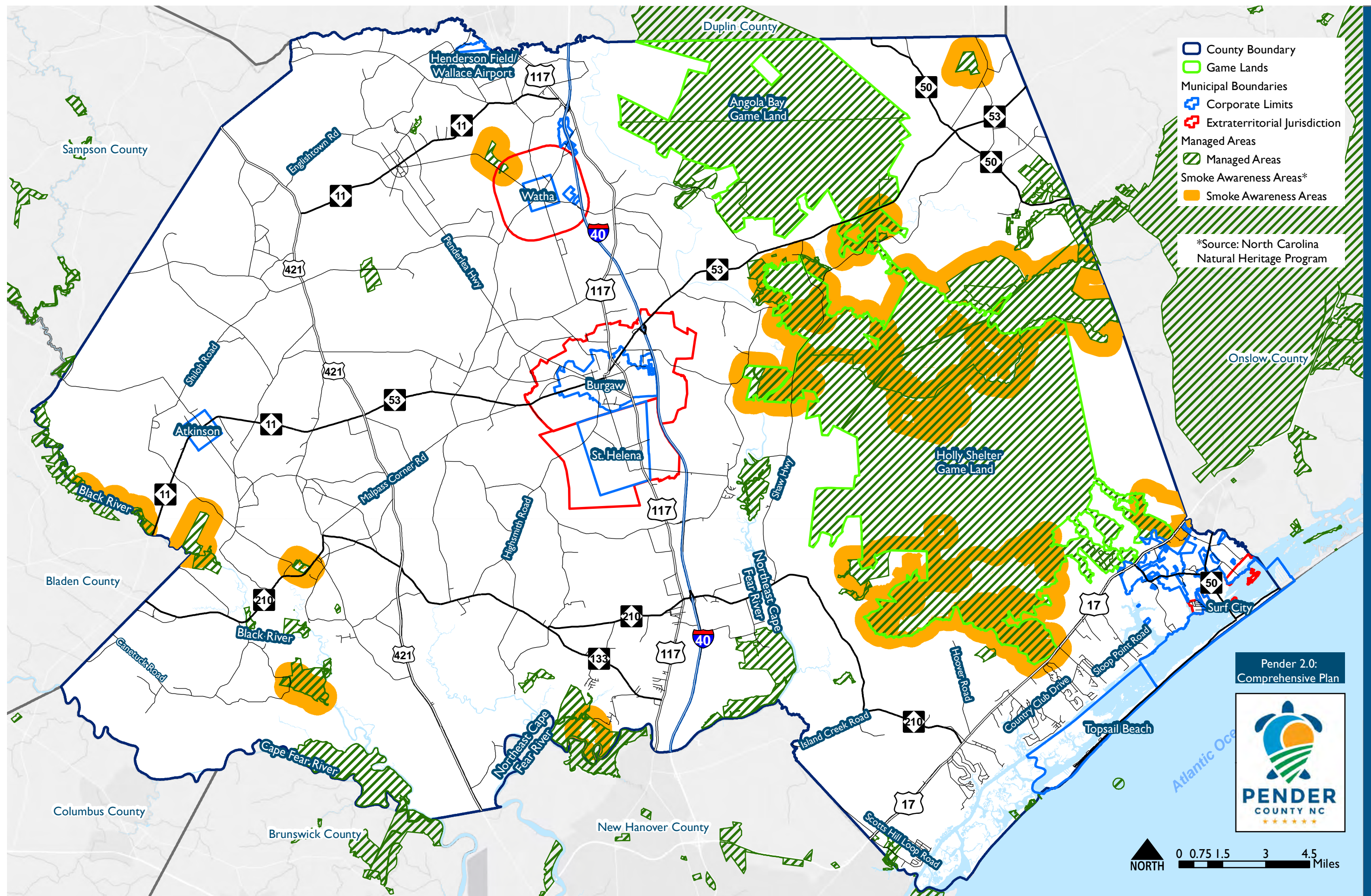
Map 3.6: Coastal and Non-Coastal Wetlands



Map 3.6A: Coastal and Non-Coastal Wetlands



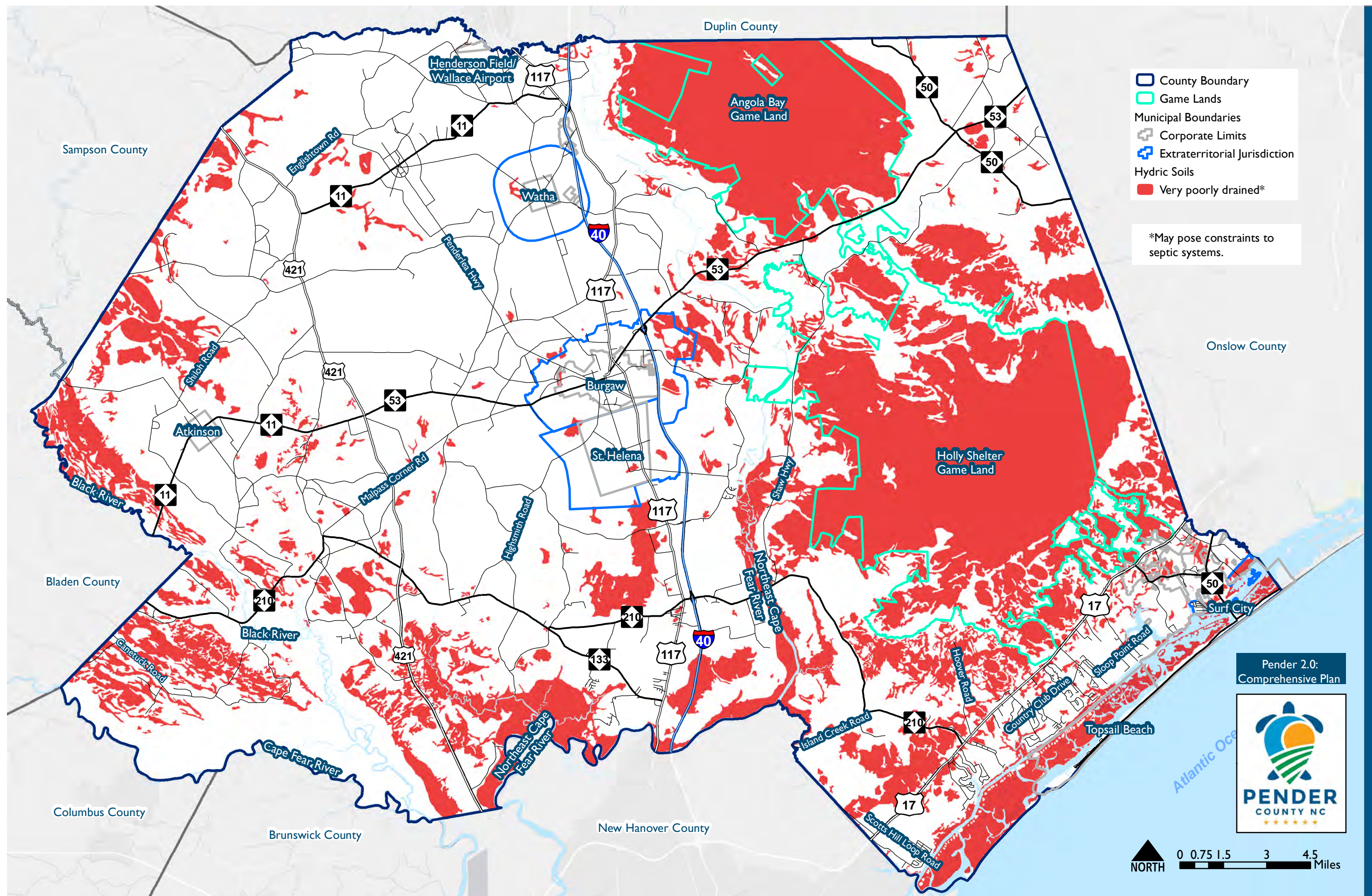
Map 3.7: Natural Heritage Natural Area Locations



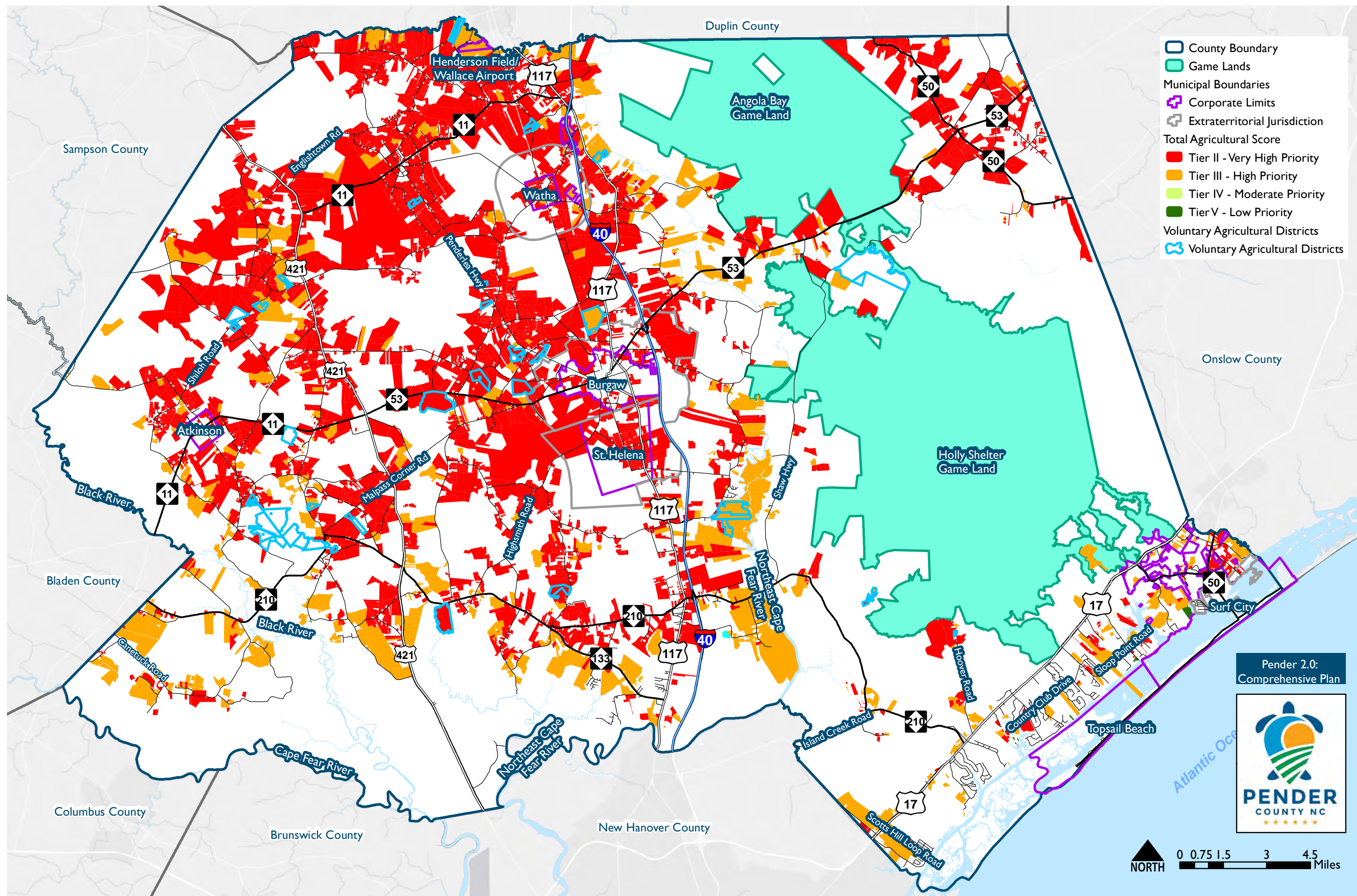
Map 3.8: Smoke Awareness Areas & Managed Areas



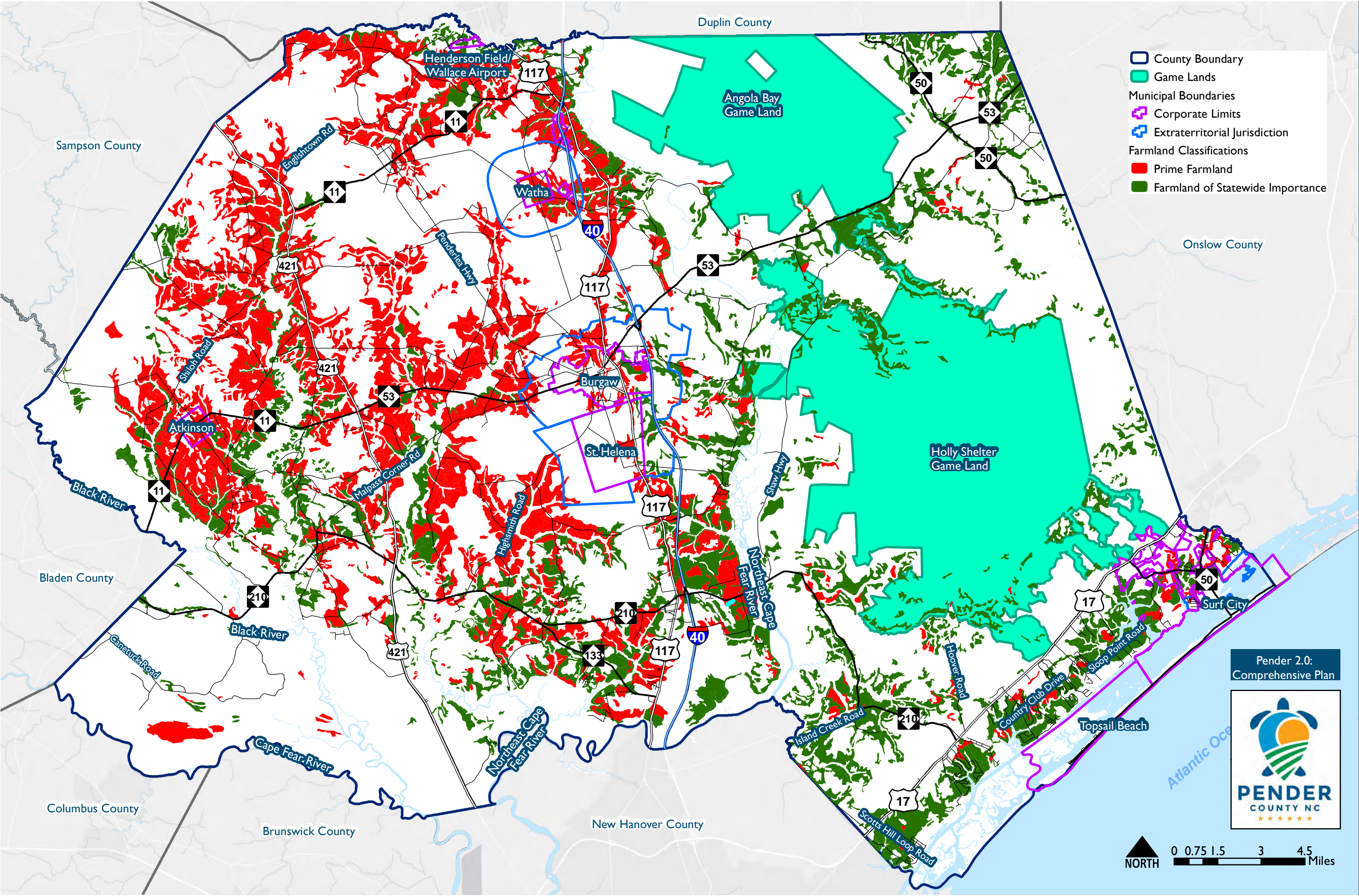
Map 3.9: Biodiversity and Wildlife Habitat Assessment



Map 3.10: Septic System Suitability



Map 3.1 I: Agricultural Lands Assessment & Voluntary Agricultural Districts



Map 3.12: Farmland Classifications

CHAPTER 4: COMMUNITY FACILITIES AND SERVICES

INTRODUCTION

Community facilities and services are vital to supporting economic development and quality of life, and are necessary to provide for the continued growth and development facing the County. The CAMA planning guidelines encourage the coastal communities to evaluate the location and adequacy of community facilities that protect important environmental factors and that attract land development in the coastal area. This chapter provides analysis and information pertaining to each item listed below.

- water supply systems;
- wastewater systems;
- transportation systems;
- recreational opportunities and public access facilities;
- schools; and
- broadband service (internet)

WATER SUPPLY SYSTEM STATUS AND TRENDS

WATER SUPPLY SYSTEM

Throughout Pender County, there are approximately 270 miles of water lines, ranging in size from 2 to 16 inches, serving customers and residents – 30 miles of which were installed in 2016. See **Map 4.1: Water Facilities** for the location of these lines. Of these water lines, approximately 20% are made of ductile iron and approximately 80% are made of Polyvinyl Chloride (PVC). In 2016, Pender County Utilities served 16,431 customers with centralized water, with the remaining residents utilizing personal groundwater wells or other providers for water service. The County has a finished water storage capacity of 3.5 million gallons, which is available to equalize permanent and seasonal water demands, reduce pressure fluctuations in the distribution system, and provide reserves for firefighting, power outages, and other emergencies.

Prior to 2000, the majority of County residents received their drinking water from private groundwater wells. In 2000, Pender County Utilities began constructing water infrastructure to provide centralized water service to residents. Initially, the water was sourced from the Town of Wallace through a series of unused groundwater wells that previously serviced a textile mill. In 2012, Pender County Utilities finished construction of a 2 million gallon per day (MGD) permitted capacity water treatment plant on US 421 to allow for treatment of raw water sourced from the Cape Fear River as part of a purchase agreement with the Lower Cape Fear Water and Sewer Authority (LCFWSA). The LCFWSA pumps surface water from the King's Bluff Reservoir, located up-river from Lock and Dam No. 1 on the Cape Fear River.

In June of 2017, it was made public that the toxin GenX was introduced into the Cape Fear River. Being that GenX is an unregulated substance, efforts are underway to better understand the impacts that GenX has on the County's drinking water and health of residents.

WATER DEMAND

The water supplied by the LCFWSA is treated at the Pender County Water Treatment Plant, which has a 2 MGD permitted capacity. According to data obtained from the Local Water Supply Plan (2016), December accounted for the lowest water demand at 0.969 MGD and July, the greatest, at 1.341 MGD. Water demand is the highest in the summer months, which is consistent with the influx of seasonal visitors and residents. In addition, irrigation use is typically higher in the warmer months. It should be noted that water utilized for irrigation purposes is also considered potable water. **Table 4.1** displays County water consumption figures for 2016 and **Figure 4.1** depicts the existing water treatment plant.

Table 4.1: Pender County Monthly Water Consumption (2016)

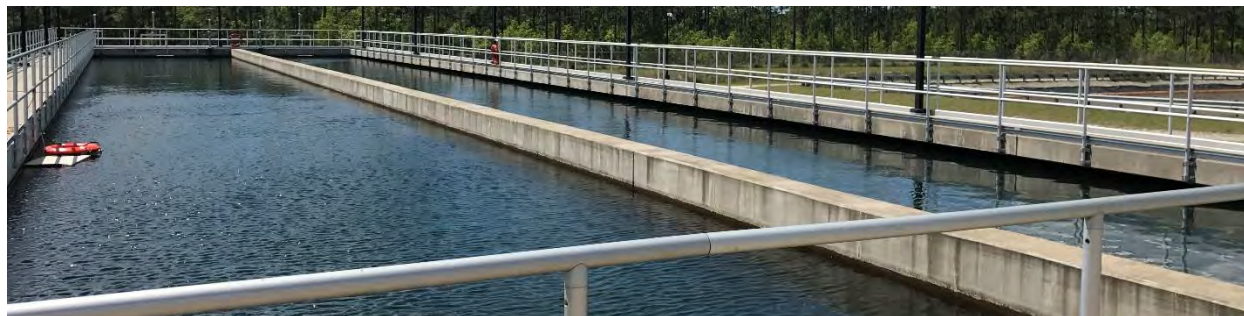
Source: NC Division of Water Resources, Pender County, Cape Fear Council of Governments

Month-Year	Average Daily Use (MGD)	Percent of Permitted Capacity
Jan-16	1.033	51.65%
Feb-16	1.035	51.75%
Mar-16	1.136	56.80%
Apr-16	1.141	57.05%
May-16	1.165	58.25%
Jun-16	1.307	65.35%
Jul-16	1.341	67.05%
Aug-16	1.284	64.20%
Sep-16	1.208	60.40%
Oct-16	1.193	59.65%
Nov-16	1.117	55.85%
Dec-16	0.969	48.45%
Average	1.161	58.05%

In 2016, the County did not experience any water capacity issues. In fact, for most of the year there is significant unrealized demand and available capacity. Currently, the County has an agreement with the Town of Surf City to allow for the purchase 100,000 gallons per day (0.100 MGD) for regular use and the Town of Wallace to purchase 1.200 MGD for emergency use.

Figure 4.1: Pender County Water Treatment Plant

Source: Cape Fear Council of Governments



According to projections outlined in the Local Water Supply Plan, the County should have sufficient capacity to serve residents and businesses through the year 2060. However, it should be noted that the population projection outlined in the Local Water Supply Plan is greater (132,272) than that projected by using the State demographers growth rate in Chapter 2 of the Land Use Plan (113,346). It can be estimated that with the addition of seasonal visitors, it is more prudent to plan for more substantial population growth and therefore the higher population estimate is valid. Despite the difference in population projections, and possible impact on water demand, the County has ample supply through its primary water source (Cape Fear River) to allow for an increase in the current purchase agreement if necessary. It should be noted that the Local Water Supply Plan calls for the purchase of an additional 8 MGD from the LCFWSA to meet water demand by 2060.

In light of the County's water supply planning and expansion, water consumption demands within the County river basins will increase above the interbasin transfer limit of 2 MGD. To allow for such a transfer, an Interbasin Transfer (IBT) Certificate is required per NCGS 243-215.22. In March of 2016, the County notified the Environmental Management Commission (EMC) of its intent to request an IBT Certificate to allow for more substantial water transfers. Pender County and its co-applicants requested an authorized transfer between designated IBT river basins, from the Cape Fear River to the South River, Northeast Cape Fear River, and New River basins of up to an average of 15 MGD. This transfer amount is based on updated water use projections to year 2060. **Table 4.2** provides the County's projected population and water demand through 2060.

Table 4.2: Pender County Projected Population and Water Demand (2016-2060)

Source: NC Division of Water Resources – Local Water Supply Plan (2016), NCOSBM, Cape Fear Council of Governments

	2016	2020	2030	2040	2050	2060
Year-Round Customers*	16,431	68,600	86,400	101,800	118,100	132,272
Total Available Supply (MGD)	6.0	6.0	6.0	14.0	14.0	14.0
Total Demand (MGD)	1.161	2.035	3.435	5.435	7.753	9.553
Demand as Percent of Supply	19%	34%	57%	39%	55%	68%

*The Land Use Plan uses the State demographer's growth rate that results in a lower 2060 population than provided in the Local Water Supply Plan (2016).

WASTEWATER SYSTEM STATUS AND TRENDS

PUBLIC WASTEWATER PROVIDER

Pender County currently owns and operates the Rocky Point Sewer Collection System, Maple Hill Septic Tank Effluent Pump (STEP) System, and the Pender Commerce Park Treatment Plant. The Rocky Point Sewer Collection System provides non-residential wastewater service from US 117 to the New Hanover County Line to NC-210, NC-210 from US 117 to Heidi Trask High School, and NC-133 from US 117 to Little Kelly Road. Wastewater is collected from this system and sent to the Cape Fear Public Utility Authority (CFPUA) for treatment. The County has an agreement with CFPUA to allow for the collection of 250,000 gallons per day (0.25 MGD). Only 8% of the 250,000 gallons per day is currently used. Accordingly, there is a need to increase flow and customers served by the Rocky Point collection system. In the future, the County should explore opportunities to provide service to residential development.

The Maple Hill STEP system has a capacity of 42,000 gallons per day (0.042 MGD) and the service area uses approximately 35.7% of its capacity. This system was installed with grant funds provided by the Clean Water Management Trust Fund (CWMTF) and the Rural Center for the purpose of eliminating failing septic systems and straight pipe discharges. The County does not foresee any capacity issues in this area over the next 10 to 20 years.

Figure 4.2: Construction of Greenhouse, Certified Lab, and Supporting Facilities for the Commerce Park WWTP

Source: Cape Fear Council of Governments



In June of 2015, Pender County Utilities began construction of a wastewater treatment plant (WWTP) at the Commerce Park that utilizes an ecological treatment approach that has a different look, feel, and smell when compared to the typical activated sludge treatment plants. This cutting-edge facility will treat more water to a higher quality, produce less sludge, and mitigate odors in a more compact footprint than a typical WWTP. This facility is expected to be operational by late 2017. The system's initial design capacity is 0.500 MGD, which will

accommodate the existing Commerce Park operations. Depending on the build-out of the commerce park, future plant expansions will be added in 3 to 4 MGD increments, up to 11 MGD. See **Map 4.2: Wastewater Service Facilities & Availability** for the location of these facilities.

OTHER WASTEWATER PROVIDERS

Other than the existing Pender County facilities listed previously, and the soon to be operational Pender Commerce Park WWTP, County residents rely on individual private wastewater providers for service or on-site septic systems. These wastewater providers and facilities are listed below:

- Aqua Resources
- Old North State Water Company
- Pluris
- Utilities Inc.

In December 2015, Pluris completed construction of the Pluris Membrane Bioreactor WWTP to serve the Blake Farm Development along US 17 and Sidbury Road. The WWTP has a current permitted capacity of 250,000 gallons per day, with a 3 MGD total capacity for the entire Blake Farm Development footprint and other customers along the US 17 corridor. However, currently, the system only has 400 customers with a flow of 48,000 gallons per day, which is less than 20% of the available capacity. See **Map 4.2: Wastewater Service Facilities & Availability** for the water service availability from private providers.

Over the past thirty years much discussion has surrounded the need, or lack thereof, to provide centralized wastewater facilities Countywide. Current demands are met through a combination of on-site septic systems, public centralized wastewater, and private systems. The following is an excerpt from the 1987 Pender County Land Use Plan that highlights this ongoing issue that the County will continue to face:

When citizens were asked about a County sewer system, of the 616 responses, 412 favored a County sewer system, 112 were not sure, and 92 were against a County sewer system in rapidly growing areas of the County. Again, because of relatively small population projections and current low density of development, individual septic tanks should be adequate during the planning period. However, the County may begin to look at alternative ways to serve the faster growing areas near the more ecologically sensitive parts of the County.

TRANSPORTATION SYSTEMS

Understanding the relationship between transportation systems and land use planning is vital to fostering a desirable quality of life for County residents. Planning for where we live, work, and play, should coincide with the design of transportation networks. In addition, planning that considers not just the automobile, but also the pedestrian and cyclist, will result in better quality development and more attractive places to live.

Pender County is a member of the Wilmington Metropolitan Planning Organization (MPO) and also a member of the Cape Fear Rural Planning Organization (RPO) which includes the counties of Pender, Brunswick, and Columbus. The Wilmington MPO boundary in Pender County includes the Scotts Hill and Hampstead areas, follows NC-210 to Montague Road, then follows Montague Road until the Black River, which travels to the New Hanover County line. The RPO boundary abuts the MPO boundary and spans across the rest of the County (See **Map 4.6** for more information).

MPOs are responsible for coordinating transportation efforts in urban areas and RPOs are responsible for non-urban areas. The MPO and the RPO work with the NC Department of Transportation (NCDOT) in making transportation related decisions for the region. With citizen input, the MPO and RPO are responsible for developing a transportation priority list to promote projects and programs with NCDOT and the Federal Highway Administration (FHWA). In North Carolina, the State assumes the major responsibility for financing and constructing highways and other primary roads that serve as major transportation corridors. Furthermore, in County jurisdictions, roadway construction is only financed through private development or funding through NCDOT.

The County's location along the coast of North Carolina ensures that a significant amount of traffic will result from residents and visitors traveling to area beaches. With anticipated population growth, transportation systems will continue to be an important component in improving the quality of life for current and future residents. This section summarizes the existing transportation conditions, adopted plans, and future recommendations for the County's vehicular roadway network, pedestrian and bicycle transportation network, and transit service.

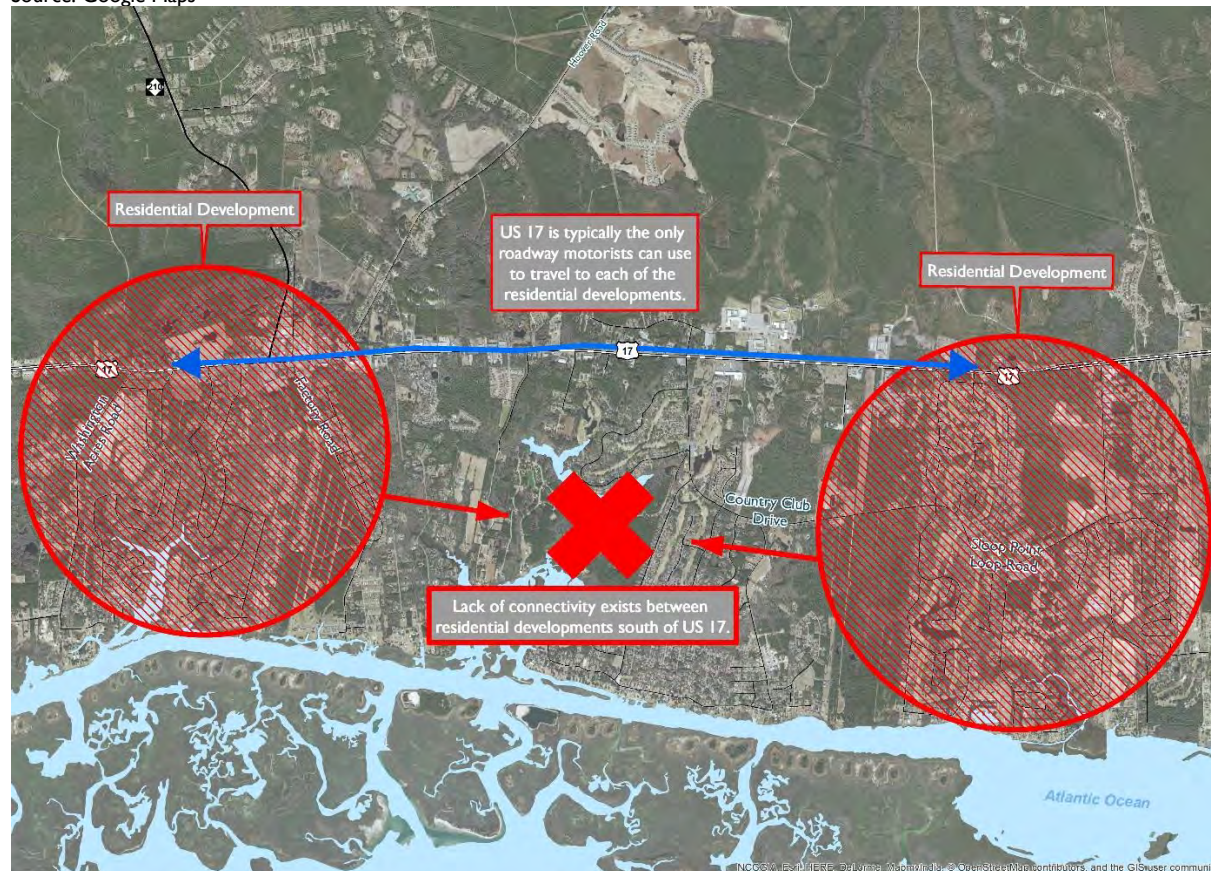
EXISTING CONDITIONS

The roadway network within Pender County – especially along the US 17 corridor – highlights how rapid economic development and population growth influence the geometry of the existing roadway facilities. Without proper coordinated planning efforts, increased land use development can hinder the network's ability to provide connectivity throughout the area. As the roadway network developed in the County, existing major roadways became the mode to move both regional traffic and local traffic, rather than developing a grid network to better distribute the traffic across the region. The current, non-grid development of the roadway

system relies on select primary routes and prevents the utilization of alternate routes when accidents and other types of congestion occur. Thus, the area becomes difficult and frustrating to navigate safely. Scotts Hill Loop Road, Country Club Road, and Sloop Point Loop Road are the only roadways that provide connectivity to multiple housing units within the coastal area. **Figure 4.3** shows limited connectivity of the existing transportation network in Hampstead.

Figure 4.3: Existing Transportation Network Along US 17 and Lack of Connectivity

Source: Google Maps



Even though rapid economic development and population growth played a key role in the development of the existing roadway network in the County, the region's unique geography has led to some of the limited connectivity in the transportation network – adjacent land uses are divided by waterways and environmentally fragile lands. Accordingly, existing and future roadway connections will face inevitable constraints.

Aside from the congestion and connectivity issues within the County's jurisdiction, many roadways built in the past were not constructed to minimum NCDOT roadway standards. As these roadways degrade from vehicular wear and tear, maintenance and improvements will be required. However, as they do not satisfy NCDOT roadway standards, NCDOT will not accept responsibility for the upkeep of these roads and the onus for such falls upon residents served by the roadway. To help eliminate future problems, County regulations should continue

to require roads to be built to NCDOT standards. An excerpt from the 1987 Pender County Land Use Plan follows:

Based on a November 1985 windshield survey of the County, it was apparent that many subdivisions have been developed over the years using dirt roads that will probably not meet today's Department of Transportation road standards. Although this may not be a major problem now for the County, as these developments continue to have homes developed, many of these roads may become maintenance problems from additional use. If they were not originally constructed to State DOT standards or have not been accepted for DOT maintenance, this could become a major long-range problem for the County. Adoption of subdivision regulations requiring roads to be built to DOT standards will eliminate this problem in the future.

In 2004, the County adopted subdivision regulations and as a part of those regulations minimum roadway design standards were included.

TRAFFIC COUNTS

The annual traffic count used for transportation planning purposes is called the Annual Average Daily Traffic Count (AADT). The AADT is the number of vehicles passing in both directions over a single point on a roadway over the course of a year divided by the 365 days in a year. For example, if 36,000 vehicles pass a single point on the road in a year, the AADT is 98.6 vehicles per day ($36,000 / 365 = 98.6$). It must be noted that these annual traffic counts are averages, and certain peak season days may produce traffic counts well in excess of the AADT count. Seasonal traffic counts are of particular concern in Pender County due to its proximity to the coastline. In 2008, the NCDOT Traffic Survey Group suspended standalone seasonal traffic counts. As a result, only AADT counts are available. Peak volumes are included in the AADT, but are not available separately for comparison purposes.

To evaluate transportation and roadway deficiencies, the AADT counts are typically compared to a road's design capacity. Traffic on key segments of various roadways is counted and calculated and compared to a standard road design capacity based on that roadway's individual type. For example, a two-lane roadway has a different design capacity than a roadway that has two-lanes with a center turn lane.

Table 4.3: Pender County Annual Average Daily Traffic (2006 and 2015) Counts

Source: NCDOT

Roadway Name/Location	2006 Annual Average Daily Traffic	2015 Average Annual Daily Traffic	Percent Change (2006-2015)
NC-50 – North of NC-53	1,300	1,600	23.08%
US 17 – South of NC-210	27,000	33,000	22.22%
Shaw Highway – North of NC-210	1,100	1,300	18.18%
US 17/NC-210	33,000	36,000	9.09%

Roadway Name/Location	2006 Annual Average Daily Traffic	2015 Average Annual Daily Traffic	Percent Change (2006-2015)
NC-210 – West of I-40	12,000	13,000	8.33%
US 117 – North of NC-210	12,000	13,000	8.33%
I-40 at NC-210	25,000	26,000	4.00%
NC-53 – East of I-40	5,700	5,800	1.75%
NC-133 – West of US 117	10,000	10,000	0.00%
Penderlea Highway – West of Burgaw	1,900	1,900	0.00%
US 117 – North of Jacksonville Highway	4,100	4,000	-2.44%
US 117 – South of NC-210	7,600	7,400	-2.63%
US 421 – North of NC-53	4,200	4,000	-4.76%
US 421 – South of NC-210	6,000	5,700	-5.00%
NC 11-53 – West of US 421	3,500	3,000	-14.29%
NC-210 – East of US 421	2,700	2,300	-14.82%
NC-210 – West of US 17	9,000	7,600	-15.56%
NC-210 – East of I-40	7,400	5,700	-22.97%
NC-11 – East of US 421	1,900	1,400	-26.32%

The highest AADT counts in Pender County are found on US 17/NC-210, US 17 (South of NC-210) and I-40 at NC-210. Average daily traffic counts on these roadways range from 26,000 to 36,000 vehicles per day. Several of the roads included in **Table 4.3** have experienced significant AADT increases and decreases since 2006. NC-50 experienced the largest AADT percentage increase (23.08%) followed by US 17 – South of NC-210 (22.22%). The largest AADT percentage decrease occurred along NC-11 – East of US 421 (-26.32%). See **Map 4.3: Traffic Counts** and **Map 4.5: Coastal Traffic Counts and Automobile Accidents** for more information.

LEVEL OF SERVICE

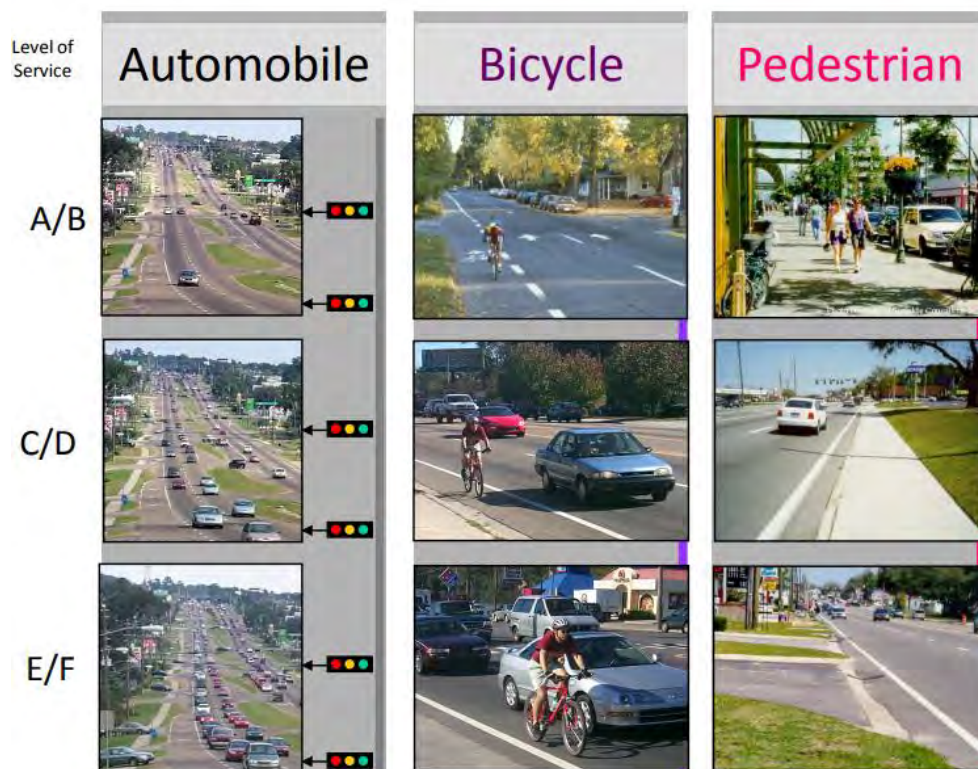
The relationship of travel demand compared to the roadway capacity determines the level of service (LOS) of a roadway. Six levels of service identify the range of possible conditions. Designations range from LOS A, which represents the best operating conditions, to LOS F, which represents the worst operating conditions. Design requirements for roadways vary according to the desired capacity and level of service. LOS D indicates “practical capacity” of a roadway, or the capacity at which the public begins to express dissatisfaction. The six levels of service are described below. While the description below only addresses the automobile, levels of service can also be applied to non-motorized transportation as illustrated in **Figure 4.4**.

- **LOS A:** Describes primarily free flow conditions. The motorist experiences a high level of physical and psychological comfort. The effects of minor incidents of breakdown are easily absorbed. Even at the maximum density, the average spacing between vehicles is about 528 feet, or 26 car lengths.
- **LOS B:** Represents reasonably free flow conditions. The ability to maneuver within the traffic stream is only slightly restricted. The lowest average spacing between vehicles is about 330 feet, or 18 car lengths.

- **LOS C:** Provides for stable operations, but flows approach the range in which small increases will cause substantial deterioration in service. Freedom to maneuver is noticeably restricted. Minor incidents may still be absorbed, but the local decline in service will be great. Queues may be expected to form behind any significant blockage. Minimum average spacing is in the range of 220 feet, or 11 car lengths.
- **LOS D:** Borders on unstable flow. Density begins to deteriorate somewhat more quickly with increasing flow. Small increases in flow can cause substantial deterioration in service. Freedom to maneuver is severely limited, and the driver experiences drastically reduced comfort levels. Minor incidents can be expected to create substantial queuing. At the limit, vehicles are spaced at about 165 feet, or 9 car lengths.
- **LOS E:** Describes operation at capacity. Operations at this level are extremely unstable, because there are virtually no usable gaps in the traffic stream. Any disruption to the traffic stream, such as a vehicle entering from a ramp, or changing lanes, requires the following vehicles to give way to admit the vehicle. This can establish a disruption wave that propagates through the upstream traffic flow. At capacity, the traffic stream has no ability to dissipate any disruption. Any incident can be expected to produce a serious breakdown with extensive queuing. Vehicles are spaced at approximately 6 car lengths, leaving little room to maneuver.
- **LOS F:** Describes forced or breakdown flow. Such conditions generally exist within queues forming behind breakdown points.

Figure 4.4: Example Level of Service Image (non-motorized transportation included for reference)

Source: FDOT

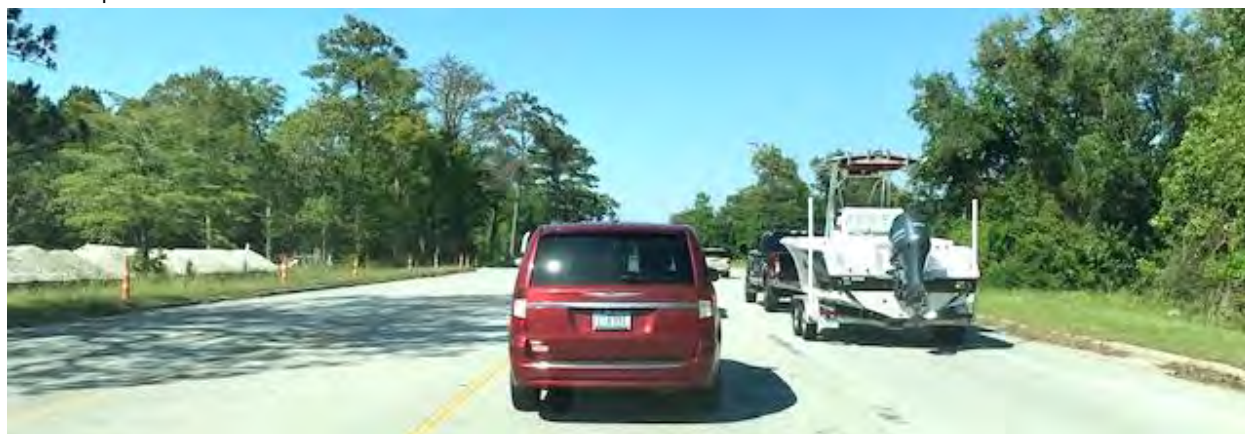


Based upon available data, currently no roads within Pender County exceed traffic volume capacity, but many in the southeastern portion of the County face congestion and lower levels of service. According to a 2016 capacity analysis report prepared for NCDOT, in coordination with the Hampstead Bypass project, along US 17 from Washington Acres Road to Sloop Point Road, most signalized intersections operate an acceptable level of service. However, several intersections experienced a LOS of F during the morning and evening commute times. Those particular intersections include: NC 210/Dan Owen Drive, Hoover Road, Country Club Drive/Jenkins Drive, and Vista Lane. According to the report, the most significant morning delay (51.4 seconds) occurs at the intersection of Country Club Drive/Jenkins Drive, with the most significant evening delay (30.5 seconds) at NC 210/Dan Owen Drive. The County desires roadways to function at a LOS D or better. Consideration of the LOS of a particular roadway will be important in future development approvals which may degrade a segment of roadway or intersection beyond a LOS D.

During summer months, US 17 congestion is exacerbated due to increased seasonal visitors traveling to area beaches. Furthermore, if accounting for seasonal increases in population and traffic, NC-210 east of US 17 may approach or exceed capacity during the summer months. In fact, seasonal traffic counts were collected by the Cape Fear RPO on NC-210 just west of the NC-50 intersection. The results indicated a substantial increase in traffic when compared to the AADT for the location. On Friday, May 26, 2017 (Memorial Day weekend), 17,592 vehicles were counted, which indicates an increase of roughly 7,000 vehicles (64%) from the 11,000 AADT count. Based upon these increased seasonal counts along NC-210, it can be estimated that a similar increase occurs along the US-17 corridor. It should be noted that NCDOT designs roadways for AADT, not peak traffic counts. **Figure 4.5** shows an image of a traffic functioning at a LOS of F along US 17, south of Hampstead on Memorial Day weekend, 2017.

Figure 4.5: Memorial Day Weekend Traffic (2017)

Source: Cape Fear Council of Governments



AUTOMOBILE ACCIDENT LOCATIONS

From a safety perspective, there are multiple NCDOT High Frequency Crash locations and Fatal Crash locations within the County. Traffic crashes are often used as indicators for locating congestion and roadway problems. There have been numerous crashes along US 17 in the Hampstead/Scotts Hill area, along the entirety of US 117, and along the central segment of US 421. The locations of fatal can be seen on **Map 4.4: Automobile Accidents** and **Map 4.5: Coastal Traffic Counts and Automobile Accidents**.

COMMUTER TRIPS

At present, Pender County's economy is predominantly comprised of farming, manufacturing enterprises, and tourism-based services. With limited job availability in the County, a significant percentage of residents commute outside the County to seek employment. For example, just 9% (973) of people both live and work within the WMPO portion of the County, while 91% (10,230) of people work elsewhere. Whereas throughout the County as a whole, 37% (8,809) of the total population works within the County, and 62% (14,443) work outside of the County. This indicates the strain on the transportation networks within the southeastern part of the County. A much higher percentage of commuters are located in this area than throughout the remainder of the County.

With such a large commuting population and further development forecast in the area, it will be critical to maintain major roadways at relatively uncongested levels. **Figure 4.6** displays a graphic of the number of commuters traveling to work inside and outside of Pender County. The orange line represents the MPO boundary.

Figure 4.6: Commuter Traffic for Employment – Wilmington MPO Boundary

Source: Pender County Collector Street Plan (2016)



NON-MOTORIZED TRANSPORTATION

Non-motorized transportation is increasingly desirable nationwide. There are many economic benefits of a pedestrian and bicycle friendly community (See **Figure 4.7**). In recent years, Americans have begun to desire walkability over increased household square footage and now place a large preference on the ability to walk or bike to destinations. According to a study conducted by the National Association of Realtors, the presence of sidewalks/ greenways and places to walk/bike are among the top community characteristics people consider important when deciding where to live. While non-motorized transportation is often considered a leisure travel mode, it can also be utilized to travel from point A to B for utilitarian purposes. In the past, and as indicated by survey results and public input, residents have expressed interest in expanding options for cycling and pedestrian travel in the County. While the more rural areas of the County may not be suitable for bicycle and pedestrian facilities, the areas of the County with a greater housing density and proximity to employment, recreation, or entertainment opportunities may be ideal for investment of these facilities.

Figure 4.7: Statewide Economic Impact of Non-motorized Transportation

Source: WalkBikeNC



Unincorporated Pender County has very limited pedestrian and bicycle facilities, partly because funding for such is not typically provided outside of incorporated municipalities, as is the case in Pender County. The few existing facilities are mainly confined to developer-built sidewalks. Several bicycle and pedestrian facilities are planned, but not yet constructed. These include the Mountains-to Sea Trail, the Coastal Pender Greenway, the Coastal Pender Rail Trail, the Central Pender Rail Trail, and the East Coast Greenway. The exact alignments for these trails have yet to be determined. Safety remains an issue for non-motorized transportation users as there have been several bicycle/pedestrian related accidents over the years. From 2010 to 2014, there were 60 bicycle and pedestrian

related crashes. Of these crashes, the majority were involving a vehicle and a pedestrian. Eight

pedestrian related crashes resulted in fatalities. The number of crashes and types of injuries incurred from 2010 to 2014 are presented in **Table 4.4**.

Table 4.4: Pender County Bicycle and Pedestrian Crashes (2010-2014)

Source: NCDOT

Pedestrian Injury	Crash Year					Total
	2010	2011	2012	2013	2014	
Fatal	0	0	2	1	5	8
Disabling Injury	1	0	0	1	2	4
Evident Injury	3	5	3	3	2	16
Possible Injury	2	2	2	4	2	12
No Injury	0	0	3	2	1	6
Unknown Injury	0	0	2	0	0	2
Total	6	7	12	11	12	48
Bicyclist Injury	Crash Year					Total
	2010	2011	2012	2013	2014	
Disabling Injury	1	0	1	0	1	3
Evident Injury	0	4	2	1	0	7
Possible Injury	1	0	0	0	1	2
Total	2	4	3	1	2	12

TRANSIT SERVICE

Pender Adult Services, Inc. provides transit for seniors (age 65 and up), any person with a disability, and general public (age 18 or older). Available pick up locations include the Heritage Place Senior Center (901 S. Walker Street, Burgaw), Topsail Senior Center (20959 US 17, Hampstead), Cape Fear Community College North Campus (4500 Blue Clay Road, Castle Hayne), and Wallace Airport-Henderson Field (250 Henderson Field Road, Wallace). This service provides a vital need for those without a personal vehicle or that may be unable to drive. The primary use of the service is for traveling to medical care. Pender County has been exploring opportunities for Park and Ride Facilities at key locations. There are currently no fixed route transit services available throughout the County. A partnership with Wave Transit would be necessary to provide these services.

LONG RANGE PLANNING INITIATIVES AND FUTURE IMPROVEMENTS

HAMPSTEAD BYPASS

The North Carolina Department of Transportation (NCDOT) proposes to construct the proposed Bypass around Hampstead, NC in Pender County. This facility would extend from I-140 (Wilmington Bypass) in New Hanover County to Sloop Point Loop Road in Pender County. The project, which is identified as R-3300, is intended to improve traffic flow by providing an alternative north-south route through the area. The Hampstead Bypass was first identified in the 1997 Thoroughfare Plan for Pender County as a proposed principal arterial road that runs parallel to US 17. The Bypass will provide higher speed controlled access within

the coastal region of the County. Once the principal arterial road is constructed, it is expected to improve the traffic carrying capacity, as well as improve the safety of the roadway users in the area. One of the two segments are currently funded, but the entirety of the project still remains unfunded. After the completion of the Hampstead Bypass, daily traffic volumes are expected to significantly decrease. A completion date is currently unknown. **Figure 4.8** is an image of the proposed Hampstead Bypass alignment. **Figure 4.9** presents the 2010, 2020, and 2040 projected traffic volumes surrounding the area of the bypass.

In addition, as part of a 2016 capacity analysis report for US 17 from Washington Acres Road to Sloop Point Road, it was indicated that if the Hampstead Bypass were not constructed, by 2040 significant delays would result and the majority of intersections would function at a LOS of F. For example by 2040, during the average morning commute, the intersection of Country Club Drive/Jenkins Drive would operate on a 115.7 second delay, with left turning vehicles exiting Country Club Drive facing a nearly eight minute delay. During the evening commute, traffic delays would be most significant at the intersection of Washington Acres Road, where projected congestion would slow traffic by an average of 188.5 seconds. While traffic heading northbound between Washington Acres Road and NC 210/Dan Owen Drive would be slowed by five to seven minutes on average. Furthermore, the travel speeds from Washington Acres Road to Sloop Point Road would vary between 11 and 23 miles per hour – significantly slower than current peak commute speeds of 35 to 38 miles per hour. Accordingly, completion of the Hampstead Bypass is among the top public input priorities identified as part of this land use planning process.

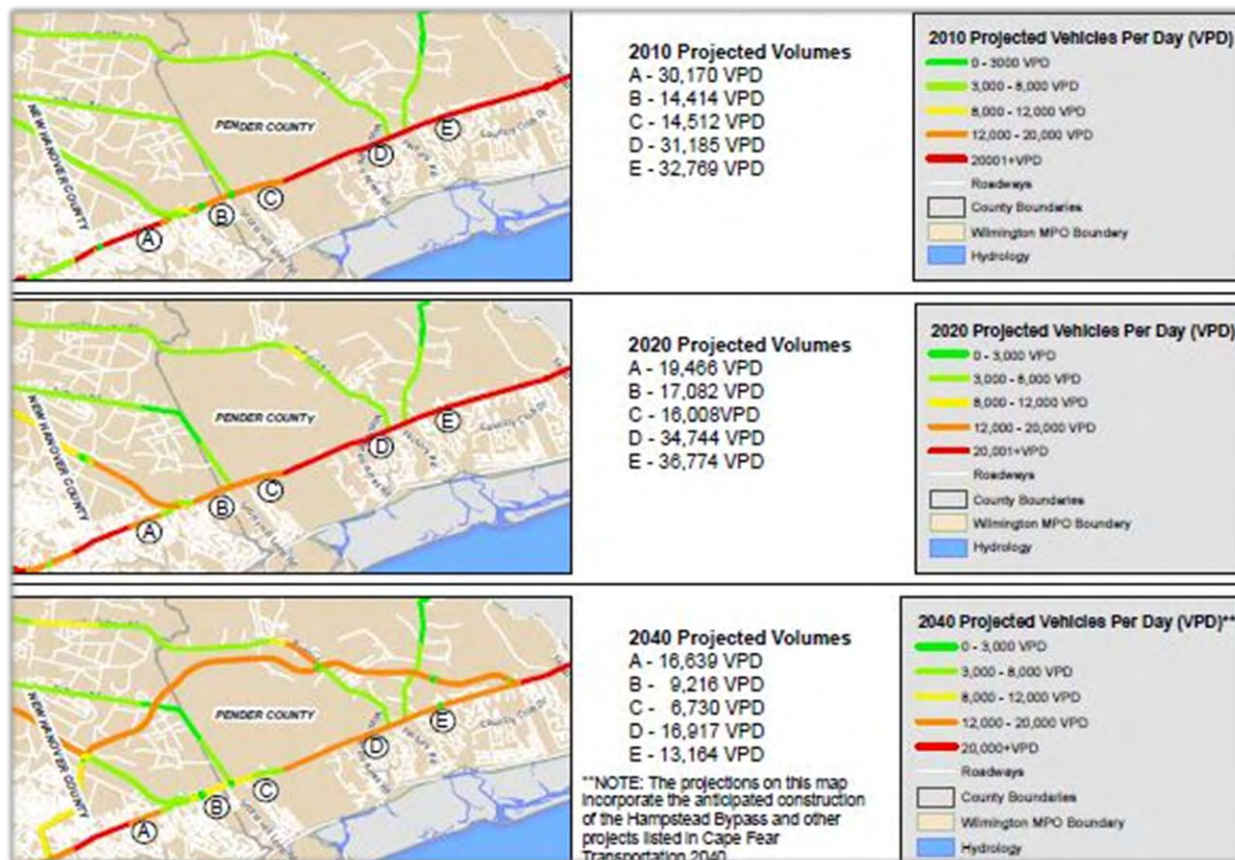
Figure 4.8: Proposed Hampstead Bypass Alignment

Source: Cape Fear Council of Governments and Pender County



Figure 4.9: Hampstead Bypass Traffic Volume Projections

Source: WMPO



US 17 MEDIAN INSTALLATION (SUPERSTREET) & DAN OWEN DRIVE IMPROVEMENTS

In addition to the Hampstead Bypass, safety and traffic flow improvements are slated to be constructed along US 17 from Washington Acres Road to north of Sloop Point Road (See **Figure 4.10**). This will entail the construction of a median along the majority of this segment of US 17 to a “superstreet” facility. A “superstreet” has intersections in which the minor cross-street traffic is prohibited from going straight through or left at a divided highway intersection. The minor cross street traffic must turn right but can then access a U-turn located in the median to proceed in the desired direction. Doing this reduces the number of traffic signal phases required to move traffic through the intersection thereby allowing for longer green times on the major roadway and thus reducing congestion caused by the signals.

Also included in the US 17 Superstreet project is the extension of Dan Owen Drive and subsequent connection to Factory Road. Together, both construction improvements will greatly increase safety and traffic flow along the Hampstead area of US 17. Construction of the projects are scheduled to begin in 2021.

Figure 4.10: US 17 Median Installation (Superstreet)

Source: NCDOT

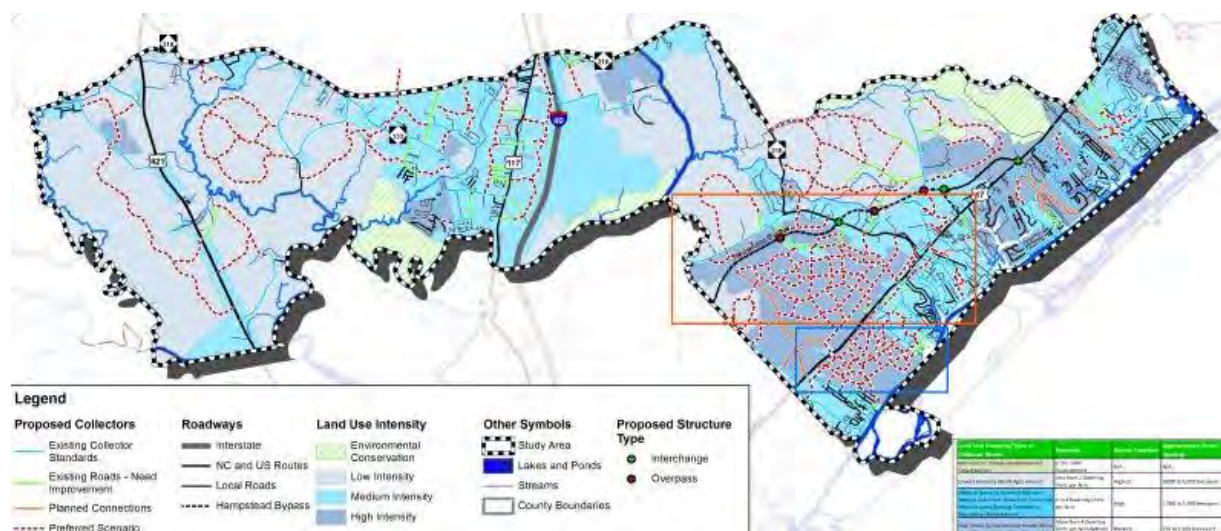


PENDER COUNTY COLLECTOR STREET PLAN (2016)

The Wilmington MPO, in partnership with the Pender County Planning and Community Development Department, commissioned the Pender County Collector Street Plan (2016) to determine future roadway connectivity demands in the southern portion of the County. The Collector Street Plan includes three US routes and one NC route that are considered arterial roads: US 17, US 117, US 421, and NC-210, respectively. **Figure 4.11** presents the 2016 Collector Street Plan Area and displays the location of future collector streets.

Figure 4.11: Pender County Recommended Collector Streets

Source: Pender County Collector Street Plan (2016)



Collector streets are streets that connect neighborhoods and local roads to arterial roads. Pender County currently has several collector streets, including Scotts Hill Loop Road, Country Club Drive, Sloop Point Loop Road, NC-133, and Hoover Road. Collector streets are commonly two lanes, no longer than two or three miles long, and have speed limits between 25 and 45 mph. They function to carry lower volumes of traffic while keeping the traffic congestion on arterial roads at a minimum. Collector streets are suitable routes for shorter, local trips, while long-distance trips remain on the arterial streets. Collector streets are also beneficial to the residents and visitors through providing enhanced mobility opportunities for all users of the roadway, including emergency service providers, pedestrians, bicyclists, school buses, and municipal services. It is important to note that Pender County does not own or maintain the roadways, therefore, the roads are either publicly owned and maintained by NCDOT, or privately owned and maintained.

The Collector Street Plan also provides requirements for cross-section designs that accommodate automobiles, cyclists, and pedestrians in the more densely populated areas of the County. The Collector Street Plan separates the cross-section designs into four groups with three different design options, all of which were designed based on the most current version of NCDOT's Complete Streets Policies. The different design options within each group suggest improvements to increase bicycle and pedestrian safety and ensure that options are provided for non-motorized transportation. The Collector Street Plan serves as an important step toward ensuring that the newly constructed roads maintain appropriate connectivity across the southern portion of Pender County. More information about the plan can be found on the Pender County website.

COMPREHENSIVE TRANSPORTATION PLANS

PENDER COUNTY, TOPSAIL AREA, AND WILMINGTON MPO

Comprehensive Transportation Plans (CTP) are based on the projected growth for the planning area for which it serves. The goal of the plan is to provide a detailed analysis of the County's transportation system, including roadway, rail, bicycle, pedestrian, and transit facilities. There is a chance that actual growth patterns differ from the anticipated growth patterns included in the CTP. Therefore, it may be necessary to accelerate or delay the implementation of some recommendations presented in a CTP.

The implementation of the CTP is largely dependent upon the policy boards and citizens of the County. As statewide transportation demands exceed available funding, it is imperative that the local planning areas seek funding for projects of highest priority. Once projects are prioritized at the local level, they are submitted to the MPO or RPO for regional prioritization. Local governments should consistently use the CTP as a guide for development. To ensure proper implementation of the recommended projects, local governments and NCDOT must coordinate on relevant land development reviews. Significant projects included in the Pender County 2016 CTP, the 2011 Topsail Area CTP, and the MPO CTP are presented in **Table 4.5**.

The locations of these recommended projects can be seen on **Map 4.6: CTP Roadway Recommendations (2016)**.

Table 4.5: CTP Roadway Recommendations (2016)

Source: NCDOT Transportation Planning Branch, WMPO

Roadway	Description	Improvement
US 17 (Hampstead Bypass)	Construct a four-lane freeway from I-140 to north of Topsail Middle/High School.	Reduce congestion and improve mobility in the area.
US 17	Upgrade existing facility to superstreet.	Improve capacity and mobility of the existing facility with the Strategic Highway Corridor vision. Improve the Hurricane Evacuation Route along the corridor.
US 117 (North of Rocky Point)	Convert existing 2-3 lane facility from NC 210 to US 117 Business/Walker Street to a four-lane divided boulevard.	Reduce congestion and improve mobility in the area.
US 117 Bypass	Convert the existing 3-lane facility to a four-lane divided major thoroughfare. Existing US 117 Bypass is projected to be over capacity by 2040 from US 117 Business/Walker Street to NC-53.	Reduce congestion and improve mobility in the area. Construction of sidewalks on both sides of the facility.
US 421 from North of NC-210 to Sampson County Line	Widen to a four-lane divided expressway to help during hurricane evacuation.	US 421 is identified as a hurricane evacuation route and is a vital artery in moving people and goods through the state.
NC-210 (East of US 17)	Widen existing facility to a four-lane divided boulevard from US 17 to Little Kinston Road. Widen existing facility to a four-lane divided boulevard from west bridge end, west of North Topsail Beach to the Topsail Area CTP Planning Boundary.	Relieve congestion on the existing facility. Install curb and gutter and sidewalks for the entire length of the segment.

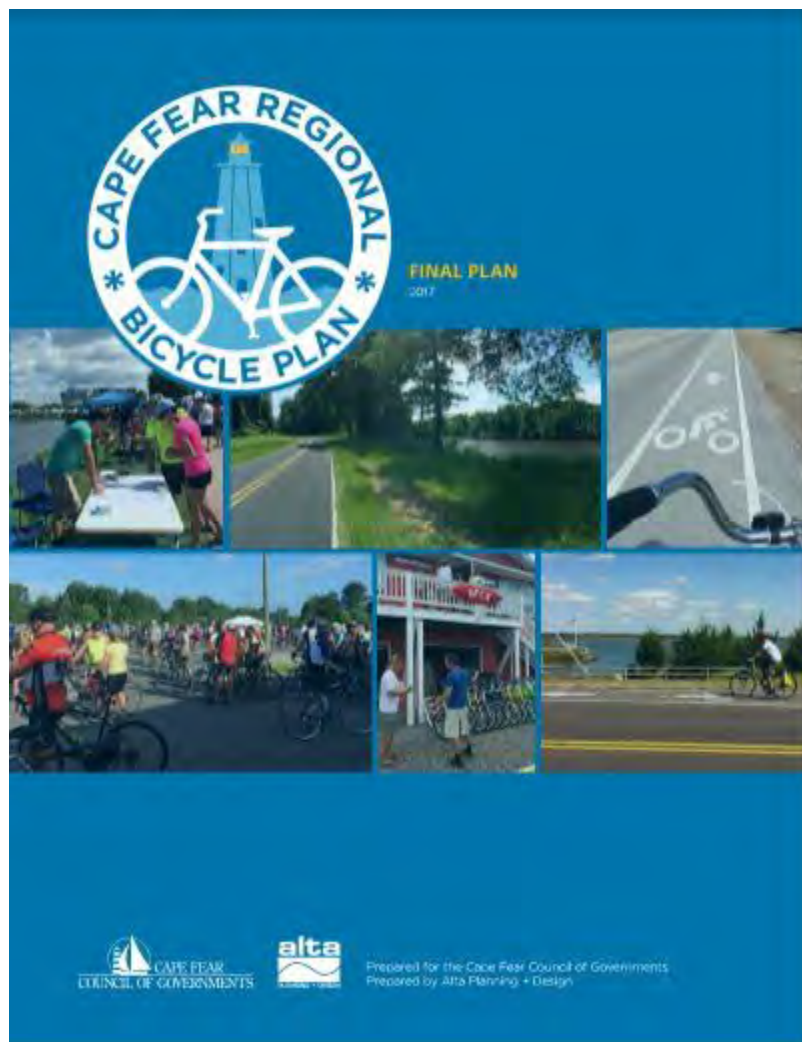
CAPE FEAR REGIONAL BICYCLE PLAN (2017)

The Cape Fear Regional Bicycle Plan aims to identify key bicycling routes and provide recommendations for new facilities, programs, and policies to increase the options for recreation-based tourism, affordable personal mobility, and carbon-free transportation. According to the plan, there are several low-volume rural roadways throughout Pender County that have potential to provide safe regional bicycle connections without significant investments.

The Cape Fear Regional Bicycle Plan highlights several types of new bicycle infrastructure opportunities that are suitable for the area. Since the majority of the area is rural and typically contain long distances between many destinations, the focus of the plan is to route bicyclists to roadways with low traffic volumes. Ideally, these routes should be located along roadways with paved shoulders so that limited changes to the existing roadways are required. However, when this is not possible, bike lanes, shared use paths, shared-lane markings, separate bike lanes, and signed bike routes are suitable to promote public health and safety. **Figure 4.12** shows the existing and proposed bicycle routes included in the Cape Fear Regional Bicycle Plan.

Figure 4.12: Cape Fear Regional Bicycle Plan (2017)

Source: Cape Fear Regional Bicycle Plan

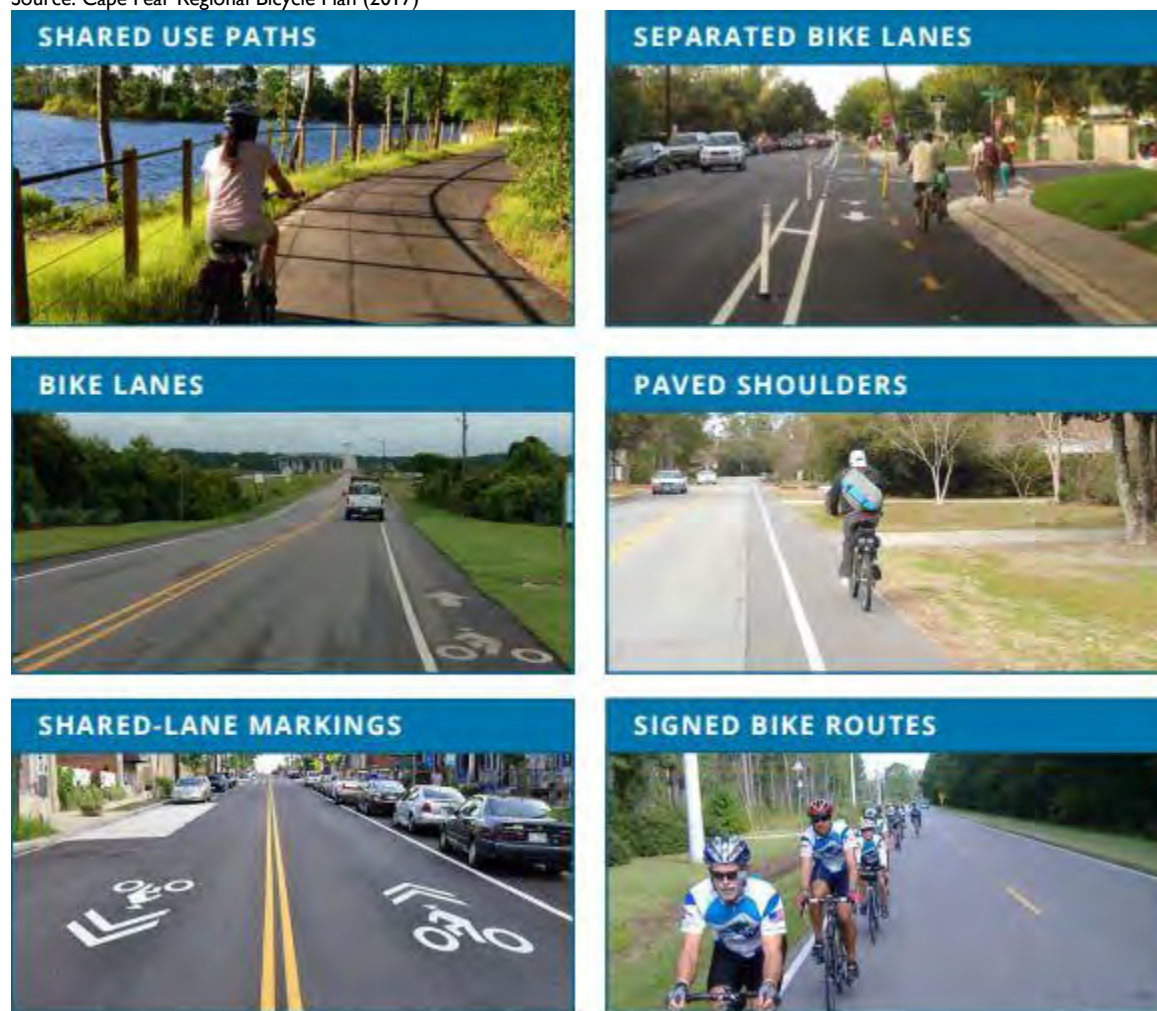


One of the short-term priority projects included in the plan is the Burgaw Osgood Canal Greenway Link. This project consists of widening the existing pedestrian trail between Hayes Street and South Walk Street, as well as the section along the east side of South Walker Street. Shared-lane markings will be installed following the completion to the widening project. This project will complete the bicycle connectivity between the Osgood Canal Greenway at Hayes Street and the Osgood Canal Greenway at Fremont Street and improve access to Burgaw Middle School, Cape Fear Community College, Rotary Park, Johnson Park, Wilmington Street Park A & B, Ashe Street Park, and the library. **Figure 4.13** shows a variety of bicycle facilities and

includes an image of the shared-lane markings that will be installed during the widening project. The Cape Fear Regional Bicycle Plan can be found on the Cape Fear Council of Government's website.

Figure 4.13: Types of Recommended Bicycle Facilities

Source: Cape Fear Regional Bicycle Plan (2017)

**NCDOT STATE TRANSPORTATION IMPROVEMENT PROGRAM (2018-2027)**

In 2013, the Strategic Transportation Investments (STI) law created a process to determine how NCDOT, in partnership with local governments, will fund and prioritize transportation projects in the state of North Carolina. The STI law allows NCDOT to use its funding more efficiently and effectively to enhance the state's infrastructure, while supporting economic growth, job creation, and a higher quality of life. The STI law also establishes Strategic Mobility Formula, which is a new way of allocating available revenues based on data-driven scoring and local input. This formula was used for the first time to develop NCDOT's current construction schedule. Under STI, all modes compete for the same funding. This means that roadway projects compete with ferry projects which will compete with public transportation, bicycle/pedestrian, aviation, and rail projects.

The Strategic Prioritization Office of Transportation (SPOT) develops quantitative scores for all projects. Projects are evaluated based on their merit through an analysis of the existing and future conditions, the benefits the project is expected to provide, the project's multi-modal characteristics, and how the project fits in with local priorities. Only the highest scoring projects are selected to be included in the NCDOT Statewide Transportation Improvement Program (STIP). The STIP, which identifies the transportation projects that will receive funding during a 10-year period, is a state and federal requirement. Federal law requires it to be updated at least every four years. NCDOT, however, updates it every two years. Pender County has nine projects included in the current Draft STIP (2018-2027). Those projects are described in **Table 4.6** and can be seen on **Map 4.7: Draft STIP (2018-2027)**.

Table 4.6: Pender County State Transportation Improvement Program Projects (2018-2027)

Source: NCDOT Draft STIP (2018-2027)

Roadway	Description
US 17 (Hampstead Bypass)	Construct freeway on new location from south of Hampstead to north of Hampstead.
US 17	Convert road from Washington Acres Road (SR-1582) to Sloop Point Loop Road (SR-1563) to superstreet.
I-40	Mill and resurface from Johnston-Sampson County line to US 117 in Pender County.
I-40	Pavement rehabilitation from south of US 117 to north of Camp Kirkwood Road (SR-1318) in Pender County and South of NC-210 in Pender County to the end of I-40 in New Hanover County.
I-40	Pavement rehabilitation from west of Camp Kirkwood Road (SR-1318) to east of NC-210.
NC-53	Widen US 117 Bypass to Stag Park Road to three lanes.
US 117 Business (Walker Street/Wilmington Street)	Construct roundabout.
NC-50/NC-210	Replace Bridge 700016 over the Intracoastal Waterway (Surf City Bridge).
Henderson Field (Wallace Airport)	Expand apron and extend runway to 5,500 feet.

RECREATIONAL OPPORTUNITIES & PUBLIC ACCESS FACILITIES

According to the Coastal Area Management Act (CAMA), public facilities are considered a key component of a community's infrastructure. This section of the Land Use Plan inventories public access facilities and available recreation facilities that residents and visitors can utilize.

Parks, recreation, and public access facilities are important to a community's economic and social well-being and also promote a healthy lifestyle. Parks provide an opportunity for stress relief, exercise, social interaction, and offer a gathering place for families and friends.

Communities with adequate parks and recreation opportunities are generally highly sought after by residents and attract future residents as a more desirable location for development of homes, neighborhoods, businesses, and industry. Aside from the parks that the County provides, there are several public access sites that allow for residents and visitors to embrace the natural scenery and water-based recreational opportunities of the Northeast Cape Fear River, Intracoastal Waterway, and the Atlantic Ocean.

According to analyses conducted by the NC Division of Parks and Recreation, Pender County is significantly deficient in public recreational acreage and facilities. The 2015-2020 North Carolina Statewide Comprehensive Outdoor Recreation Plan (SCORP) indicates that Pender County ranks 78th out of the 100 North Carolina counties in residents per park acre, including 99th in playgrounds, 100th in athletic fields, 100th in athletic courts, 94th in picnic shelters, and 89th in residents per trail mile. These deficiencies are further reflected in the Regional Growth Management Plan prepared by North Carolina's Eastern Region Military Growth Task Force, which indicates that an additional 8-10 acres of neighborhood parks, 13 acres of community parks, and 25-127 acres of district parks are needed just to address the park acreage needed to support the projected military-induced growth in Pender County. However, it should be noted that recreational opportunities such as access to the Holly Shelter game lands and the beach/sound are not included in the state or military analysis.

PARKS AND RECREATION

Pender County owns and operates three public parks – Pender Memorial Park, Hampstead Kiwanis Park, and Millers Pond Park. Pender Memorial Park was first developed for fairground use and then as the site of the athletic fields for the former Burgaw High School. In 2006, the County was awarded a \$280,000 PARTF grant that was utilized to develop two additional youth baseball/softball fields, three batting cages, three multi-purpose soccer/football fields, a new concession stand and bathroom, a playground, parking lot, and a picnic shelter. The County is currently exploring options for the expansion of the existing facilities at the park. **Figure 4.14** displays an image of playground equipment at Pender Memorial Park.

Figure 4.14: Pender Memorial Park

Source: Cape Fear Council of Governments



The property that Hampstead Kiwanis Park was built on was originally donated to the Hampstead Kiwanis Club by the Tommie Little and Bill Clark Families for the creation of a park to serve the greater Hampstead community. Since then, Hampstead Kiwanis Club and Pender County have worked together to develop and maintain the park. In 2002, the County received a \$250,000 PARTF grant, and used the \$150,000 from private donations to construct a baseball field, a multi-purpose field, a concession stand and bathroom, a playground, and a picnic shelter. In 2004, the County was awarded an addition \$395,000 as part of another PARTF grant to construct two additional youth baseball/softball fields, one multi-purpose field, a paved walking trail, and an additional parking lot. **Figure 4.15** shows an image of the existing facilities at Kiwanis Park.

Figure 4.15: Hampstead Kiwanis Park

Source: Cape Fear Council of Governments



Millers Pond Park is situated on a 31.38 acre site that was used by the NCDOT as a source of fill dirt for a transportation improvement project. The mining of the fill resulted in the seven acre freshwater pond. NCDOT eventually sold the property to Pender County. The park has a parking area, 0.53 mile long nature trail, a pond overlook, bench seating, picnic shelters, a canoe

and small boat launch area, restrooms, a nature and education center, and informational kiosks. **Figure 4.16** displays an image of the seven acre freshwater pond.

Figure 4.16: Millers Pond Park

Source: Cape Fear Council of Governments



Beginning in 2013, Pender County and the N.C. Wildlife Resources Commission partnered together to construct the Holly Shelter Shooting Range. Construction was completed in late October of 2016 and the facility was open for operation in early November of 2016. The shooting range includes a 200-yard rifle range with 12 shooting stations, a 50-yard pistol range with 12 shooting stations, a target archery range, and a 3-D archery course with 20 stations. To help cover the costs associated with operating the range, Pender County collects fees for a daily pass. The County also provides staffing for the Holly Shelter Shooting Range. **Figure 4.17** shows an image of the 50-yard pistol range. The location of three parks, as well as the other private, municipal, state, and federally owned recreation facilities can be seen on **Map 4.8: Parks and Recreational Opportunities** and **Map 4.9: Coastal Parks and Recreational Facilities**.

Figure 4.17: Holly Shelter Shooting Range

Source: Cape Fear Council of Governments



The County currently has five N.C. Wildlife Resources Commission (NCWRC) public boat access sites, four of which are in unincorporated areas of the County. The fifth is located at Soundside Park in Surf City. These sites provide boat launches and parking facilities. Two of the sites are located off of Shaw Highway, along the Northeast Cape Fear River. The third is located at the end of Whitestocking Road, which is also along the Northeast Cape Fear River. The fourth public access is located in Hampstead, at the end of Lewis Road. This facility allows

the public to launch their boat into the Intracoastal Waterway. The locations of these public water access sites can be seen on **Map 4.10: Community Facilities** and **Map 4.11: Coastal Community Facilities**.

Other than these five NCWRC public boat access sites, there are 51 CAMA public access sites along Topsail Island (22 miles long), which provide access to the sound and beach. This equates to roughly one public access site every 0.43 miles. These locations are not shown on **Map 4.10**, but can be found on the NCWRC website. It is important to note that there are no CAMA public access sites in unincorporated Pender County.

SCHOOLS

Parents typically consider the quality of schools in the area when deciding where to buy a home. School systems can better plan for the need and location of new schools if they are kept up to date on population growth, especially with regards to proposed residential developments. If the school systems are involved in the new development review process, then they may be able to identify needed sites for new schools within these areas. Sometimes school systems negotiate with property owners to purchase land which exceeds their needs. If other local governments are advised of the potential availability of land on or near a school site, they may be able to satisfy some of their need for community facilities, such as parks and libraries. Currently, the County does not require the reservation of school sites as part of the development approval process.

Figure 4.18: South Topsail Elementary School

Source: Pender County



During the early 1980s, the Pender County School system actually lost enrollment. However, just 5 years later, rapid growth and an increasing birth rate pushed student enrollment up by over 700 to nearly 5,000 students. Beginning in the 1990s, Pender County experienced rapid population growth that has placed a severe strain on the County's public school system capacity, especially as the residential composition

shifted from a significant number of retirees to an increased number of families with school-age children. In 1996, voters approved a \$25 million school bond and in 2005 approved a \$52 million bond to address crowded conditions of the existing schools. Capital budgets were set to build new schools and complete much needed renovations to others:

- Two new elementary schools, North Topsail and South Topsail, were built in the Hampstead community as the first two projects under the bond referendum and a state grant.
- Two new elementary schools were built in Rocky Point. They were intended to alleviate crowded conditions at Malpass Corner Elementary and Rocky Point Elementary.
- A new middle school will house students for West Pender Middle and Burgaw Middle Schools.

- A new Topsail High School and Trask High School were built to relieve crowding of the existing high schools in the County.

According to a report prepared by the Operations Research and Education Laboratory (ORED) of NC State, over the past five years, the average annual growth rate in the Pender County school system has been 2.58% or about 220 students per year. This increase of 3.83% is the largest annual increase in the district's student membership since 2006. The gain of 341 K-12 students from 2015-16 to 2016-17 was more than 50% greater than the average growth rate over the past 5 years. As a result, the County school system continues to deal with capacity issues.

Again, in 2014, Pender County Schools received a \$75 million school bond to address the population growth and increase academic opportunities. The school system is currently in the process of completing renovations/additions to Cape Fear Elementary, Cape Fear Middle, Burgaw Middle, West Pender Middle, and Pender High. The district is also constructing a new elementary and middle school with a 1,568 student capacity in the Surf City area, as well as a replacement school at Penderlea.

As of 2017, the County school system has 9,499 students enrolled and **Table 4.7** indicates that all of the schools in the eastern portion of the County are over capacity by at least 95%, from 2016-2027. As specified in the ORED report prepared for the school system, every school located in the eastern area is projected to be over capacity at the start of the 2017-2018 school year. It should be noted that the projections included in the **Table 4.7** do not include the added capacity for the new schools. The Surf City Elementary and Middle School is projected to add capacity for 1,568 students – 750 for the elementary and 818 for the middle schools. Accordingly, this will alleviate some overcapacity issues experienced in North Topsail Elementary, Topsail Elementary, and Topsail Middle School.

Based on projections in the report, no schools located in the northern portion of the County are anticipated to exceed capacity over the next ten years. Several schools in the southern area of the County are projected to meet or exceed capacity beginning in the 2020-2021 school year. Moving forward, partnership with the School System and the County Planning and Community Development will be paramount to ensuring the proper allocation of resources and capital.

The locations of the new schools can be seen on **Map 4.10 Community Facilities** and **Map 4.11 Coastal Community Facilities**.

Table 4.7: Pender County Schools Capacity Projections (2016 – 2027)

Source: Pender County Schools (Red cells are greater than 105% capacity; orange 100-105%; yellow 95-100%; green less than 95%)

Area	Capacity	Pre-K	Month-I	Forecasted Month-I (Average Daily Membership)									
	'16-'17	'16-'17	'16-'17	'17-'18	'18-'19	'19-'20	'20-'21	'21-'22	'22-'23	'23-'24	'24-'25	'25-'26	'26-'27
Northern Area													
Burgaw Elementary	683	36	577	591	588	602	594	592	586	595	609	615	627
Malpass Corner Elementary	667	36	471	481	474	470	477	491	495	502	514	519	529
Penderlea Elementary	532		499	474	459	440	419	400	386	379	372	372	379
Burgaw Middle	322		254	252	277	289	315	321	332	323	316	327	331
Pender High	795	36	635	635	609	599	590	610	638	653	658	647	638
Totals	2,999	108	2,436	2,443	2,407	2,400	2,395	2,414	2,437	2,453	2,469	2,480	2,504
Southern Area													
Cape Fear Elementary	516		479	516	529	536	560	572	603	580	630	668	710
Rocky Point Elementary	484	80	187	483	472	483	506	549	603	644	685	719	756
Cape Fear Middle	483		484	492	524	530	484	482	446	529	535	601	576
West Pender Middle	307		167	160	183	194	198	185	180	184	190	192	195
Heide Trask High	815		764	808	807	810	821	834	875	876	881	858	905
Totals	2,605	80	2,381	2,459	2,514	2,552	2,570	2,622	2,707	2,814	2,921	3,038	3,142
Eastern Area													
North Topsail Elementary	511	39	780	841	858	873	907	927	915	922	938	939	947
South Topsail Elementary	512		676	721	759	787	799	841	829	847	871	880	897
Topsail Elementary	506		581	609	614	633	662	701	705	715	731	739	754
Topsail Middle	745		1,038	1,051	1,095	1,151	1,206	1,261	1,349	1,394	1,460	1,461	1,485
Topsail High	1,400		1,395	1,472	1,492	1,513	1,486	1,492	1,588	1,663	1,729	1,870	1,921
Totals	3,674	39	4,470	4,694	4,818	4,957	5,060	5,223	5,386	5,541	5,729	5,889	6,004
Special/Alternative													
Pender Early College			212	225	225	225	225	225	225	225	225	225	225
System Total	9,278	227	9,499	9,821	9,963	10,134	10,249	10,484	10,754	11,033	11,344	11,632	11,875

SCHOOL TRAFFIC

Recently, the public has expressed concerns regarding traffic management and site planning at the County's schools. As high school students reach driving age, there will be a greater number of students driving, while the number of elementary students being driven to school by parents is also increasing. The majority of the school facilities were not designed to address the current vehicular traffic volumes and turning movements found within the areas surrounding the County's schools. Traffic delay and motor vehicle safety are a constant concern of the residents of the County.

BROADBAND INTERNET

Access to broadband internet access is vital in Pender County because it allows for increased opportunities for education, public safety, healthcare, government services, and economic development. The benefits of increased broadband internet coverage include increased business opportunities and entrepreneurialism. Expanding coverage allows for increased opportunity and efficiency for businesses and citizens. Residents needing medical assistance are more easily connected to their physicians. Broadband internet allows employees to work from home and provides flexibility for businesses. And finally, residents have more opportunities to connect with each other and be involved within the community. Broadband internet has become a necessary utility in the same way people view water, electricity, and television access.

Broadband internet services in Pender County range in availability as they do throughout the state of North Carolina. Similarly, the divide occurs between the rural and urban areas of the County population. Many areas in the County receive acceptable broadband internet access. Those areas include the more urban areas of Pender County along US17. Other areas such as Rocky Point also have access to these services.

However, many areas in Pender County are underserved or do not have access to broadband internet services at all. Those areas mostly include the northern and western portions of the County. Areas such as Currie, Atkinson, Penderlea, and Maple Hill have provided feedback regarding their desire for increased broadband internet services. Efforts to increase broadband availability throughout the County should be pursued based on the current evaluation of coverage and facilities.

Recent efforts to expand broadband coverage in Pender County include partnering with COMSPECO to solicit responses from citizens throughout County to determine service availability and potential areas of improvement. The responses were used to develop a potential service map. The County also mapped existing wireless and water towers that could be utilized to provide service in areas of need. These assets were identified and compared to the survey responses. Meetings were held with internet service providers (ISPs) to coordinate service in the identified areas of need. COMSPECO entered into a contract with the County to utilize Maple Hill's water tank to provide wireless internet service to the nearby area, including the wastewater treatment plant, Maple Hill Recreation Center, and local Fire/EMS stations. Additional efforts are underway to coordinate with Four County EMC to provide fiber broadband service to Pender County Schools, which could provide opportunity for future connections to nearby homes and businesses.

SUMMARY

Listed below is a summary of the analysis and information included in this chapter:

- According to projections in the Local Water Supply Plan (2016), the County should have sufficient capacity to serve residents and businesses through the year 2060.
- The County owns and operates three Wastewater systems: Rocky Point Sewer Collection System (250,000 gallon per day permitted capacity), Maple Hill STEP System (42,000 gallons per day permitted capacity), and soon to be operational Pender Commerce Park Treatment Plant (500,000 gallons per day permitted capacity). None of these systems are currently at or near capacity.
- Other than the existing Pender County facilities, County residents rely on private wastewater providers for service or on-site septic systems.
- The existing transportation network within the County currently limits the amount of connectivity and ease of access for local, short-length trips.
- The highest Annual Average Daily Traffic (AADT) counts are found on US 17/NC-210 (36,000), US 17 – South of NC-210 (33,000), and I-40 at NC-210 (26,000).
- Based upon available data, currently no roadways exceed traffic volume capacity, but US 17 and NC-210 likely exceed capacity during summer months.
- The County has been exploring opportunities for Park and Ride Facilities at key locations. There are currently no fixed route transit services available in the County.
- Only 9% of residents both live and work within the WMPO boundary, while the remaining 91% commute outside of the County for employment.
- Unincorporated Pender County has very limited pedestrian and bicycle facilities. Safety remains an issue for non-motorized transportation users as there have been 60 bicycle/pedestrian crashed from 2010-2014. Eight of which resulted in fatalities.
- The Hampstead Bypass has been proposed and is expected to improve the traffic carrying capacity and increase safety along US 17. One of the two proposed segments is currently funded.
- According to the NC Division of Parks and Recreation, Pender County ranks 78th out of the 100 North Carolina counties in residents per park area, including 99th in playgrounds, 100th in athletic fields, 100th in athletic courts, 94th in picnic shelters, and 89th in residents per trail mile.
- Pender County owns and operates three public parks: Pender Memorial Park, Hampstead Kiwanis Park, and Millers Pond Park. The County partners with the NCWRC to operate the Holly Shelter Shooting Range, which opened in early November of 2016.
- Unincorporated areas of the County have four NCWRC public boat access facilities. Only one is an Intracoastal Waterway public boat access facility.
- Many areas in Pender County are underserved or do not have access to broadband internet services at all. Those areas mostly include the northern and western portions of the County.

GOALS, OBJECTIVES, AND POLICIES

INTRODUCTION

The County has established a set of land use and development related policies to act as guidelines during any official decision making process. These policies and goals reflect the comments and concerns received during the public involvement process and provide citizens, property owners, and developers with a predictability of official actions. Goals, policies, and recommended actions in this chapter relate to infrastructure (water & wastewater), transportation, public access, parks and recreation, schools, and broadband service. Two CAMA management topics are covered in the policy section herein: Infrastructure Carrying Capacity and Public Access. It should be noted that these topic areas are developed as part of the Division of Coastal Management's 7B Land Use Planning Guidelines.

Refer to Appendix A for Definitions of actions words contained within the policy section.

INFRASTRUCTURE CARRYING CAPACITY – WATER & WASTEWATER FACILITIES

Goal 4.1: Ensure that public infrastructure systems are sized, located, and managed to provide service to residents and businesses and so the quality and productivity of Areas of Environmental Concern (AECs) and other fragile areas are protected or restored.

Objective 4.1: Ensure that the location and capacity of public infrastructure systems are consistent with the County's growth and development goals.

Policy 4.1.A: Capital Improvement Planning: The County shall coordinate capital improvement planning with the Comprehensive Land Use Plan and in accordance with Technical Review Committee process.

Recommended Action 4.1.A.1: Consider establishing a Cost of Land Use Fiscal Impact Analysis study that will include current information about the cost of government services, such as schools, water, and sewer.

Policy 4.1.B: Coordinate Water and Wastewater Facilities with Long-Range Plans: The County shall coordinate the timing, location and intensity of growth – where possible – by locating/approving water and sewer improvements in accordance with the Comprehensive Land Use Plan and Water/Wastewater Master Plans.

Recommended Action 4.1.B.1: Update the 2006 Water and Wastewater Master Plans to address current conditions of private wastewater providers, Interbasin transfer requirements, emergency raw water infrastructure, and provisions for alternative drinking water sources, if desired.

Recommended Action 4.1.B.2: Establish estimated demand for water and wastewater service in each respective Water & Sewer Service District.

Recommended Action 4.1.B.3: Consider identifying and establishing generalized service area boundaries for the location of public and private water and sewer providers.

Policy 4.1.C: Operation of Water and Wastewater Facilities: The County shall ensure efficient uninterrupted operation of water and wastewater facilities for residents served by County facilities.

Policy 4.1.D: Water and Wastewater Expansion & Acquisition: The County shall continue to pursue grants to expand public water and wastewater systems to serve priority economic development areas and areas that have inadequate or degraded service levels or environmental concerns with onsite systems.

Recommended Action 4.1.D.1: Encourage water and sewer systems to be designed and located such that expansion to serve future development is feasible.

Recommended Action 4.1.D.2: Identify policies and procedures for the consolidation and acquisition of private water/wastewater systems should the issue arise in the future.

Recommended Action 4.1.D.3: Consider establishing a separate capital improvement fund for the potential future acquisition of failing private water/wastewater systems.

Policy 4.1.E: Regional Coordination: The County shall continue to seek regional cooperation and coordination to maximize service delivery while minimizing duplication of infrastructure and services.

Policy 4.1.F: Future Land Use Map Review: The County shall consult the future land use map when considering the locations of new public or community water/wastewater facilities.

WATER FACILITIES

Policy 4.1.G: Water Supply Expansion: The County will consider modifying its water purchase agreement with the Lower Cape Fear Water and Sewer Authority in the next five to ten years to meet estimated growing demand.

Recommended Action 4.1.G.1: Consider establishing a study to explore additional sources for drinking water whether through alternative surface water/groundwater sources or treatment methods.

Recommended Action 4.1.G.2: Consider establishing more stringent drinking water quality testing procedures than those mandated by state and federal guidelines to inform users of potential water quality issues.

Recommended Action 4.1.G.3: Consider establishing a voluntary program for testing of private drinking water wells for those in need. If determined water quality issues exist as a result of testing, consider prioritizing expansion of centralized service to areas impacted by degraded water quality.

Policy 4.1.H: Interbasin Transfer Certificate: The County will continue to support efforts to obtain an Interbasin Transfer Certificate to allow for expansion of the potable water supply to additional areas of the County.

Policy 4.1.I: Maintaining Adequate Fire Protection: The County will continue to ensure that adequate water pressure is available to meet fire suppression as needed to keep pace with the demands of the growing seasonal population.

WASTEWATER FACILITIES

Policy 4.1.J: Commerce Park Wastewater Treatment Plant (WWTP): The County will continue to recruit customers and users to increase demand at the Commerce Park.

Policy 4.1.K: Rocky Point Wastewater Collection System: The County shall continue to support wastewater service area of the Rocky Point collection system.

Recommended Action 4.1.K.1: Consider providing service to residential users in the service area of the Rocky Point collection system.

Recommended Action 4.1.K.2: Establish an allocation of capacity to be dedicated to future residential versus non-residential use.

Policy 4.1.L: Private Wastewater Expansion: The County will continue to require a consistency review with the Comprehensive Land Use Plan and Wastewater Master Plan for construction or expansion of private wastewater systems.

Recommended Action 4.1.L.1: Revise the table of permitted uses in the UDO to include additional wastewater facility types to enable greater discretion in the approval procedure. Such uses should be distinguished through clear definitions which distinguish their treatment capacity and service intent.

Policy 4.1.M: Package Treatment Plants: The County will discourage the use of package treatment plants and only allow such where expansion of centralized public and/or private sewer service is not feasible.

Recommended Action 4.1.M.1: In cases where package treatment plants are approved, consider requiring 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.

Recommended Action 4.1.M.2: Consider establishing a program to manage decentralized wastewater treatment systems and/or required periodic inspection by County staff as a condition of approval.

Recommended Action 4.1.M.3: Consider identifying locations where package treatment plants shall not be permitted.

Policy 4.1.N: Soils and Septic Tank Suitability: The County shall continue to prohibit on-site septic systems on lots smaller than 15,000 square feet (12,000 square feet in the Planned Development and Residential Mixed zoning districts) and where public or community wastewater service is available. All septic tanks must be in compliance with State Health Regulations as administered by the Pender County Health Department.

TRANSPORTATION - VEHICULAR

Goal 4.2: Manage the timing, location and intensity of growth by coordinating transportation improvements in accordance with development and ensuring safe and efficient modes of transportation are available to all residents and visitors.

Objective 4.2: Provide support for the efficient flow of vehicular traffic through NCDOT roadway projects, connectivity requirements, and implementation of adopted transportation plans.

Policy 4.2.A: Safety: The County supports safety as a primary concern for all transportation-related projects.

Policy 4.2.B: Hampstead Bypass: The County shall enthusiastically support the construction of the Hampstead Bypass.

Recommended Action 4.2.B.1: Encourage NCDOT to proceed with advanced acquisition of right-of-way to expedite the process.

Recommended Action 4.2.B.2: Ensure all proposed development is designed to coordinate with existing or planned streets and highways as provided in the UDO and NCGS 153A-331.

Policy 4.2.C: Comprehensive Transportation Plan: Ensure that the Pender County Comprehensive Transportation Plan (CTP) is updated and that it is coordinated with the Comprehensive Land Use Plan.

Recommended Action 4.2.C.1: Require future update to the Comprehensive Transportation Plan(s) be coordinated. Work with NCDOT to establish a CTP encompassing the entirety of Pender County rather than separated by the Wilmington MPO and Cape Fear RPO boundaries.

Policy 4.2.D: Roadway Hierarchy and LOS: The County should continue to utilize a hierarchical, functional transportation system that prioritizes needed improvements, and promotes the proper arrangement of land use patterns to ensure and determine the proper levels of service (LOS) to reduce any associated negative impacts to the overall transportation network.

Policy 4.2.E: Regional Coordination: Ensure that Pender County's transportation needs are adequately addressed through the Wilmington MPO and Cape Fear RPO Transportation Improvement Program requests.

Recommended Action 4.2.E.1: Work with the MPO, RPO, NCDOT or outside consultant to create safety audits in locations with high crash rates as identified on Maps 4.4 and 4.5.

Recommended Action 4.2.E.2: Explore all opportunities for safety improvements to intersections identified as high crash locations.

Policy 4.2.F: Collector Street Plan: The County shall continue to support and implement the Pender County Collector Street Plan when reviewing and approving new development proposals within the WMPO Boundary area of the County.

Recommended Action 4.2.F.1: Provide an annual update to the Planning Board and Board of Commissioners regarding the implementation status of the Collector Street Plan. Such a report should identify issues and opportunities for improving the existing requirements contained in the UDO, if any.

Recommended Action 4.2.F.2: Update the Collector Street Plan in concert with the Future Land Use map contained in this plan and when such is revised or amended.

Policy 4.2.G: Flexible Road Standards: The County shall continue to allow and encourage flexible road design standards, where consistent with minimum NCDOT safety standards, which incorporate low impact development and smart growth principles.

Policy 4.2.H: Entryway Corridors: The County encourages the aesthetic enhancement of entryway corridors and recognizes the important economic, tourism, and community image benefits of attractive roadways that enter the County's planning area. Such entryway corridors should receive priority attention for improved appearance and development standards, including landscaping, signage, and tree preservation.

Policy 4.2.I: Connectivity: The County shall continue to enforce connectivity requirements that require new developments and individual sites to provide vehicular and pedestrian interconnectivity to existing or planned adjacent sites and adjoining developments.

Recommended Action 4.2.I.1: Consider updating the UDO to provide additional provisions to clarify the intent of connectivity requirements and safety to ensure that future development, adjacent to existing connection points/stub streets, follows through with construction of connecting stub streets and encourages safety.

Recommended Action 4.2.I.2: Consider establishing a case study of existing connectivity ordinances within county jurisdictions across North Carolina, and their various effectiveness, in an effort to improve connectivity regulations in Pender County.

Recommended Action 4.2.I.3: Consider updating the UDO to include language specifically requiring stub streets to be constructed to the adjacent property line and that no obstructions shall be permitted.

Recommended Action 4.2.I.4: Consider requiring a stub out connection where development is adjacent to single family lots fronting upon thoroughfares/arterial roadways to allow for future connections.

Recommended Action 4.2.I.5: Update and continually maintain the database of future right-of-way dedications, “paper streets,” and stub-outs. Research recorded documents to expand the database to include existing paper streets to ensure maximum coordination and connectivity.

Policy 4.2.J: Private Roads/Streets: The County shall continue to require that all private streets be constructed in accordance with the most current NCDOT Subdivision Minimum Construction Standards manual and the NCDOT Guidelines for Drainage Studies and Hydraulic Design.

Recommended Action 4.2.J.1: Update required certifications and disclosures contained in the UDO, regarding private roads, to include language stating such has been constructed to the minimum standards of the of the NCDOT Subdivision Minimum Construction Standards manual and NCDOT Guidelines for Drainage Studies and Hydraulic Design. Specifically require all certifications/disclosures regarding private roads/streets be included with each approval.

Recommended Action 4.2.J.2: Establish a study to identify public input regarding private road/streets and specific policy changes, if desired, for the permitting thereof.

Recommended Action 4.2.J.3: Clarify applicability requirements within the UDO for “subdivisions with private streets subject to requirements to construct public streets.” Such applicability should be clearly stated at the onset of discussion regarding private streets.

Recommended Action 4.2.J.4: Consider requiring all private roads/streets to include an easement to allow for travel of the roadway by the general public. In particular, if future development includes access to public facilities or public trust areas, such an easement should be required.

TRANSPORTATION – ALTERNATIVE MODES

Goal 4.3: Provide safe opportunities for walking and cycling, while supporting the need for paratransit service and other alternatives to provide transportation choices for residents and visitors.

Objective 4.3: Encourage alternative means of transportation to reduce traffic, enhance economic development, offer services to those without use of a vehicle, and provide recreational opportunities for residents and visitors.

Policy 4.3.A: Alternative Means of Transportation: The County shall work with the NCDOT, MPO, and the RPO to encourage alternative forms of transportation including regional rail, paratransit, public transit, Transportation Demand Measures such as van-pooling and ride sharing, and an inter-modal transportation system.

Recommended Action 4.3.A.1: Explore opportunities to increase the number of transportation services and options in Maple Hill in order to link the residents to jobs, health care, and other local services.

Recommended Action 4.3.A.2: Explore the possibility of extending a bus route from NC 53 to the Onslow County line, and providing a park and ride lot at this location.

Recommended Action 4.3.A.3: Explore the possibility of partnering with Pender County Adult Services to coordinate transportation stops and services between PAS and WAVE Transit and connect in Castle Hayne.

Policy 4.3.B: Cape Fear Regional Bicycle Plan: The County shall support efforts to implement the recommendations contained in the Cape Fear Regional Bicycle Plan.

Policy 4.3.C: Share the Road: Ensure that rural highways include shoulders that provide sufficient space for bicyclists and have “share the road” signs to alert drivers.

Policy 4.3.D: Bicycle and Pedestrian Transportation: The County shall encourage all projects to consider pedestrian and bicycle for inclusion in all road construction, reconstruction, or maintenance projects.

Recommended Action 4.3.D.1: Establish a funding strategy and continuing maintenance policy for construction of County sidewalks and greenway/multi-use path facilities. Ideally, such funding and maintenance responsibility shall be the under the purview of the Parks and Recreation department.

Recommended Action 4.3.D.2: Pursue grant funds to complete an official NCDOT Comprehensive Bicycle and/or Pedestrian Transportation Plan for the Hampstead area. Such a plan should identify alternative funding methods, maintenance responsibilities, and prioritized facilities. Grant applications are typically due November/December of each year. County jurisdictions are now eligible to apply (Eligibility for Pender County should be pursued).

Recommended Action 4.3.D.3: Consider options to establish a Countywide Greenway Plan. Such a plan will outline priority locations for greenway facilities, funding mechanisms tied to future development, and procedures for maintenance and continued upkeep thereof.

Recommended Action 4.3.D.4: Identify and prioritize all recommended bicycle and pedestrian facilities as part of any future non-motorized transportation planning effort.

Recommended Action 4.3.D.5: Establish a bicycle and pedestrian committee to prioritize future bicycle and pedestrian capital improvements and identify programs and needs related to non-motorized transportation.

Recommended Action 4.3.D.6: Establish a bicycle and pedestrian transportation infrastructure service area map to allocate funding collected as part of a fee-in-lieu program to install bicycle and pedestrian facilities in accordance with recommended improvements.

Policy 4.3.E: Pender Adult Services Transit: The County shall continue to support paratransit service as a vital resource for the elderly, disabled, and/or those without access to a personal vehicle.

Policy 4.3.F: Public Transit: The County shall support efforts to establish public transit opportunities such as park and ride facilities and/or fixed route services in accordance with the Future Land Use Map.

Recommended Action 4.3.F.1: Coordinate provisions for public transit and Transportation Demand Management services with the Regional Mixed Use future land use category as depicted on the County's Future Land Use Map.

Recommended Action 4.3.F.2: Monitor changes to Urban/Rural Census designations following the 2020 Census to identify locations suitable for potential fixed route transit services.

PUBLIC ACCESS

Goal 4.4: Maximize public access to the public trust waters of the coastal region for residents and visitors.

Objective 4.4: Implement policies and recommendations that assure satisfactory access to public trust waters for all Pender County residents, businesses, and visitors.

Policy 4.4.A: Public Water Access: The County supports efforts to work with local groups and state and federal agencies to secure and maintain water access points throughout the County. The County will consider any state or federal financial assistance that may be available to increase the inventory of public water access points. The County also supports the preservation and maintenance of areas that have traditionally and historically been used for public access.

Recommended Action 4.4.A.1: Pursue funding under the North Carolina CAMA Shoreline Access funding program for other eligible projects that provide access for its citizens.

Policy 4.4.B: Public Water Access Amenities: The County supports state and federal funding of piers for crabbing, fishing, or public estuarine access.

Recommended Action 4.4.B.1: Consider updating the 1993 Waterfront Access Plan with funding from the Division of Coastal Management.

Recommended Action 4.4.B.2: Consider revising the UDO to require that public water access is provided in accordance with subdivision/development as outlined in an approved Waterfront Access Plan and/or at appropriate intervals along estuarine and riverine bodies of water. Such a provision may require the dedication of public access easements through extension of right-of-way to high water marks as a means of recreation.

Recommended Action 4.4.B.3: Consider establishing a separate capital improvement fund for the construction of waterfront amenities and/or acquisition of suitable waterfront access locations.

Policy 4.4.C: Waterfront Land Acquisition: The County will encourage not only the State of North Carolina, but also area local governments to diligently pursue the acquisition and development of waterfront properties for public use, particularly regarding boating access.

Policy 4.4.D: Boating Access: The County will continue to work with the NC Wildlife Resources Commission (WRC) Boating Infrastructure Program to identify and acquire land for public boat ramps and ancillary parking facilities to public trust waters.

Recommended Action 4.4.D.1: Identify potential locations suitable for applying for funds for public boat ramps, particularly along coastal waters in support of the tourism-based economy. Such locations may include Long Creek, Moores Creek, Rockfish Creek, and Scotts Hill Intracoastal Waterway access.

Recommended Action 4.4.D.2: Consider applying for public access funding for additional boat ramps.

Recommended Action 4.4.D.3: Consider co-location of other appropriate recreational amenities and multiple grant funding sources at future boat ramps.

Policy 4.4.E: Public Trust Waters Navigation: The County opposes any use which significantly interferes with the public right to navigate or utilize existing access to any public trust waters.

Policy 4.4.F: ADA Accessibility: The County believes that, where possible, public water access sites should be accessible to persons with disabilities.

Policy 4.4.G: Dredging: The County will continue to work with the Army Corps of Engineers and any other State and Federal agencies to ensure continued dredging and maintenance of channels and rivers as needed to keep these facilities open to navigation.

Policy 4.4.H: Water-Based Tourism and Development: The County supports development that promotes Pender County as a tourist and recreational destination. The County intends for such development to protect and preserve the natural environment and support public water access through private funds and grant monies.

PARKS AND RECREATION

Goal 4.5: Increase the amount of land available and the funding for parks, recreation and open spaces to serve current Pender County residents and visitors. NOTE: Additional policies concerning open space are included in Chapter 3.

Objective 4.5: Ensure adequate, appropriately located parks, recreation and open spaces are available to serve the needs of Pender County residents and visitors.

Policy 4.5.A: Comprehensive Parks and Recreation Master Plan: The County shall coordinate development and provisions for recreational amenities with the Comprehensive Parks and Recreation Plan.

Recommended Action 4.5.A.1: Prepare a new, updated Comprehensive Parks and Recreation Master Plan.

Recommended Action 4.5.A.2: Ensure that the updated plan adequately reflects current and future recreation needs. Adopt implementation measures to acquire and develop parks, recreation areas, and open spaces.

Recommended Action 4.5.A.3: Ensure future capital improvement projects include a balance between revenue generation facilities and nonrevenue generating facilities.

Recommended Action 4.5.A.4: Establish parks and recreation service districts for the allocation and distribution of recreational opportunities.

Recommended Action 4.5.A.5: As part of the plan update, identify needed activities and programs for neighborhood youth that are potentially viable in the Maple Hill neighborhood.

Policy 4.5.B: Regional Parks: The County shall support the expansion and development of large regional parks such as Pender Memorial Park and Hampstead Kiwanis Park as the primary recreational opportunities for residents and visitors.

Recommended Action 4.5.B.1: Establish expansion plans for athletic fields and programming at Pender Memorial Park and Hampstead Kiwanis Park.

Policy 4.5.C: Coordinated Development: The County shall encourage development plans to arrange open space/amenities adjacent to other open space areas, County parks and recreation facilities, or state, federal, or other protected lands.

Policy 4.5.D: Recreation Facilities Required: The County shall continue to enforce regulations requiring construction of appropriate recreational amenities for applicable develop and/or a “fee in lieu of” option to enable the enhancement of amenities of nearby park facilities.

Recommended Action 4.5.D.1: Establish a monetary value for recreational amenities/units to more appropriately allocate fees captured as part of the development approval process.

Policy 4.5.E: Board of Education Coordination: The County shall coordinate with Pender County Board of Education and partner with civic groups to co-locate parks and recreation sites on or adjacent to school property as appropriate.

Policy 4.5.F: Upland Recreation Facilities: The County shall ensure that park and recreation set asides include usable upland open space.

Policy 4.5.G: Recreation Standards: The County shall continue to ensure UDO regulations include clearly defined recreation standards, which include reasonable and quantifiable areas of facilities/fees to be provided.

Policy 4.5.H: Maintenance: The County shall consider establishing a maintenance department within the Parks and Recreation Department.

Recommended Action 4.5.H.1: Establish a formal Maintenance Operations Plan and policy.

Policy 4.5.I: Funding and Resources: The County shall consider allocating increased funding and resources for enhancement and maintenance of existing and future parks and recreation facilities.

Recommended Action 4.5.I.1: Consider increasing spending to bring per capita figures closer to those of the counties in the region and communities of similar populations.

Recommended Action 4.5.I.2: Increase revenue generation within the department to bring the cost recovery closer to the state average.

SCHOOLS

Goal: 4.6: Provide exceptional schooling and award-winning service to Pender County's growing school-age population.

Objective 4.6: Ensure adequate student space in Pender County Public Schools and encourage co-location of community facilities.

Policy 4.6.A: Regional Cooperation: The County supports regional cooperation and a process for all local governments, including the Technical Review Committee, to advise public school officials of pending large developments and population growth in general so that they may adequately plan to increase capacity.

Policy 4.6.B: Long-Range Plan: The County supports long-range planning for the school system to establish future enrollment figures, capital improvement needs, and funding constraints.

Recommended Action 4.6.B.1: Establish and continually update a twenty-year plan for the Pender County School System which provides enrollment figures, capital improvement needs, and funding constraints.

Recommended Action 4.6.B.2: Ensure that capital improvements to schools adequately address the needs of different areas of the County, including improvements to existing schools update the facilities to modern standards of newer schools.

Recommended Action 4.6.B.3: Establish an estimated number of students per each development type (single-family, multi-family, etc.) to identify short-term impacts of development approval.

Recommended Action 4.6.B.4: Address traffic access, safety, and circulation issues through physical improvements and operating procedures.

Recommended Action 4.6.B.5: Consider establishing school capacity thresholds (80/90%) whereby active capital improvement measures will be initiated to alleviate future overcrowding.

Policy 4.6.C: Land Acquisition: The County encourages local government participation in land acquisition for new schools, in order to co-locate other public facilities, such as parks and libraries, on or near school sites.

Policy 4.6.D: School Site Reservation: The County supports legislation to allow for reservation of school sites in the development approval process in accordance with, the requirements of NCGS 153A-331.

Recommended Action 4.6.D.1: In accordance with the Board of Education, establish and adopt an appendix to this land use plan which clearly identifies the specific location and size of each school site to be reserved for future use. When siting new school locations, especially in the eastern portion of the County, it will be important to assure Smoke Awareness Areas are evaluated to optimize the use of controlled burning for wildfire reduction and habitat management.

Policy 4.6.E: Shared-use Facilities: The County shall continue to support the shared-use of school facilities for recreational opportunities and community activities.

BROADBAND SERVICE

Goal 4.7: Enhance broadband internet services to underserved communities throughout the County to increase the economical and lifestyle opportunities provided by broadband internet service.

Objective 4.7: The County shall take actions to coordinate with internet service providers (ISPs) and other similar entities in an effort to enhance broadband internet coverage in areas that area currently underserved.

Policy 4.7.A: Broadband Expansion: The County supports the installation and expansion of broadband internet services to areas of the County that are currently underserved by working with developers and ISPs on the expansion of services.

Policy 4.7.B: Underserved Areas: The County shall support the expansion of current broadband internet coverage to areas that are both serviced and underserved by utilizing existing facilities and supporting the expansion of existing and new networks.

Recommended Action 4.7.B.1: Perform annual GIS updates to the wireless network maps by coordinating with ISPs and reviewing permit applications.

Recommended Action 4.7.B.2: Establish a telecommunications committee to assess the potential for broadband internet access in underserved areas, and to act as a point of contact for developers, residents, businesses, and providers.

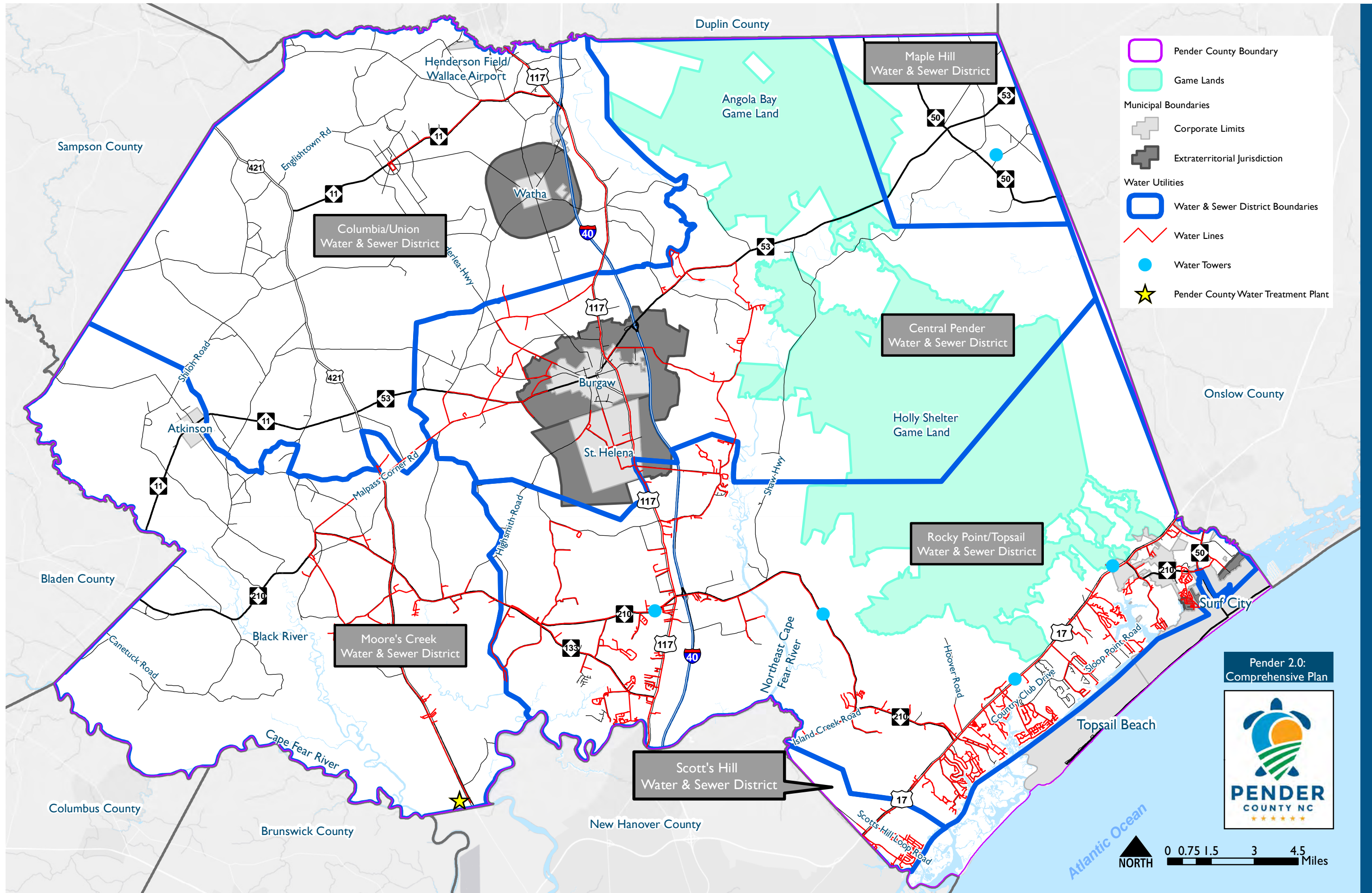
Recommended Action 4.7.B.3: Consider establishing a provision or incentive whereby the availability of broadband service is included in the review of zoning map amendments or conditional zoning requests.

COORDINATED DEVELOPMENT

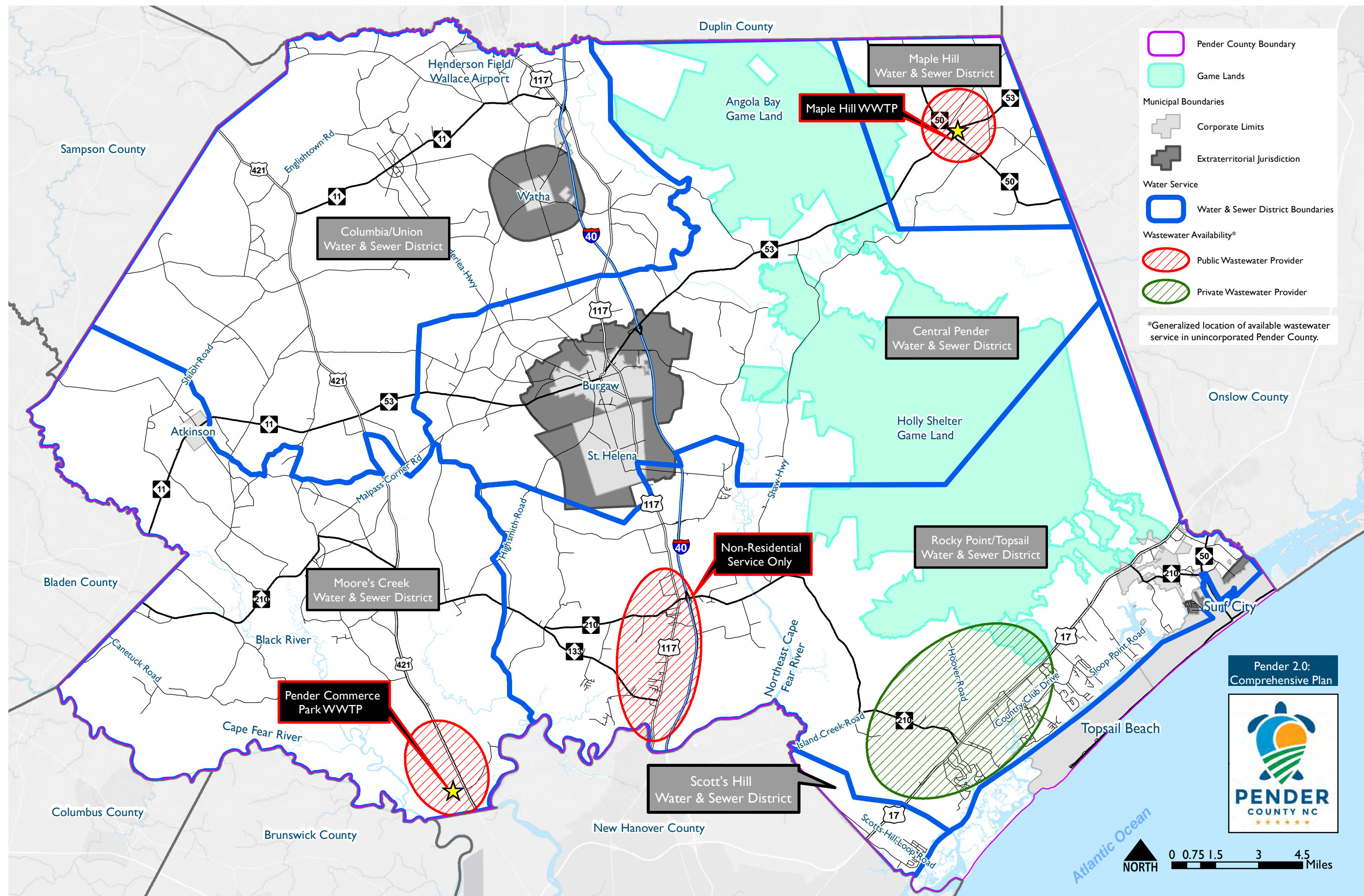
Goal 4.8: The County maximizes opportunities to benefit public safety, health, and wellbeing by coordinating public facilities, services and utilities development with natural resources conservation.

Policy 4.8.A: Green Infrastructure Plan: Consider developing and integrating a green infrastructure plan with future capital improvement and public services plans (Refer to Policy 3.1.K.)

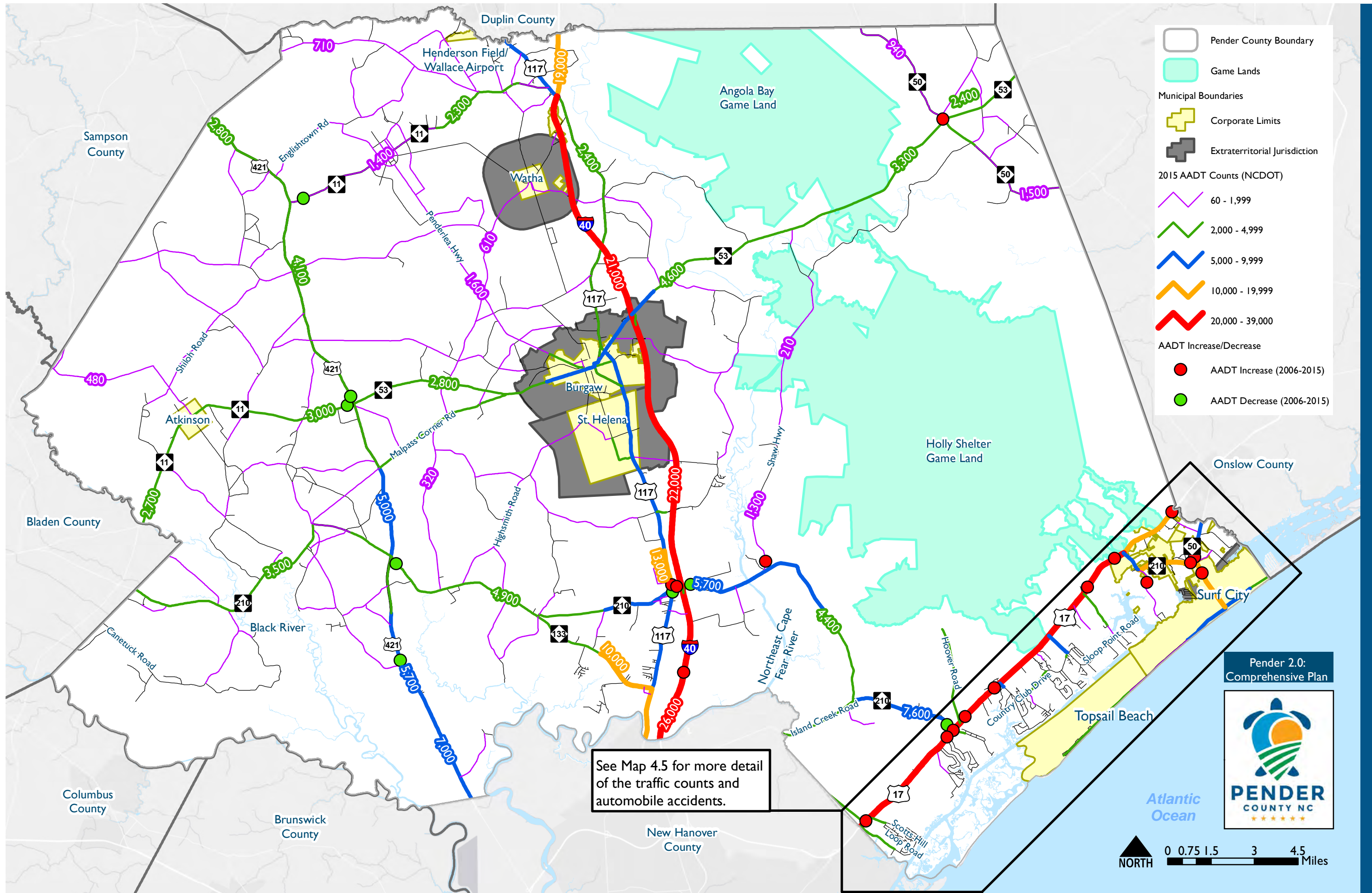
Recommended Action 4.8.A.1: Review the Biodiversity/Wildlife Habitat Assessment and associated environmental features GIS data in community facilities and services projects and planning, with the purpose of reducing unnecessary impacts to natural resources and wildlife habitat.



Map 4.1: Water Facilities

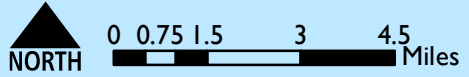


Map 4.2: Wastewater Service Facilities & Availability

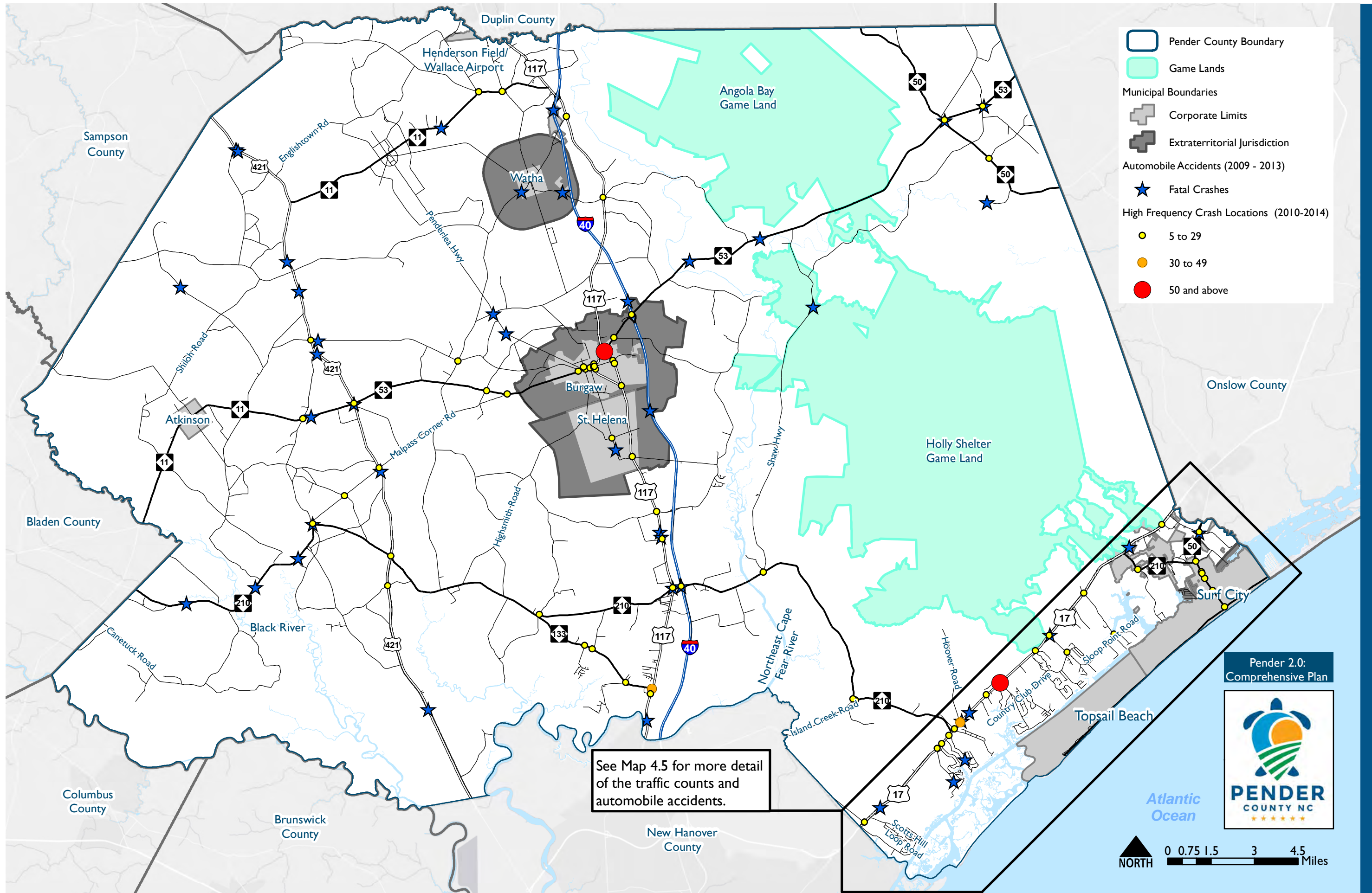


See Map 4.5 for more detail of the traffic counts and automobile accidents.

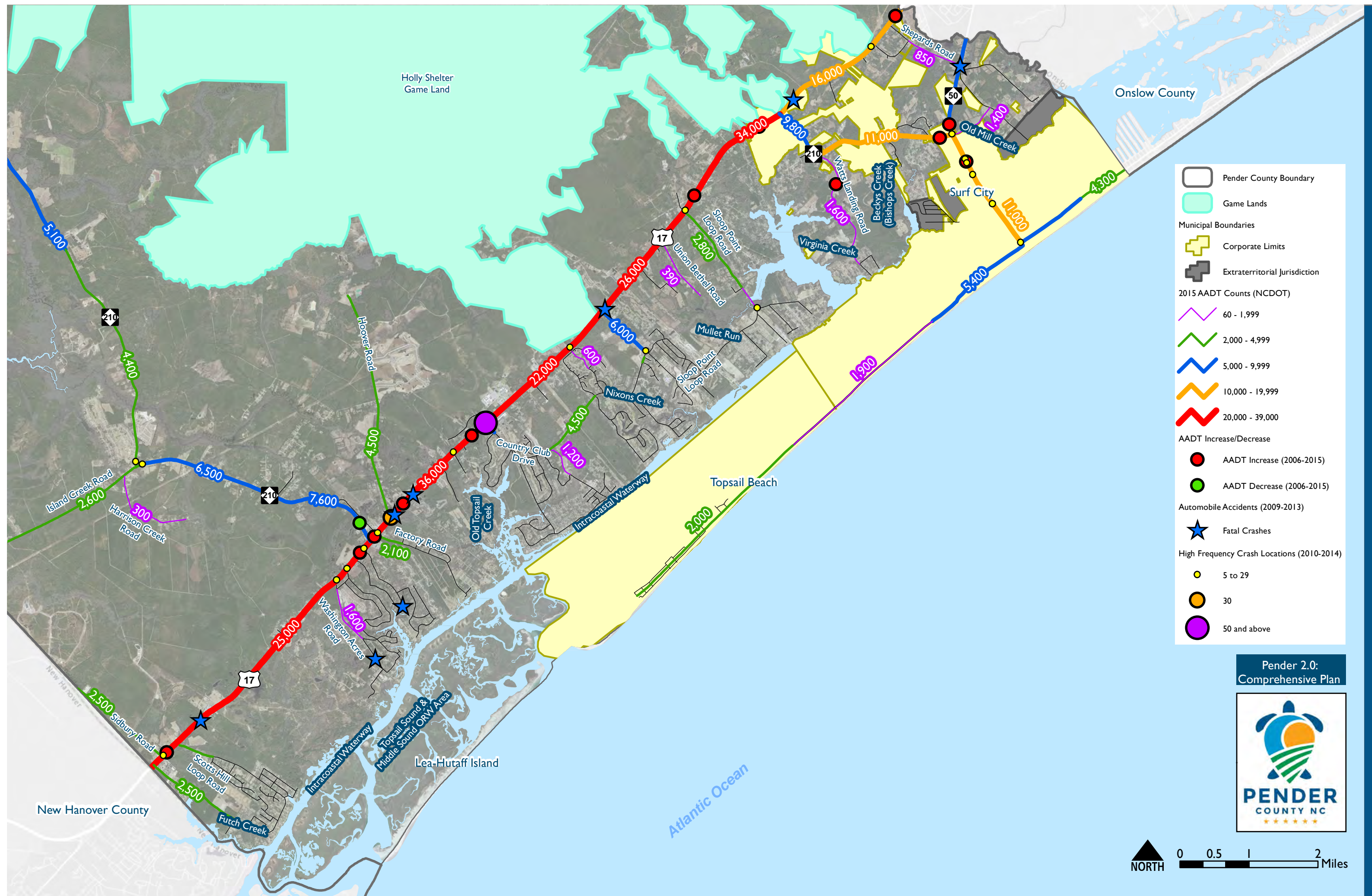
Pender 2.0:
Comprehensive Plan



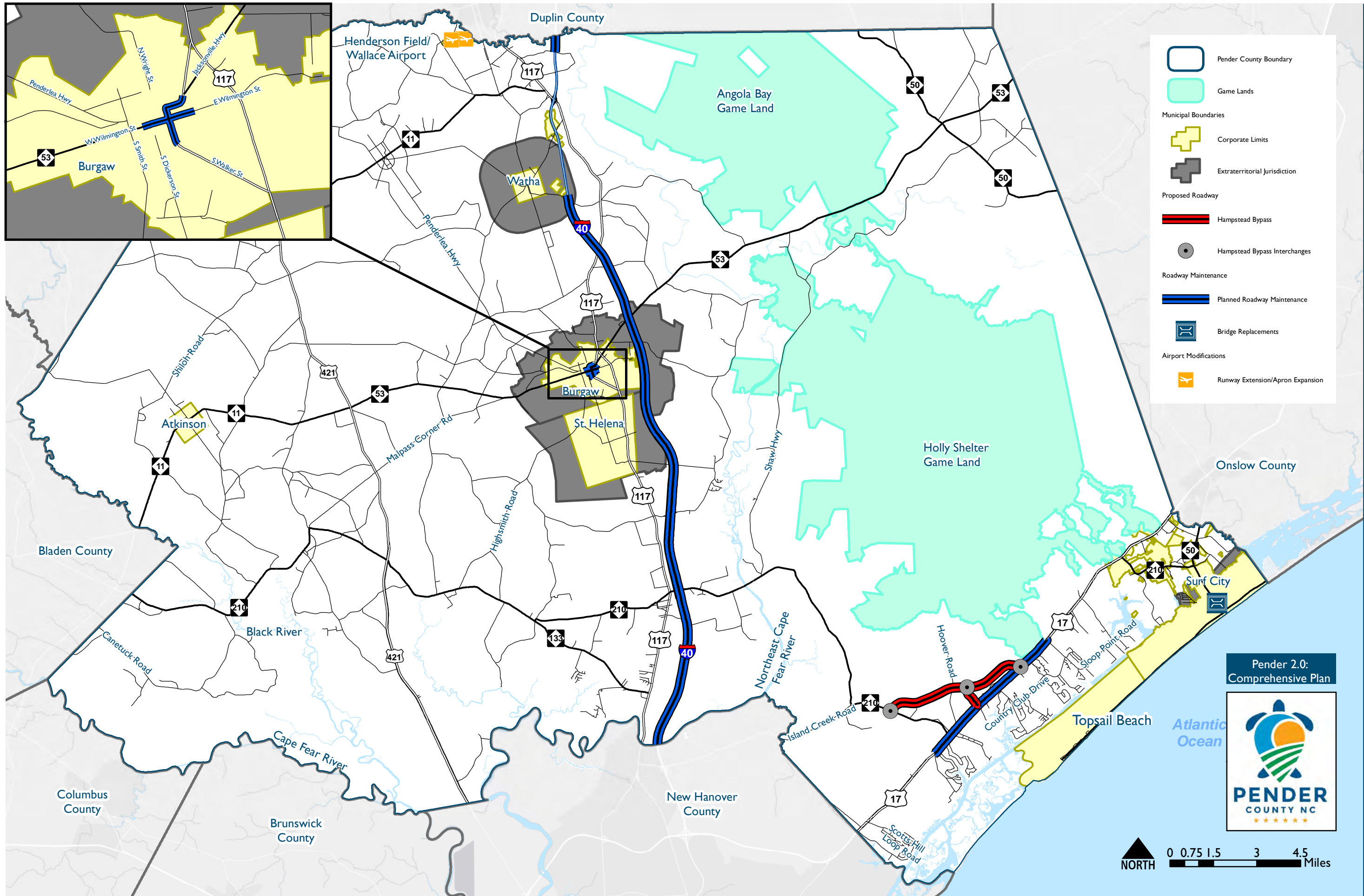
Map 4.3: Traffic Counts



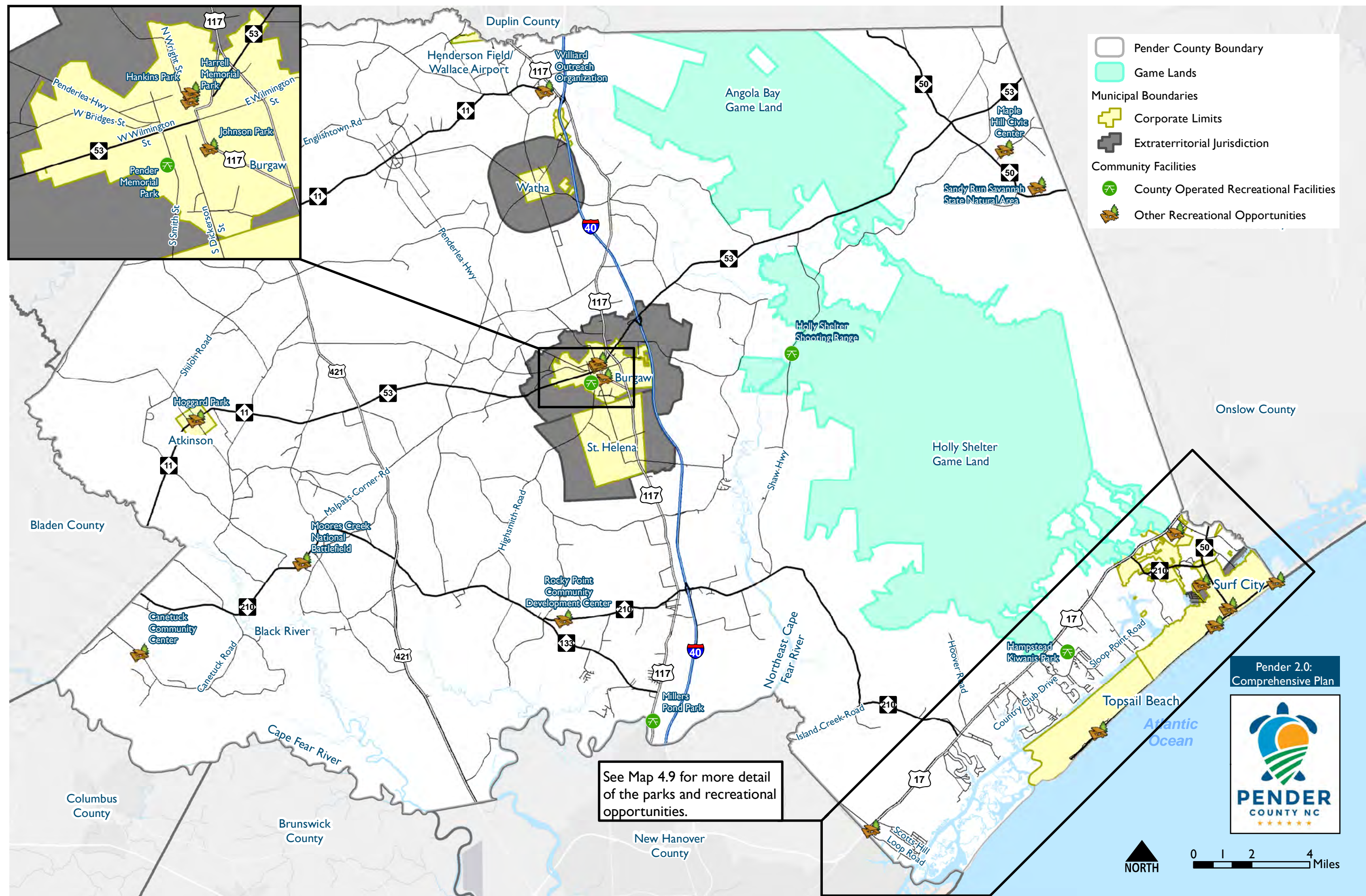
Map 4.4: Automobile Accidents



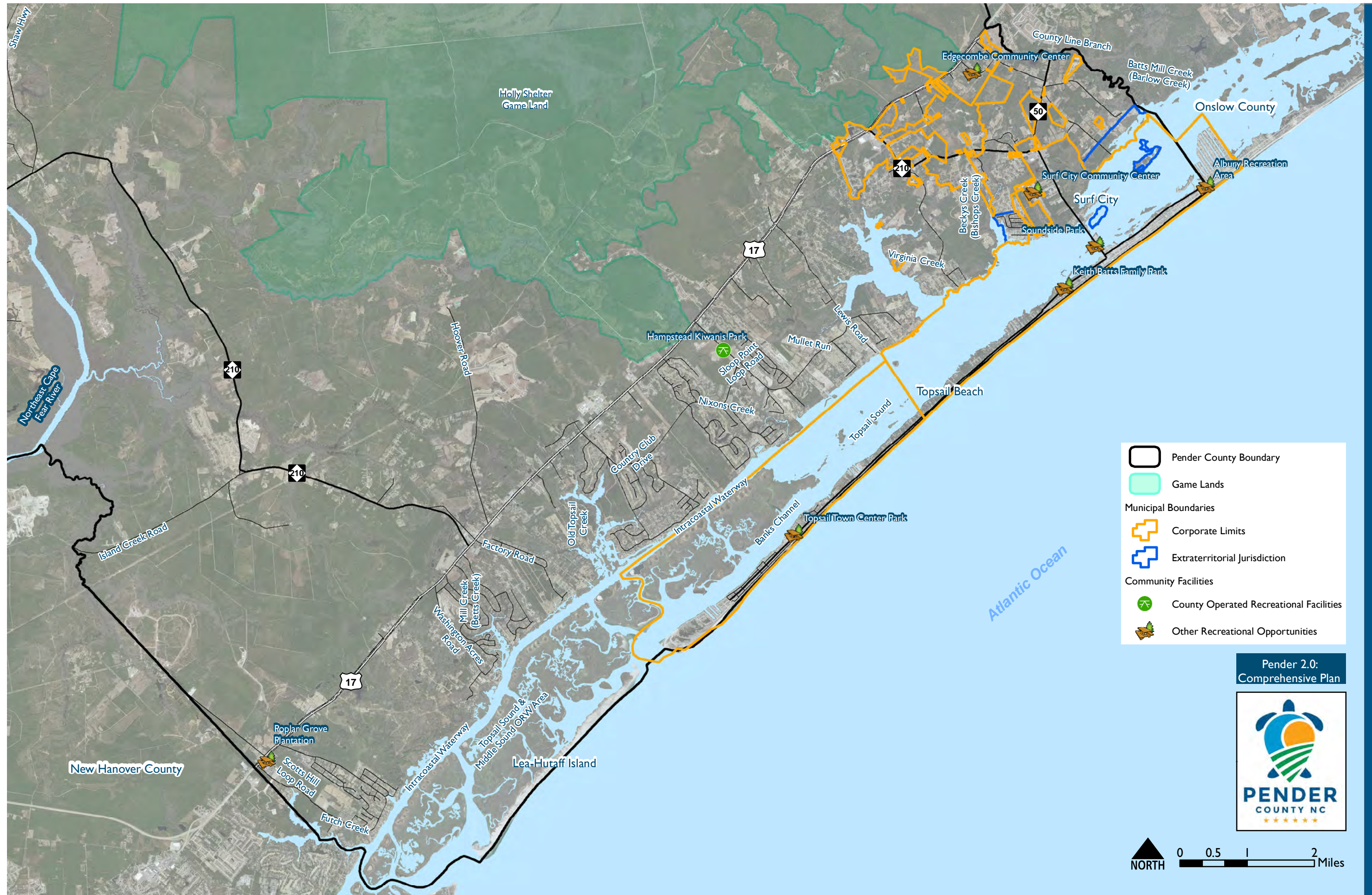
Map 4.5: Coastal Traffic Counts and Automobile Accidents



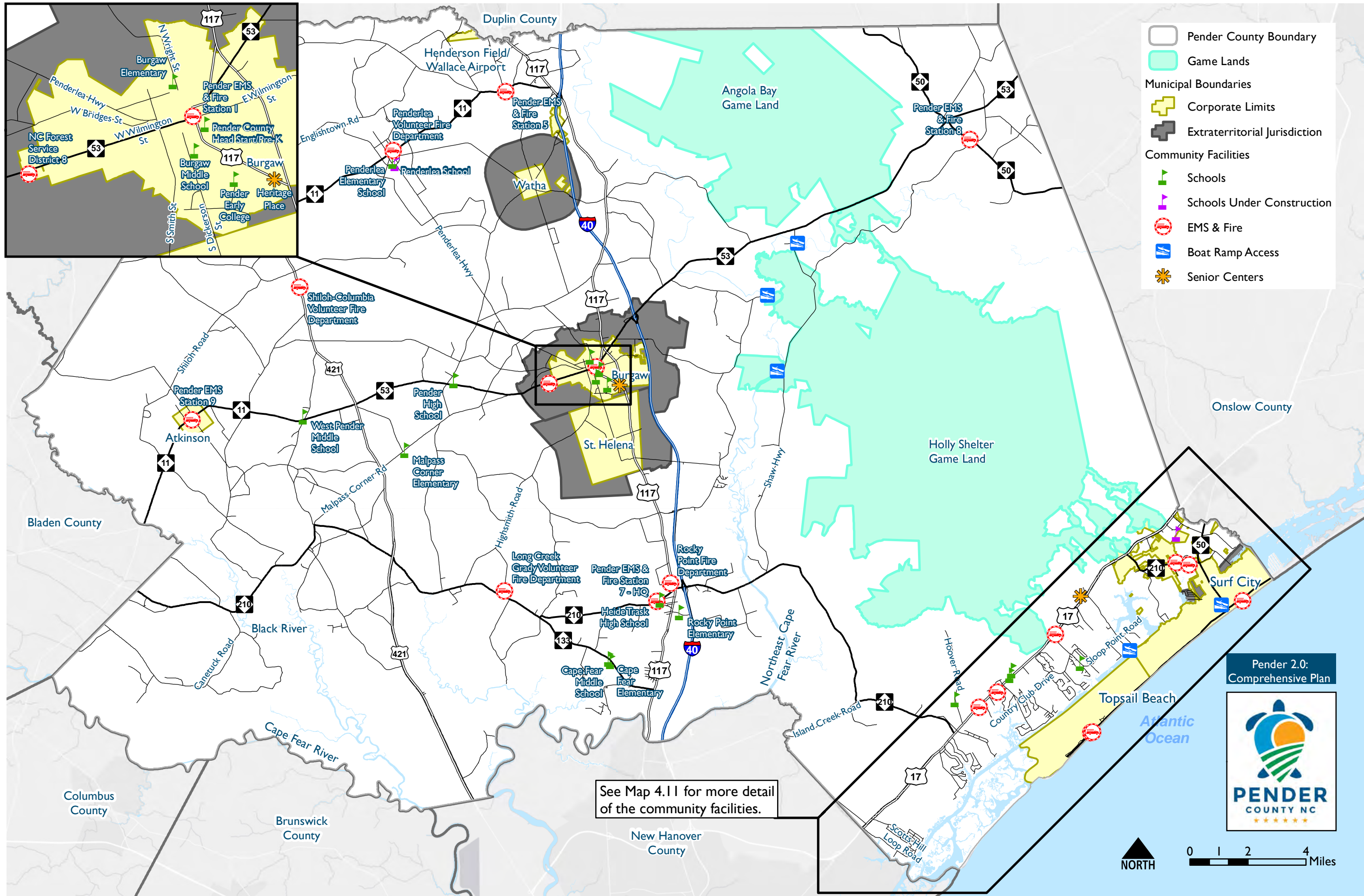
Map 4.7: Draft STIP (2018-2027)



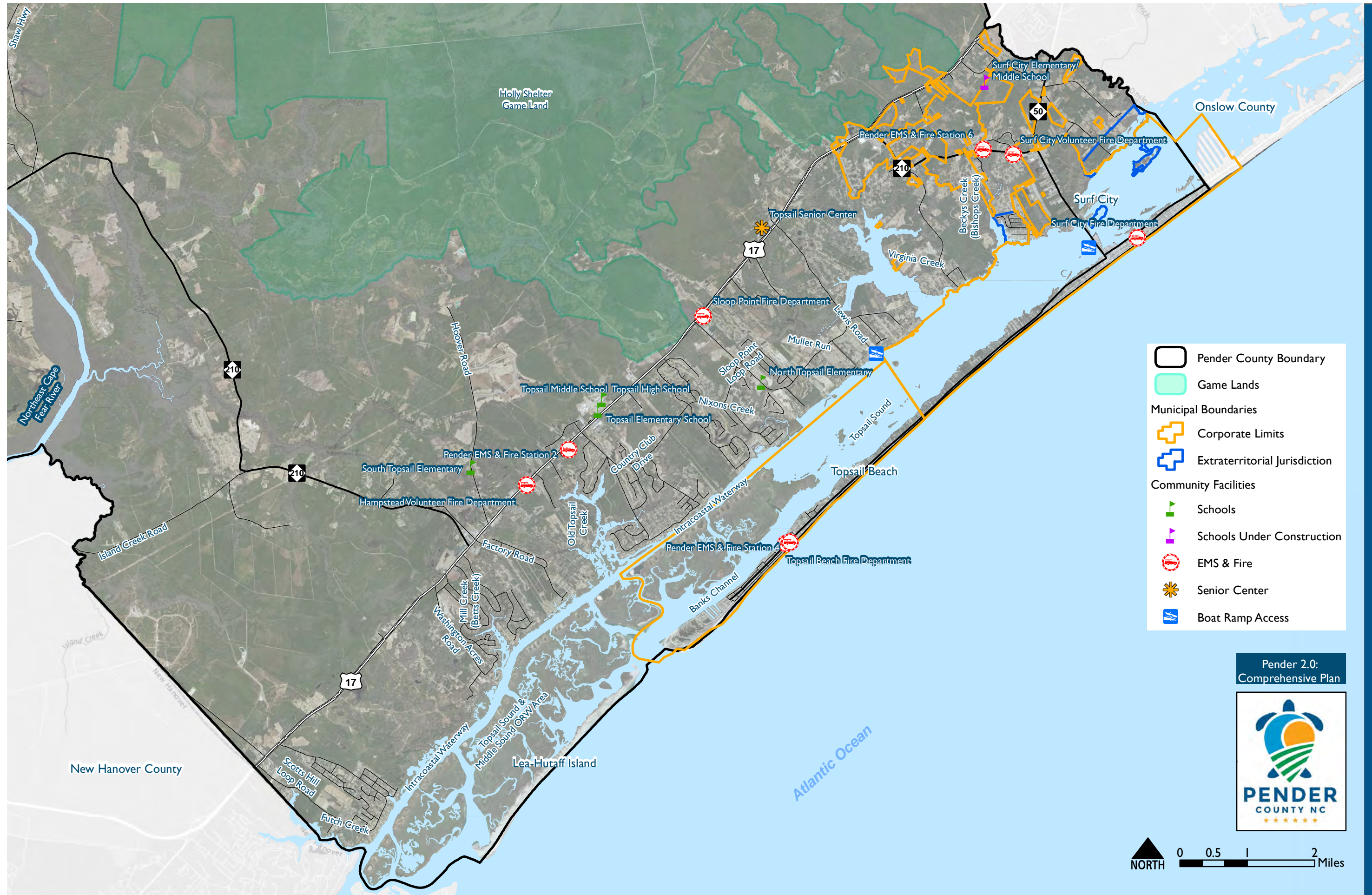
Map 4.8: Parks and Recreational Opportunities



Map 4.9: Coastal Parks and Recreational Opportunities



Map 4.10: Community Facilities



Map 4.11: Coastal Community Facilities

CHAPTER 5: LAND USE AND GROWTH MANAGEMENT

INTRODUCTION

This chapter outlines existing development patterns throughout unincorporated Pender County and further categorizes the types of structures and land uses. Put simply, the existing land use analysis is a description of the development that exists today. For example, if a parcel is developed with a single-family home, then the corresponding existing land use classification is single-family residential. An analysis of vacant land and future development potential based upon zoning classification is provided in this section. The chapter also contains the future land use map and a narrative that provides a framework for desired growth patterns and guidance for land use decisions over the next ten to twenty years. Goals, policies, and recommended actions are provided relating to land use and development at the end of the chapter.

EXISTING LAND USE ANALYSIS

This section allows the local elected officials, appointed boards, citizens, and local planning staff to gather an overall ‘picture’ of the existing land use patterns throughout Pender County. An assessment of these patterns, and the identification of available areas for development, can help forecasting where, what type, and how much development may occur in the future. This section will also assist in identifying vacant land where new development is expected and areas where in-fill or redevelopment is feasible and/or desirable. The information in this section provides a foundation for establishing the County’s Future Land Use Map (**Map 5.8: Pender County Future Land Use Map**).

SOURCE OF EXISTING LAND USE ANALYSIS AND MAP

The Existing Land Use Map (**Maps 5.1-5.7**) and tables were created by the Cape Fear Council of Governments using Pender County Tax Records updated in December 2016, full-color orthophotos (map quality aerial photos) taken in 2016, and Land-Based Classification Standards (LBCS) developed by the American Planning Association.

LAND USES IDENTIFIED IN UNINCORPORATED PENDER COUNTY

Land is classified as it is currently developed or undeveloped as provided in **Table 5.1: Existing Land Use Classifications**.

Table 5.1: Existing Land Use Classifications

Source: Cape Fear Council of Governments GIS, Pender County GIS

Existing Land Use Class	Land Uses/Development Type within each Existing Land Use Classification
Commercial	Retail shops/stores (including grocery stores, pharmacies, etc.), Entertainment, Convenience stores, Restaurants (all food service), Hotel/motel, Repair Services, etc.

Existing Land Use Class	Land Uses/Development Type within each Existing Land Use Classification
Office & Institutional	Schools, Churches/Cemeteries, Health Services, Emergency Services, Government/Community Centers, Fraternal Lodges, etc.
Industrial	Water/Sewer Treatment Plants, Processed Food Production/Distribution, Manufacturing, Warehouse Distribution, Rock/Soil/Sand Quarries
Multi-Family Residential	2 or more dwelling units attached
Single-Family Residential	Single-family detached dwelling unit (includes modular homes)
Manufactured Home	Prefabricated dwelling units/Mobile homes
Recreational	Parks, Common Areas, Golf Courses, Clubhouses, etc.
Conservation	Game Lands, Conservation Easements, Land Trusts, National Parks, etc.
Rural Agriculture	Single-family dwellings on lots greater than 2 acres, Livestock/Poultry Production, Crop Cultivation, Silviculture, Horticulture, etc.
Vacant/Infill	Undeveloped Land Less Than 2 Acres

Figures 5.1 – 5.9 provide an example of each particular land use type.

Figure 5.1: Commercial Land Use (2017)

Source: Cape Fear Council of Governments



Figure 5.2: Office & Institutional Land Use– Heide Trask High School (2017)

Source: Cape Fear Council of Governments



Figure 5.3: Industrial Land Use – Acme Smoked Fish of North Carolina (2017)

Source: Cape Fear Council of Governments



Figure 5.4: Multi-Family Residential Land Use (2017)

Source: Cape Fear Council of Governments



Figure 5.5: Single-Family Residential Land Use (2017)

Source: Cape Fear Council of Governments



Figure 5.6: Manufactured Home Land Use (2017)

Source: Cape Fear Council of Governments



Figure 5.7: Recreation Land Use – Millers Pond Park (2017)

Source: Cape Fear Council of Governments



Figure 5.8: Rural Agriculture Land Use (2017)

Source: Cape Fear Council of Governments



Figure 5.9: Vacant/Infill Land Use (2017)

Source: Cape Fear Council of Governments



EXISTING LAND USE

The following section outlines the existing land use patterns throughout unincorporated Pender County and within each respective planning area.

PENDER COUNTY

Table 5.2: Existing Land Use in the Planning Jurisdiction provides a breakdown of the County by each particular existing land use category. The land use classifications are summarized by the number of parcels, acreage, and percent of acreage in each respective use classification throughout the County. Because Pender County spans such a large area, existing land use data is also categorized by each of the six planning areas.

Table 5.2: Existing Land Use in the Planning Jurisdiction

Source: Cape Fear Council of Governments GIS, Pender County GIS

Existing Land Use (ELU) by Type	Pender County		
	Parcel Count	Acres	Percent Acreage
Commercial	441	1,181.59	0.21%
Office & Institutional	341	2,441.19	0.43%
Industrial	96	1,696.23	0.30%
Multi-Family Residential	314	69.28	0.01%
Single-Family Residential	17,655	33,303.65	5.90%
Manufactured Home	2,655	5,902.55	1.05%
Recreational	30	621.27	0.11%
Conservation	231	118,988.15	21.08%
Rural Agriculture	6,806	344,111.97	60.96%
Vacant/Infill	8,342	6,107.94	1.08%
Incorporated Municipalities, Rights-of-way, and Waterbodies	--	50,069.17	8.87%
Total	36,911	564,493.00	100.00%

Rural agriculture land uses occupy the greatest percentage of land throughout unincorporated Pender County. This land use classification accounts for more than 60% (344,111.97 acres) of land throughout the unincorporated County. Conservation lands account for second largest percentage of land – over 21% of the total acreage in the County (118,988.15 acres) – and can be attributed primarily to the large tracts of land within the Holly Shelter and Angola Bay Game Lands. Together, rural agriculture and conservation lands account for more than 80% of the land in the County. Single-family dwellings account for the most significant category of developed land in the unincorporated County, followed by manufactured dwellings. In total, there is nearly 40,000 acres of land used for single-family residential purposes. Commercial, office, and industrial uses are scattered throughout the County, with the majority concentrated south of NC 210 and along the US 17 corridor (See **Map 5.1: Pender County Existing Land Use**, as well as **Maps 5.2 – 5.7** for each planning area's existing land use maps for additional information.

Vacant/Infill land accounts for a little over 1% of the land in the Pender County. These lands are currently undeveloped and are less than 2 acres in area. As such, these parcels represent prime development opportunities as many will not be further subdivided and only require a structure to be built upon them. It should be noted, however, that just over 50% of the vacant/infill land potentially contains wetlands and therefore may be subject to development constraints if identified as 404 wetlands through a jurisdictional determination.

This characterization of the County as a whole is largely comparable to the analysis surmised some thirty years ago. Dating back to the 1987 Land Use Plan, it can be said that land use patterns thirty years ago are largely similar to those today, except for perhaps an increase in the relative density of development. See excerpt below:

Pender County has a very low density of development with extensive forested areas and agricultural areas throughout the County. Most residential and commercial development is located in municipalities or along highway thoroughfares leading to municipalities or communities. The fastest growing portion of the County is Topsail Township, including Topsail Beach, Surf City, and the area between U.S. 17 and the Intracoastal Waterway. The major land use change affecting the County and completed since the 1981 Land Use Plan was prepared has been the completion and opening of Interstate I-40.

UNION PLANNING AREA – EXISTING LAND USE

The Union Planning Area, located in the northwestern portion of Pender County, is primarily characterized by rural agriculture land use. The Town of Watha and the unincorporated communities of Willard and Penderlea are located in the Union Planning Area. Over 90% of the land in the planning area is classified within this category – which indicates very low density residential development, wooded areas, or active/inactive agriculture lands. Apart from rural agricultural lands, approximately 7.23% of the land is currently used for single-family residential and manufactured home land uses. Commercial, office & institutional, and industrial are limited to locations along US 421 and US 117. It is important to note that the existing land uses within the incorporated Town of Watha are not included in this analysis. More details regarding the

existing land uses can be found in **Table 5.3: Union Planning Area Existing Land Use (2017)** and **Map 5.2: Union Planning Area Existing Land Use**.

Table 5.3: Union Planning Area Existing Land Use (2017)

Source: Cape Fear Council of Governments GIS, Pender County GIS

Union Planning Area	Parcel Count	Acreage	Percent Acreage
Commercial	41	94.39	0.08%
Office & Institutional	70	398.86	0.36%
Industrial	7	16.86	0.02%
Multi-Family Residential	1	1.18	0.001%
Single-Family Residential	2,023	6,720.78	5.98%
Manufactured Home	450	1,399.57	1.25%
Conservation	6	633.43	0.56%
Rural Agriculture	2,006	102,190.12	90.97%
Vacant/Infill	1,078	880.92	0.78%
Total	5,682	112,336.09	100.00%

***Waterbodies, incorporated municipalities, and rights-of-way are not included.**

HOLLY SHELTER PLANNING AREA – EXISTING LAND USE

The Holly Shelter Planning Area is located in the northeastern portion of Pender County, which contains two state owned and managed game and the unincorporated community of Maple Hill. Since these game lands are located in the planning area, the majority of existing land use is dedicated to conservation (57.23%). The second most common land use in the Holly Shelter Planning Area is rural agriculture, which makes up nearly 40% of the land mass. Other than conservation and rural agriculture, there is very limited development in this planning area. The most substantial concentration of development is found along NC 50 and NC 53. There is also scattered single-family development and vacant lots located adjacent to the Northeast Cape Fear River. The existing land use information for the Holly Shelter Planning Area can be found in **Table 5.4: Holly Shelter Planning Area Existing Land Use (2017)** and **Map 5.3: Holly Shelter Planning Area Existing Land Use**.

Table 5.4: Holly Shelter Planning Area Existing Land Use (2017)

Source: Cape Fear Council of Governments GIS, Pender County GIS

Holly Shelter Planning Area	Parcel Count	Acreage	Percent Acreage
Commercial	24	53.91	0.04%
Office & Institutional	36	332.76	0.25%
Industrial	13	754.51	0.58%
Multi-Family Residential	1	0.94	0.001%
Single-Family Residential	905	2,988.50	2.28%
Manufactured Home	237	675.12	0.51%
Recreation	2	5.33	0.004%
Conservation	70	75,094.97	57.23%
Rural Agriculture	1,153	50,621.94	38.58%
Vacant/Infill	853	684.22	0.52%
Total	3,294	131,212.18	100.0%

***Waterbodies, incorporated municipalities, and rights-of-way are not included.**

BURGAW PLANNING AREA – EXISTING LAND USE

Within the Burgaw Planning Area, approximately 83% of land is composed of rural agriculture uses. This analysis does not include any information within the Town of Burgaw or the Village of St. Helena. Over 10% of the land in the Burgaw Planning Area is currently used for single-family residences. Of the other land uses in this planning area, nearly 3% is conservation land, and approximately 1.39% is vacant/infill land. More detailed information can be found in **Table 5.5: Burgaw Planning Area Existing Land Use (2017)** and **Map 5.4: Burgaw Planning Area Existing Land Use**.

Table 5.5: Burgaw Planning Area Existing Land Use (2017)

Source: Cape Fear Council of Governments GIS, Pender County GIS

Burgaw Planning Area	Parcel Count	Acreage	Percent Acreage
Commercial	11	92.53	0.27%
Office & Institutional	30	272.10	0.79%
Industrial	4	59.92	0.17%
Multi-Family Residential	4	5.16	0.01%
Single-Family Residential	1,262	3,491.31	10.10%
Manufactured Home	169	431.86	1.25%
Recreation	1	4.41	0.01%
Conservation	4	1,016.68	2.94%
Rural Agriculture	715	28,721.95	83.07%
Vacant/Infill	617	480.42	1.39%
Total	2,817	34,576.34	100.0%

*Waterbodies, incorporated municipalities, and rights-of-way are not included.

CASWELL PLANNING AREA – EXISTING LAND USE

The Caswell Planning Area is located in the southwestern portion of Pender County. US 421 and NC-210 traverse the planning area and the unincorporated community of Currie and incorporated Town of Atkinson are located here. Similar to the previous planning areas, Caswell's land use pattern is primarily rural residential and agriculture. Over 85% of the land is classified as a rural agriculture. The second most prevalent land use in the Caswell Planning Area is conservation, closely followed by single-family residential development (6.13% and 5.42%, respectively). The Pender Commerce Park is located within this planning area on US 421 near the southern border of the County. Limited development exists around this site and minimal housing despite the availability of suitable land for development. More information can be found in **Table 5.6: Caswell Planning Area Existing Land Use (2017)** and **Map 5.5: Caswell Planning Area Existing Land Use**.

Table 5.6: Caswell Planning Area Existing Land Use (2017)

Source: Cape Fear Council of Governments GIS, Pender County GIS

Caswell Planning Area	Parcel Count	Acreage	Percent Acreage
Commercial	22	60.30	0.07%
Office & Institutional	53	201.37	0.22%
Industrial	13	509.81	0.56%
Multi-Family Residential	1	17.54	0.02%
Single-Family Residential	1,379	4,903.10	5.42%
Manufactured Home	378	1,348.87	1.49%
Conservation	38	5,549.32	6.13%
Rural Agriculture	1,267	77,183.74	85.28%

Vacant/Infill	873	732.38	0.81%
Total	4,024	90,506.43	100.0%

***Waterbodies, incorporated municipalities, and rights-of-way are not included.**

LONG CREEK PLANNING AREA – EXISTING LAND USE

The existing land use within the Long Creek Planning Area is primarily rural agriculture, with approximately 77% of land being classified as such. Single-family residences account for more than 6,400 acres of land in this planning area. Rocky Point is located within this planning area. There is a greater mix of land uses and general development within this planning area that can be found throughout much of the rest of the inland portions of the County. Along the US 117 corridor there is a mix of commercial, office, industrial, and residential development. Wastewater service is available along this corridor, but is only available for non-residential use. Small subdivisions and residential development are located along the primary roadway corridors and in close proximity to the Northeast Cape Fear River. With close proximity to New Hanover County and easy access to I-40, it is anticipated that this area will have more substantial growth and development than the other planning areas, save for Topsail. Close to 8% of land is dedicated to conservation efforts and is primarily attributed to the Bellhammon Tract, located along the Northeast Cape Fear River. Approximately 1.5% of this planning area's land is currently being used for manufactured homes, which is the highest percentage across all the other planning areas. This information is provided in **Table 5.7: Long Creek Planning Area Existing Land Use (2017)** and **Map 5.6: Long Creek Planning Area Existing Land Use**.

Table 5.7: Long Creek Planning Area Existing Land Use (2017)

Source: Cape Fear Council of Governments GIS, Pender County GIS

Long Creek Planning Area	Parcel Count	Acreage	Percent Acreage
Commercial	86	280.05	0.48%
Office & Institutional	58	495.41	0.85%
Industrial	27	202.64	0.35%
Multi-Family Residential	12	9.32	0.02%
Single-Family Residential	3,134	6,419.36	11.05%
Manufactured Home	512	882.18	1.52%
Recreation	5	33.75	0.06%
Conservation	7	4,295.78	7.39%
Rural Agriculture	1,140	44,576.87	76.73%
Vacant/Infill	1,194	903.03	1.55%
Total	6,175	58,098.38	100.0%

***Waterbodies, incorporated municipalities, and rights-of-way are not included.**

TOPSAIL PLANNING AREA – EXISTING LAND USE

The Topsail Planning Area is located along the coast in the southeastern portion of the County and is bisected by US 17 and contains the unincorporated community of Hampstead. Despite exhibiting characteristics of an incorporated municipality, Hampstead remains unincorporated. According to population estimates outlined in Chapter 2 of this plan, the Topsail Planning Area has experienced the greatest population growth rate increase from 2000 to 2015. Despite this, as of 2017, nearly 50% of land is still classified as rural agriculture, much of which is located west of US 17. Single-family residential development accounts for 10% of the land use within

this planning area or nearly 9,000 acres. Large housing developments are located east of US 17 and include the Scotts Hill community, Washington Acres, Olde Point, Belvedere Plantation, and others. This area of the County is also beginning to experience redevelopment of manufactured home communities. For example, the Topsail Greens golf course community is undergoing the conversion of golf course fairways and manufactured housing to more expensive stick-built single-family housing. As development pressures mount in this planning area, it is anticipated that this trend will continue. As stated in Chapter 2, the share of manufactured housing in the County appears to be declining in favor of stick-built or modular single-family homes. However, there is still more than 1,100 acres of development allocated to manufactured housing in the Topsail planning area – the majority of which is located north of Hampstead and closer to the Town of Surf City.

Commercial development is scattered along the US 17 corridor, with the greatest concentration found in the center of Hampstead and extending northeast to Sloop Point Road. Conservation land accounts for the second largest use of land within the Topsail Planning Area. This is due to a portion of the Holly Shelter Game Land in the planning area, as well as Lea-Hutaff Island. These tracts of land are classified as conservation and will continue to be classified as such in the future. There are more than 3,500 parcels classified as vacant/infill that are available for development without further subdivision. The majority of these parcels are zoned for single-family residential uses at a minimum lot size of 15,000 square feet.

This area has experienced substantial growth over the last thirty years. According to the County's 1987 Land Use Plan, residential development was slowly beginning to increase in this area. An excerpt from the 1987 Land Use Plan provides insight into the land use pattern in this area thirty years ago.

1987 Land Use Plan - Topsail Township Existing Land Use

Based on the survey, we found that commercial development continues to concentrate along U.S. 17 near Poplar Grove Plantation, Hampstead, near Vista, and at the intersection of N.C. 210 and U.S. 17. In addition to commercial uses along the U.S. 17 corridor, two public schools and a public library are located between Hampstead and the Belvedere Plantation development.

Single-family residences are located along Scotts Hill Loop Road at Scotts Hill, with water access for boats at Scotts Hill Marina. A large area between Scotts Hill and Washington Acres is wooded and undeveloped. Washington Acres has approximately 75 lots developed, with most of these developed lots being concentrated on or near the water. Washington Acres also has a boat landing available. Deerfield, at the time of the survey in late 1985, had 21 developed lots, with most of those being located on the water. Development along Lea Drive/Factory Road between Hampstead and the Intracoastal Waterway is a combination of conventional homes and mobile homes.

Both Olde Point and Belvedere Plantation are very attractive planned communities surrounding golf course facilities. The development along Kings Landing/Olde Point Loop at the waterfront is a relatively high-density single-family development with rather small lots. Also, at the waterfront,

a marina is being developed as part of the Belvedere community. Continuing north on U.S. 17, the next major new development is Topsail Green, which is an attractive mobile home development around an 18-hole golf course. State Roads Sloop Point, Lewis Road, and Moores Landing have a combination of conventional and mobile home development on single lots, with Bay Harbour in the early development stages with only two developed lots in late 1985.

Virginia Creek Forest and Deer Run and Cedar Landing, near N.C. 50, are large, primarily mobile home developments. Gabes Point is a larger residential development with entrance from N.C. 50 at the entrance to the Surf City and Topsail Beach Bridge. Lots on or near the water are developed, with many of the interior lots undeveloped.

Further information can be found in **Table 5.8: Topsail Planning Area Existing Land Use (2017)** and **Map 5.7: Topsail Planning Area Existing Land Use**.

Table 5.8: Topsail Planning Area Existing Land Use (2017)

Source: Cape Fear Council of Governments GIS, Pender County GIS

Topsail Planning Area	Parcel Count	Acreage	Percent Acreage
Commercial	261	597.50	0.69%
Office & Institutional	99	741.71	0.85%
Industrial	36	152.78	0.18%
Multi-Family Residential	336	35.14	0.04%
Single-Family Residential	9,027	8,758.72	10.06%
Manufactured Home	923	1,149.53	1.32%
Recreation	29	577.79	0.66%
Conservation	119	32,333.31	37.13%
Rural Agriculture	1,024	40,358.88	46.35%
Vacant/Infill	3,756	2,366.70	2.72%
Total	15,610	87,072.06	100.0%

***Waterbodies, incorporated municipalities, and rights-of-way are not included.**

VACANT LAND ANALYSIS & DEVELOPMENT POTENTIAL

In order to better understand the impacts of potential development in the unincorporated County, vacant and rural agricultural lands were analyzed based upon the zoning district in which they are located. To further refine the potential for future development, land potentially subject to wetlands was also removed from the calculation (see **Map 3.6: Coastal and Non-Coastal Wetlands**). To establish the estimate, all acreage occupied by wetlands was removed from the calculation. It should be noted that these mapped wetlands only represent an indication of potential environmental constraints. Only those wetlands identified as “404” by jurisdictional determination will pose true regulatory constraints. Housing unit estimates are calculated based upon the current density allocation after removing 30% of the acreage to account for roads, open space, utilities, and/or stormwater. These calculations are merely estimates to convey the potential for development throughout the County. **Table 5.9: Pender County – Vacant/Rural Land not Impacted by Wetlands by Zoning Districts (2017)** provides the total acreage and percent acreage of land within each of the designated zoning districts.

Table 5.9: Pender County – Vacant/Rural Land not Impacted by Wetlands by Zoning Districts (2017)

Source: Cape Fear Council of Governments GIS, Pender County GIS

Zoning District	Total Acreage	Percent Acreage
General Industrial	2,418.60	1.38%
Industrial Transition	29.48	0.02%
General Business	1,468.65	0.84%
Office & Institutional	53.12	0.03%
Planned Development	4,155.48	2.38%
Residential Performance	19,977.12	11.44%
Manufactured Housing Community	37.63	0.02%
Rural Agricultural	146,295.01	83.75%
Environmental Conservation	235.39	0.13%
Total	174,670.47	100.00%

Throughout the unincorporated County, Rural Agricultural zoning accounts for the greatest percentage of potentially developable land. Though, most of this land will continue to be used only for agricultural or very low density purposes. If all of this land were converted to single-family development at the minimum lot size it would equate to nearly 100,000 additional single-family homes. The Residential Performance and Planned Development zoning district account for nearly 25,000 acres of land that could be developed for housing. Accordingly, there is ample land available to accommodate future development throughout the entire county. More specific analysis of vacant land and development potential by zoning district follows.

Table 5.10.: Pender County Planning Areas – Vacant/Rural Land not Impacted by Wetlands by Zoning Districts (2017)

Source: Cape Fear Council of Governments GIS, Pender County GIS

Zoning District	Union Planning Area		Holly Shelter Planning Area		Burgaw Planning Area	
	Total Acreage	Percent Acreage	Total Acreage	Percent Acreage	Total Acreage	Percent Acreage
General Industrial	--	--	--	--	--	--
Industrial Transition	--	--	--	--	--	--
General Business	690.35	1.12%	16.25	0.07%	249.29	1.53%
Office & Institutional	14.63	0.02%	6.37	0.03%	4.06	0.02%
Planned Development	--	--	--	--	--	--
Residential Performance	2,631.35	4.28%	1,385.68	6.37%	2,897.53	17.78%
Manufactured Housing Community	--	--	--	--	--	--
Rural Agricultural	58,039.55	94.51%	20,210.61	92.91%	13,125.15	80.55%
Environmental Conservation	35.13	0.06%	134.55	0.62%	18.14	0.11%
Total	61,411.00	100.00%	21,753.75	100.00%	16,294.18	100.00%

Within the Union, Holly Shelter, and Burgaw Planning Areas, the most significant percentage of land available for development falls within the Rural Agricultural zoning district. Accordingly, it is anticipated that these planning areas will continue to be predominantly rural in nature. Some land is available for development in the Residential Performance zoning district, which allows

for housing development on lots of approximately 15,000 square feet. See **Table 5.10 and Table 5.11: Pender County Planning Areas – Vacant/Rural Land not Impacted by Wetlands by Zoning Districts (2017)**

UNION PLANNING AREA – VACANT LAND BY ZONING DISTRICT

Within this planning area, it is anticipated that minimal growth in housing and associated services will occur over the next thirty years. Where growth does occur, it will likely be in proximity to the Northeast Cape Fear River near the I-40/US 117 intersection and along the US 421 corridor.

HOLLY SHELTER PLANNING AREA – VACANT LAND BY ZONING DISTRICT

The vast majority of land located within the Holly Shelter Planning Area is zoned Rural Agriculture or Environmental Conservation. Accordingly, very low density residential development and conservation lands will continue to be the predominant land use pattern in the Holly Shelter Planning Area. Future development within this area will likely entail very low density single-family residential uses and supporting services.

BURGAW PLANNING AREA – VACANT LAND BY ZONING DISTRICT

Within this planning area, there is nearly 3,000 acres of land available for development zoned Residential Performance, which would allow for the development of nearly 6,000 single-family homes in the planning area. There is also more than 13,000 acres of zoned Rural Agriculture. As a result, a substantial deviation from the low density, agricultural land use pattern on the periphery of the Town of Burgaw is not anticipated.

Table 5.11: Pender County Planning Areas – Vacant/Rural Land not Impacted by Wetlands by Zoning Districts (2017)

Source: Cape Fear Council of Governments GIS, Pender County GIS

Zoning District	Caswell Planning Area		Long Creek Planning Area		Topsail Planning Area	
	Total Acreage	Percent Acreage	Total Acreage	Percent Acreage	Total Acreage	Percent Acreage
General Industrial	516.97	1.43%	1,901.62	9.01%	--	--
Industrial Transition	--	--	29.48	0.14%	--	--
General Business	53.66	0.15%	197.39	0.94%	261.53	1.72%
Office & Institutional	6.59	0.02%	16.27	0.08%	4.91	0.03%
Planned Development	352.43	0.98%	899.40	4.26%	2,899.47	19.03%
Residential Performance	1,153.02	3.19%	6,791.47	32.17%	5,114.96	33.57%
Manufactured Housing Community	--	--	--	--	37.63	0.25%
Rural Agricultural	34,494.47	95.54%	13,204.74	62.55%	6,914.44	45.38%
Environmental Conservation	44.59	0.12%	--	--	2.98	0.02%
Total	36,104.76	100.00%	21,109.28	100.00%	15,235.93	100.00%

The Caswell, Long Creek, and Topsail Planning Areas are anticipated to experience much more development and growth than the planning areas located in the northern portion of the

County. In total, throughout these three planning areas, there is more than 17,000 acres of vacant land zoned as Residential Performance or Planned Development (See **Table 5.10**). Accordingly, there is ample suitable land available to accommodate projected population growth.

CASWELL PLANNING AREA – VACANT LAND BY ZONING DISTRICT

In the Caswell Planning Area, the vast majority of land available for development – nearly 35,000 acres – is zoned Rural Agricultural. This would allow for very low density residential development. Much of the southern portion of the US 421 corridor is zoned Rural Agricultural, despite its close proximity to New Hanover County and the I40 Bypass. The potential for more dense residential development in this planning area is feasible, as approximately 1,500 acres of land is zoned for Residential Performance and Planned Development. In addition, there is more than 500 acres of underutilized land zoned for General Industrial along the US 421 corridor.

LONG CREEK PLANNING AREA – VACANT LAND BY ZONING DISTRICT

Rocky Point is located in the Long Creek Planning Area whose close proximity to I-40, Castle Hayne, and several employment centers make the area poised for increased growth and development. Within the planning area, there is nearly 7,000 acres of suitable land zoned Residential Performance that would allow for the construction of approximately 15,000 housing units. However, the vast majority of land (63%) is zoned as Rural Agriculture. There is roughly 200 acres of vacant land zoned General Business – the majority of which is located near the intersection of US 117 and NC-210 just west of I-40 – to support future development of commercial, office, retail, healthcare, and accommodation type uses. Lastly, there is nearly 2,000 acres of vacant land zoned for General Industrial uses. Much of this land is located along I-40 and south of NC 210, some of which may be better suited for residential rather than industrial uses.

TOPSAIL PLANNING AREA – VACANT LAND BY ZONING DISTRICT

As discussed previously, the Topsail Planning Area has experienced the most growth and development impacts of all the planning areas. Even with the significant amount of development that has occurred over the last thirty years, there still remains an abundant amount of land suitable for residential and commercial development in the planning area. There is more than 8,000 acres of vacant land zoned for Residential Performance and Planned Development in the planning area. If built out, this would equate to approximately 17,000 new housing units. Within this 8,000 acres, there are several master planned communities such as Blake Farm, Hawksbill Cove, and Wyndwater that will be developed over the next five to ten years and will contribute to the housing boom in the area. Additionally, there are a substantial number of platted residential lots that are currently vacant, where infill residential development will occur. Many of these vacant lots are located in the existing communities of Olde Point, Belvedere Plantation, Snug Harbor, Virginia Creek, Washington Acres, and others. There is also land available for commercial development – more than 250 acres zoned General Business – along the US 17 corridor. Development within this General Business district will provide retail and office opportunities for the residential communities in the planning area.

FUTURE LAND USE

The Pender County Future Land Use Map (**Map 5.8**) is created to provide guidance for zoning and land use decisions. The map visually depicts the County's long range land use and development goals. The map is intended to show the community's planned future growth patterns within the County's planning jurisdiction and is also provided for each respective planning area (**Maps 5.9 – 5.14**).

The future land use categories provide the desired land uses and development characteristics for each respective category. While the future land use map and guidelines establish goals and policy direction for various areas in the County's planning jurisdiction, it is the County's Official Zoning Map and Unified Development Ordinance that codifies the actual development regulations within the planning jurisdiction.

FUTURE LAND USE CATEGORIES

This section defines the future land use guidelines for Pender County. The future land use classification includes twelve land use categories. North Carolina General Statutes require that all rezoning decisions and ordinance amendments be reviewed for consistency with the County's Land Use Plan, including a statement by the Planning Board and Board of Commissioners as to whether the amendment is or is not consistent with the Land Use Plan.

Each future land use category includes a description and desired uses. Desired density is provided for residential categories, which is classified based on Dwelling Units per Acre (du/a). Dwelling units per acre are the number of residential units constructed per acre of lot size. The following narrative outlines the key desired development guidelines for each individual future land use category depicted on the future land use maps.

HOW TO USE THE FUTURE LAND USE MAP AND GUIDELINES

Upon adoption of this plan, the Planning Board, Board of Commissioners, and citizens should reference this chapter in reviewing land use and development related decisions and policy implementation. The future land use map should be amended if significant changes occur or are proposed to occur. This will aid in consistency with changes to the County's Official Zoning Map.

Each future land use classification (note: category is used interchangeably throughout this chapter) contained in this chapter is described with a short narrative and supporting development guidelines. The color that identifies that future land use category on the Future Land Use Map is also provided on the page containing the narrative and development guidelines. It should be noted that the boundary of each particular future land use category is not bound explicitly by parcel lines.

Key terms used in the future land use category narrative:

- **Mixed use:** The horizontal or vertical mixture of non-residential and/or residential uses within a common development plan. The term mixed use is intended to imply flexibility

in market driven development of compatible land uses to reduce traffic congestion, provide entertainment and services to residents, and enhance quality of life for Pender County residents.

- **Neighborhood scale:** Development that conforms to the neighborhood fabric. The footprint of neighborhood scale structures are typically limited to 15,000 square feet or less with surface parking lots not exceeding 20,000 square feet.
- **Human scale:** Development that caters to the pedestrian rather than the automobile. Structures are built with architectural features, fenestration, 25% transparency or greater, and are served by bicycle and pedestrian facilities.
- **Supporting services:** Infrastructure or land uses that are complementary to more dense residential development. This includes water/sewer infrastructure, health care facilities, grocery stores, and broadband availability.
- **Employment centers:** Development of significant commerce centers that support employment. These commerce centers may consist of multi-story office buildings with footprints in excess of 20,000 square feet. These centers must be located on primary roadway corridors such as US 17, US 117, US 421, and I-40.

REGIONAL MIXED USE

The regional mixed use category will allow for the strategic allocation of future development and population growth, while limiting land use conflicts within existing neighborhoods. Growth is focused in locations that are served by water/sewer infrastructure and are located along planned major collector roadways and existing primary roadway corridors in the southern portion of the County (I-40, US 17, US 117, US 421, and NC-210). This future land use category provides access to retail, office, and multi-family residential uses. These land uses are primarily accessed by the automobile, but facilities should be included to increase the viability of access via walking or cycling.

The preferred land use mix is primarily commercial/retail and office with multi-family residential uses. Large employment centers and retail spaces are encouraged. Higher density single-family uses should account for less than 25% of a development proposal and should complement a more substantial mix of commercial/office and multi-family development. Development within this category should provide ample landscaping and street trees to present an inviting environment to travelers passing through the County. More intense commercial and offices uses requiring larger lots sizes, parking area, and stormwater infrastructure are permitted in this land use category. Artisan manufacturing is encouraged in this category.

Big box buildings, such as department stores, variety stores, warehouse retail centers, grocery stores, furniture outlets, and similar buildings shall be designed such that the exterior façade has the appearance of several smaller, human scale, buildings through the use of vertical treatments and elements that break up the horizontal wall.

Internal circulation patterns should create street-like spaces lined with on-street angled or parallel parking and parking areas. Internal pedestrian connections should also be provided

whereby structures within a development are connected with each other. Sidewalks should connect all buildings within the site and to adjoining sites. Sidewalks should have street trees and pedestrian lighting. Surface parking lots should be heavily shaded, landscaped, and located in the rear of new development where practicable. Shared parking should be encouraged where multiple uses are located within walking distance (1/4 mile). Stormwater infrastructure should be located behind buildings or incorporated into the design of the development as an amenity. Development density within this category allows for up to 15 units per acre for multi-family residential development and up to 10 units per acre for single family development.

Desired Uses:

- Most commercial, retail, office, & institutional uses
- Employment centers
- Artisan manufacturing
- Multi-family residential
- High density single-family residential uses
- Upper story residential

Regional Mixed Use

Inappropriate Uses:

- Medium and low density single-family residential uses
- Storage facilities
- Industrial uses

Transportation Infrastructure:

- Automobile: arterial, collector (major, local, minor), and local roads
- Pedestrian: 5 – 10 foot sidewalks, crosswalks, pedestrian signals
- Cyclist: bicycle lanes, multi-use paths, and bicycle parking
- Transit: Park and ride facilities and limited fixed-route service (including bus shelters)

NEIGHBORHOOD MIXED USE

Neighborhood mixed use allows for a transition between more intense commercial, office, and residential development to lower density residential neighborhoods. The neighborhood mixed use category is primarily dedicated to non-residential uses that provide services, entertainment, and amenities to residents within a three mile radius. Land use and development within this category is closely coordinated with existing and planned roadway transportation networks, while encouraging bicycle and pedestrian access. This future land use category should be composed of a mixture of integrated commercial, office, institutional, and single-family residential uses. This future land use classification is not intended to be solely reserved for mixed use developments. Single use developments that contribute toward an integrated land use pattern of appropriate commercial, office, civic, and medium density residential uses are encouraged.

Appropriate uses include neighborhood-scale retail, restaurant, and office establishments; religious and educational institutions; and higher-density single-family residences – attached and detached. Large-scale or intense commercial establishments, multi-family development, and industrial operations are not appropriate. Building footprints are generally limited to 15,000 square feet in size or smaller. These areas should be served by water and sewer infrastructure. Development density within this category allows for up to 10 units per acre for residential development.

Neighborhood Mixed Use

Desired Uses:

- Commercial/retail and office uses that serve existing communities. Examples include restaurants, cafes, drug stores, healthcare facilities, professional offices, and retail-oriented uses.
- Single-family dwellings – detached, duplex, and townhouse (up to ten units in a single structure)

Inappropriate Uses:

- Establishments requiring large surface parking in excess of 20,000 square feet
- Low density residential uses
- Industrial uses
- Storage facilities

Transportation Infrastructure:

- Automobile: arterial, collector (major, local, minor), and local roads
- Pedestrian: 5 foot sidewalks, crosswalks, and pedestrian signals
- Cyclist: bicycle lanes, multi-use paths, and bicycle parking

COMMERCIAL WATERFRONT

Pender County's Intracoastal Waterway and river segments are prime locations for strategically placed development to support and enhance coastal activities, water-based recreation, and the tourism industry. This future land use category should be developed with commercial and recreational amenities that support the County's interest as a tourism destination, while providing access to these resources for residents and the general public. Principles for development include allocation of space for public access, coordination with floodplain and CAMA development regulations, sensitivity to natural habitat, tree preservation, and buffering of any adjacent residential uses. The use of low-impact development for stormwater management is highly encouraged. Pervious parking lots are highly desired and appropriate gravel (clean-washed #57 stone) may be used in place of permanent surfaces. Ease of vehicular and bike/pedestrian access is vital to the commercial waterfront land uses.

Direct access to public trust waters should be provided. Development within this future land use category should be compatibly designed and connected to the adjacent waterbody – river or Intracoastal Waterway – through designated public access locations such as a boardwalk, dock, pier, and/or canoe/kayak or small boat launch.

Commercial Waterfront

Desired Uses:

- Water-based restaurants and retail establishments open to the public
- Water-based recreational uses available for public use

Inappropriate Uses:

- Uses not associated with coastal or riverine waters
- Industrial uses
- Residential uses

Transportation Infrastructure:

- Automobile: collector (local, minor) and local roads
- Pedestrian: 5 foot sidewalks
- Cyclist: bicycle lanes, multi-use paths, and bicycle parking

CIVIC

The civic future land use category accounts for the development of governmental buildings and supporting community services such as police and fire rescue. Public institutional uses such as schools and governmental buildings are also included in this future land use category.

Desired Uses:

- Public uses

Civic

Inappropriate Uses:

- Commercial development
- Residential development

Transportation Infrastructure:

- Automobile: arterial, collector (major, local, minor), and local roads
- Pedestrian: 5 foot sidewalks
- Cyclist: bicycle lanes, multi-use paths, and bicycle parking

INDUSTRIAL

To increase employment in the County, industrial uses are highly encouraged in appropriate locations such as the Pender Commerce Park or US 117 in Rocky Point. Industrial land uses that are adjacent to residential land uses should be heavily buffered to reduce any adverse impacts between these two incompatible uses. The width of the buffer should be based on the type of industry and its potential to create noise, odors, heavy truck traffic, or other negative effects.

Appropriate uses include manufacturing, warehousing and wholesaling, transportation and distribution centers, water and wastewater treatment facilities, landfills, bulk storage of hazardous materials, large equipment storage and operation, and other uses that may be unpopular neighbors. Residential development and general retail uses are not appropriate. These areas should be served by water and sewer infrastructure.

Desired Uses:

Industrial

- Industrial
- Manufacturing
- Mining

Inappropriate Uses:

- Residential
- Commercial

Transportation Infrastructure:

- Automobile: arterial, collector (major, local, minor), and local roads
- Pedestrian: 5 foot sidewalks on site
- Cyclist: bicycle lanes and bicycle parking on site

LIGHT INDUSTRIAL

The purpose of this land use category is for the use of light industrial operations and heavy commercial uses such as building material suppliers, auto repair, auto sales, storage facilities, and other establishments with extensive outdoor storage or those that will have an impact on neighboring properties. Light industries typically require less space, raw power, and water consumption than those in the Industrial future land use category. These uses may entail the manufacturing of partially processed materials to produce items of relatively high value per unit weight.

These areas should have excellent transportation access (or potential access) to primary roadways. These areas may be individual sites or integrated into the Pender Commerce Park. Light industrial uses create minimal emission of smoke, dust, fumes, glare, noise, and vibrations. These areas should be served by water and sewer infrastructure.

Light Industrial

Desired Uses:

- Light industrial
- Light manufacturing
- Office
- Heavy commercial
- Storage facilities

Inappropriate Uses:

- Heavy industrial
- Heavy manufacturing
- Residential uses

Transportation Infrastructure:

- Automobile: arterial, collector (major, local, minor), and local roads
- Pedestrian: 5 foot sidewalks
- Cyclist: bicycle lanes and bicycle parking on site

MEDIUM DENSITY RESIDENTIAL

Medium density residential uses are vital to supporting Pender County's growing population by strategically locating more dense residential development in areas that will not create conflicts with existing neighborhoods. These uses are located in close proximity to supporting services and a mixture of development types, and are generally found in the southern portion of the County. Appropriate uses include single-family residences, duplexes, townhomes, community recreation and open space uses, and neighborhood-scale institutional uses such as religious and civic organizations. Townhomes may be suitable when proposed as part of a master planned community whereby the dimensional requirements and uses forming the outer boundary of the community are compatible with the adjacent properties or permissible uses. Clustering of new residential communities is encouraged.

Planned communities may also include well-integrated neighborhood-scale commercial and office uses. Industrial and manufacturing uses, and commercial and office uses not located within a planned community, are inappropriate. Development density within this category is three to six dwelling units an acre or less.

**Medium Density
Residential**

Desired Uses:

- Single-family dwellings – detached and duplex (up to two units per structure)
- Townhomes may be suitable when included as part of a master planned community
- Age appropriate retirement housing
- Recreation, parks, and open space

Inappropriate Uses:

- Multi-family residential uses
- Commercial, office, and institutional development not integrated into a planned community
- Industrial development

Transportation Infrastructure:

- Automobile: arterial, collector (major, local, minor), and local roads
- Pedestrian: 5 foot sidewalks and crosswalks at primary intersections
- Cyclist: bicycle lanes and multi-use paths

LOW DENSITY RESIDENTIAL

The Low Density Residential future land category is located on the fringe of medium density residential uses and within existing single-family neighborhoods. These areas are typically established single-family neighborhoods with a low density residential development pattern. Appropriate uses include single-family dwellings and neighborhood-scale institutional facilities. Commercial and industrial uses are inappropriate in these areas, as are large institutions and other significant traffic generators. Duplexes and townhomes may be suitable when proposed as part of a master planned community whereby the dimensional requirements and uses forming the outer boundary of the community are compatible with the adjacent properties or permissible uses. Clustering of new communities is encouraged.

Development density within this category is two dwelling units an acre or less. Water and sewer service may not be available in these areas.

Desired Uses:**Low Density
Residential**

- Single-family residential uses – detached
- Duplexes and townhomes may be suitable when included as part of a master planned community
- Recreation, parks, and open space

Inappropriate Uses:

- Non-residential development
- Single-family dwellings – attached
- Multi-family residential uses

Transportation Infrastructure:

- Automobile: Collector (local, minor), and local roads
- Pedestrian: 5 foot sidewalks on one side
- Cyclist: bicycle lanes and multi-use paths

COASTAL RESIDENTIAL

Supporting the County's coastal character and natural habitat is a top priority for Pender County residents. To more appropriately preserve the County's coastal character, the Coastal Residential future land use category is established. Coastal residential land uses are located east of the US 17 corridor and generally within a half-mile of estuarine waters such as coastal creeks and the Intracoastal Waterway. Appropriate uses include single-family residences, community recreation and open space uses, and water-based recreation uses (public and private). Unencumbered access to public trust coastal waters and maximum development setback from the shoreline is highly encouraged. Clustering of new communities is encouraged.

To support adjacent coastal surface water quality, low impact development (LID) is encouraged. In general, lots should maximize pervious surfaces. Tree preservation and mitigation is required for stormwater purposes and as a means of preserving the coastal habitat. Development density within this category is three dwelling units an acre or less. Water and sewer service are typically available in these areas.

Desired Uses:

- Single-family dwellings – detached
- Recreation, parks, and open space

Coastal Residential

Inappropriate Uses:

- Single-family dwellings – attached
- Multi-family residential uses
- Commercial, office, and institutional development
- Industrial development

Transportation Infrastructure:

- Automobile: Collector (local, minor) and local roads
- Pedestrian: 5 foot sidewalks
- Cyclist: bicycle lanes and multi-use paths

RURAL AGRICULTURE

The Rural Agricultural future land use category supports and protects Pender County's agricultural areas. These areas are an essential part of the County's economy and agricultural heritage. Within the Rural Agriculture future land use category, agriculture uses are highly encouraged. Preservation of prime farmland soils for continued prosperity of farming and forestry operations should be considered. Manufactured homes and very low density single-family detached dwellings are appropriate uses in this category. Commercial, civic, office, and institutional uses are permitted where compatible with existing neighborhoods and as a resource or employment opportunity for area residents. Development density within this

category is one dwelling unit an acre or less. Expansion of centralized water and sewer systems within this future land use category are discouraged, unless necessary to protect public health when existing systems fail.

Desired Uses:

- Single-family dwellings – detached
- Manufactured homes
- Recreation, parks, and open space

**Rural
Agriculture**

Inappropriate Uses:

- Single-family dwellings – attached
- Multi-family residential uses
- Most commercial, office, and institutional development
- Industrial development

Transportation Infrastructure:

- Automobile: Collector (local, minor) and local roads
- Cyclist: paved shoulders and multi-use paths

RECREATION

The Recreation future land use category is intended to preserve future public and private recreation/open space lands. Recreation uses such as parks, golf courses, boat launches, and passive open space should be preserved for use by future generations. In order to protect property values and enhance quality of life, these lands should be protected from future development.

Desired Uses:

- Preserved open space
- Active and passive recreation uses
- Recreational amenities and clubhouses
- Public buildings

Recreation

Inappropriate Uses:

- Non-residential development
- Residential development

Transportation Infrastructure:

- Automobile: arterial, collector (major, local, minor), and local roads
- Pedestrian: 5 foot sidewalks
- Cyclist: bicycle lanes, multi-use paths, and bicycle parking

CONSERVATION

This land use category includes state-owned game lands, conservation trust lands, and Lea-Hutaff Island. These lands serve as resources for the public at large through environmental education opportunities, natural aesthetic qualities, wildlife habitat, and stormwater drainage. Development is strongly discouraged within this future land use category. Appropriate uses include parks, passive/active open space, and nature centers. Residential, commercial, and industrial development are not appropriate.

Desired Uses:

Conservation

- Nature trails
- Preserved open space
- Nature-based educational uses that have limited environmental impact
- Forestry and agricultural uses
- Passive recreation areas

Inappropriate Uses:

- Non-residential development unless exempted above
- Residential development

Transportation Infrastructure:

- Automobile: collector (local, minor) and local roads
- Pedestrian: nature trails
- Cyclist: paved shoulders and multi-use paths

SUMMARY

Listed below is a summary of the analysis and information included in this chapter:

- Rural agriculture land uses occupy the greatest percentage of land throughout unincorporated Pender County. This land use classification accounts for 61% (344,111.97 acres) of land throughout the unincorporated County.
- Single-family dwellings account for the most significant category of developed land in the unincorporated County, followed by manufactured dwellings. In total, approximately 7% (40,000 acres) of land is used for single-family residential purposes.
- Vacant/Infill land accounts for a little over 1% of the land in the Pender County. These lands are currently undeveloped and are less than 2 acres in area. As such, these parcels represent prime development opportunities as many will not be further subdivided and only require a structure to be built upon them.
- Dating back to the 1987 Land Use Plan, it can be said that land use patterns thirty years ago are largely similar to those today, except for perhaps an increase in the relative density of development.
- Throughout the unincorporated County, Rural Agricultural zoning accounts for the greatest percentage of land. Though, most of this land will continue to be used only for agricultural or very low density purposes. If all of this land were converted to single-family development at the minimum lot size it would equate to nearly 100,000 additional single-family homes.
- The Residential Performance and Planned Development zoning district account for nearly 25,000 acres of land that could be developed for housing. Accordingly, there is ample land available to accommodate future development throughout the entire county.
- Within the Union, Holly Shelter, and Burgaw Planning Areas, the most significant percentage of land available for development falls within the Rural Agricultural zoning district. Accordingly, it is anticipated that these planning areas will continue to be predominantly rural in nature.
- The Caswell, Long Creek, and Topsail Planning Areas are anticipated to experience much more development and growth than the planning areas located in the northern portion of the County. In total, throughout these three planning areas, there is more than 17,000 acres of vacant land zoned as Residential Performance or Planned Development.
- The Pender County Future Land Use Map is created to provide guidance for zoning and land use decisions. The map visually depicts the County's long range land use and development goals. The map is intended to show the community's planned future growth patterns within the County's planning jurisdiction.

GOALS, OBJECTIVES, AND POLICIES

INTRODUCTION

The County has established a set of land use and development related policies to act as guidelines during any official decision making process. These policies and goals reflect the comments and concerns received during the public involvement process and provide citizens, property owners, and developers with a predictability of official actions. Policies in this chapter relate to land use and growth management. One CAMA management topic is covered in the policy section herein: Land Use Compatibility.

Please note the following concerning the usage and definition of a Goal, Objective, Policy, and Recommended Action. Each of these terms are intended for a specific component of the implementation and utility of this land use plan. See below for more information:

- **Goal:** A general statement indicating a desired end or the direction the County will follow to achieve that end.
- **Objective:** Direction toward the attainment of a particular goal.
- **Policy:** A statement identifying the County's position regarding the pursuit of a goal or objective.
- **Recommended Action:** A statement outlining a specific course of action the County may pursue to implement goals and policies. Recommended actions are not used in review of development proposals, text amendments, and/or rezoning requests.

Refer to Appendix A for Definitions of action words contained within the policy section.

LAND USE COMPATIBILITY

Goal 5.1: Land Use and Growth Management: Manage the physical growth and development of Pender County by encouraging more intensive land uses in key locations identified for such growth while preserving and protecting the unique physical character and social assets of the rural heritage and coastal habitat that makes the County a unique place to live.

Objective 5.1: Land Use and Growth Management: Ensure that development and use of resources balances protection of natural resources and agricultural lands with economic development, avoids risks to public health and welfare, and is consistent with the capability of the land.

Policy 5.1.A: New Development: The County shall require all development to adhere to the land use regulations set forth in the County's Unified Development Ordinance. Accordingly, the County shall utilize any and all zoning and subdivision procedures, allowed per NC General Statutes, to preserve the unique characteristics of Pender County. This may include – but shall not be limited to – overlay districts, cluster development requirements, density incentives, open space allocation, tree preservation, school site reservation, conditional zoning, and other tools as may be necessary.

Policy 5.1.B: Land Use Plan Consistency: The County generally requires that any official land use and development related actions (e.g. re-zonings, text amendments, and special use permits) remain consistent with the policies adopted in this plan and any other applicable plan. Any actions that are inconsistent with such plans shall require a statement from the Planning Board and Board of Commissioners approving such decisions, as to the in conditions taken into account in amending the Unified Development Ordinance to meet the development needs of the community, and why the action was reasonable and in the public interest.

Policy 5.1.C: Coordination with Infrastructure/Services: The County shall encourage development in areas where the necessary infrastructure – roads, water, sewer, broadband, and schools – is available, planned or can be most cost effectively provided and extended to serve existing and future development. Natural resource conservation should be considered.

Recommended Action 5.1.C.1: Annually review the future land use map in concert with new or proposed infrastructure to ensure the desired growth pattern reflects the expansion of new roads, water, sewer, broadband, or schools. Identify geographic areas that may be suitable for an increase or decrease in the relative density associated with infrastructure plans. This review should include an inventory and analysis of completed or planned collector streets.

Recommended Action 5.1.C.2: To avoid unnecessary impacts to wildlife habitat, the Biodiversity/Wildlife Habitat Assessment and other conservation GIS map layers and information will be considered in future growth plans.

Policy 5.1.D: Focused Growth and Development: The County supports a growth pattern that includes low density single-family residential communities, but also allows for the strategic placement of higher density residential, mixed uses, and commercial development to accommodate and support future population growth, where necessary infrastructure exists or is planned.

Policy 5.1.E: Compatible Development: The County supports new commercial and multi-family developments that blend with surrounding neighborhoods and limit traffic, noise, and light impacts on existing residential uses.

Policy 5.1.F: Conditional Zoning: The County shall continue to use conditional zoning process as a tool for encouraging desirable development outcomes.

Policy 5.1.G: Development Review: The County supports an efficient, transparent, and predictable development review and approval procedure.

Recommended Action 5.1.G.1: Consider rezoning all vacant Planned Development tracts to a base zoning district that is consistent with the future land use map. Establish an inventory of vacant land zoned Planned Development.

Recommended Action 5.1.G.2: Consider revising the County’s Master Development Plan review procedure to only apply to phased development plans. Where unphased development is proposed, the Master Development Plan procedure should be modified to reflect a staff/technical review committee review of a conceptual or schematic plan. Consider revising or removing the Master Development Plan procedure for vacant land within the Planned Development zoning district. An option for by right development without Planning Board approval should be provided to development applicants and property owners within the Planned Development district.

MIXED USE DEVELOPMENT: COMMERCIAL, OFFICE, AND MULTI-FAMILY

Policy 5.1.H: Mixed Use Development: The County supports a wide range of commercial and residential development at varying intensities, when appropriately located, and provided that impacts to adjacent property owners and traffic congestion is mitigated.

Recommend Action 5.1.H.1: Consider establishing Mixed Use zoning districts consistent with the County’s future land use map – Regional and Neighborhood – which allow for development of multi-family, commercial, office, and vertical mixed use development.

Recommend Action 5.1.H.2: Consider establishing urban design guidelines and/or Form Based Code requirements for development within the Regional and Neighborhood Mixed Use future land use category. This effort should be undertaken by a consultant as part of public driven master planning process.

Recommended Action 5.1.H.3: To encourage the installation of shade trees, the following should be removed from the County’s “Canopy Tree” plant material list: Crepe Myrtle, Gingko Biloba, and Washington Hawthorn. Such trees are selected for removal due to their limited canopy spread and ability to provide shade.

Recommended Action 5.1.H.4: Require the installation of bicycle and pedestrian infrastructure as outlined in a future Comprehensive Bicycle and Pedestrian Transportation Plan, which specifically serves the development.

Policy 5.1.I: Multi-family Residential Development: The County shall allow multi-family development in designated and appropriate areas as identified within the Regional Mixed Use future land use category.

Recommended Action 5.1.I.1: Consider allowing multi-family developments as a by right use in certain zoning districts in accordance with the future land use map.

Recommended Action 5.1.I.2: Consider establishing residential density standards that are comparable to neighboring jurisdictions. As part of the

procedure, the County should analyze and research any and all incentives and/or supplemental regulations whereby an increase in density is granted. Neighboring jurisdictions: Onslow County – 10 dwelling units per acre, Brunswick County – 14 dwelling units per acre, New Hanover County – 17 dwelling units per acre.

Recommended Action 5.1.I.3: Consider establishing options whereby multi-family residential developments contribute funds for the County to acquire water-based recreational areas serving residents in the immediate area rather than for construction/allocation of open space within their particular development. Adherence to the provisions outlined in NCGS 153A-331 is required.

Policy 5.1.J: Multi-family Residential Development and Infrastructure: The County shall coordinate the expansion of multi-family residential development with the availability of water and sewer infrastructure.

Policy 5.1.K: Commercial Development: The County supports a wide range of commercial development, particularly those businesses that provide needed services to residents and visitors, provided that the impacts on traffic are minimized.

Recommended Action 5.1.K.1: Discourage the construction of storage facilities along the road frontage. Such facilities should be located behind other development and generally not visible from primary roadways. Based on public input, storage facilities are not desired along the US 17 corridor.

Policy 5.1.L: Office and Employment Centers: The County vigorously supports the development of large-scale office and employment centers to increase the number of jobs located within the County.

Policy 5.1.M: Commercial Waterfront: The County supports carefully developed commercial waterfront locations for use by the public, as a means to increase access to public trust areas, and to support the tourism industry.

Recommended Action 5.1.M.1: Consider establishing a Commercial Waterfront zoning district consistent with the County's future land use map. Uses should only be permitted through the special use permit process or specific development standards. Water-based restaurants, retail establishments, and recreational uses available for public use are desired.

INDUSTRIAL USES, BUSINESS DEVELOPMENT, AND TOURISM

Policy 5.1.N Industrial Uses and Business Development: The County supports the recruitment and siting of compatible industrial, heavy commercial, and large-scale employment establishments in areas that are consistent with County's future land use map. Compatible heavy commercial and employment center uses are also appropriate within the Regional Mixed Use future land use category.

Recommended Action 5.1.N.1: Consider committing additional County resources to improve and expand efforts to retain and recruit industries. Place emphasis on re-use of vacant buildings, recruitment of clean industries, expansion of the Pender Commerce Park, and creation of jobs.

Policy 5.1.O Pender Commerce Park/US 421: The County encourages and supports economic development projects of industrial, commercial, and other employment-related development in Pender Commerce Park and other properties in the vicinity.

Policy 5.1.P: Industrial Development Infrastructure: The County supports the expansion of water and sewer infrastructure for industrial and business development as depicted on the County's future land use map.

Policy 5.1.Q: Industrial Development in Hazard Areas: The County discourages industrial development within special flood hazard areas. This policy applies to both new industrial development and to expansion of existing industrial facilities.

Policy 5.1.R: Storage Facilities: The County supports the development of storage facility uses in the Industrial and Light Industrial future land use categories.

Policy 5.1.S: Wallace Airport Service: The County supports on-going efforts to retain and enhance air service at Wallace Airport/Henderson Field.

Recommended Action 5.1.S.1: Continue to work with the Town of Wallace to identify opportunities for commercial and industrial expansion in the proximity of the airport.

Policy 5.1.T: Maritime Industry: The County supports maritime-related industries such as marine biotechnology, commercial fishing, aquaculture, and coastal tourism.

Recommended Action 5.1.T.1: Consider options to partner with the UNCW Center for Marine Science and MARBIONIC to identify opportunities for marine biotech, aquaculture, or uses that would be compatible with coastal tourism.

Policy 5.1.U: Tourism Development and Uses: The County shall strive to protect and enhance coastal habitats, agricultural heritage, and surface water quality as an effective method for continued expansion of tourism-related industries and jobs.

RESIDENTIAL DEVELOPMENT AND HOUSING

Policy 5.1.V: Residential Development: The County supports a range of housing types and development at appropriate densities and locations that are compatible with their surroundings and are in accordance with the future land use map.

Recommended Action 5.1.V.1: Consider establishing tiered residential zoning districts based upon the future land use map and/or existing lot sizes.

Policy 5.1.W: Single-family Residential Development: The County shall maintain areas exclusively for conventional single-family development. Conversion of single-family homes to two-family and/or multi-family residential uses within established single-family neighborhoods shall be discouraged.

Policy 5.1.X: Coastal Residential Development: The County supports the protection of existing coastal single-family residential neighborhoods and property values by encouraging low-impact development principles, impervious coverage thresholds, public trust access, and preservation of tree canopy.

Recommended Action 5.1.X.1: Consider the establishment of a new Coastal Residential zoning district or overlay district for single-family residential development within ½ mile of estuarine or coastal waters. Such a district should encourage low impact development (LID), limit impervious surface coverage, require tree preservation and mitigation, and incentivize the allocation of public access to coastal waters.

Policy 5.1.Y: Manufactured Homes: The County shall continue to provide areas exclusively for manufactured housing development in the planning jurisdiction.

Goal 5.1.Z: Cluster Development Incentive: The County supports the clustering of residential development within the residential future land use categories for the preservation of coastal natural resources, prime agricultural lands, or wildlife habitat areas.

Recommended Action 5.1.Z.1: Consider incentives such as a density bonus where it can be demonstrated that a development will perpetually preserve coastal natural resources, prime agricultural lands, and/or wildlife habitat areas in accordance with the NC WRC “Conservation Recommendations for Priority Terrestrial Wildlife Species and Habitats in North Carolina.”

Policy 5.1.AA: Public Access Incentive: The County supports increased access to public trust waters through public access easements.

Recommended Action 5.1.AA.1: Consider incentives such as a density bonus where a development provides public trust water access to County residents through a permanent access easement. Such a provision may require the dedication of public access easements through extension of right-of-way to high water marks as a means of recreation and/or a fee-in-lieu for waterfront acquisition. NOTE: See Recommended Action 4.4.B.2.

Policy 5.1.BB: Workforce Housing: The County supports the development of a variety of workforce housing options for teachers, fire fighters, police officers, seniors, and low to moderate income persons.

Recommended Action 5.1.BB.1: Consider establishing zoning district regulations which support a variety of housing options in close proximity to

primary employment centers such as the Pender Commerce Park, US 421, and US 117/210.

Recommended Action 5.1.BB.2: Consider incentives such as a density bonus where a development provides housing for low to moderate income persons.

RURAL RESIDENTIAL AND AGRICULTURE

Policy 5.1.CC: Agricultural Business: The County support efforts to preserve existing farming operations and to expand agri-business opportunities.

Policy 5.1.DD: Mitigating Impacts: The County supports efforts to mitigate adverse effects of large-scale livestock farms, such as odor and potential ground/surface water pollution from waste lagoons.

Policy 5.1.EE: Rural Land Use Patterns: The County supports the rural residential and agricultural land use patterns as they currently exist throughout much of the County and as depicted on the future land use map.

Recommended Action 5.1.EE.1: Consider establishing a zoning district specific to the Penderlea community which will preserve the existing land use pattern and lifestyle of the area.

Policy 5.1.FF: Rural Non-Residential Uses: The County shall continue to accommodate limited non-residential uses in rural areas.

Recommended Action 5.1.FF.1: Consider increasing development intensity and uses at primary rural roadway intersection in accordance with the future land use map.

Policy 5.1.GG: Rural Infrastructure Expansion: The County generally discourages the expansion of water and sewer infrastructure in the Rural Agricultural future land use category, unless necessary to protect public health when existing systems fail.

RECREATION AND CONSERVATION

Policy 5.1.HH: Recreational Development: The County encourages and supports expansion and preservation of public and private recreational lands.

Policy 5.1.II: Conservation Lands: The County supports the preservation of existing conservation lands as depicted on the future land use map for education opportunities, natural aesthetic qualities, wildlife habitat, and stormwater drainage. Development is not supported in these areas. Expansion of conservation lands by private property owners is supported by the County.

Recommended Action 5.1.II.1: Consider designating Lea-Hutaff Island as Environmental Conservation on the County's official zoning map.

HISTORIC AND CULTURAL RESOURCES

Goal 5.2: Historic and Cultural Resources: Protect, enhance, and maintain vital historic and cultural resources for future generations as a means to support tourism and the County's identity.

Objective 5.2: Historic and Cultural Resources: Ensure that historic and cultural resources are maintained or enhanced as development occurs.

Policy 5.2.A: The County supports the preservation of significant historic and cultural resources.

Recommended Action 5.2.A.1: Designate historic, cultural or architecturally significant properties through National Register or local historic programs.

Recommended Action 5.2.A.2: Consider prioritizing historic, cultural or architecturally significant properties for public acquisition/protection.

PLANNING AREAS

Goal 5.3: Union Planning Area: Maintain the continued viability of agricultural operations and the predominant low density rural lifestyles of residents in the Union Planning Area.

Objective 5.3: Union Planning Area: Ensure that rural land use patterns are maintained and encourage preservation of prime farmlands for current and future use.

Goal 5.4: Holly Shelter Planning Area: Support Maple Hill residents by incentivizing commercial and industrial uses in targeted areas with an emphasis on increasing the number of economic development opportunities and services in the planning area.

Objective 5.4 Holly Shelter Planning Area: Focus on long-term economic sustainability, job creation, and business opportunities through economic development efforts and land use policies that encourage appropriate non-residential investment in environmentally viable sites.

Goal 5.5: Burgaw Planning Area: Protect the low density residential land use patterns and rural heritage on the periphery of the Town of Burgaw, while discouraging growth within vulnerable flood hazard areas.

Objective 5.5: Burgaw Planning Area: Ensure that rural land use patterns are maintained and limit expansion of dense residential development within the flood hazard areas adjacent to the Northeast Cape Fear River.

Goal 5.6: Caswell Planning Area: Solidify the Pender Commerce Park and adjacent properties as highly suitable for major economic development projects – including mixed use and residential developments – that support the creation of new jobs and enable significant non-residential tax base growth.

Objective 5.6: Caswell Planning Area: Support the development of commercial, office, and residential land uses along the US 421 corridor and in close proximity to the Pender

Commerce Park to serve as an employment base, economic development opportunity, and as a means for providing suitable workforce housing.

Goal 5.7: Long Creek Planning Area: Expand development which supports employment through the expansion of mixed uses that include multi-family and commercial land uses.

Objective 5.7: Long Creek Planning Area: Accommodate higher density mixed use growth in and around the I-40/US 117 and NC 210 intersections.

Goal 5.8: Topsail Planning Area: Protect existing single-family neighborhoods and coastal habitats from the expansion of incompatible land uses, while focusing more intensive growth and development in key locations along the US 17 corridor and in accordance with the US 17 Bypass and Collector Street Plan.

Objective 5.8: Topsail Planning Area: Manage traffic congestion, preserve coastal lifestyles, and enhance job opportunities through focused growth and development that will attract employers and support the continued expansion of residential development at varying densities.

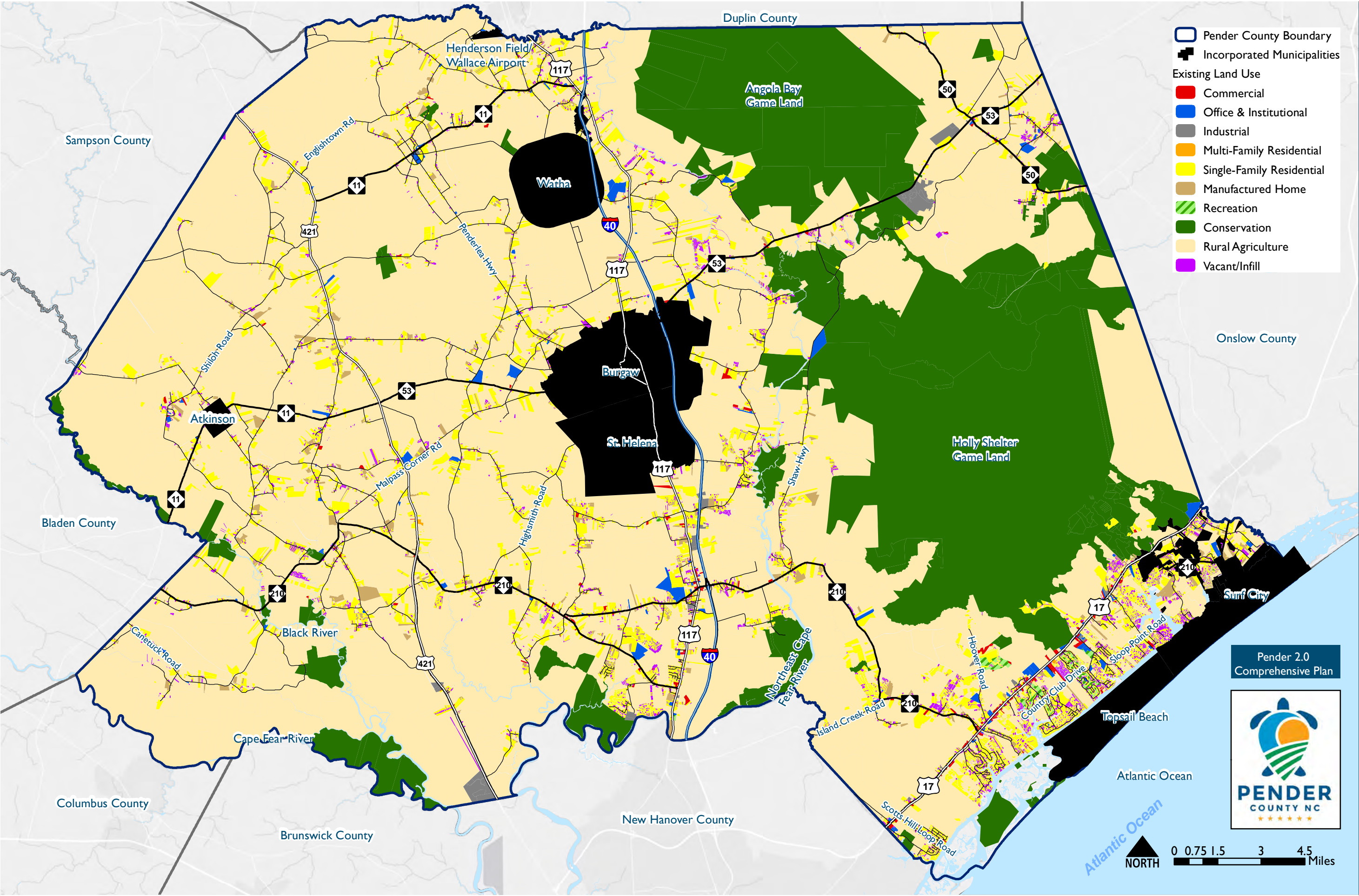
PUBLIC INPUT

Goal 5.9: Public Input: Increase opportunities for public input in all facets of the land use planning process.

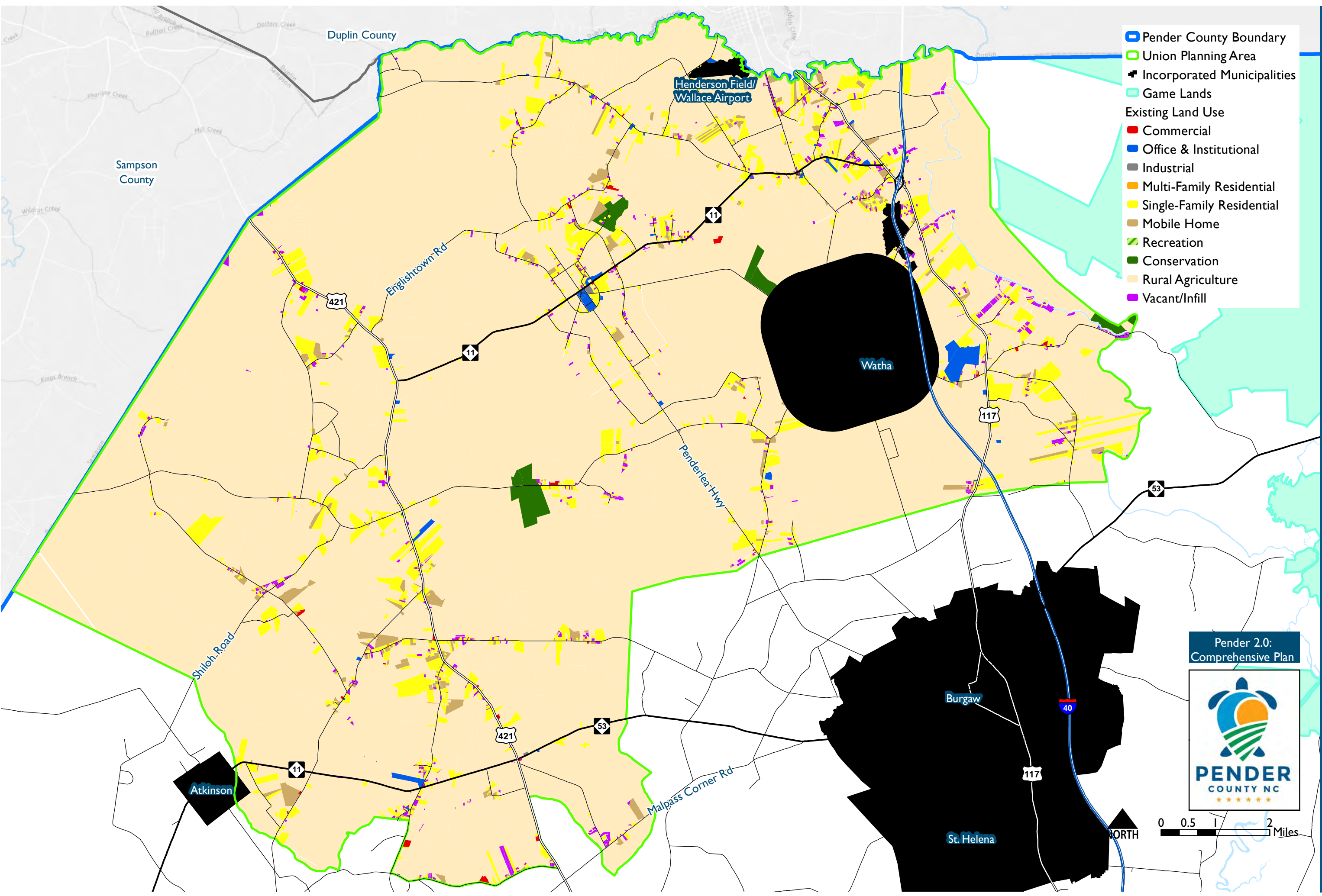
Objective 5.9: Public Input: Ensure that all residents of Pender County have a full and adequate opportunity to participate in the planning decision making process.

Policy 5.9.A: The County shall continue to utilize standing committees and boards to involve the public in planning decisions whenever practicable.

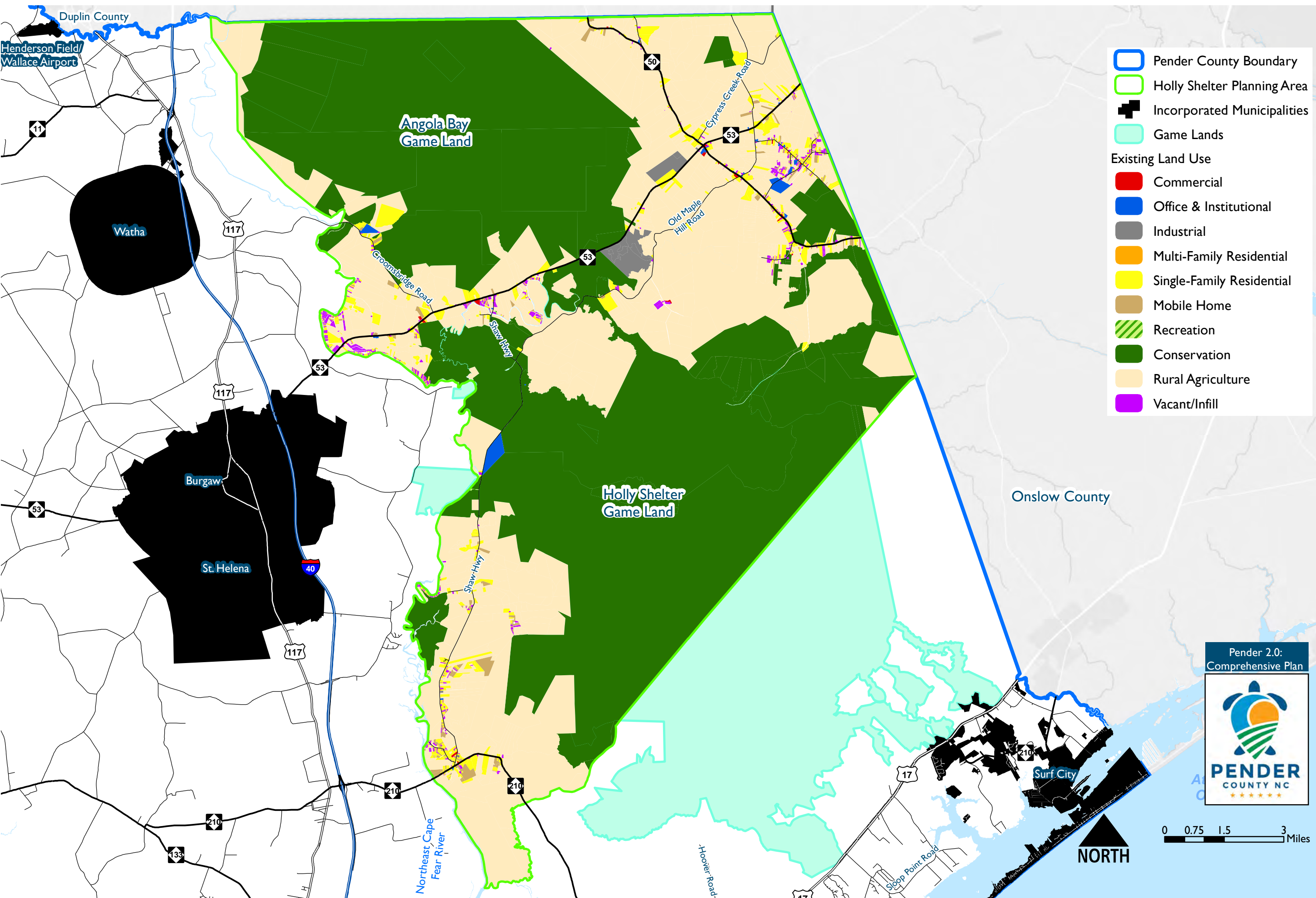
Policy 5.9.B: The County shall continue to utilize the County's website, social media, and other methods to keep residents informed of planning and land use decisions whenever practicable.



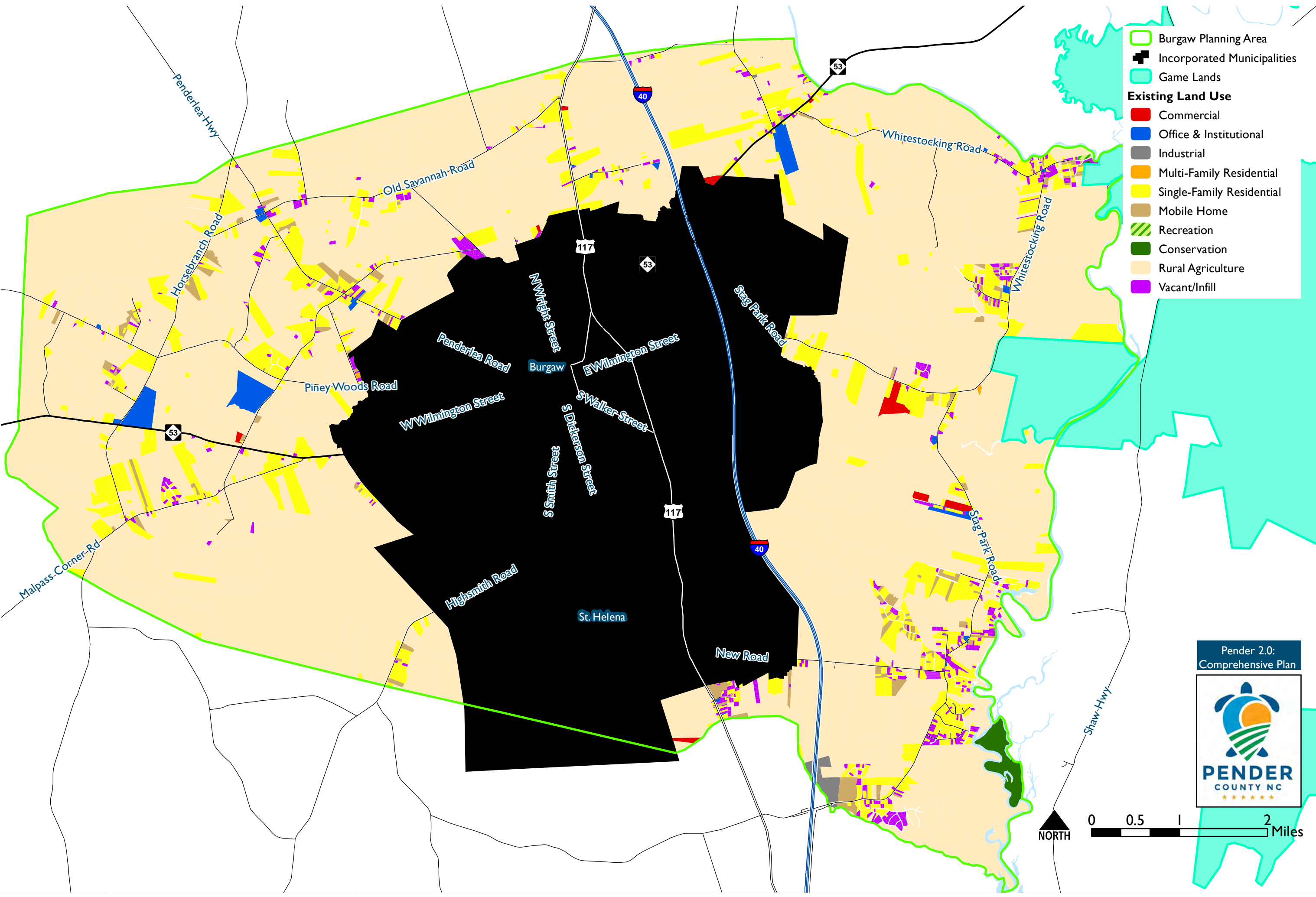
Map 5.1: Pender County Existing Land Use



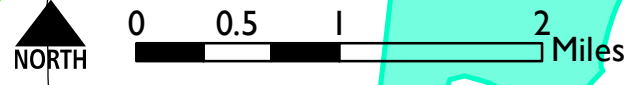
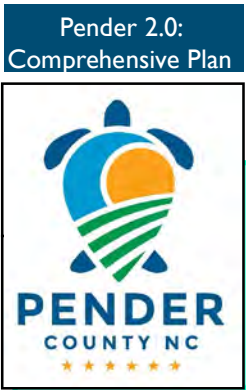
Map 5.2: Union Planning Area Existing Land Use



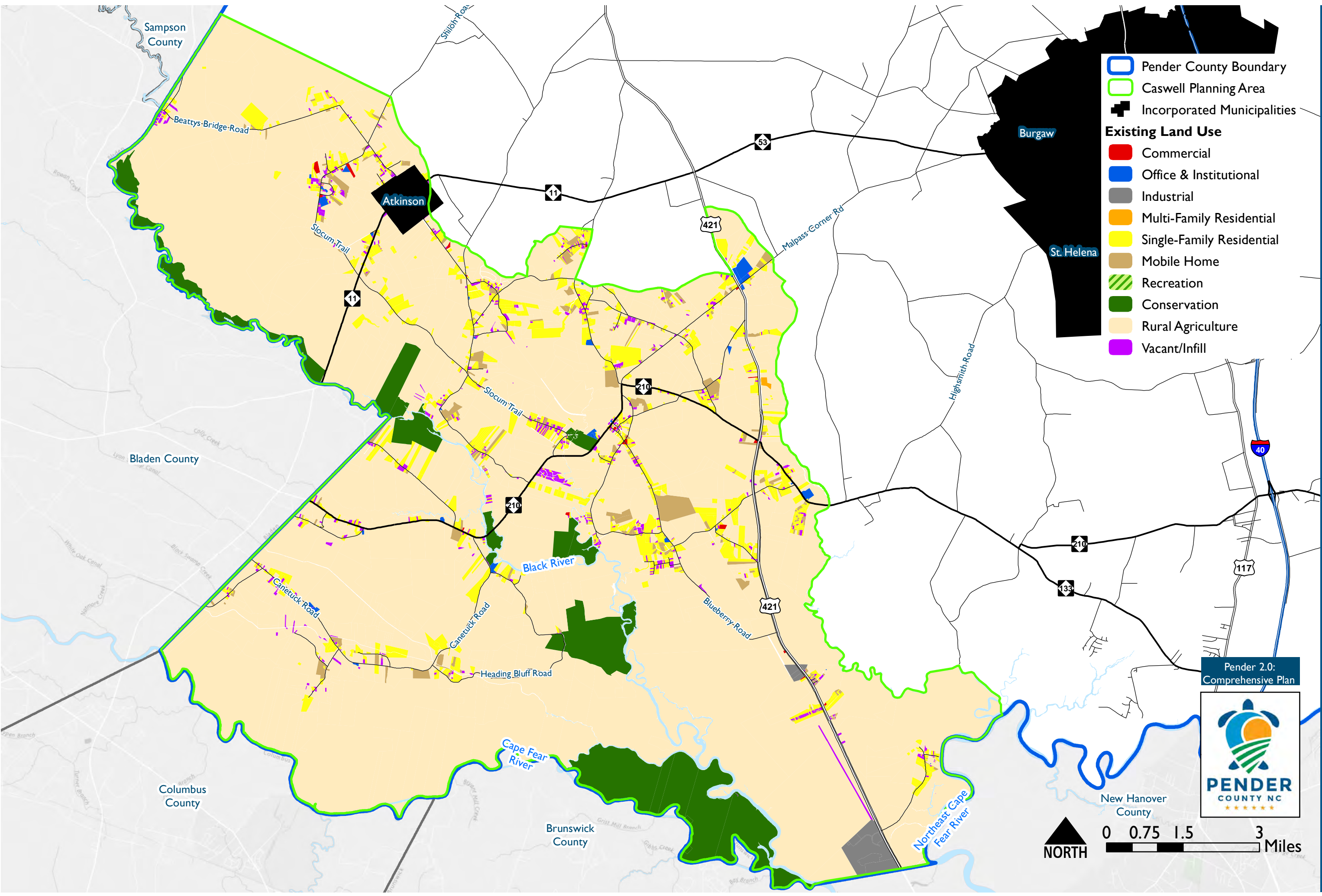
Map 5.3: Holly Shelter Planning Area Existing Land Use



- Burgaw Planning Area
- Incorporated Municipalities
- Game Lands
- Existing Land Use**
 - Commercial
 - Office & Institutional
 - Industrial
 - Multi-Family Residential
 - Single-Family Residential
 - Mobile Home
 - Recreation
 - Conservation
 - Rural Agriculture
 - Vacant/Infill



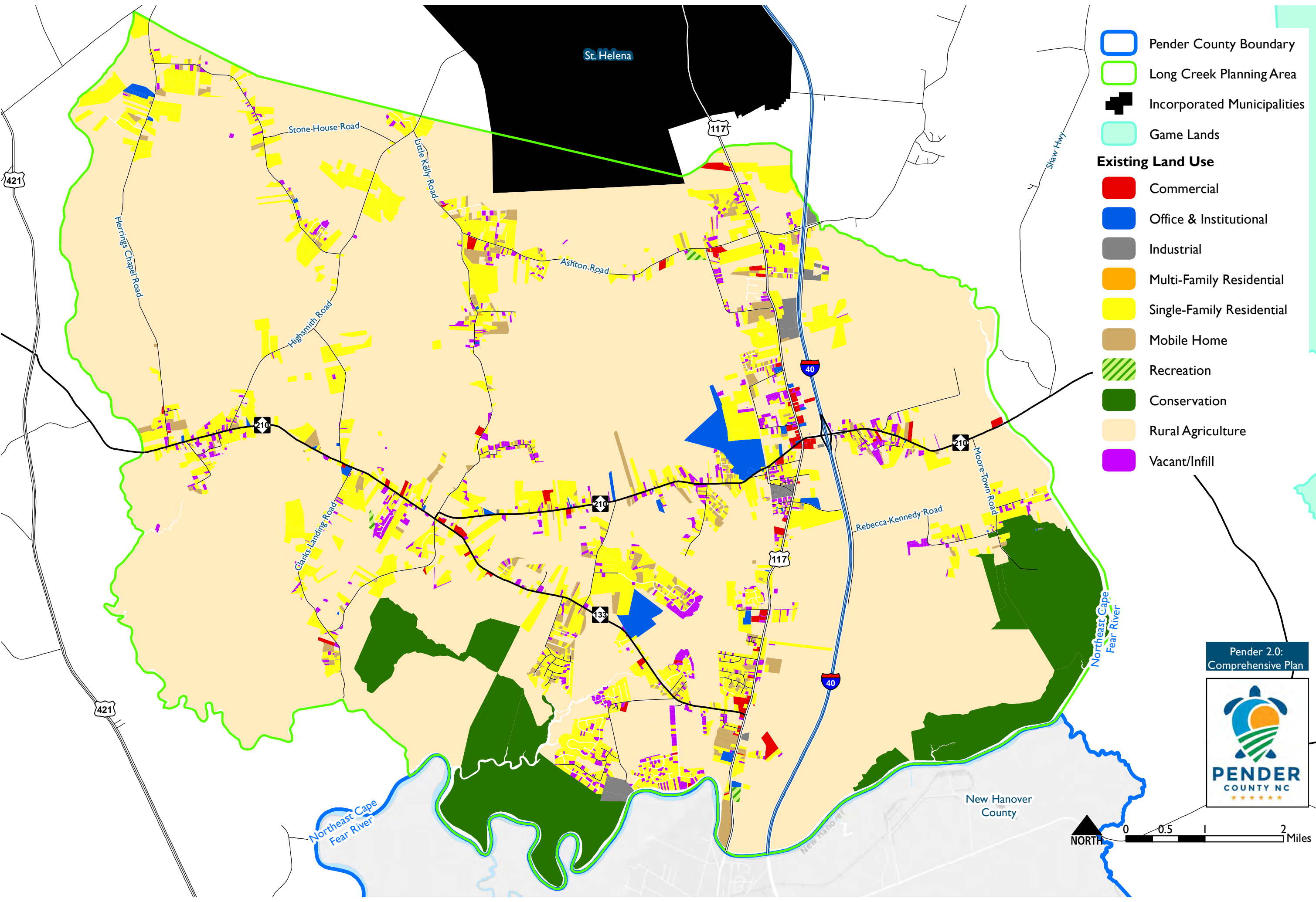
Map 5.4: Burgaw Planning Area Existing Land Use

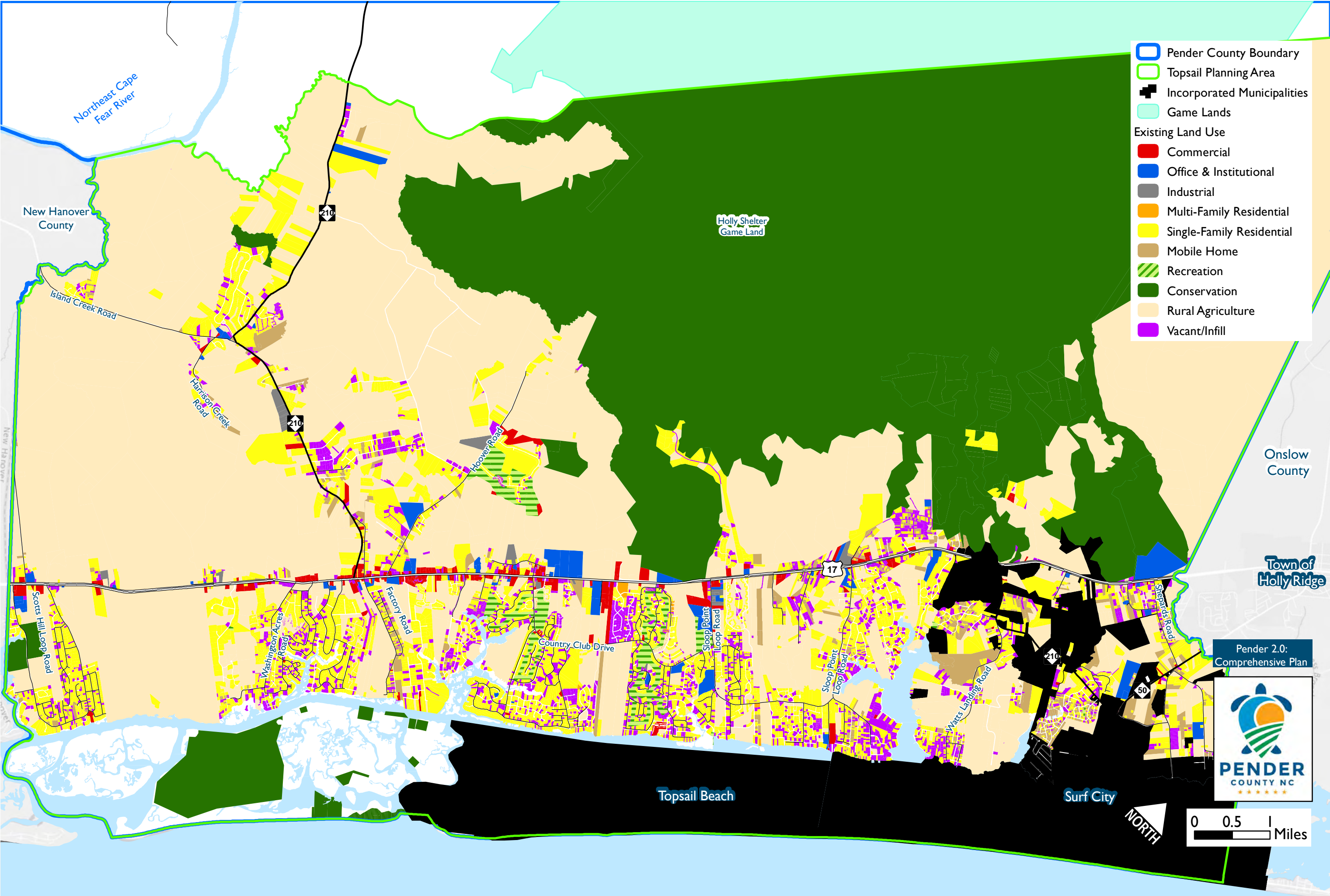


- Pender County Boundary
 - Caswell Planning Area
 - Incorporated Municipalities
- Existing Land Use**
- Commercial
 - Office & Institutional
 - Industrial
 - Multi-Family Residential
 - Single-Family Residential
 - Mobile Home
 - Recreation
 - Conservation
 - Rural Agriculture
 - Vacant/Infill

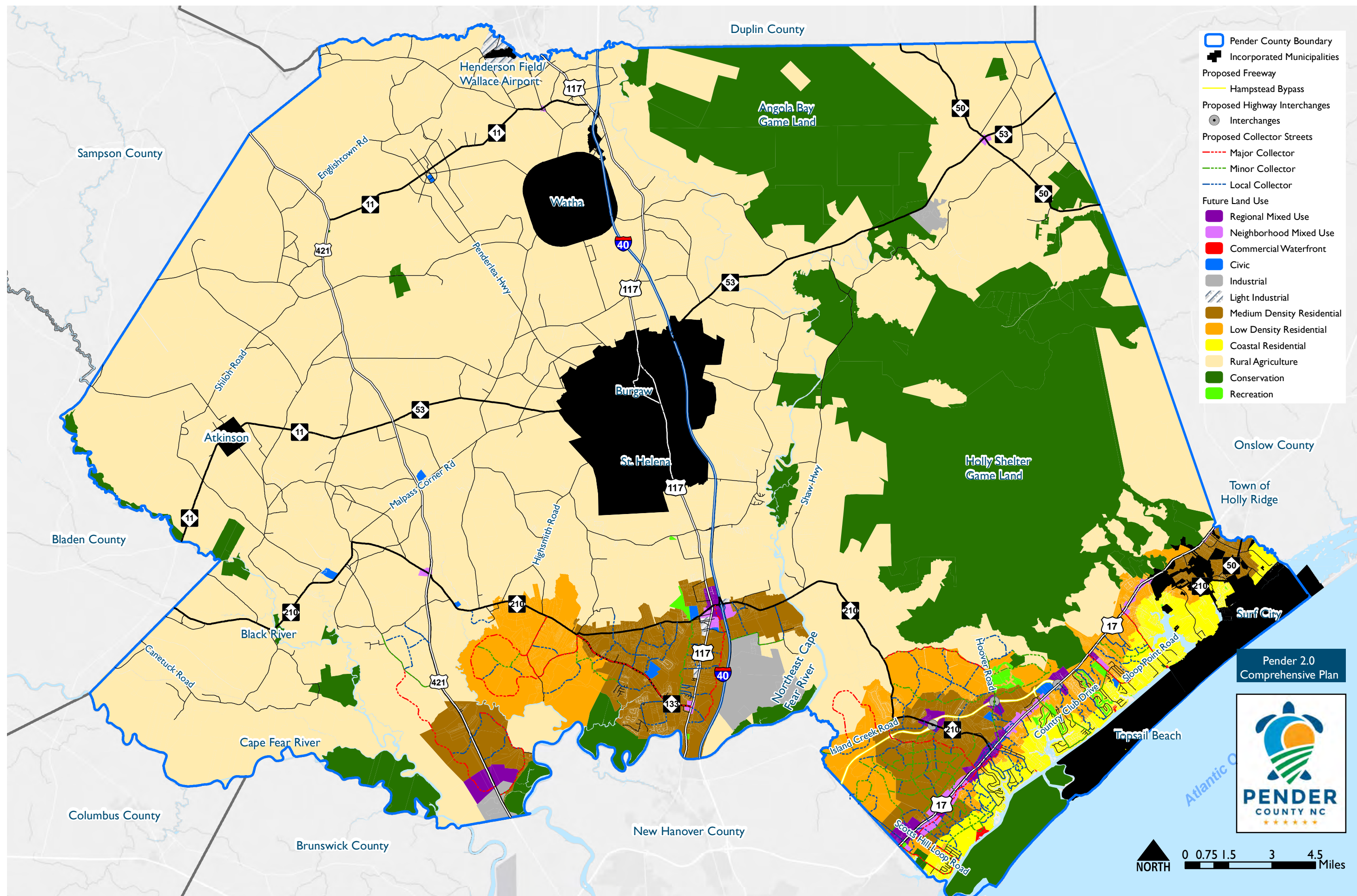
Map 5.5: Caswell Planning Area Existing Land Use

Map 5.6: Long Creek Planning Area Existing Land Use

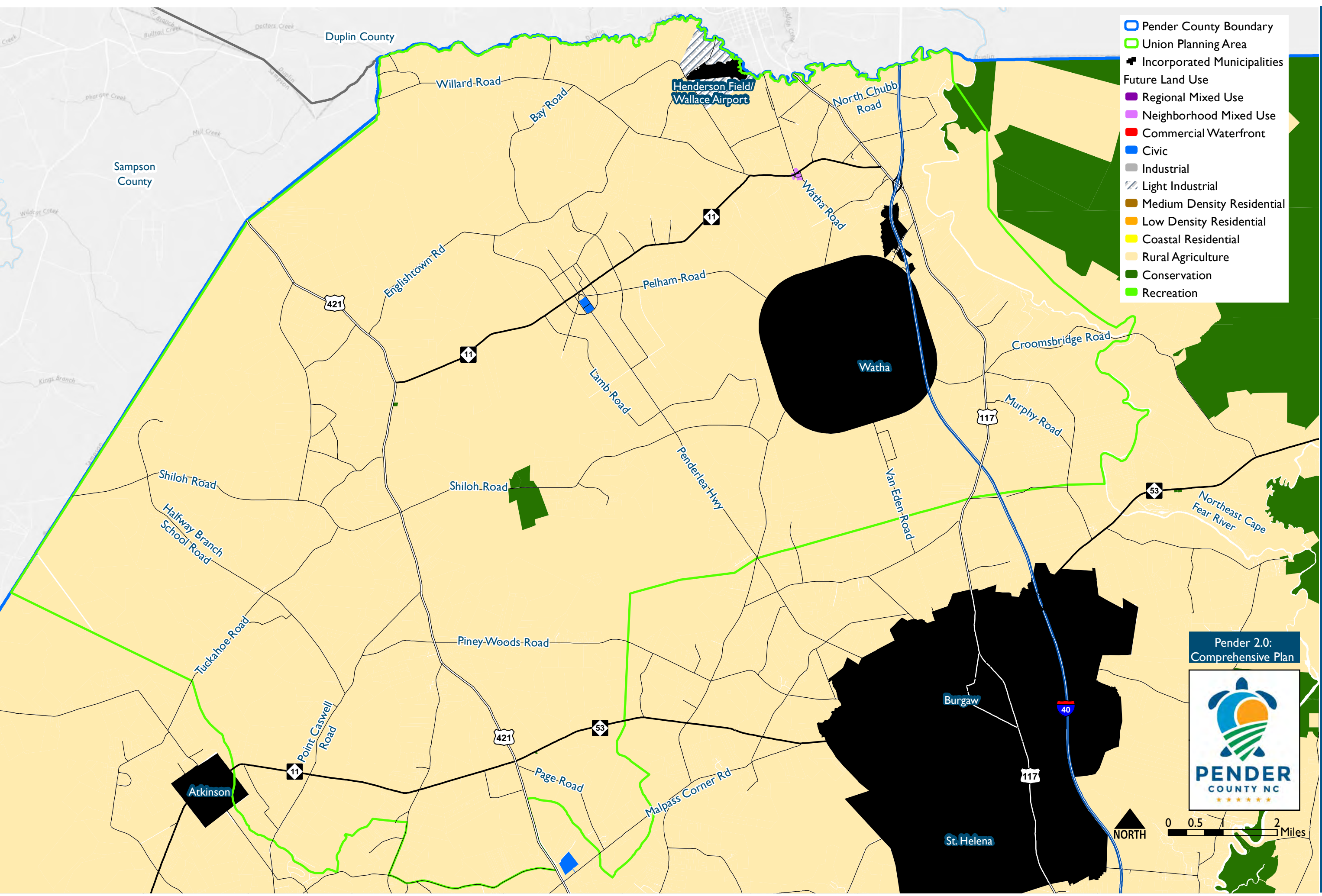




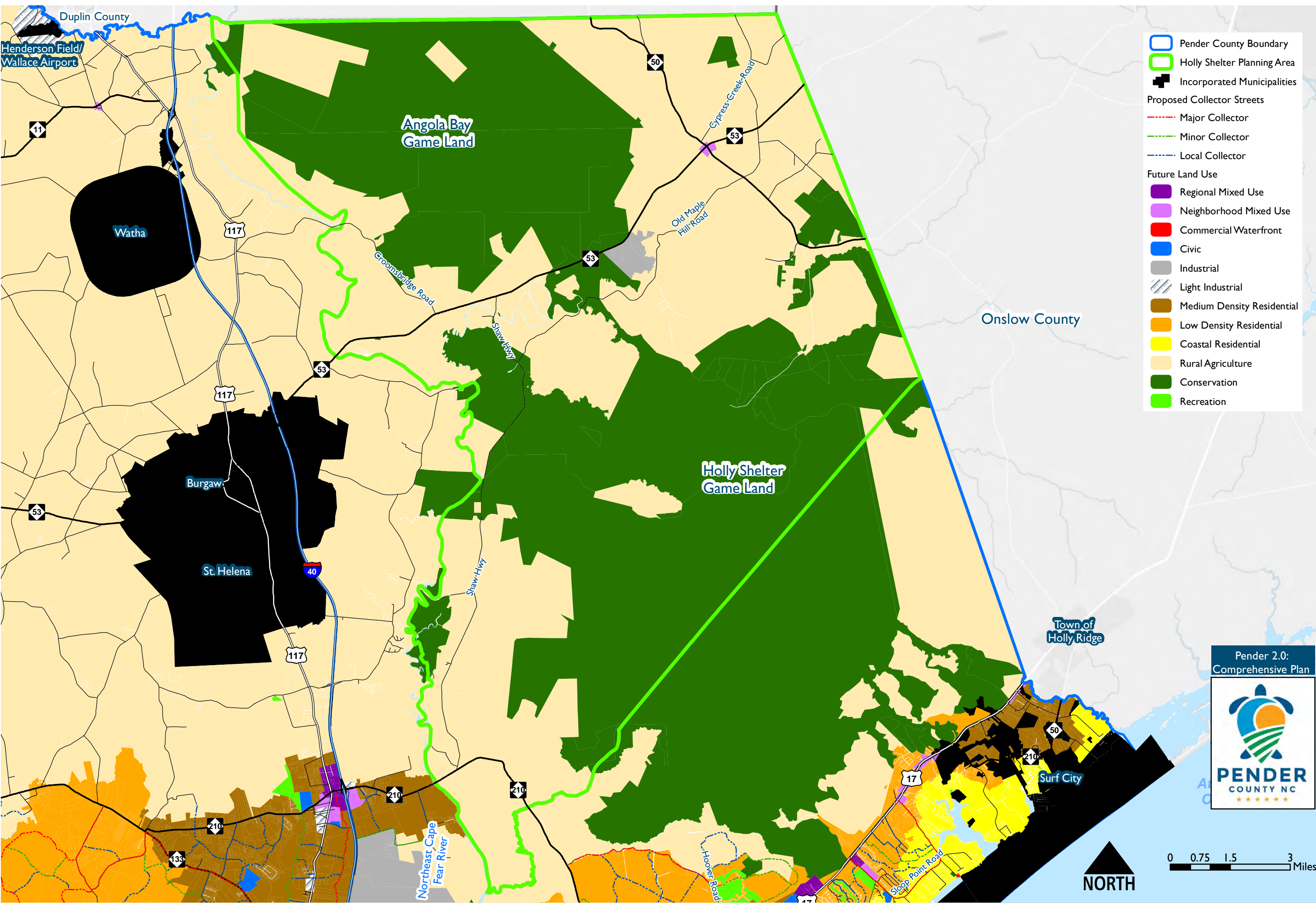
Map 5.7: Topsail Planning Area Existing Land Use



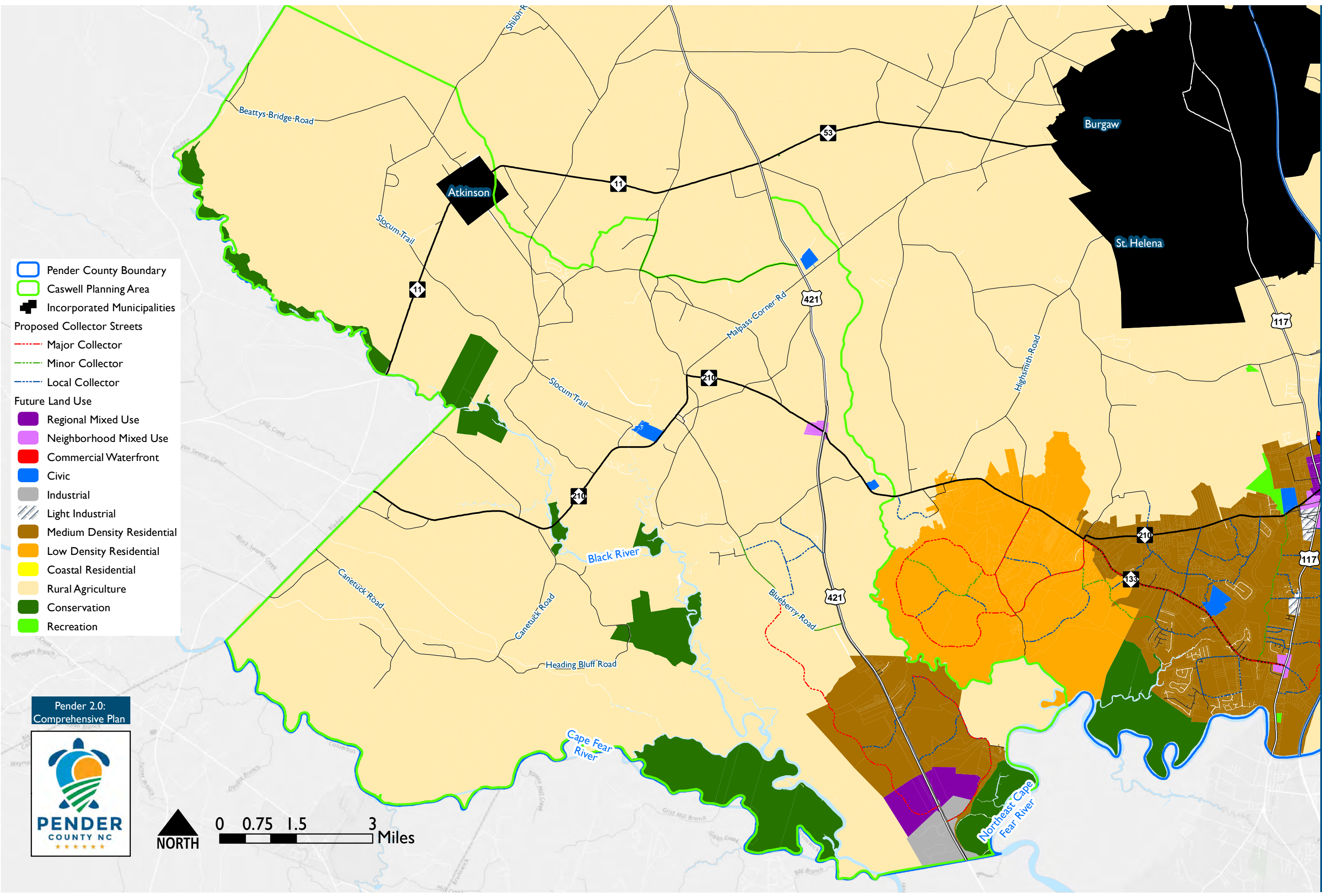
Map 5.8: Pender County Future Land Use



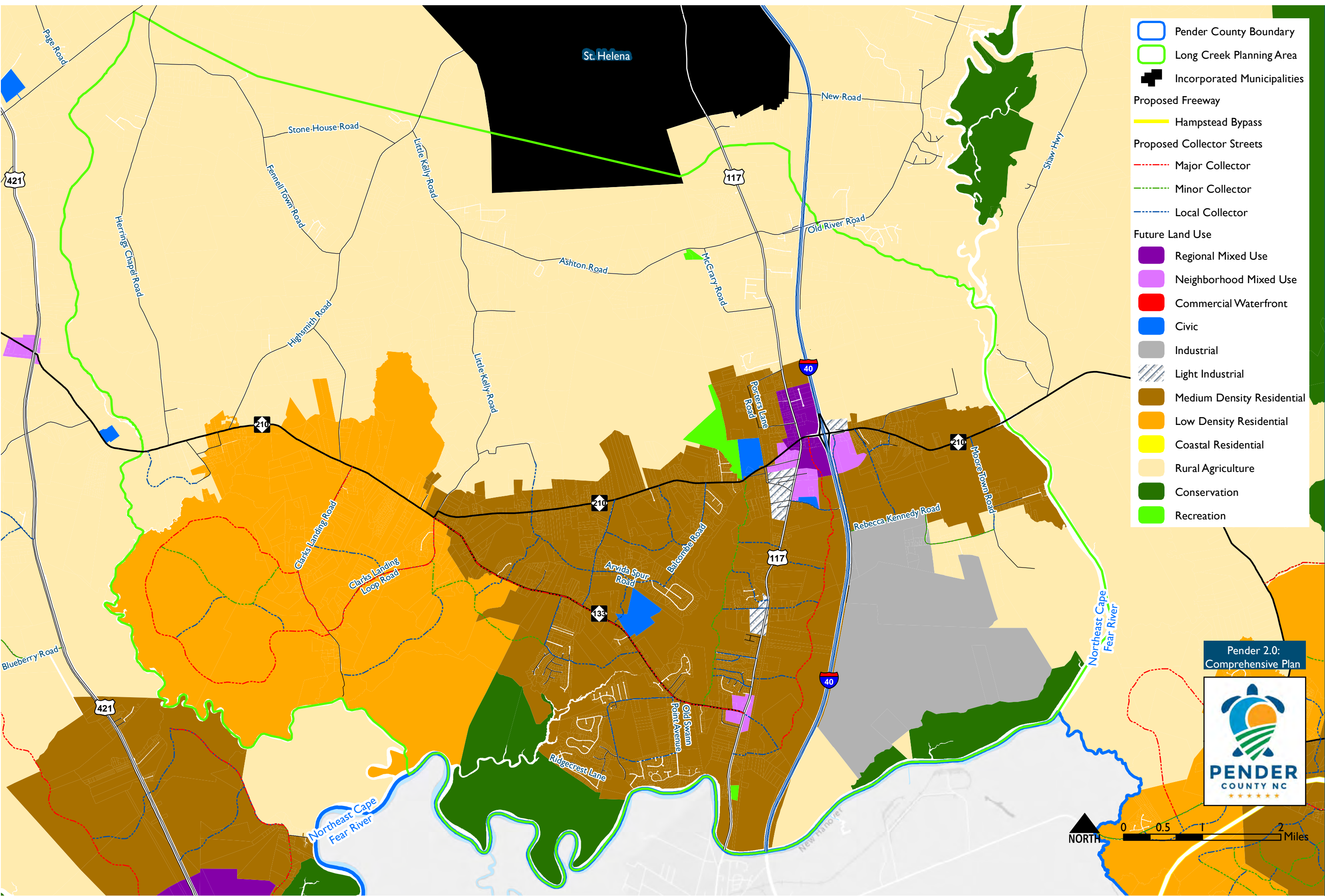
Map 5.9: Union Planning Area Future Land Use



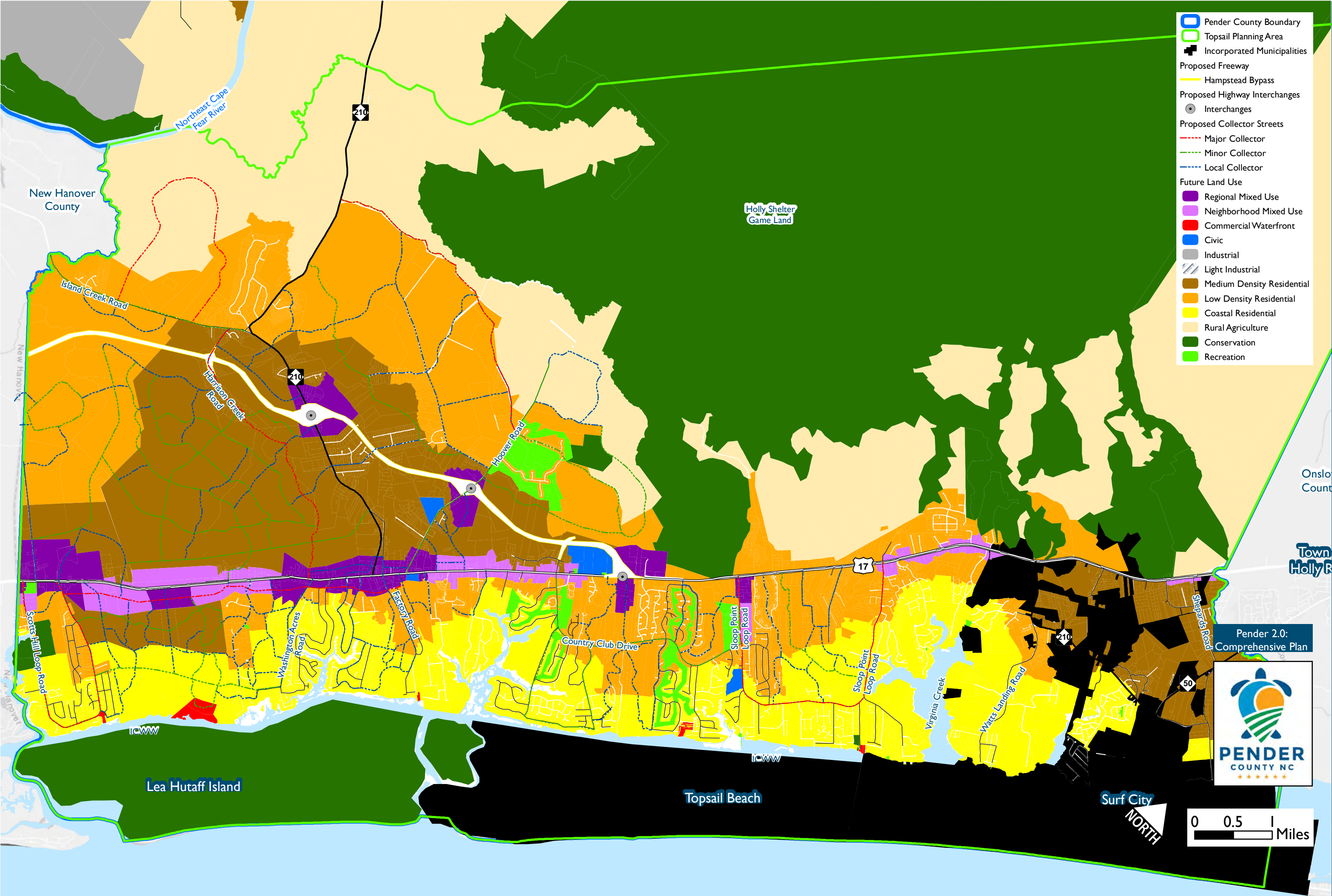
Map 5.10: Holly Shelter Planning Area Future Land Use



Map 5.12: Caswell Planning Area Future Land Use



Map 5.13: Long Creek Planning Area Future Land Use



Map 5.14: Topsail Planning Area Future Land Use Map

CHAPTER 6: TOOLS FOR MANAGING DEVELOPMENT

This section of the land use plan describes Pender County's procedures for administering land development regulations and also provides a schedule for implementation of recommended actions. This section has three major parts that describe the:

- *Role of the land use plan in local decisions:* the role of the plan and the status of its goals, objectives, policies, and recommended actions in Pender County's land use and development decisions;
- *Existing development management program:* Pender County's existing policies, ordinances, codes, and regulations and how they will be coordinated and employed to implement the plan's policies and recommended actions;
- *Action plan and implementation schedule:* the priority policies and recommended actions that will be taken to implement the plan with a general schedule to accomplish these actions.

Collectively, these sections describe how the Pender 2.0: Comprehensive Land Use Plan will manage future land use and development.

ROLE OF THE LAND USE PLAN IN LOCAL DECISIONS

Pender 2.0: Comprehensive Land Use Plan serves a variety of functions and the plan for the future contains a broad range of:

- **Goals:** A general statement indicating a desired end or the direction the County will follow to achieve that end.
- **Objectives:** Direction toward the attainment of a particular goal.
- **Policies:** A statement identifying the County's position regarding the pursuit of a goal or objective.
- **Recommended Actions:** A statement outlining a specific course of action the County may pursue to implement goals and policies. Recommended actions are not used in review of development proposals, text amendments, and/or rezoning requests.

The goals, objectives, policies, and recommended actions provide a long range planning function but they also help guide day to day operations. The daily functions relate primarily to the decisions of actions of elected and appointed officials and the County's administrative staff.

For the Board of Commissioners, the Pender 2.0: Comprehensive Land Use Plan contains County policies and provides a guide when making decisions regarding future land use and development, public access, protecting the environment, mitigating natural and manmade hazards, or ensuring that the County's infrastructure and services are adequate to serve population. While Pender 2.0: Comprehensive Land Use Plan's policies do not have the same status as zoning regulations, except in matters related to development or land uses within

Areas of Environmental Concern (AECs), the policies and recommended actions and the future land use map contained in the plan help guide decisions on future ordinances and zoning decisions. Moreover, general statutes require statements of consistency with comprehensive plans or any other locally adopted plan(s) before adopting or rejecting any local code, ordinance, or zoning changes or amendments. Amendments to this plan will be initiated and approved by the Board of Commissioners and will occur in accordance with the guidelines for land use plan amendments under Subchapter 7B of the North Carolina Administrative Code. The land use plan can be amended as whole by a single resolution or in parts by successive resolutions and is subject to special state notice and advertising requirements for land use plan amendments.

In addition to guiding development decisions, the Board of Commissioners use the Pender 2.0: Comprehensive Land Use Plan's policies and recommended actions when making decisions on the County's capital improvement program (CIP) and its annual operating budgets. The Board of Commissioners will also review the implementation strategy and make periodic adjustments based on budgetary considerations, emerging issues, problems or community needs, or to coordinate with future planning efforts and ongoing projects. All changes to the Pender 2.0: Comprehensive Land Use Plan's policies and recommended actions and this implementation strategy will be forwarded to the DEQ's Division of Coastal Management (DCM) for its subsequent approval.

The County's Planning Board will use the plan and its policies to determine the consistency of project plans and development proposals with community goals and objectives. Policies and the future land use map will also guide decisions on whether to grant or deny requests for such things as special use permits or the approval of statutory vested rights.

The County's administrative staff use the plan's policies and recommendations in a variety of ways. Staff in the Planning and Community Development Department will use the plan when reviewing site plans and development proposals. Various County departments will use the policies and recommended actions to guide proposals for development projects and plans for public services and facilities. Many of the plan's policies and recommended actions also guide ongoing operations and programs within other County departments as well. Accordingly, County staff will use the implementation strategy to guide budget preparation, the development of the CIP, and make reference to the plan when applying for various sources of federal, state, and county grant funds.

In reviewing conditional zoning requests, the County's administrative staff, Planning Board, and Board of Commissioners will use the plan for consistency review. Conditional zoning allows for the consideration of certain development types that are permitted uses in the underlying zoning district, but due to their nature may not be appropriate for a particular location. A conditional zoning district is intended for a development that has a high level of certainty of being constructed and the most commonly expected application will contain a specified use. This process allows for mutually agreeable conditions that are established through negotiation between the applicant and the County.

The County's Pender 2.0: Comprehensive Land Use Plan will be used by other federal and state officials, in particular DEQ's DCM. An important use of Pender 2.0: Comprehensive Land Use Plan is for consistency determinations by the DCM for major permits issued pursuant to CAMA regulations.

The Pender 2.0: Comprehensive Land Use Plan will be of use to a variety of community members. The plan is a useful tool for developers and property owners because it provides guidance on the types of land use and development that are desired within the community. The plan's policies and recommendations will also help developers to craft proposals that are consistent with the County's goals and objectives, thereby increasing the likelihood that these projects will be approved. The plan also provides information that will help owners and developers to better understand the capabilities and limitations of their property. The plan also provides community members with information to reference when supporting or opposing projects within the community.

EXISTING DEVELOPMENT MANAGEMENT PROGRAM

All land development in Pender County is subject to a wide range of state and local permits pursuant to a comprehensive set of state regulations and local ordinances. The following sections summarize Pender County's major ordinances and the regulatory provisions of the County's development management program.

PENDER COUNTY'S LAND DEVELOPMENT REGULATIONS

Pender County, like other counties in the state, has been granted general statutory authority by the North Carolina General Statutes to enact necessary ordinances designed to protect and promote the health, safety and the general welfare of its citizens. Local plans and policies are enforced through ordinances adopted by the Board of Commissioners. Following is a listing of County Ordinances and enforcement provisions related to land use and development. These provisions are applicable to the unincorporated areas of Pender County.

Pender County Unified Development Ordinance: The Unified Development Ordinance is the most prominent land development regulatory tool used by the Pender County to ensure that land is developed in conformance with the designations contained in the Future Land Use Classification Map contained in Chapter 5 (**Map 5.8: Pender County Future Land Use**). The ordinance was originally adopted in 2010. The ordinance regulates location and height of buildings, establishes minimum building lot sizes, and establishes districts in which uses related to residential, commercial, and institutional uses are either allowed or prohibited.

Subdivision Regulations: Since 2004, Pender County has enforced subdivision regulations which guide the general design of newly developing areas within the County's jurisdiction. These regulations are contained within the Unified Development Ordinance. A subdivision is the division of any parcel or tract of land into two or more lots for the purpose of development. The purpose of the subdivision regulations is to establish procedures and standards for the development and subdivision of land within the County's jurisdiction.

Flood Damage Prevention Ordinance: Pender County administers a Flood Damage Prevention Ordinance and participates in the Federal Flood Insurance Program. First floor building elevation requirements vary in the County if located in the Special Flood Hazard Area.

Building Code: Pender County has an active building inspections program and enforces the NC State Building Code, including the codes concerning general construction, plumbing, heating, electrical, fire, and gas, as well as the NC Uniform Residential Building Code. The County's Building Inspectors issue building permits and inspect construction to ensure strict compliance with all code enforcement.

Airport Minimum Standards Ordinance: This ordinance was adopted to protect the airport interests and to aid public safety by restricting height of objects and buildings near the Henderson Field Airport. The ordinance provides continuity for maintaining the orderly development of commercial businesses at the airport.

Sign Ordinance: Sign restrictions are included in the Unified Development Ordinance.

ACTION PLAN AND IMPLEMENTATION SCHEDULE

The following table outlines a schedule to assist the County in implementing the recommended actions of this land use plan. The implementation schedule is to be used as a resource for County staff and officials. The schedule is not a mandate for the allocation of funding nor does it require such.

Table 6.1: Schedule for Implementing Recommended Actions

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
Water Quality and Natural Environment		
Recommended Action 3.1.A.1: Monitor NC DEQ Surface Water Classifications for any changes that identify a degradation of water bodies. When a change results in a lower surface water quality designation, the County in partnership with applicable agencies or municipalities, will take steps to study and identify the reason for such change.	Ongoing	Planning & Community Development
Recommended Action 3.1.B.1: Consider establishing an overlay district for the CAMA 575 foot Outstanding Resource Waters AEC buffer to encourage enhanced mitigation of stormwater runoff and preservation of tree canopy.	FY 18 /19	Planning & Community Development
Recommended Action 3.1.C.1: Consider identifying incentives for new subdivisions whereby riparian buffers are increased in size from the standard 30 foot buffer and identify strategies to limit land disturbance and tree removal within these areas.	FY 18 /19	Planning & Community Development
Recommended Action 3.1.D.1: Explore opportunities to increase the requirements for stormwater management for all types of development. In doing so, the County should adopt stormwater regulations to account for fill	FY 18 /19	Planning & Community Development, Public Works

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
(including standalone lots), impervious coverage limits, and the designation of a design storm year. Such requirements should identify regulations for the construction phase (i.e. erosion and sedimentation control) and post-construction phase (i.e. stormwater control).		
Recommended Action 3.1.D.2: Consider modifying applicability requirements for stormwater management that are more stringent than those outlined by 15A NCAC 02H .1019, whereby 10,000 square feet of impervious surface or greater than an acre of disturbance triggers stormwater mitigation.	FY 18 /19	Planning & Community Development, Public Works
Recommended Action 3.1.D.3: Consider establishing a stormwater/ditch maintenance program coordinated through the County Public Works Department and with the NC Department of Transportation.	FY 19 /20	Public Works
Recommended Action 3.1.D.4: Consider establishing a percent reduction goal in overall stormwater runoff volume. For example, the County will reduce stormwater runoff volumes by 10% by 2025.	FY 19 /20	Planning & Community Development
Recommended Action 3.1.D.5: Develop a Stormwater Management Master Plan with a principle focus on reduction of stormwater runoff volumes. Partnership with regional local governments or agencies may be required.	FY 20 /21	Planning & Community Development
Recommended Action 3.1.E.1: Expand efforts to identify and eliminate stormwater discharges resulting from County building, facilities, and activities. For example, downspout disconnection to impervious surfaces and the installation of rain gardens can substantially reduce stormwater runoff discharges.	FY 18 /19	Public Works
Recommended Action 3.1.F.1: Establish partnerships with Pender County municipalities (if necessary) to develop a Watershed Restoration Plan(s). Partnership with regional local governments or agencies may be required.	FY 20 /21	Planning & Community Development
Recommended Action 3.1.F.2: Pursue grant funds to assist in developing a Watershed Restoration Plan. Pursuant to Section 205(j)/604(b) of the Clean Water Act, the Division of Water Resources will award grant funds to Regional Commissions and Councils of Government for to carry out water quality management and planning projects, including, but not limited to: <ul style="list-style-type: none"> Identifying most cost effective and locally acceptable facility and non-point source measures to meet and maintain water quality standards; Developing an implementation plan to obtain state and local financial and regulatory commitments to implement measures developed to meet water quality standards; and 	FY 20 /21	Planning & Community Development

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
<ul style="list-style-type: none"> Determining the nature, extent, and cause of water quality problems in various areas of the state. 		
Recommended Action 3.1.F.3: Ensure that the Watershed Restoration Plan contains the nine minimum elements required to receive EPA Section 319 funds for implementation of capital improvements projects.	FY 20 /21	Planning & Community Development
Recommended Action 3.1.H.1: Explore options for implementing incentives for developers that utilize low-impact development (LID) techniques to manage the potential impacts of stormwater runoff.	FY 18 /19	Planning & Community Development
Recommended Action 3.1.H.2: Consider requiring LID techniques for development located within the CAMA 575 foot Outstanding Resource Waters AEC.	FY 18 /19	Planning & Community Development
Recommended Action 3.1.I.1: The County shall consider requiring all rezoning/conditional zoning petitions to be reviewed in relation to the Biodiversity/Wildlife Habitat Assessment and the NC Wildlife Resources Commission Habitat Conservation Recommendations.	FY 18 /19	Planning & Community Development
Recommended Action 3.1.J.1: Consider expanding the definition of “environmental features” to include Areas of Environmental Concern (AECs), Significant Natural Heritage Areas (SNHAs), Natural Heritage Element Occurrences (NHEOs), Smoke Awareness Areas, and Prime Farmland soils.	FY 18 /19	Planning & Community Development
Recommended Action 3.1.J.2: Consider providing the information referenced in Recommended Action 3.1.K.1 on the County’s GIS website.	FY 18 /19	Planning & Community Development, Information Technology
Recommended Action 3.1.J.3: Consider developing a green infrastructure plan that identifies a network of natural lands and open spaces and provides ecosystem conservation as well as alternative transportation modes through trails and greenways. Such a plan should guide the preservation of open space for new development where identified.	FY 21 /22	Planning & Community Development, Parks and Recreation
Recommended Action 3.1.J.4: Consider establishing a green infrastructure committee composed of local government staff and natural resource professionals whose main purpose is to implement the green infrastructure plan and coordinate natural resources conservation among all local plans, ordinances, and departments.	FY 21 /22	Planning & Community Development, Parks and Recreation
Recommended Action 3.1.K.1: Consider revising the density calculations to remove preserved open space from the calculation.	FY 18 /19	Planning & Community Development
Recommended Action 3.1.K.2: Consider including a minimum passive open space requirement where environmental features are present and remove the 50% maximum designation.	FY 18 /19	Planning & Community Development

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
Recommended Action 3.1.K.3: Consider providing specific standards for the provision of open space to include such things as habitat connectivity and tree preservation. Habitat connectivity should encourage the dedication of large contiguous tracts of land, typically 10 acres at a minimum, with a minimum average width of 500 feet and separation from building activity of at least 350 feet and conservation of natural open space that is at least 300 feet wide between environmental features will be encouraged to better ensure that wildlife can travel between core wildlife habitats. Where such cannot be reasonably provided, a payment in-lieu fee should be provided to the County for the future dedication of park land that will protect wildlife habitat, while also providing an amenity for the general public and residents of the subject development.	FY 18 /19	Planning & Community Development, Parks and Recreation
Recommended Action 3.1.K.4: Consider establishing a 'Resource Conservation Incentive District' located to the south of US 17, in and adjacent to floodplain forests along streams and rivers and adjacent to and between Game Lands. South of US 17, maritime forest blocks of five to ten acres should be set-aside from development and connected to wetlands and forest in the floodplain where practicable.	FY 18 /19	Planning & Community Development, Parks and Recreation
Recommended Action 3.1.K.5: In concert with NC Wildlife Resources Commission, consider evaluating a program to rezone rural areas to a base density of no greater than one unit per three or more acres. A density of one unit per three acres has been shown to raise property values in rural areas. Within these areas consider allowing for a density bonus to conserve at least 50 percent of the site.	FY 19 /20	Planning & Community Development
Recommended Action 3.1.K.6: Compile a GIS database of all designated open space and consider providing such on the County's GIS website or available through the Planning and Community Development Department.	FY 19 /20	Planning & Community Development, Information Technology
Recommended Action 3.1.L.1: Consider expanding the applicable development types – rather than zoning districts – that require tree preservation.	FY 18 /19	Planning & Community Development
Recommended Action 3.1.L.2: Consider removing the exemption for tree surveys/preservation in Special Flood Hazard Area (SFHAs), Areas of Environmental Concern (AECs), wetland buffers, and stream buffers.	FY 18 /19	Planning & Community Development
Recommended Action 3.1.L.3: Consider a provision that allows for an applicant to display a tree protection area without the individual designation of each tree species and size.	FY 18 /19	Planning & Community Development
Recommended Action 3.1.L.4: Consider enhancing mitigation for the removal of significant trees, as defined in the UDO, such that the caliper of trees removed is equivalent to that replaced.	FY 18 /19	Planning & Community Development

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
Recommended Action 3.1.M.1: Encourage the use of the NC Division of Forestry, <i>Forestry Best Management Practices Manual to Protect Water Quality</i> .	Ongoing	Planning & Community Development
Recommended Action 3.1.Q.1: Consider providing outreach and education to homeowners regarding the impacts of failing bulkheads to surface waters and property damage.	Ongoing	Planning & Community Development
Natural Hazard Areas		
Recommended Action 3.2.D.1: Consider participating in the Community Rating System Status (CRS) as a means to reduce flood insurance rates. As part of this participation, County staff should be continuously trained on the steps that can be taken to improve the CRS rating.	FY 18 /19	Planning & Community Development
Recommended Action 3.2.E.1: Consider establishing a formalized procedure for evaluating potential land acquisition projects, which also considers wildlife habitat conservation, prior to such.	FY 19 /20	Planning & Community Development, Parks and Recreation, County Manager's Office
Recommended Action 3.2.H.1: Consider establishing an overlay district within Smoke Awareness Areas and/or the Wildland/Urban Interface zone to require Firewise Landscaping practices.	FY 19 /20	Planning & Community Development
Recommended Action 3.2.I.1: Consider establishing a public education program designed to help inform the public about their exposure to natural hazards and actions they can take to mitigate potential damage to public health, safety, and property from natural disasters. This includes, but is not limited to: <ul style="list-style-type: none"> • Ensure the local library maintains documents about flood insurance, flood protection, floodplain management, and natural and beneficial functions of floodplains. Many documents are available free of charge from the Federal Emergency Management Agency (FEMA); • Encourage builders, developers, and architects to become familiar with the NFIP's land use and building standards; • Provide local real estate agents with handouts advising potential buyers to investigate potential flood hazards for the property they are considering purchasing; • Advertise the availability of flood insurance on an annual basis; and, • Post hazard related information on the County's website and distribute appropriate educational materials and other social media outlets. 	FY 19 /20	Planning & Community Development
Agricultural Lands		
Recommended Action 3.3.B.1: Consider partnering with NC State or an appropriate agency or consultant to	FY 20 /21	Planning & Community Development

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
prepare a Return on Investment (ROI) analysis for the various land use types that exist in the County, including agricultural lands.		
Recommended Action 3.3.C.1: Pursue grant funds available through the NC Department of Agriculture Development and Farmland Preservation Trust to complete a farmland preservation plan.	FY 20 /21	Planning & Community Development, Cooperative Extension
Recommended Action 3.3.C.2: Explore options for the creation of a Prime Agricultural Land Overlay district to help preserve and protect agricultural lands for future use.	FY 19 /20	Planning & Community Development, Cooperative Extension
Recommended Action 3.3.C.3: Consider establishing a guidance manual for the siting and/or installation of solar panels/farms that will address such things as incentives, prime farmland soils, land clearing, stormwater management and decommissioning.	FY 20 /21	Planning & Community Development, Cooperative Extension
Recommended Action 3.3.C.4: Consider investing in a consumer education campaign that highlights the benefits of buying local produce, beef, poultry, pork, and fish. The County should also inform consumers of the locations where they can purchase these products.	FY 20 /21	Planning & Community Development, Cooperative Extension
Recommended Action 3.3.D.1: Consider providing resources to help develop, promote, and support alternative farming methods in identified prime agricultural areas.	Ongoing	Cooperative Extension
Recommended Action 3.3.E.1: Consider developing a public outreach program to educate residents about the potential benefits of the Beaver Management Assistance Program.	FY 19 /20	Planning & Community Development, Cooperative Extension
Recommended Action 3.3.E.2: Consider developing a map to identify known beaver issue areas to assist with targeted outreach for the program.	FY 19 /20	Planning & Community Development, Information Technology
Infrastructure Carrying Capacity – Water & Wastewater		
Recommended Action 4.1.A.1: Consider establishing a Cost of Land Use Fiscal Impact Analysis study that will include current information about the cost of government services, such as schools, water, and sewer.	FY 19 /20	Planning & Community Development, Utilities
Recommended Action 4.1.B.1: Update the 2006 Water and Wastewater Master Plans to address current conditions of private wastewater providers, Interbasin transfer requirements, emergency raw water infrastructure, and provisions for alternative drinking water sources, if desired.	FY 20 /21	Utilities
Recommended Action 4.1.B.2: Establish estimated demand for water and wastewater service in each respective Water & Sewer Service District.	FY 20 /21	Utilities
Recommended Action 4.1.B.3: Consider identifying and establishing generalized service area boundaries for the	FY 20 /21	Planning & Community Development, Utilities

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
location of public and private water and sewer providers.		
Recommended Action 4.I.D.1: Encourage water and sewer systems to be designed and located such that expansion to serve future development is feasible.	Ongoing	Planning & Community Development, Utilities
Recommended Action 4.I.D.2: Identify policies and procedures for the consolidation and acquisition of private water/wastewater systems should the issue arise in the future.	FY 21 /22	Utilities
Recommended Action 4.I.D.3: Consider establishing a separate capital improvement fund for the potential future acquisition of failing private water/wastewater systems.	FY 21 /22	Utilities
Water Facilities		
Recommended Action 4.I.G.1: Consider establishing a study to explore additional sources for drinking water whether through alternative surface water/groundwater sources or treatment methods.	FY 20 /21	Utilities
Recommended Action 4.I.G.2: Consider establishing more stringent drinking water quality testing procedures than those mandated by state and federal guidelines to inform users of potential water quality issues.	FY 20 /21	Utilities
Recommended Action 4.I.G.3: Consider establishing a voluntary program for testing of private drinking water wells for those in need. If determined water quality issues exist as a result of testing, consider prioritizing expansion of centralized service to areas impacted by degraded water quality.	FY 21 /22	Utilities
Wastewater Facilities		
Recommended Action 4.I.K.1: Establish an allocation of capacity to be dedicated to future residential versus non-residential use.	FY 20 /21	Planning & Community Development, Utilities
Recommended Action 4.I.L.1: Revise the table of permitted uses in the UDO to include additional wastewater facility types to enable greater discretion in the approval procedure. Such uses should be distinguished through clear definitions which distinguish their treatment capacity and service intent.	FY 18 /19	Planning & Community Development, Utilities
Recommended Action 4.I.M.1: In cases where package treatment plants are approved, the County should require a specific contingency plan specifying how ongoing private operation and maintenance of the plant will be provided, and detailing provisions for assumption of the plant into a public system should the private operation fail.	FY 18 /19	Planning & Community Development, Utilities
Recommended Action 4.I.M.2: Consider establishing a program to manage decentralized wastewater treatment systems and/or required periodic inspection by County staff as a condition of approval.	FY 20 /21	Utilities

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
Recommended Action 4.1.M.3: Consider identifying locations where package treatment plants shall not be permitted.	FY 20 /21	Planning & Community Development, Utilities
Transportation - Vehicular		
Recommended Action 4.2.B.1: Encourage NCDOT to proceed with advanced acquisition of right-of-way to expedite the Hampstead Bypass process.	Ongoing	Planning & Community Development
Recommended Action 4.2.B.2: Ensure all proposed development is designed to coordinate with existing or planned streets and highways as provided in the UDO and NCGS 153A-331.	Ongoing	Planning & Community Development
Recommended Action 4.2.C.1: Require future update to the Comprehensive Transportation Plan(s) be coordinated. Work with NCDOT to establish a CTP encompassing the entirety of Pender County rather than separated by the Wilmington MPO and Cape Fear RPO boundaries.	FY 21 /22	Planning & Community Development
Recommended Action 4.2.E.1: Work with the MPO, RPO, NCDOT or outside consultant to create safety audits in locations with high crash rates as identified on Maps 4.4 and 4.5.	FY 20 /21	Planning & Community Development
Recommended Action 4.2.E.2: Explore all opportunities for safety improvements to intersections identified as high crash locations.	FY 20 /21	Planning & Community Development
Recommended Action 4.2.E.1: Provide an annual update to the Planning Board and Board of Commissioners regarding the implementation status of the Collector Street Plan. Such a report should identify issues and opportunities for improving the existing requirements contained in the UDO, if any.	Ongoing	Planning & Community Development
Recommended Action 4.2.E.2: Update the Collector Street Plan in concert with the Future Land Use map contained in this plan and when such is revised or amended.	Ongoing	Planning & Community Development
Recommended Action 4.2.I.1: Consider updating the UDO to provide additional provisions to clarify the intent of connectivity requirements and safety to ensure that future development, adjacent to existing connection points/stub streets, follows through with construction of connecting stub streets.	FY 19 /20	Planning & Community Development
Recommended Action 4.2.I.2: Consider establishing a case study of existing connectivity ordinances within county jurisdictions across North Carolina, and their various effectiveness, in an effort to improve connectivity regulations in Pender County.	FY 19 /20	Planning & Community Development
Recommended Action 4.2.I.3: Consider updating the UDO to include language specifically requiring stub streets to be constructed to the adjacent property line and that no obstructions shall be permitted.	FY 18 /19	Planning & Community Development
Recommended Action 4.2.I.4: Consider requiring a stub out connection where development is adjacent to single	FY 18 /19	Planning & Community Development

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
family lots fronting upon thoroughfares/arterial roadways to allow for future connections.		
Recommended Action 4.2.I.5: Update and continually maintain the database of future right-of-way dedications, “paper streets,” and stub-outs. Research recorded documents to expand the database to include existing paper streets to ensure maximum coordination and connectivity.	Ongoing	Planning & Community Development
Recommended Action 4.2.J.1: Update required certifications and disclosures contained in the UDO, regarding private roads, to include language stating such has been constructed to the minimum standards of the of the NCDOT Subdivision Minimum Construction Standards manual and NCDOT Guidelines for Drainage Studies and Hydraulic Design. Specifically require all certifications/disclosures regarding private roads/streets be included with each approval.	FY 18 /19	Planning & Community Development
Recommended Action 4.2.J.2: Establish a study to identify public input regarding private road/streets and specific policy changes, if desired, for the permitting thereof.	FY 19 /20	Planning & Community Development
Recommended Action 4.2.J.3: Clarify applicability requirements within the UDO for “subdivisions with private streets subject to requirements to construct public streets.” Such applicability should be clearly stated at the onset of discussion regarding private streets.	FY 18 /19	Planning & Community Development
Recommended Action 4.2.J.4: Consider requiring all private roads/streets to include an easement to allow for travel of the roadway by the general public. In particular, if future development includes access to public facilities or public trust areas, such an easement should be required.	FY 18 /19	Planning & Community Development
Transportation – Alternative Modes		
Recommended Action 4.3.A.1: Explore opportunities to increase the number of transportation services and options in Maple Hill in order to link the residents to jobs, health care, and other local services.	Ongoing	Planning & Community Development
Recommended Action 4.3.A.2: Explore the possibility of extending a bus route from NC 53 to the Onslow County line, and providing a park and ride lot at this location.	FY 19 /20	Planning & Community Development
Recommended Action 4.3.A.3: Explore the possibility of partnering with Pender County Adult Services to coordinate transportation stops and services between PAS and WAVE Transit and connect in Castle Hayne.	FY 19 /20	Planning & Community Development
Recommended Action 4.3.D.1: Establish a funding strategy and continuing maintenance policy for construction of County sidewalks and greenway/multi-use path facilities. Ideally, such funding and maintenance	FY 20 /21	Planning & Community Development, Parks and Recreation, Public Works

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
responsibility shall be the under the purview of the Parks and Recreation department.		
Recommended Action 4.3.D.2: Pursue grant funds to complete an official NCDOT Comprehensive Bicycle and/or Pedestrian Transportation Plan for the Hampstead area. Such a plan should identify alternative funding methods, maintenance responsibilities, and prioritized facilities. Grant applications are typically due November/December of each year. County jurisdictions are now eligible to apply (Eligibility for Pender County should be pursued).	FY 18 /19	Planning & Community Development, Parks and Recreation
Recommended Action 4.3.D.3: Consider options to establish a Countywide Greenway Plan. Such a plan will outline priority locations for greenway facilities, funding mechanisms tied to future development, and procedures for maintenance and continued upkeep thereof.	FY 20 /21	Planning & Community Development, Parks and Recreation
Recommended Action 4.3.D.4: Identify and prioritize all recommended bicycle and pedestrian facilities as part of any future non-motorized transportation planning effort.	FY 20 /21	Planning & Community Development, Parks and Recreation
Recommended Action 4.3.D.5: Establish a bicycle and pedestrian committee to prioritize future bicycle and pedestrian capital improvements and identify programs and needs related to non-motorized transportation.	FY 20 /21	Planning & Community Development
Recommended Action 4.3.D.6: Establish a bicycle and pedestrian transportation infrastructure service area map to allocate funding collected as part of a fee-in-lieu program to install bicycle and pedestrian facilities in accordance with recommended improvements.	FY 20 /21	Planning & Community Development
Recommended Action 4.3.F.1: Coordinate provisions for public transit and Transportation Demand Management services with the Regional Mixed Use future land use category as depicted on the County's Future Land Use Map.	FY 20 /21	Planning & Community Development
Recommended Action 4.3.F.2: Monitor changes to Urban/Rural Census designations following the 2020 Census to identify locations suitable for potential fixed route transit services.	FY 20 /21	Planning & Community Development
Public Access		
Recommended Action 4.4.A.1: Pursue funding under the North Carolina CAMA Shoreline Access funding program for other eligible projects that provide access for its citizens.	Ongoing	Planning & Community Development, Parks and Recreation
Recommended Action 4.4.B.1: Consider updating the 1993 Waterfront Access Plan with funding from the Division of Coastal Management.	FY 19 /20	Planning & Community Development, Parks and Recreation
Recommended Action 4.4.B.2: Consider revising the UDO to require that public water access is provided in accordance with subdivision/development as outlined in an approved Waterfront Access Plan and/or at	FY 18 /19	Planning & Community Development

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
appropriate intervals along estuarine and riverine bodies of water. Such a provision may require the dedication of public access easements through extension of right-of-way to high water marks as a means of recreation.		
Recommended Action 4.4.B.3: Consider establishing a separate capital improvement fund for the construction of waterfront amenities and/or acquisition of suitable waterfront access locations.	FY 18 /19	Planning & Community Development
Recommended Action 4.4.D.1: Identify potential locations suitable for applying for funds for public boat ramps, particularly along coastal waters in support of the tourism-based economy. Such locations may include Long Creek, Moores Creek, Rockfish Creek, and Scotts Hill Intracoastal Waterway access.	FY 19 /20	Planning & Community Development, Parks and Recreation
Recommended Action 4.4.D.2: Consider applying for public access funding for additional boat ramps.	Ongoing	Planning & Community Development, Parks and Recreation
Recommended Action 4.4.D.3: Consider co-location of other appropriate recreational amenities and multiple grant funding sources at future boat ramps.	Ongoing	Planning & Community Development, Parks and Recreation
Parks and Recreation		
Recommended Action 4.5.A.1: Prepare a new, updated Comprehensive Parks and Recreation Master Plan.	FY 21 /22	Parks and Recreation
Recommended Action 4.5.A.2: Ensure that the updated plan adequately reflects current and future recreation needs. Adopt implementation measures to acquire and develop parks, recreation areas, and open spaces.	FY 21 /22	Parks and Recreation
Recommended Action 4.5.A.3: Ensure future capital improvement projects include a balance between revenue generation facilities and nonrevenue generating facilities.	Ongoing	Parks and Recreation
Recommended Action 4.5.A.4: Establish parks and recreation service districts for the allocation and distribution of recreational opportunities.	FY 21 /22	Planning & Community Development, Parks and Recreation
Recommended Action: 4.5.A.5: As part of the plan update, identify needed activities and programs for neighborhood youth that are potentially viable in the Maple Hill neighborhood.	FY 21 /22	Parks and Recreation
Recommended Action 4.5.B.1: Establish expansion plans for athletic fields and programming at Pender Memorial Park and Hampstead Kiwanis Park.	FY 19 /20	Parks and Recreation
Recommended Action 4.5.D.1: Establish a monetary value for recreational amenities/units to more appropriately allocate fees captured as part of the development approval process.	FY 21 /22	Planning & Community Development, Parks and Recreation
Recommended Action 4.5.H.1: Establish a formal Maintenance Operations Plan and policy.	FY 18 /19	Parks and Recreation, Public Works
Recommended Action 4.5.I.1: Consider increasing spending to bring per capita figures closer to those of the counties in the region and communities of similar populations.	Ongoing	Parks and Recreation

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
Recommended Action 4.5.I.2: Increase revenue generation within the department to bring the cost recovery closer to the state average.	Ongoing	Parks and Recreation
Schools		
Recommended Action 4.6.B.1: Establish and continually update a twenty-year plan for the Pender County School System which provides enrollment figures, capital improvement needs, and funding constraints.	FY 19 /20	School System
Recommended Action 4.6.B.2: Ensure that capital improvements to schools adequately address the needs of different areas of the County, including improvements to existing schools update the facilities to modern standards of newer schools.	Ongoing	School System
Recommended Action 4.6.B.3: Establish an estimated number of students per each development type (single-family, multi-family, etc.) to identify short-term impacts of development approval.	FY 19 /20	Planning & Community Development, School System
Recommended Action 4.6.B.4: Address traffic access, safety, and circulation issues through physical improvements and operating procedures.	Ongoing	School System
Recommended Action 4.6.B.5: Consider establishing school capacity thresholds (80/90%) whereby active capital improvement measures will be initiated to alleviate future overcrowding.	FY 19 /20	School System
Recommended Action 4.6.D.1: In accordance with the Board of Education, establish and adopt an appendix to this land use plan which clearly identifies the specific location and size of each school site to be reserved for future use.	FY 18 /19	Planning & Community Development, School System
Broadband Service		
Recommended Action 4.7.B.1: Perform annual GIS updates to the wireless network maps by coordinating with ISPs and reviewing permit applications.	Ongoing	Information Technology
Recommended Action 4.7.B.2: Establish a telecommunications committee to assess the potential for broadband internet access in underserved areas, and to act as a point of contact for developers and providers.	FY 19 /20	Planning & Community Development
Recommended Action 4.7.B.3: Consider establishing a provision or incentive whereby the availability of broadband service is included in the review of zoning map amendments or conditional zoning requests.	FY 19 /20	Planning & Community Development
Coordinated Development		
Recommended Action 4.8.A.1: Review the Biodiversity/Wildlife Habitat Assessment and associated environmental features GIS data in community facilities and services projects and planning, with the purpose of reducing unnecessary impacts to natural resources and wildlife habitat.	FY 18 /19	Planning & Community Development

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
Land Use Compatibility		
Recommended Action 5.I.C.1: Annually review the future land use map in concert with new or proposed infrastructure to ensure the desired growth pattern reflects the expansion of new roads, water, sewer, broadband, or schools. Identify geographic areas that may be suitable for an increase or decrease in the relative density associated with infrastructure plans. This review should include an inventory and analysis of completed or planned collector streets.	Ongoing	Planning & Community Development
Recommended Action 5.I.C.2: To avoid unnecessary impacts to wildlife habitat, the Biodiversity/Wildlife Habitat Assessment and other conservation GIS map layers and information will be considered in future growth plans.	FY 18 / 19	Planning & Community Development
Recommended Action 5.I.G.1: Consider rezoning all vacant Planned Development tracts to a base zoning district that is consistent with the future land use map. Establish an inventory of vacant land zoned Planned Development.	FY 18 /19	Planning & Community Development
Recommended Action 5.I.G.2: Consider revising the County's Master Development Plan review procedure to only apply to phased development plans. Where unphased development is proposed, the Master Development Plan procedure should be modified to reflect a staff/technical review committee review of a conceptual or schematic plan. Consider revising or removing the Master Development Plan procedure for vacant land within the Planned Development zoning district. An option for by right development without Planning Board approval should be provided to development applicants and property owners within the Planned Development district.	FY 18 /19	Planning & Community Development
Recommended Action 5.I.G.3: Consider rezoning all vacant Planned Development tracts to a base zoning district that is consistent with the future land use map. Establish an inventory of vacant land zoned Planned Development.	FY 18 /19	Planning & Community Development
Recommend Action 5.I.H.1: Consider establishing Mixed Use zoning districts consistent with the County's future land use map – Regional and Neighborhood – which allow for development of multi-family, commercial, office, and vertical mixed use development.	FY 18 /19	Planning & Community Development
Recommend Action 5.I.H.2: Consider establishing urban design guidelines and/or Form Based Code requirements for development within the Regional and Neighborhood Mixed Use future land use category. This effort should be undertaken by a consultant as part of public driven master planning process.	FY 20 /21	Planning & Community Development
Recommended Action 5.I.H.3: To encourage the installation of shade trees, the following should be	FY 18 /19	Planning & Community Development

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
removed from the County's "Canopy Tree" plant material list: Crepe Myrtle, Ginkgo Biloba, and Washington Hawthorn. Such trees are selected for removal due to their limited canopy spread and ability to provide shade.		
Recommended Action 5.I.H.4: Require the installation of bicycle and pedestrian infrastructure as outlined in a future Comprehensive Bicycle and Pedestrian Transportation Plan, which specifically serves the development.	FY 20 /21	Planning & Community Development
Recommended Action 5.I.I.1: Consider allowing multi-family developments as a by right use in certain zoning districts in accordance with the future land use map.	FY 18 /19	Planning & Community Development
Recommended Action 5.I.I.2: Consider establishing residential density standards that are comparable to neighboring jurisdictions. As part of the procedure, the County should analyze and research any and all incentives and/or supplemental regulations whereby an increase in density is granted. Neighboring jurisdictions: Onslow County – 10 dwelling units per acre, Brunswick County – 14 dwelling units per acre, New Hanover County – 17 dwelling units per acre.	FY 18 /19	Planning & Community Development
Recommended Action 5.I.I.3: Consider establishing options whereby multi-family residential developments contribute funds for the County to acquire water-based recreational areas serving residents in the immediate area rather than for construction/allocation of open space within their particular development. Adherence to the provisions outlined in NCGS 153A 331 is required.	FY 19 /20	Planning & Community Development, Parks and Recreation
Recommended Action 5.I.K.1: Discourage the construction of storage facilities along the road frontage. Such facilities should be located behind other development and generally not visible from primary roadways. Based on public input, storage facilities are not desired along the US 17 corridor.	Ongoing	Planning & Community Development
Recommended Action 5.I.M.1: Consider establishing a Commercial Waterfront zoning district consistent with the County's future land use map. Uses should only be permitted through the special use permit process or specific development standards. Water-based restaurants, retail establishments, and recreational uses available for public use are desired.	FY 18 /19	Planning & Community Development
Industrial Uses, Business Development, and Tourism		
Recommended Action 5.I.N.1: Consider committing additional County resources to improve and expand efforts to retain and recruit industries. Place emphasis on re-use of vacant buildings, recruitment of clean industries, expansion of the Pender Commerce Park, and creation of jobs.	Ongoing	County Manager's Office

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
Recommended Action 5.I.S.I: Continue to work with the Town of Wallace to identify opportunities for commercial and industrial expansion in the proximity of the airport.	Ongoing	Planning & Community Development
Recommended Action 5.I.T.I: Consider options to partner with the UNCW Center for Marine Science and MARBIONIC to identify opportunities for marine biotech, aquaculture, or uses that would be compatible with coastal tourism.	FY 19 /20	Planning & Community Development, Tourism
Residential Development and Housing		
Recommended Action 5.I.V.I: Consider establishing tiered residential zoning districts based upon the future land use map and/or existing lot sizes.	FY 18 /19	Planning & Community Development
Recommended Action 5.I.X.I: Consider the establishment of a new Coastal Residential zoning district or overlay district for single-family residential development within ½ mile of estuarine or coastal waters. Such a district should encourage low impact development (LID), limit impervious surface coverage to 35% or less, require tree preservation and mitigation, and incentivize the allocation of public access to coastal waters.	FY 18 /19	Planning & Community Development
Recommended Action 5.I.Z.I: Consider incentives such as a density bonus where it can be demonstrated that a development will perpetually preserve coastal natural resources, prime agricultural lands, and/or wildlife habitat areas in accordance with the NC WRC “Conservation Recommendations for Priority Terrestrial Wildlife Species and Habitats in North Carolina.”	FY 18 /19	Planning & Community Development
Recommended Action 5.I.AA.I: Consider incentives such as a density bonus where a development provides public trust water access to County residents through a permanent access easement. Such a provision may require the dedication of public access easements through extension of right-of-way to high water marks as a means of recreation and/or a fee-in-lieu for waterfront acquisition. NOTE: See Recommended Action 4.4.B.2.	FY 18 /19	Planning & Community Development
Recommended Action 5.I.BB.I: Consider establishing zoning district regulations which support a variety of housing options in close proximity to primary employment centers such as the Pender Commerce Park, US 421, and US 117/210.	FY 19 /20	Planning & Community Development, Housing Authority
Recommended Action 5.I.BB.2: Consider incentives such as a density bonus where a development provides housing for low to moderate income persons.	FY 19 /20	Planning & Community Development, Housing Authority
Residential and Agriculture		
Recommended Action 5.I.EE.I: Consider establishing a zoning district specific to the Penderlea community	FY 19 /20	Planning & Community Development

Action Item	To be done in Fiscal Year (July-June)	Department Responsibility
which will preserve the existing land use pattern and lifestyle of the area.		
Recommended Action 5.1.FF.1: Consider increasing development intensity and uses at primary rural roadway intersection in accordance with the future land use map.	FY 18 /19	Planning & Community Development
Recreation and Conservation		
Recommended Action 5.1.II.1: Consider designating Lea-Hutaff Island as Environmental Conservation on the County's official zoning map.	FY 18 /19	Planning & Community Development
Historic and Cultural Resources		
Recommended Action 5.2.A.1: Designate historic, cultural or architecturally significant properties through National Register or local historic programs.	FY 19 /20	Planning & Community Development
Recommended Action 5.2.A.2: Consider prioritizing historic, cultural or architecturally significant properties for public acquisition/protection.	Ongoing	Planning & Community Development

APPENDIX A: DEFINITIONS AND ACRONYMS

DEFINITIONS OF ACTION AND DESCRIPTIVE WORDS USED IN POLICIES

The following is a list of definitions for the ‘action-words’ used in the County’s policy statements. This list is used to help in clarifying a policy’s meaning and intent.

Consider: Implies permission to pursue a course of action. Pursuit of such action is not required.

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

Create: Bring about the desired goal, usually with County staff and Planning Board involved at all levels from planning to implementation. This could include financial support by the County.

Discourage: Inhibit an undesired course or action through County regulation, staff recommendation and decisions.

Encourage: Foster the desired goal through County regulation, staff recommendation and decisions.

Enhance: Improve current regulations and decisions towards a desired state through the use of policies and County staff at all levels of planning. This could include financial support by the County.

Ensure: To make certain or sure an action is implemented, usually with County staff involvement. Financial support by the County should be provided if needed.

Establish: To introduce through the creation thereof. Financial support by the County may be provided if needed.

Goal: A general statement indicating a desired end or the direction the County will follow to achieve that end.

Identify: Catalog and confirm resource or desired item(s) through the use of County staff and actions.

Implement: Actions to guide the accomplishment of the Plan recommendations.

Maintain: Keep in good condition the desired state of affairs through the use of County regulations and practices by staff. Financial support by the County should be provided if needed.

May: Implies permission to pursue a course of action or implies that a course of action is probable and likely. While “may” leaves room for flexibility for a range of choices, it does not imply a “may” or “may not” status as used in policy statements.

Objective: Direction toward the attainment of a particular goal.

Policy: A statement identifying the County's position regarding the pursuit of a goal or objective.

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

Promote: Advance the desired state through the use of County policies and codes and Planning Board and staff activity at all levels of planning. This could include financial support by the County.

Protect: Guard against a deterioration of the desired state through the use of County policies and regulations, staff, and, if needed, financial support by the County.

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

Recommended Action: A statement outlining a specific course of action the County may pursue to implement goals and policies. Recommended actions are not used in review of development proposals, text amendments, and/or rezoning requests.

Shall: An obligation to carry out a course of action.

Should: An officially adopted course or method of action intended to be followed to implement the community Goals. Though not as mandatory as "shall", it is still an obligatory course of action unless clear reasons can be identified that an exception is warranted.

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

Sustain: Uphold the current state through County policies, decisions, financial resources, and staff action.

Work: Cooperate and act in a manner through the use of County staff actions, and policies to create the desired goal.

Acronyms Used In the Plan

AEC	Areas of Environmental Concern
CAMA	Coastal Area Management Act
COE	Corps of Engineers, United States
CRAC	Coastal Resource Advisory Committee

CRC	Coastal Resource Commission
CRS	Community Rating System
CZMA	Coastal Zone Management Act
DCM	Division of Coastal Management
NC DEQ	Department of Environmental Quality
DWR	Division of Water Resources
EMS	Emergency Medical Service
EMT	Emergency Medical Technician
ETJ	Extra-territorial Jurisdiction
FAR	Floor Area Ratio
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
HQW	High Quality Waters
ICWW	Intracoastal Waterway
LPO	Local Permit Officer
LUP	Land Use Plan
MG	Million Gallons
MGD	Millions of Gallons per Day
MHWL	Mean High Water Line
MLWL	Mean Low Water Line
MS4	Municipal Separate Storm Sewer System
N.A.	Not Applicable
NC	North Carolina
NCAC	North Carolina Administrative Code
NCDOT	North Carolina Department of Transportation
NFIP	National Flood Insurance Program
NPDES	National Pollutant Discharge Elimination System
NPS	Non-point Source

NSW	Nutrient Sensitive Waters
ORW	Outstanding Resource Water
OSDS	Onsite Sewage Disposal System
SW	Swamp Waters
U.S.	United States

APPENDIX B: MAP DATA SOURCES

DATA SOURCES USED TO CREATE MAPS

The following is a list of data sources used to compile the County's maps that supplement their respective chapters in this plan.

Map 1.1: Location

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 2.1: Planning Areas

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 3.1: Areas of Environmental Concern (AECs)

Environmental Systems Research Institute (ESRI)

NC OneMap

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

North Carolina Division of Coastal Management (NCDCM)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 3.2: Special Flood Hazard Areas (SFHAs)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

North Carolina Division of Coastal Management (NCDCM)

North Carolina Floodplain Mapping Program (NCFMP)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 3.3: Storm Surge from Hurricanes (Fast Moving Storm)

Environmental Systems Research Institute (ESRI)

National Oceanic and Atmospheric Administration (NOAA)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 3.4: Surface Water Classifications

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Environmental Quality (NCDEQ)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 3.5: Coastal Surface Water Classifications & Fish Nursery Areas

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Environmental Quality (NCDEQ)

North Carolina Department of Transportation (NCDOT)

North Carolina Division of Coastal Management (NCDCM)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 3.6: Coastal and Non-Coastal Wetlands

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

North Carolina Division of Coastal Management (NCDCM)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 3.7: Natural Heritage Natural Area Locations (SNHAs)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 3.8: Smoke Awareness Areas & Managed Areas

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

North Carolina Wildlife Resources Commission (NCWRC)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 3.9: Biodiversity and Wildlife Habitat Assessment

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

North Carolina Natural Heritage Program (NCNHP)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 3.10: Septic System Suitability

Environmental Systems Research Institute (ESRI)

Natural Resources Conservation Service (NRCS)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 3.11: Agricultural Lands Assessment & Voluntary Agricultural Districts

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

North Carolina Natural Heritage Program (NCNHP)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 3.12: Prime Farmland Classifications

Environmental Systems Research Institute (ESRI)

Natural Resources Conservation Service (NRCS)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 4.1: Water Facilities

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 4.2: Wastewater Service Facilities & Availability

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 4.3: Traffic Counts

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 4.4: Automobile Accidents

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 4.5: Coastal Traffic Counts and Automobile Accidents

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 4.6: CTP Roadway Recommendations (2016)

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Wilmington Urban Area Metropolitan Planning Organization (WMPO)

Map 4.7: Draft STIP (2018-2027)

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 4.8: Parks and Recreational Opportunities

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 4.9: Coastal Parks and Recreational Opportunities

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

U.S. Geological Survey (USGS)

Map 4.10: Community Facilities

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

Pender County Geographic Information Systems (GIS)

Pender County Schools

U.S. Geological Survey (USGS)

Map 4.1 I: Coastal Community Facilities

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Schools

U.S. Geological Survey (USGS)

Map 5.1 Pender County Existing Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)

Map 5.2 Union Planning Area Existing Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)

Map 5.3 Holly Shelter Planning Area Existing Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)

Map 5.4 Burgaw Planning Area Existing Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)

Map 5.5 Caswell Planning Area Existing Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)

Map 5.6 Long Creek Planning Area Existing Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)

Map 5.7 Topsail Planning Area Existing Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)

Map 5.8 Pender County Future Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)

Map 5.9 Union Planning Area Future Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)

Map 5.10 Holly Shelter Planning Area Future Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)

Map 5.11 Burgaw Planning Area Future Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)

Map 5.12 Caswell Planning Area Future Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)

Map 5.13 Long Creek Planning Area Future Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)

Map 5.14 Topsail Planning Area Future Land Use

Cape Fear Council of Governments (CFCOG)

Environmental Systems Research Institute (ESRI)

North Carolina Center for Geographic Information and Analysis (NC CGIA)

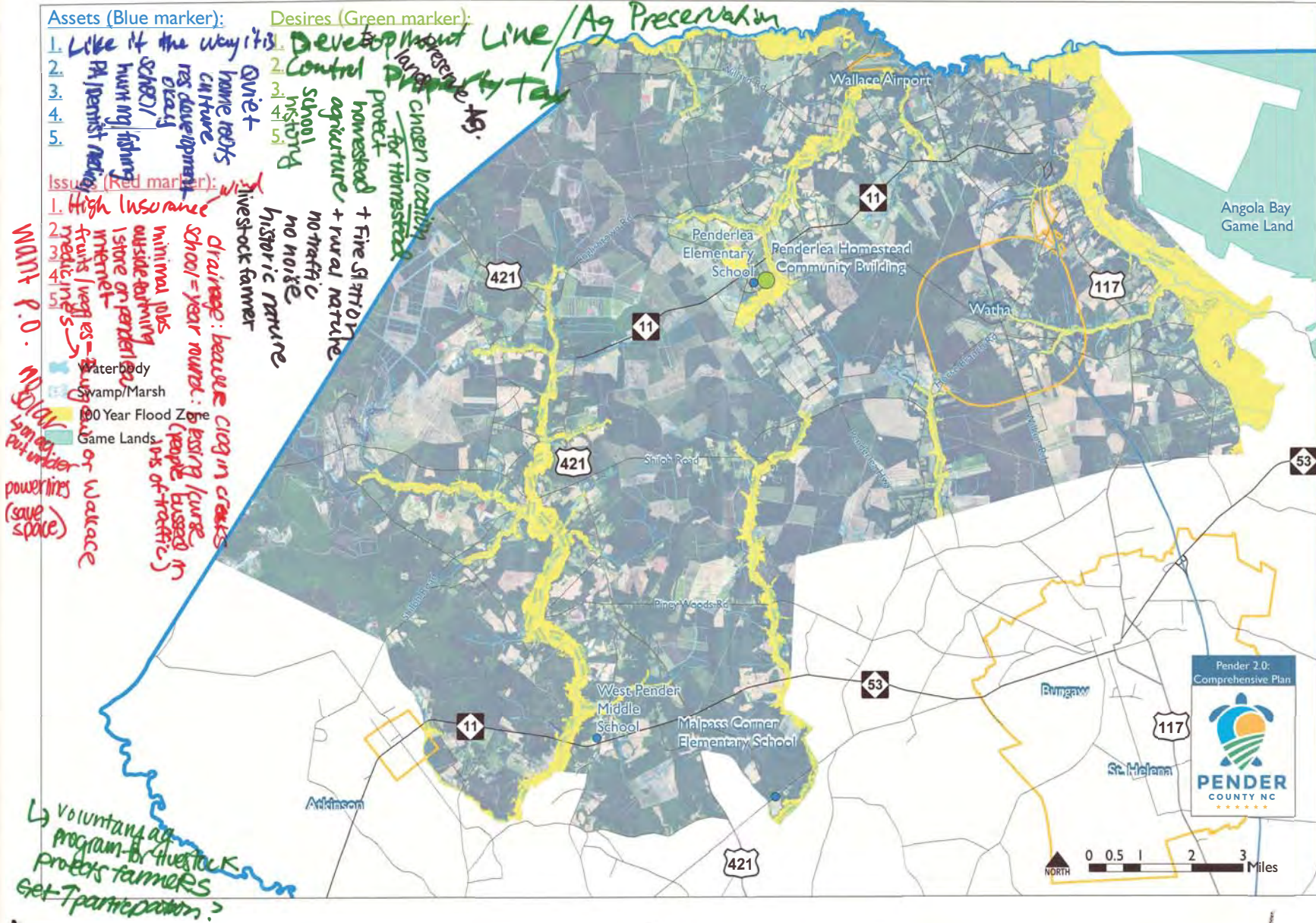
North Carolina Department of Transportation (NCDOT)

NC OneMap

Pender County Geographic Information Systems (GIS)

Pender County Tax Records

U.S. Geological Survey (USGS)



Assets (Blue marker):

1. Rural Nature of County
2. Penderlea School
3. hunting/fishing
4. Sense of community
- 5.

Desires (Green marker):

1. wider/better roadways
2. improved drainage
3. preserve rural setting
4. Limit hog farms (No New farms)
5. better job base

Issues (Red marker):

1. traffic issues
better roadways
2. creek & road ditches need cleaned
3. Lack of jobs
4. burdensome taxes
5. property taxes

- Waterbody
- Swamp/Marsh
- 100 Year Flood Zone
- Game Lands



Assets (Blue marker):

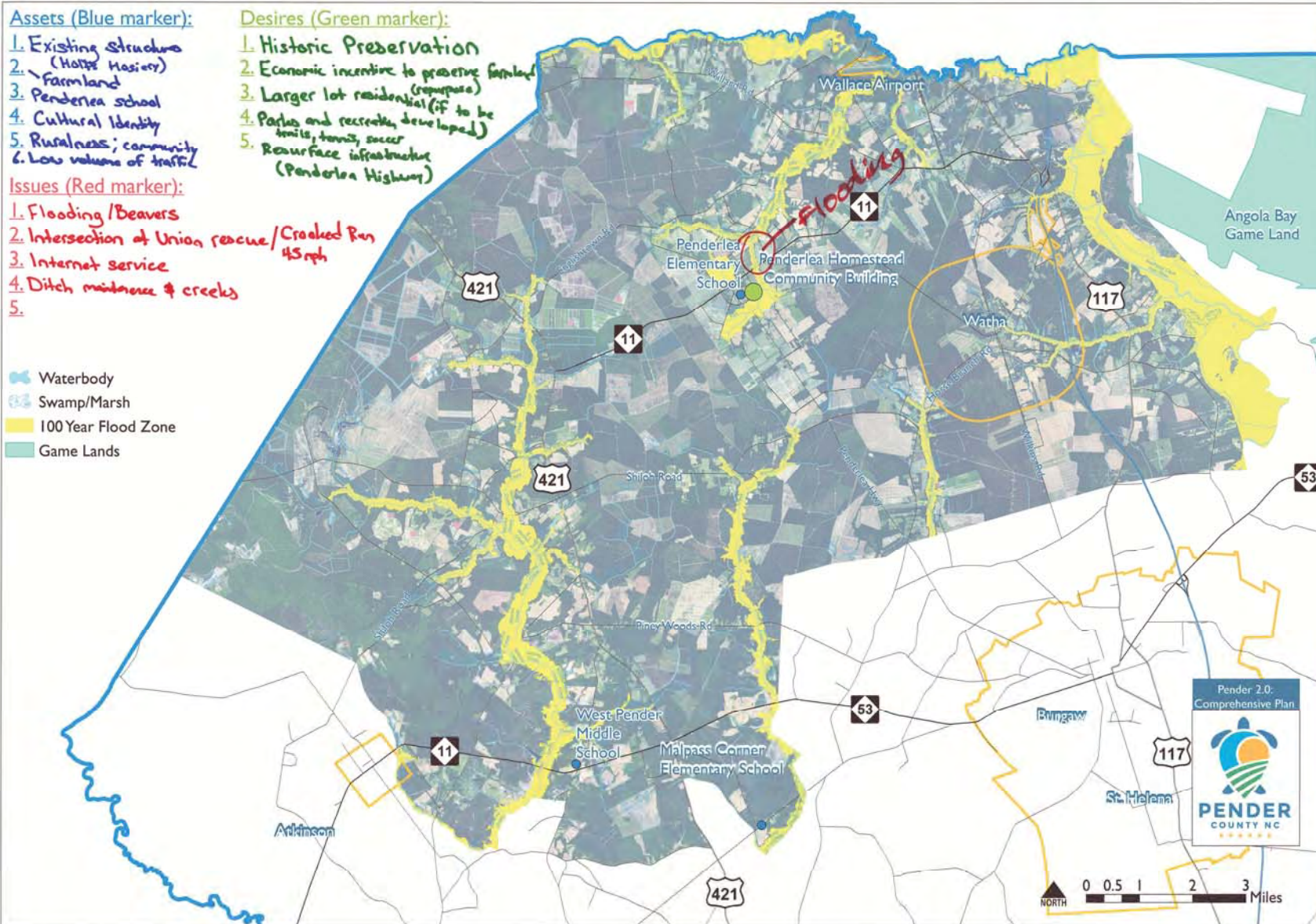
1. Existing structures (Homes, Mosier)
2. Farmland
3. Penderlea school
4. Cultural Identity
5. Ruralness; community
6. Low volume of traffic

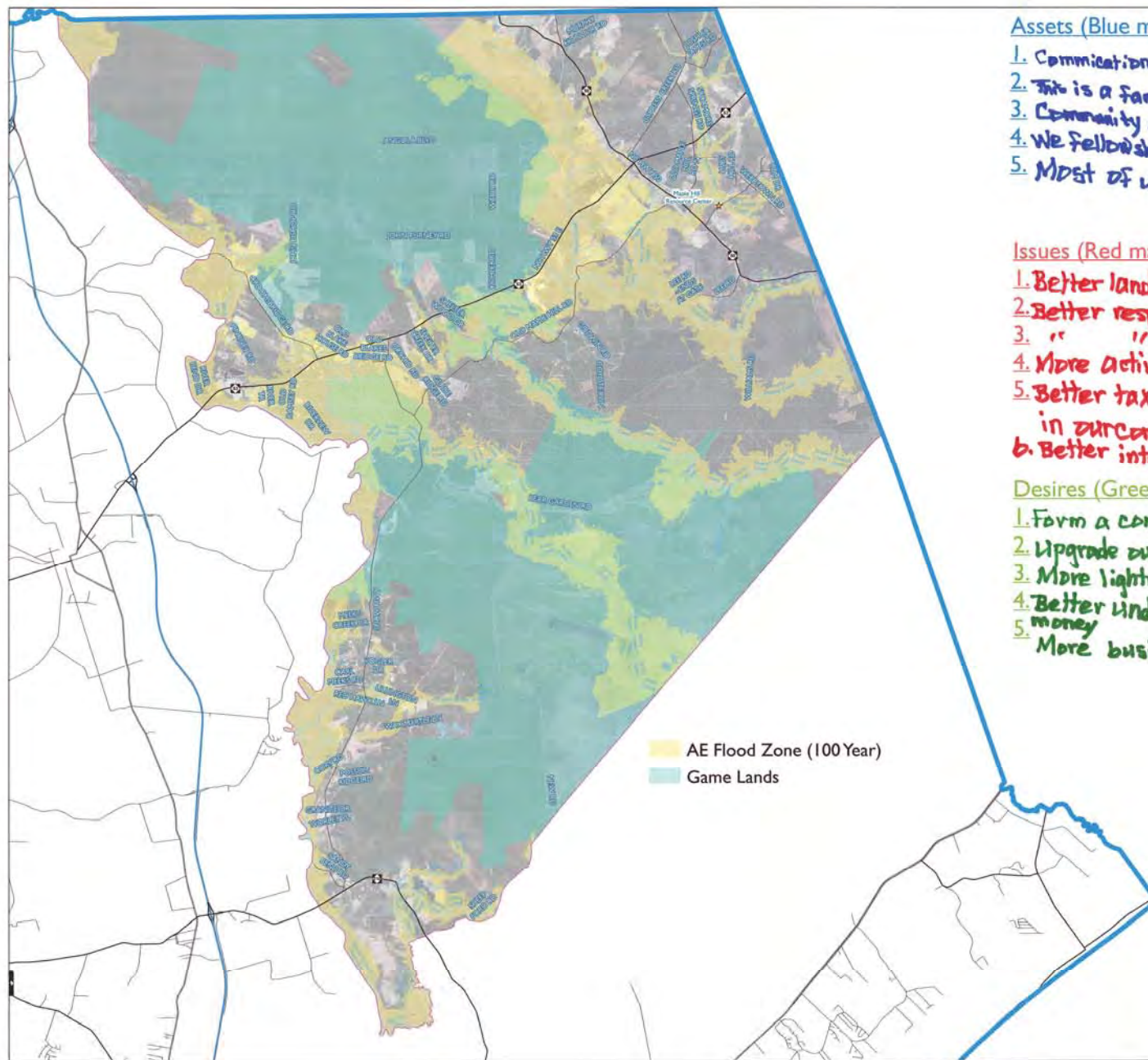
Issues (Red marker):

1. Flooding / Beavers
2. Intersection at Union road/Crooked Run 45 mph
3. Internet service
4. Ditch maintenance & creeks
- 5.

Desires (Green marker):

1. Historic Preservation
2. Economic incentive to preserve farmland (repurpose)
3. Larger lot residential (if to be trails, tennis, soccer)
4. Parks and recreation developed
5. Resurface infrastructure (Penderlea Highway)





Assets (Blue marker):

1. Communication is great
2. This is a family community
3. Community of love
4. We Fellowship in Church together
5. Most of us own our homes

Issues (Red marker):

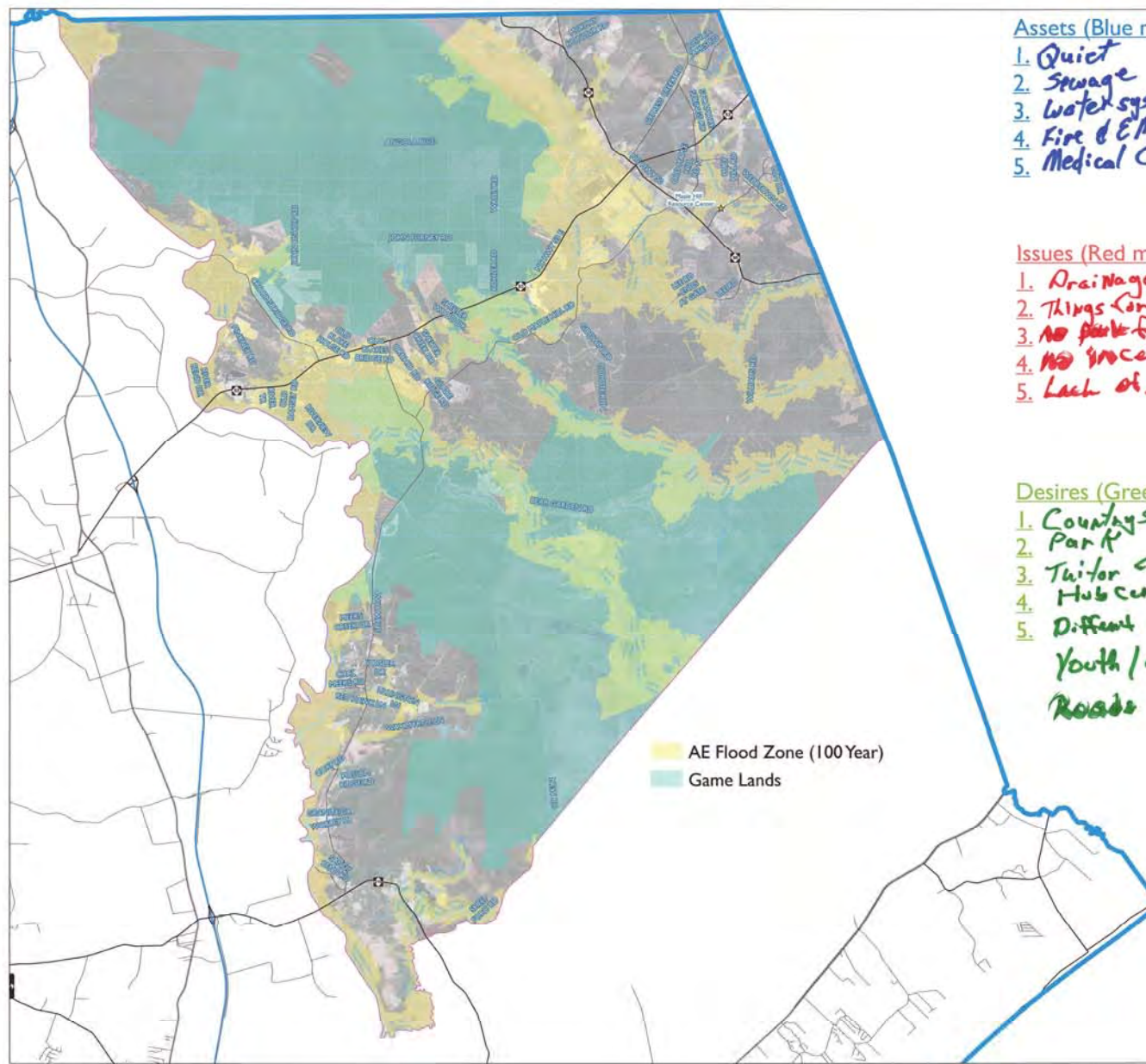
1. Better land drainage
2. Better response time from EMS
3. " " " Law enforcement
4. More activities for the children
5. Better tax ~~share~~ use for our money in our community
6. Better internet service

Desires (Green marker):

1. Form a committee to work with DOT
2. Upgrade our community center
3. More lighting for ^{our} community
4. Better understanding of the use of our tax money
5. More businesses in our community



0 0.5 1 2 3 Miles



Assets (Blue marker):

1. Quiet
2. Sewage
3. Water system
4. Fire & EMS
5. Medical Clinic - Pharmacy

Issues (Red marker):

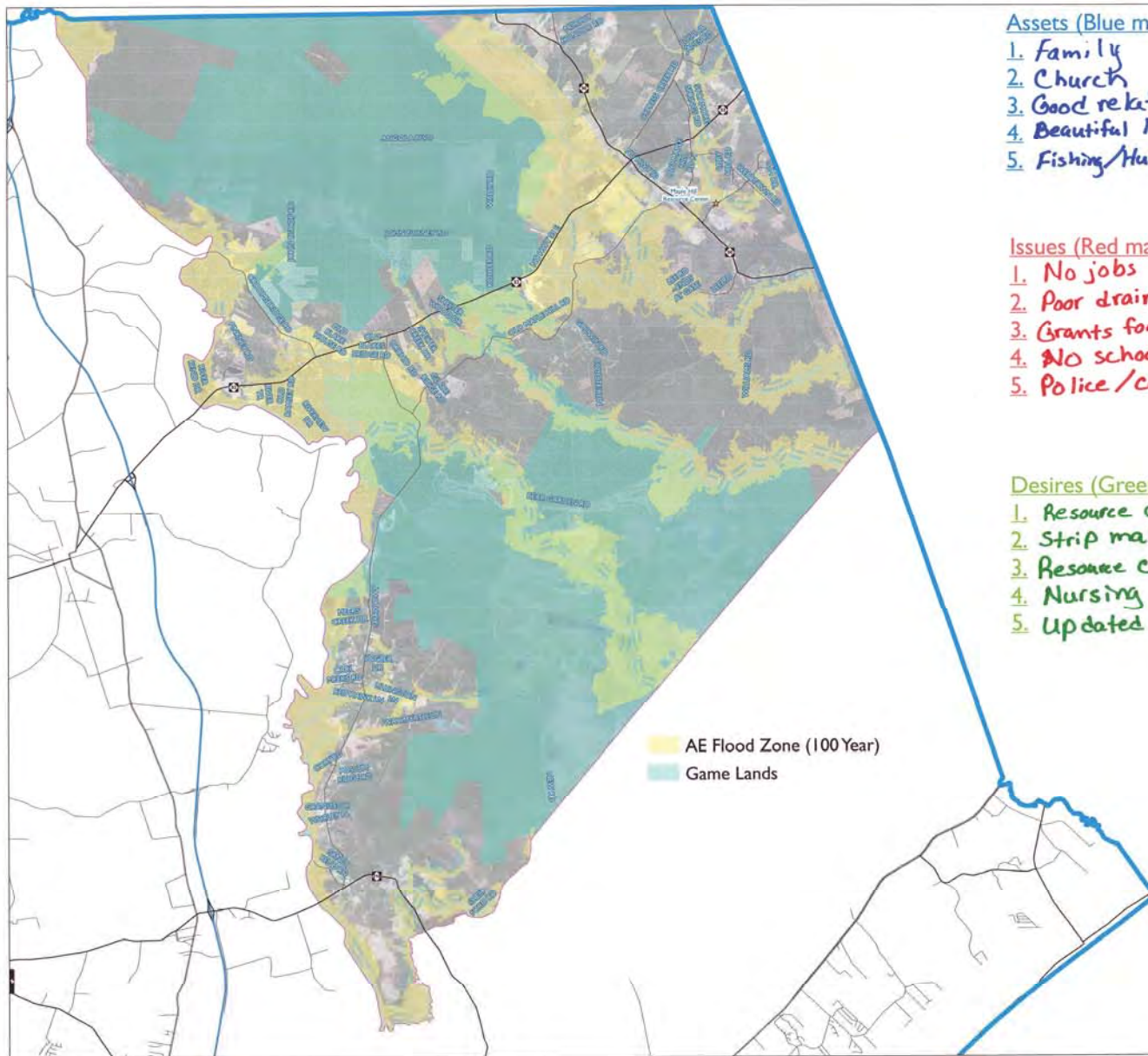
1. Drainage
2. Things for kids to do
3. No park for kids
4. No incentives for youth to return
5. Lack of jobs

Desires (Green marker):

1. Country Store
 2. Park
 3. Tutor center
 4. Hub center. ss/pole/etc
 5. Different Resumes for com
- Youth/adult programs
- Roads



0 0.5 1 2 3 Miles



Assets (Blue marker):

1. Family
2. Church
3. Good relationships
4. Beautiful landscape
5. Fishing/Hunting/gardening/farming

Issues (Red marker):

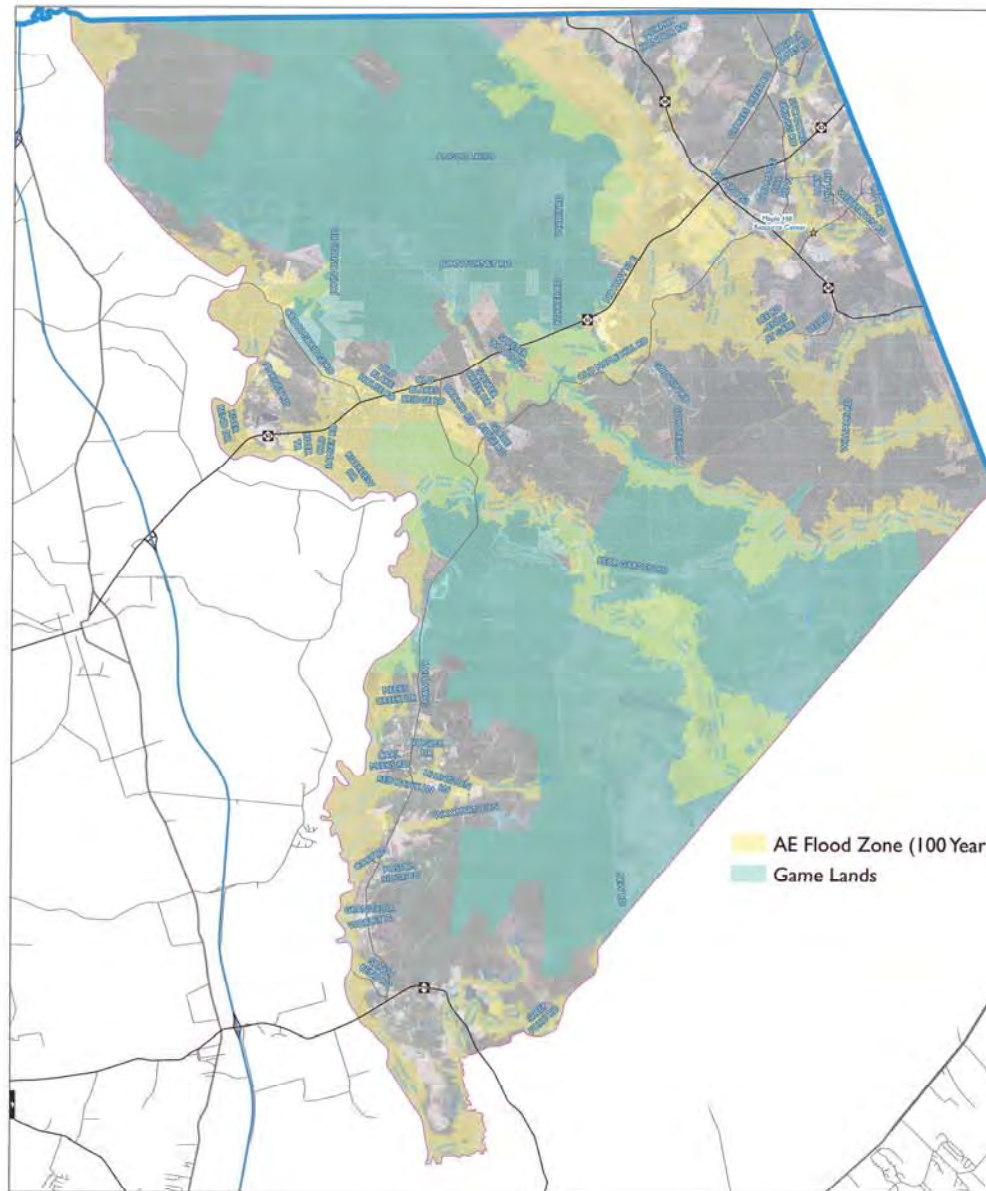
1. No jobs
2. Poor draining
3. Grants for children
4. NO school (pre-school)
5. Police /county communit

Desires (Green marker):

1. Resource center for children (pool)
2. Strip mall
3. Resource center for Senior
4. Nursing Home
5. Updated medical Center and staff



0 0.5 1 2 3 Miles



Assets (Blue marker):

1. Quiet / Little traffic
2. Sense of Community - Everybody knows each other
3. Good EMT coverage
4. Water & Sewer
- 5.

Issues (Red marker):

1. Road Flooding / Clean ditches
2. Long way to get a job - need to spend 15 minutes to commute
3. Need more youth activities
4. Long way to get to shopping
5. Long drive for kids to get to school - Long Day for kids
6. Taxes too high for what we get

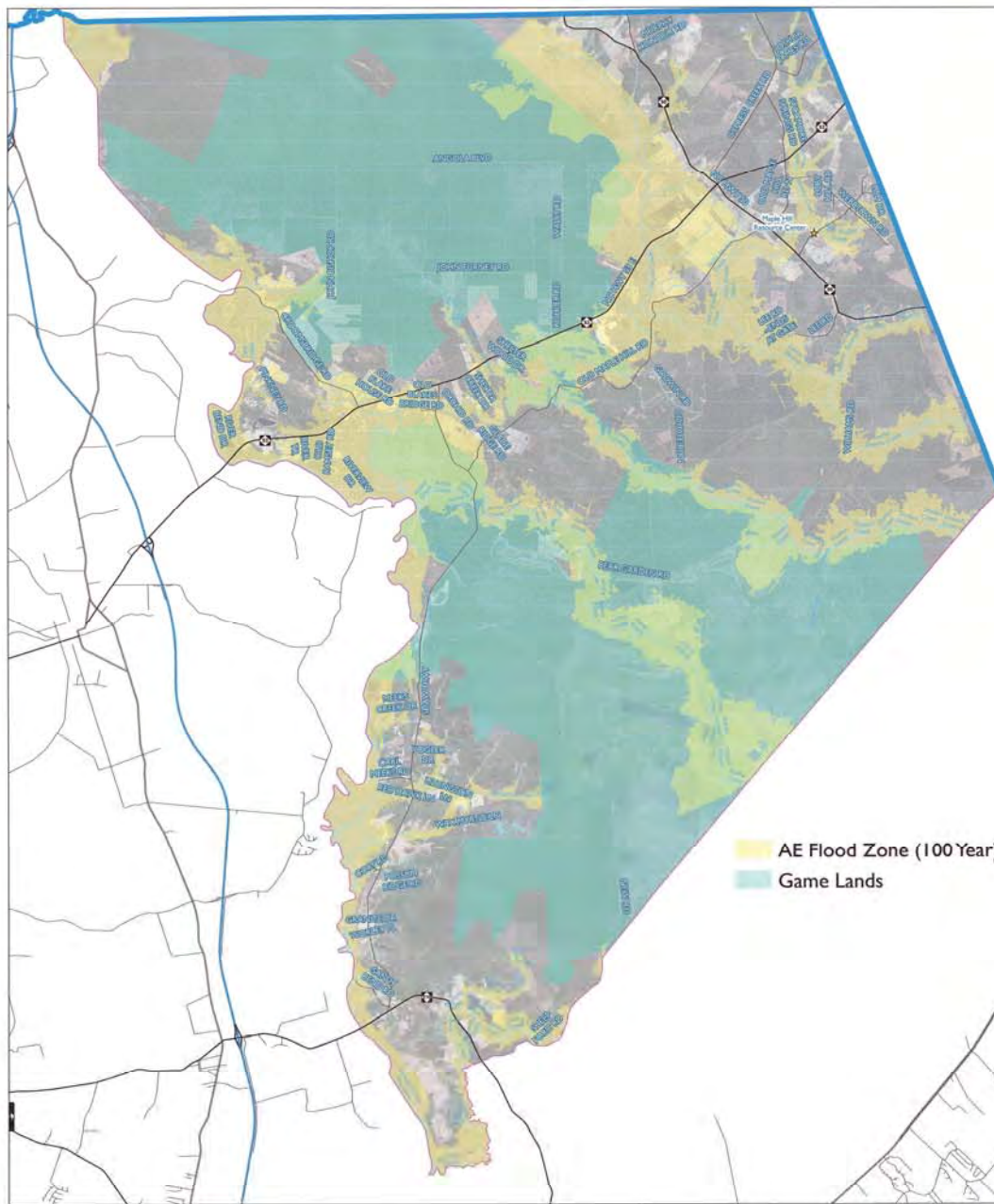
Desires (Green marker):

1. More jobs in area - Pender Co.
2. Improved State Road Maintenance
3. Local community School
4. Cell & Internet Service - better coverage
5. Bring SDS program needed for some people
6. Agricultural Processing Plant!

7. Beaver & other Wild life



0 0.5 1 2 3 Miles



Assets (Blue marker):

1. Own land (Know your neighbor) - Family
2. Sense of Community - Family Reunion
3. Church Comm.
4. Parade
5. Agriculture - Medical
- Sewer H₂O
- Community - Post office

Issues (Red marker):

1. Drainage
2. Isolated when nat. events occur
3. Jobs
4. Access to services (grocery) restaurant
- laundry
5. Access to School
- Rental Housing
- Seasonal Traffic (speeding)
- Park Space

Desires (Green marker):

1. Law Enforcement
 2. Housing including Senior Citizen (low-income)
 3. Jobs
 4. Rec Center - existing Resource Center
- Vocational Programs
- HVAC
- Carpentry
- Etc.
 5. School - (1st-3rd grade)
- programming (Resource center)
- Public &
→ Transportation



0 0.5 1 2 3 Miles

PATRICIA

1. Slow growth.
2. Quiet, Natural environment
3. Taxes
4. Hunting, Fishing,
5. National Park.
6. Low Traffic volume

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1. Communication (Cable, internet) improvement
2. Public access to state water way
3. more Family Recreation opportunities
4. more Law enforcement presence
5. Family Services - Library, meals on wheels
- 6) Improvement of Transportation Services
- 7) Curriculum improvement in Public Schools
- Vocational, Technical -
- 8) Community Center

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1. Drainage

2. County the Availability for 911

3. Funding Mechanism for area needs

4. Citizens affected by Matthew (Faster response)

5. more community closeness

6) Land use referenced (General needs of residence)

1. Agriculture

2. Low impact

1. drug store

2. Doctors.

Commonwealth of Massachusetts

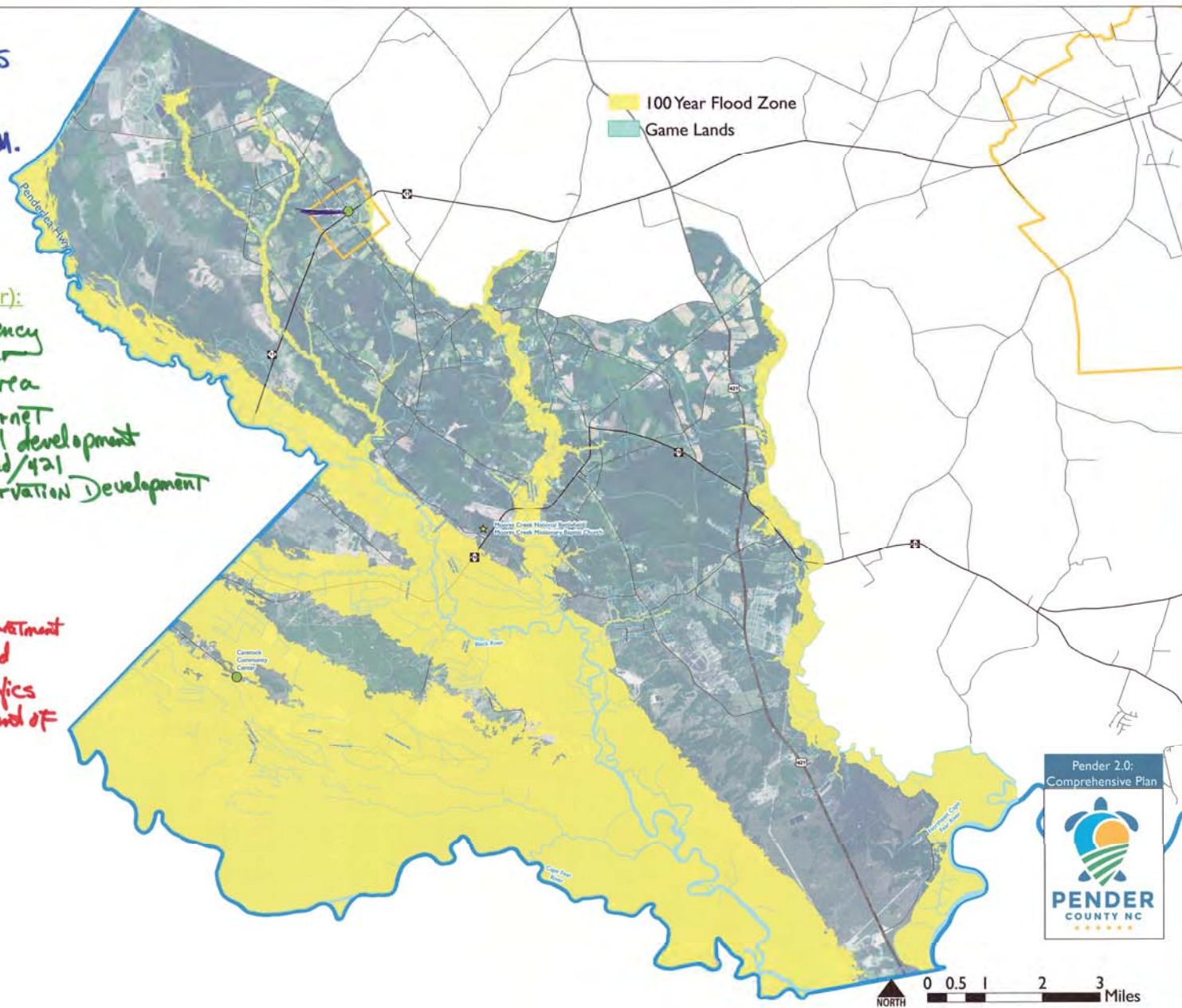
-
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2. Low impact
1. drug store
2. Doctors.



1. New Retail Stores
2. Park Facilities
3. Agriculture
4. Family Orient COMM.
5. Churches

1. Response/Emergency
2. Community center
3. More jobs in area
4. Satellite/Internet
5. More commercial development
Blueberry Road/421
6. Historic Preservation Development

1. High TAXES
2. Good ground water / Treatment
3. Bad local road
4. Too much Traffics
5. More Enforcement of speeds/drugs



Assets (Blue marker):

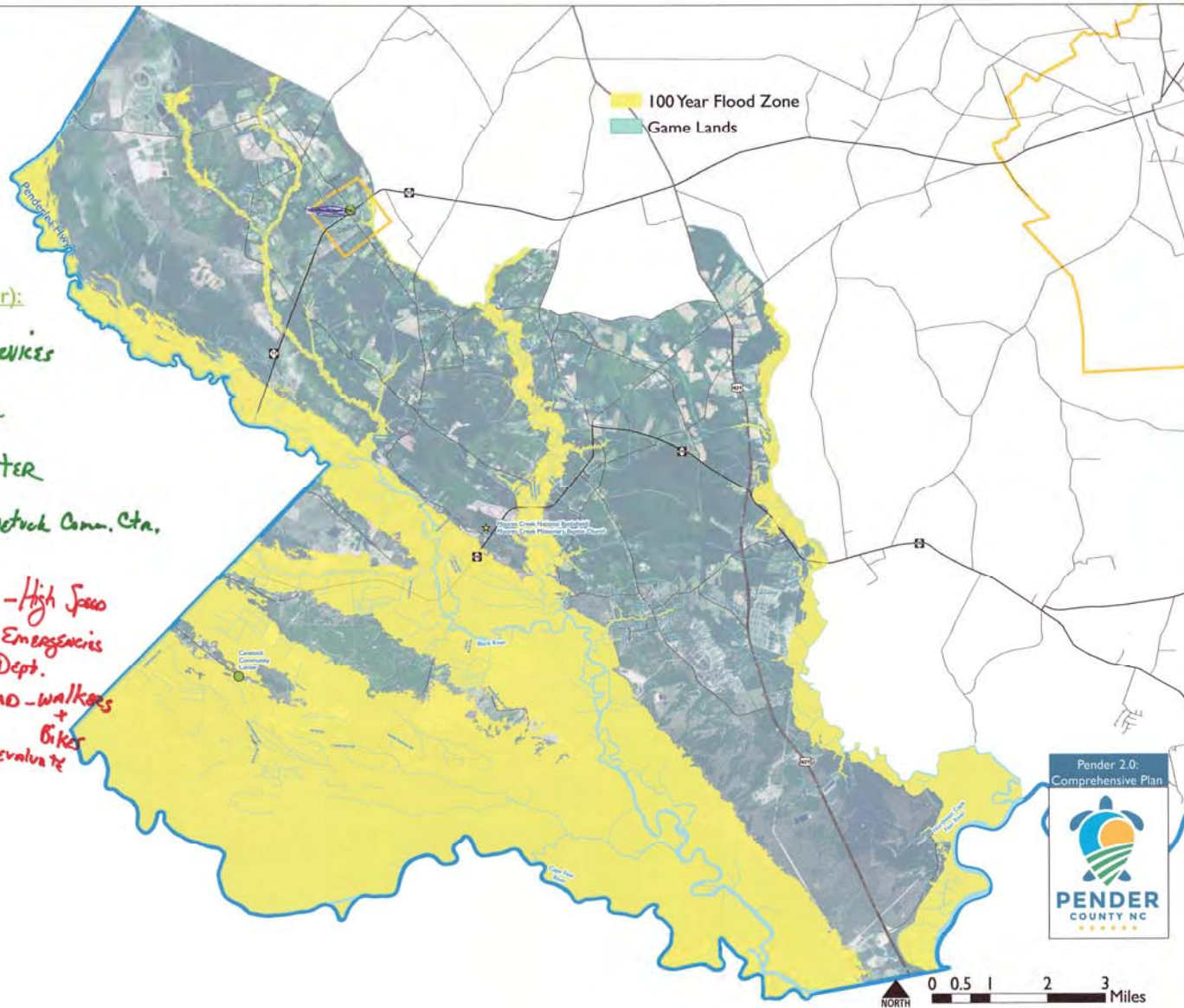
1. Battleground
2. Post Office
3. River
4. Fishing + Hunting
5. Family Living
Rt. 421
Water plant
Rosenwald School

Desires (Green marker):

1. Internet
2. Fire Dept./Services
3. Police Patrol
4. Grocery Store
5. Industry
Community Center
Restaurants
Walking trails Carver's Comm. Ctr.

Issues (Red marker):

1. Lack of Internet - High Speed
2. Landing Zone for Emergencies
3. Lack of Fire Dept.
4. Shoulders on road - walkers + Bikes
5. Wider Roads
Flood Zones - Re-evaluate



Assets (Blue marker):

1. Roads Stores
2. Ditches
3. Low-traffic
4. Rivers
5. Battlefield Wildlife

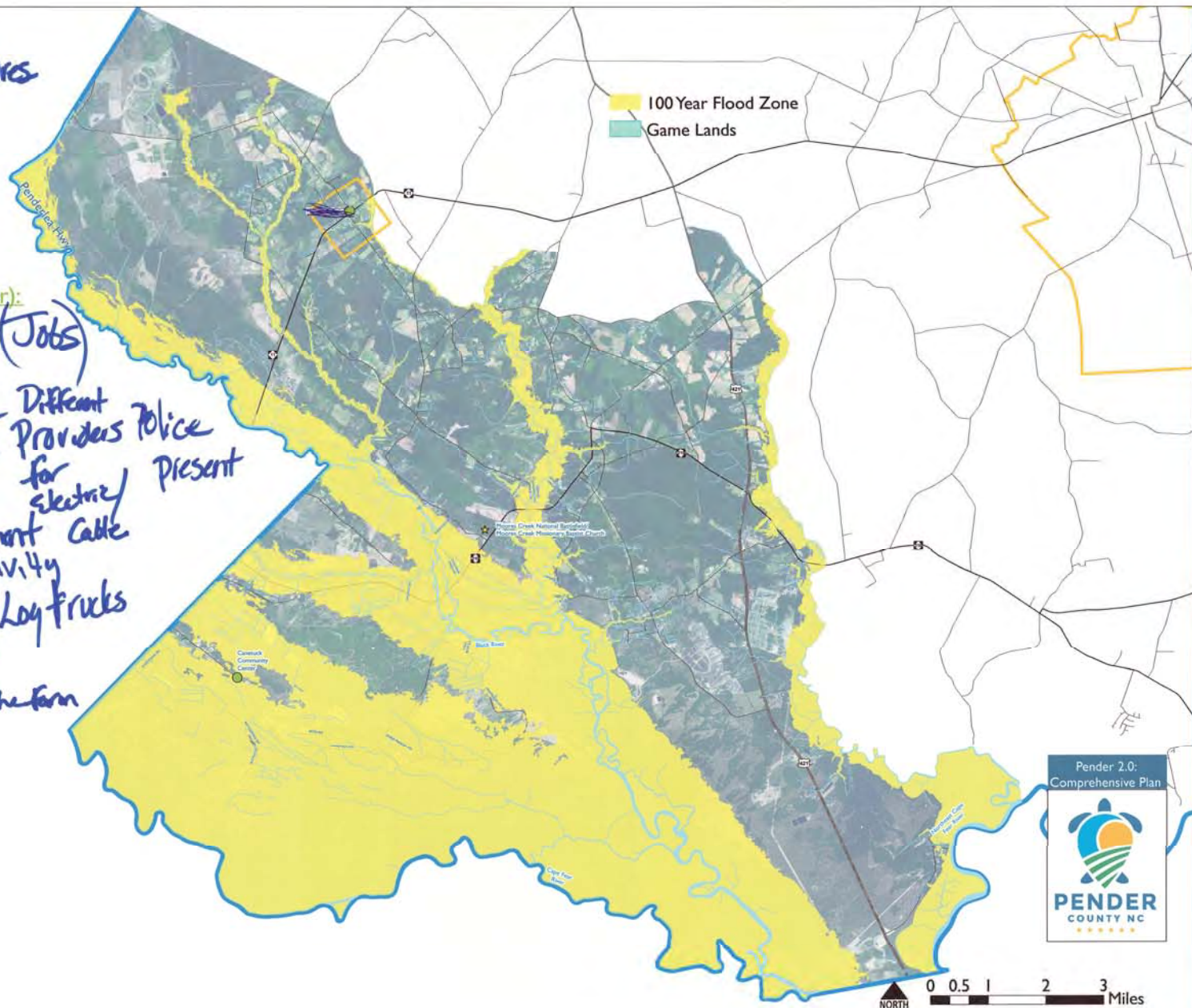
Desires (Green marker):

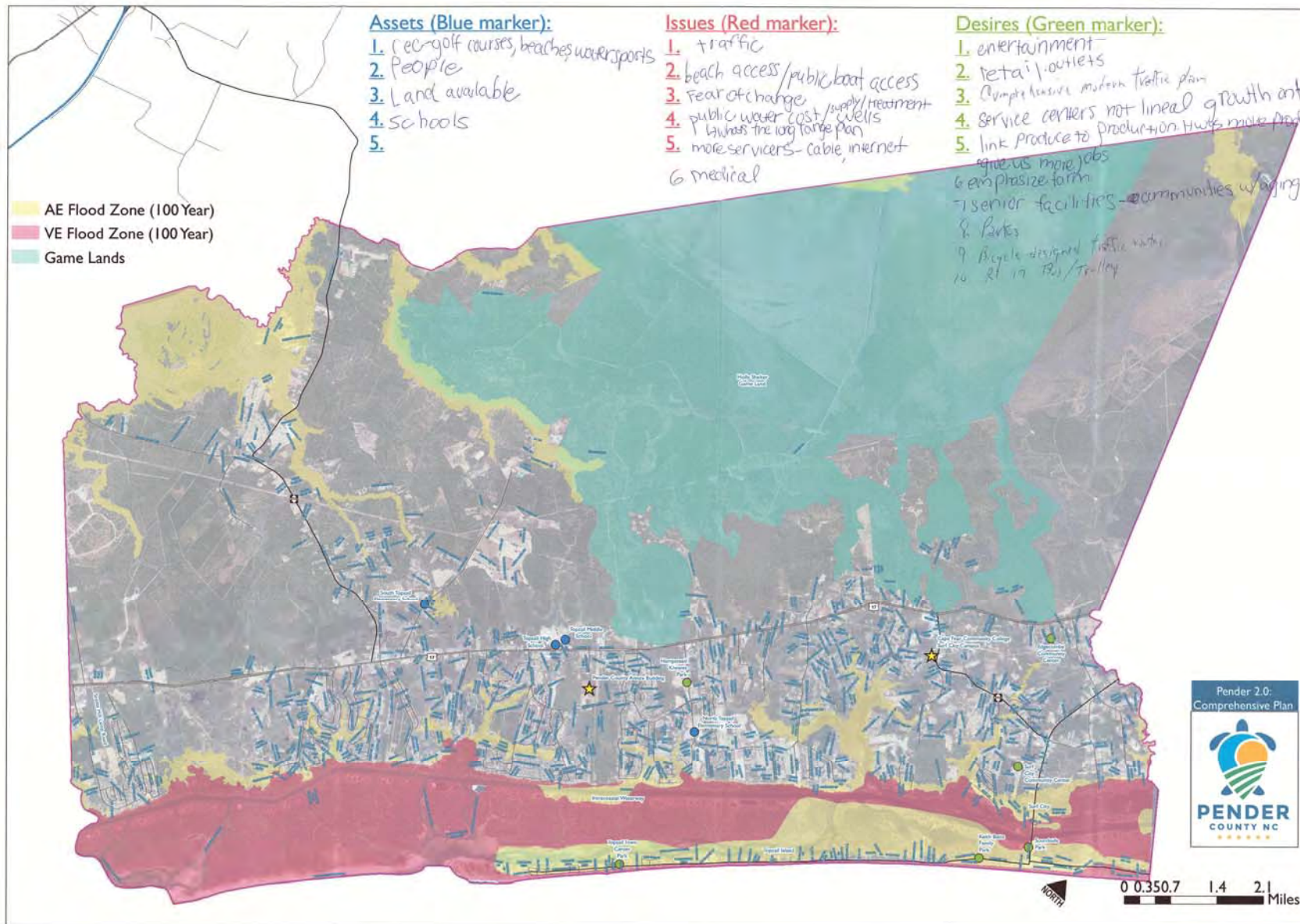
1. Roads-Dirt, (Jobs)
2. Drainage
3. Traffic lights
4. Community Center Different
5. Plan recycle Providers Police
6. Grocery store for electric Present
7. Fire Department Cable
- Family Activity

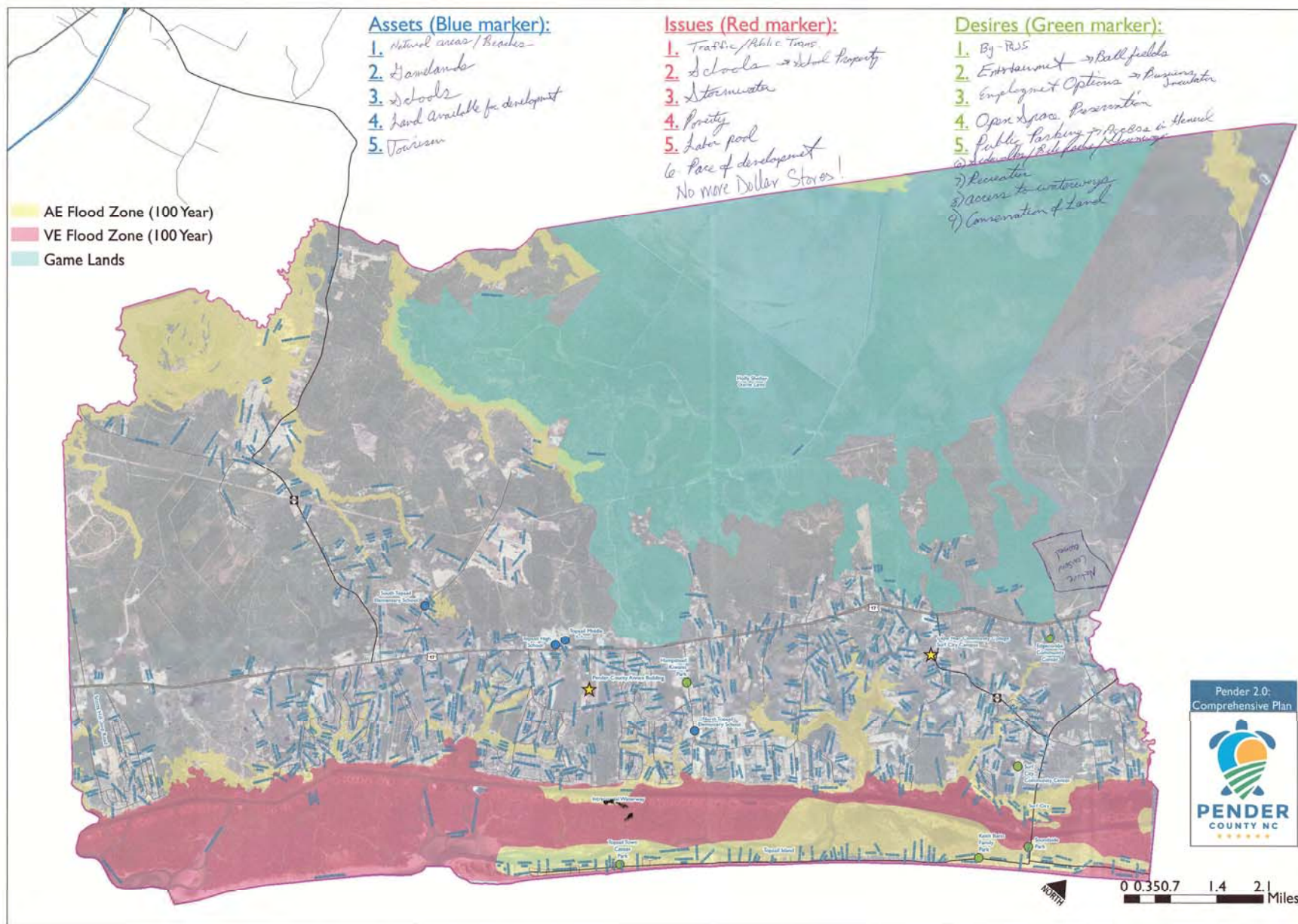
Issues (Red marker):

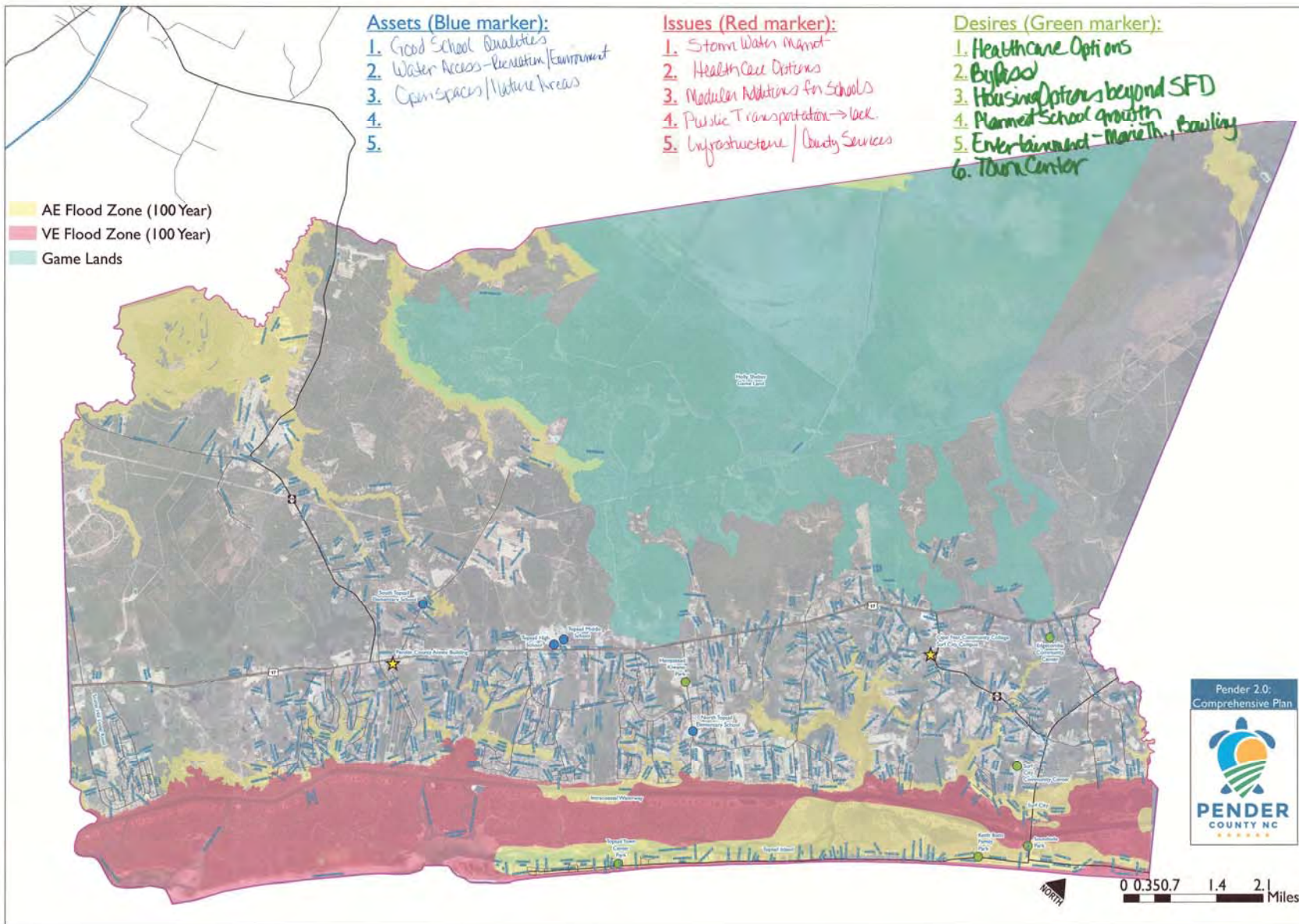
1. Tanker Trucks/Log trucks
2. Hog farms
3. DOT- MOWing
4. Chemicals from the farm land.
- 5.

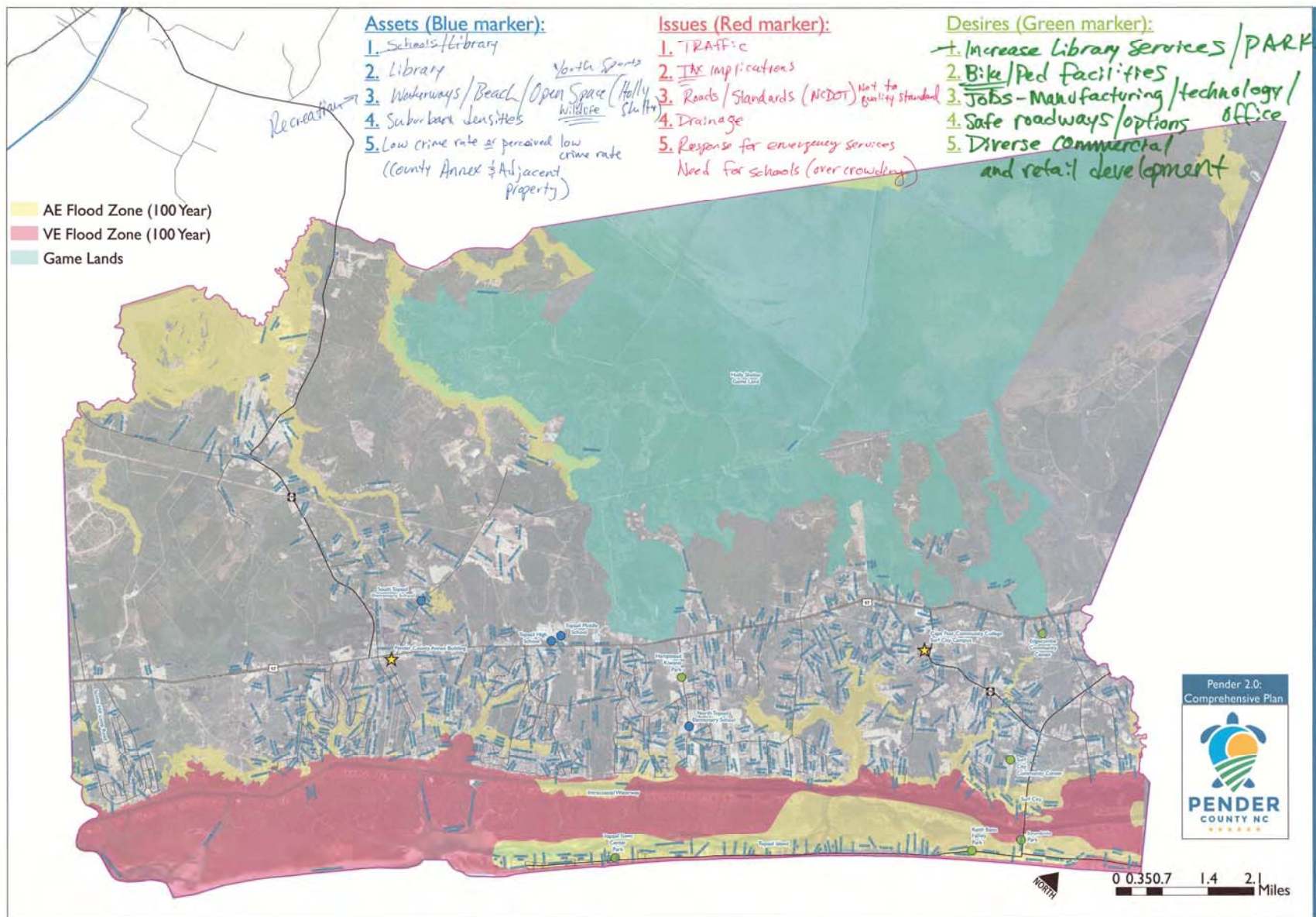
Different
Flooding
Racing



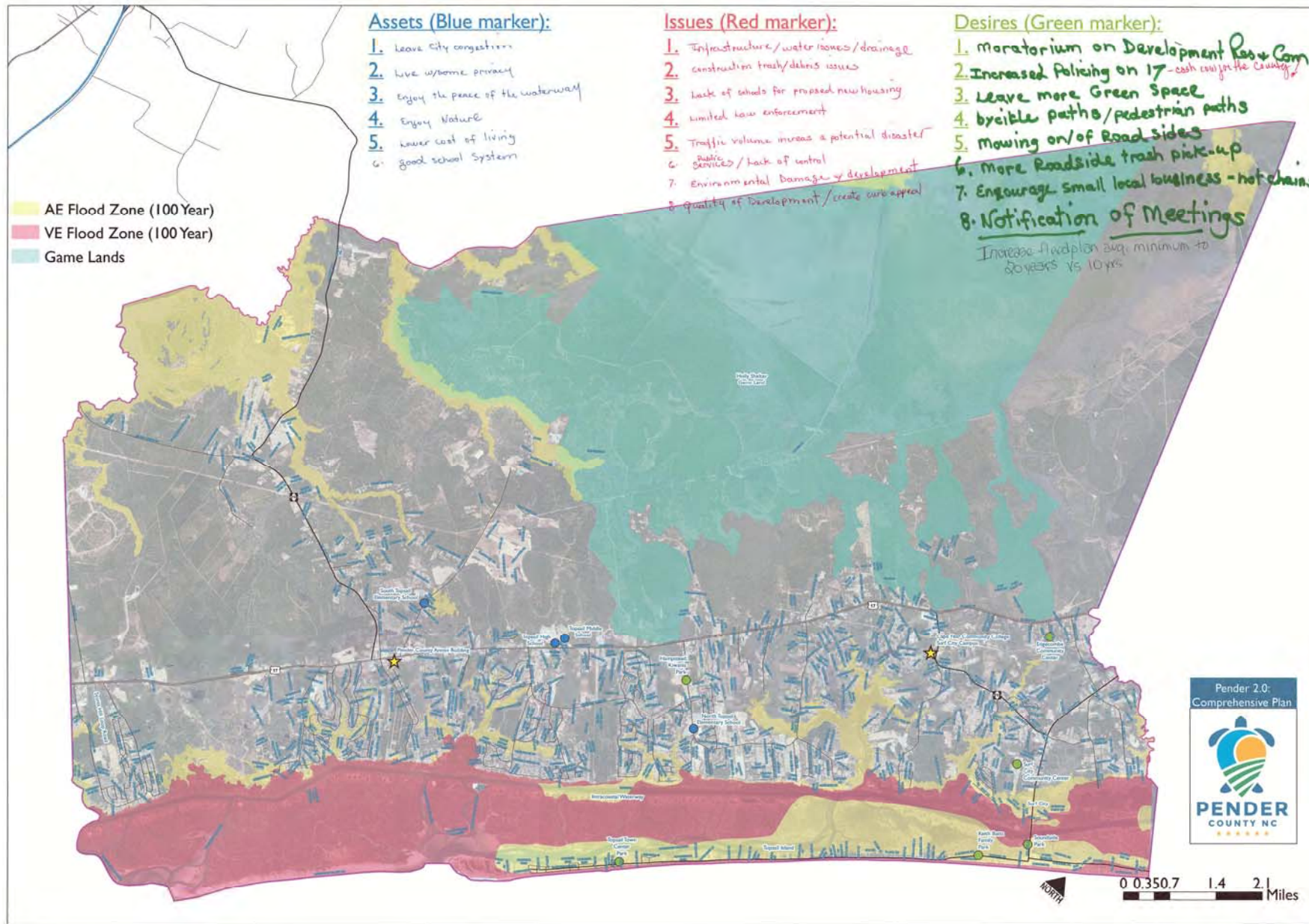








Group 1



Topsail Planning Area: Group Exercise

