

Town of Windsor:



Comprehensive CAMA Land Use Plan

Adopted by the Windsor Board of Commissioners: October 12, 2017

Certified by the Coastal Resources Commission: January 24, 2018





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Matrix for Land Use Plan Elements - 15A NCAC 7B.0702	
	Page Reference(s)
Organization of the Plan	
<ul style="list-style-type: none"> Matrix that shows the location of the required elements as set forth in this Rule. 	vii to xii
Community Concerns and Aspirations	
<ul style="list-style-type: none"> Description of the dominant growth-related conditions that influence land use, development, water quality and other environmental conditions in the planning area. 	1-3
<ul style="list-style-type: none"> Description of the land use and development topics most important to the future of the planning area including: <ul style="list-style-type: none"> Public Access Land Use Compatibility Infrastructure Carrying Capacity Natural Hazard Areas Water Quality 	1-3 6-4 6-6 6-10 6-12 6-13
Community Vision	
<ul style="list-style-type: none"> Description of the general physical appearance and form that represents the local government’s plan for the future. It shall include objectives to be achieved by the plan and identify changes that may be needed to achieve the planning vision. 	1-3
Existing and Emerging Conditions	
Population, Housing, and Economy	
Discussion of the following data and trends:	
<ul style="list-style-type: none"> Permanent population growth trends using data from the two most decennial Censuses. 	2-4
<ul style="list-style-type: none"> Current permanent and seasonal population estimates. 	2-4 to 2-6
<ul style="list-style-type: none"> Key population characteristics including age and income. 	2-6, 2-7, 2-11
<ul style="list-style-type: none"> Thirty-year projections of permanent and seasonal population in five-year increments. 	4-1, 4-2
<ul style="list-style-type: none"> Estimate of current housing stock, including permanent and seasonal units, tenure, and types of units (single-family, multi-family, and manufactured). 	2-6 to 2-9
<ul style="list-style-type: none"> Description of employment by major sectors and community economic activity. 	2-10 to 2-13
Natural Systems	
Description of natural features in the planning jurisdiction to include:	
<ul style="list-style-type: none"> Areas of Environmental Concern (AECs) as set forth in Subchapter 15A NCAC 07H. 	3-19 to 3-24
<ul style="list-style-type: none"> Soil characteristics, including limitations for septic tanks, erodibility, and other factors related to development. 	3-15 to 3-18



	Page Reference(s)
Natural Systems (continued)	
<ul style="list-style-type: none"> ● Environmental Management Commission (EMC) water quality classifications and related use support designations. 	3-7, 3-8, 3-25, 3-26
<ul style="list-style-type: none"> ● Division of Marine Fisheries (DMF) shellfish growing areas and water quality conditions. 	3-25 to 3-30
<ul style="list-style-type: none"> ● Flood and other natural hazard areas. 	3-9 to 3-10
<ul style="list-style-type: none"> ● Storm surge areas. 	3-11 to 3-14
<ul style="list-style-type: none"> ● Non-coastal wetlands, including forested wetlands, shrub-scrub wetlands and freshwater wetlands. 	3-20 to 3-22
<ul style="list-style-type: none"> ● Water supply watersheds or wellhead protection areas. 	3-26
<ul style="list-style-type: none"> ● Primary nursery areas. 	3-27
<ul style="list-style-type: none"> ● Environmentally fragile areas, such as wetlands, natural heritage areas, areas containing endangered species, prime wildlife habitats, or maritime forests. 	3-20 to 3-24
<ul style="list-style-type: none"> ● Additional natural features or conditions identified by the local government. 	N/A
<p>Environmental Conditions</p> <p>Discussion of environmental conditions within the planning jurisdiction to include an assessment of the following conditions and features:</p>	
<ul style="list-style-type: none"> ● Status and changes of surface water quality, including: <ul style="list-style-type: none"> ○ Impaired streams from the most recent Division of Water Resources (DWR) Basin Planning Branch reports. ○ Clean Water Act 303 (d) list. ○ Other comparable data. 	3-7, 3-25 to 3-30 3-27 N/A
<ul style="list-style-type: none"> ● Current situation and trends on permanent and temporary closures of shellfishing waters as determined by the Report of Sanitary Survey by the Shellfish Sanitation and Recreational Water Quality Section of the DMF. 	3-26
<ul style="list-style-type: none"> ● Areas experiencing chronic wastewater treatment malfunctions. 	3-26
<ul style="list-style-type: none"> ● Areas with water quality or public health problems related to non-point source pollution. 	3-26
<ul style="list-style-type: none"> ● Areas subject to recurrent flooding, storm surges, and high winds. 	3-9 to 3-14
<ul style="list-style-type: none"> ● Areas experiencing significant shoreline erosion as evidenced by the presence of threatened structures or public facilities. 	3-23
<ul style="list-style-type: none"> ● Environmentally fragile areas (as defined in Part (c)(2)(A)(ix) of this Rule) or areas where resource functions are impacted as a result of development. 	3-19 to 3-24
<ul style="list-style-type: none"> ● 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. 	3-19



	Page Reference(s)
Existing Land Use and Development	
<ul style="list-style-type: none"> ● Map of existing land use patterns. <ul style="list-style-type: none"> ○ Description of the existing land use patterns. ○ Estimates of the land area allocated to each land use category. ○ Characteristics of each land use category. 	3-30 to 3-32
<ul style="list-style-type: none"> ● Map of historic, cultural, and scenic areas designated by a state or federal agency or by the local government. <ul style="list-style-type: none"> ○ Descriptions of the historic, cultural, and scenic areas. 	3-38 to 3-40
Community Facilities	
Evaluation of existing and planned capacity, location and adequacy of community facilities to include:	
<ul style="list-style-type: none"> ● Map of existing and planned public and private water supply service areas. <ul style="list-style-type: none"> ○ Description of existing public and private water supply systems to include: <ul style="list-style-type: none"> - Existing condition. - Existing capacity. - Documented overflows, bypasses, or other problems that may degrade water quality or constitute a threat to public health as documented by the DWR. - Future water supply needs based on population projections. 	3-43 3-41 to 3-42 4-11
<ul style="list-style-type: none"> ● Map of existing and planned public and private wastewater service areas. <ul style="list-style-type: none"> ○ Description of existing public and private wastewater systems to include: <ul style="list-style-type: none"> - Existing condition. - Existing capacity. - Documented overflows, bypasses, or other problems that may degrade water quality or constitute a threat to public health as documented by the DWR. - Future wastewater system needs based on population projections. 	3-43 3-42 4-11
<ul style="list-style-type: none"> ● Map of existing and planned multimodal transportation systems and port and airport facilities. <ul style="list-style-type: none"> ○ Description of any highway segments deemed by the NC Department of Transportation (NCDOT) as having unacceptable service as documented on the most recent NCDOT Transportation and/or Thoroughfare Plan. ○ Description of highway facilities on the current thoroughfare plan or current transportation improvement plan. ○ Description of the impact of existing transportation facilities on land use patterns. ○ Description of the existing public stormwater management system. ○ Identification of existing drainage problems and water quality issues related to point source discharges of stormwater runoff. 	3-49, 4-6, 4-10 3-47 to 3-49 4-6 to 4-7 4-7 3-44 to 3-46 3-44



	Policy Citation(s)	Page Reference(s)
Future Land Use		
Policies		
<ul style="list-style-type: none"> ● Policies that exceed the use standards and permitting requirements found in Subchapter 7H, State Guidelines for Areas of Environmental Concern. 	N/A	6-2
Policies that address the Coastal Resources Commission’s (CRC’s) management topics:		
Public Access Management Goal: <i>Maximize public access to the beaches and the public trust waters of the coastal region.</i>		
The planning objectives for public access are local government plan policies that:		
<ul style="list-style-type: none"> ● Address access needs and opportunities. 	P.1, P.2, P.3, P.4, I.1, I.2, I.4, I.5, I.6	6-5
<ul style="list-style-type: none"> ● Identify strategies to develop public access. 	P.2, P.3, P.4, I.1, I.5	6-5
<ul style="list-style-type: none"> ● Address provisions for all segments of the community, including persons with disabilities. 	P.2, I.5	6-5
<ul style="list-style-type: none"> ● For oceanfront communities, establish access policies for beach areas targeted for nourishment. 	N/A	N/A
Land Use Compability Management Goal: <i>Ensure that development and use of resources or preservation of land balance protection of natural resources and fragile areas with economic development, and avoids risks to public health, safety, and welfare.</i>		
The planning objectives for land use compatibility are local government plan policies that:		
<ul style="list-style-type: none"> ● Characterize future land use and development patterns. 	P.5 to P.17, P.19, I.7, I.9, I.10	6-6 to 6-10
<ul style="list-style-type: none"> ● Establish mitigation criteria and concepts to minimize conflicts. 	P.7, P.8, P.12, P.13, P.15, P.16, P.18, P.19, P.21, P.23, P.24, P.25, P.26, P.28, I.9, I.11, I.13, I.16, I.17, I.18, I.20	6-6 to 6-10



	Policy Citation(s)	Page Reference(s)
Infrastructure Carrying Capacity Management Goal: <i>Ensure that public infrastructure systems are sized, located, and managed so the quality and productivity of AECs and other fragile areas are protected or restored.</i>		
The planning objectives for infrastructure carrying capacity are local government plan policies that:		
<ul style="list-style-type: none"> Establish service criteria. 	P.29, P.31, I.22, I.23, I.25	6-10 to 6-11
<ul style="list-style-type: none"> Ensure improvements minimize impacts to AECs and other fragile areas. 	P.30, I.25, I.26, I.27	6-10 to 6-11
Natural Hazard Areas Management Goal: <i>Conserve and maintain barrier dunes, beaches, floodplains, and other coastal features for their natural storm protection functions and their natural resources giving recognition to public health, safety, and welfare issues.</i>		
The planning objectives for natural hazard areas are local government plan policies that:		
<ul style="list-style-type: none"> Establish mitigation and adaptation concepts and criteria for development and redevelopment, including public facilities. 	P.40, P.42, I.30, I.31, I.32, I.33, I.35	6-12 to 6-13
<ul style="list-style-type: none"> Minimize threats to life, property, and natural resources resulting from erosion, high winds, storm surge, flooding, or other natural hazards. 	P.39, P.44, I.35	6-12 to 6-13
Water Quality Management Goal: <i>Maintain, protect, and where possible, enhance water quality in all coastal wetlands, rivers, streams, and estuaries.</i>		
The planning objectives for water quality are local government plan policies that:		
<ul style="list-style-type: none"> Establish strategies and practices to prevent or control nonpoint source pollution. 	P.46, P.47, P.53, I.37, I.41	6-14 to 6-15
<ul style="list-style-type: none"> Establish strategies and practices to maintain or improve water quality 	P.48, P.49, P.51, P.53, I.38, I.39, I.41	6-14 to 6-15



	Policy Citation(s)	Page Reference(s)
Future Land Use Map	Page Reference(s)	
<ul style="list-style-type: none"> ● Map of future land uses that depicts the policies for growth and development and the desired future patterns of land use and development with consideration given to natural system constraints and infrastructure. <ul style="list-style-type: none"> ○ Descriptions of land uses and development associated with the future land use map designations. 	5-2	
	5-1 to 5-8	
Tools for Managing Development		
<ul style="list-style-type: none"> ● Description of the role of plan policies, including the future land use map, in local decisions regarding land use and development. 	7-1 to 7-4	
<ul style="list-style-type: none"> ● Description of the community's development management program, including local ordinances, codes, and other plans and policies. 	3-61 to 3-64, 7-1 to 7-4	
Action Plan and Implementation Schedule		
<ul style="list-style-type: none"> ● Description of actions that will be taken by the local government to implement policies that meet the CRC's management topic goals and objectives, specifying fiscal year(s) in which each action is anticipated to start and finish. 	6-4 to 6-18, 7-1 to 7-4	
<ul style="list-style-type: none"> ● Identification of specific steps the local government plans to take to implement the policies, including adoption and amendment of local ordinances, other plans, and special projects. 	7-1 to 7-4	



Section 1. Introduction

A. Plan Purpose

North Carolina legislation encourages all jurisdictions to have an adopted comprehensive plan. However, there are broader and more important reasons to engage in the planning process. Planning should begin with understanding Windsor and its people and learning how to care for them. Choices must be made about the natural, manmade, and financial resources in the town.



We plan our days, weddings, and vacations to ensure things don't go awry. Planning our built environment for growth and development provides guidance to community leaders and decision makers for a path forward. *Photo Courtesy of the Town of Windsor.*

Overall, this plan will accomplish the following objectives:

- Develop a clear vision statement for the Town of Windsor;
- Address concerns of plan stakeholders & Windsor residents;
- Provide demographic/economic analysis and forecasts;
- Address land use, environment, public facilities, and transportation;
- Provide health & wellness initiatives;
- Provide compliance with CAMA Guidelines NCAC 7B.

The following provides a concise definition of a town-sponsored Comprehensive Plan:

A comprehensive plan is a statement by the community of what it is today, and what it would like to be in the future. A comprehensive plan is an official public document adopted by the chief legislative body.

This plan will include an assessment of existing conditions, projection of future needs for topics relating to land use and development, and a comprehensive listing of goals and strategies. Because the Town of Windsor is located in one of the twenty Coastal Area Management Act (CAMA) counties, the plan will also address issues relating specifically to coastal growth and development. Specifically, this document will comply with 15A NCAC Subchapter 7B, "Land Use Planning Requirements," as amended February 1, 2016, and Subchapter 7H, "State Guidelines for Areas of Environmental Concern," as amended April 1, 2016.

The Town of Windsor Comprehensive Plan differs from a traditional plan in that its contents includes health information gained from the 2010 Bertie County Community Health Assessment. Normally, a traditional plan addresses demographics, housing, economy, existing physical environmental conditions, transportation, and future land use - without any reference to health and wellness. This



plan includes components of the traditional planning model which are coordinated with identified health issues/needs.

Health concerns involve a wide range of community issues which are addressed by the plan. Those health topics include: recreation, public safety, clean water, active transportation (multi-modal), clean air, emergency preparedness, adequate housing, active living, physical activity, overall environmental health, infrastructure, and care for the aging.

B. Planning Process

The adoption of this plan by the Town of Windsor is not the end but rather the beginning of an ongoing process. This process includes five (5) essential elements:

1. *Study and Analysis.* The Town of Windsor must study land use, population trends, the economic base of the town, and physiographic features.
2. *Plan or Policy Preparation.* The comprehensive plan must provide a basic statement of how the town will develop, in what direction, and at what pace.
3. *Basic Goals.* The Town of Windsor must consider basic goals including: Do we want to grow? Do we want to be a center for high-tech industry? What balance do we want between growth and preservation of the natural environment?
4. *Implementation.* To implement the plan, the town must use such tools as land use regulations, capital improvements programs, and general guidelines for private development and public investment.
5. *Monitoring and Feedback.* The town must continually evaluate how well the plan's policies are being carried out, whether the goals are realistic, and whether new, unanticipated conditions have occurred. Feedback may become the basis for redesign of this plan.

Specifically, this plan will:

- Review historical data.
- Discuss principal issues.
- Define problems associated with growth.
- Define main trends and produce forecasts.
- Define healthy eating and active living issues/community needs.
- Define public, private, or public-private programs which should be implemented or improved.
- Define goals, policies, and implementing actions.



C. Development of the Comprehensive CAMA Land Use Plan

The development of this plan update was initiated in 2016 by the Windsor Board of Commissioners. The town's Planning Board was appointed by the Board of Commissioners to oversee plan development. The Planning Board members are:

- David Jennette, Jr., Chairman
- Elizabeth Huff, Vice-Chairman
- Jack Curlings
- Carroll Williams
- Denise Johnson
- Ann Spivey
- Caroline Copeland

Throughout the process, the Planning Board endeavored to support the town's vision statement.

Town of Windsor Vision Statement

Windsor will expand its economic base, including tourism, retail and wholesale trade, real estate and construction, and industrial development. Windsor will preserve its environmentally sensitive areas and support responsible development along its shorelines. A balanced community will be achieved which supports educational improvements, recreational opportunities, protection of its historic resources and preservation of its small town atmosphere.

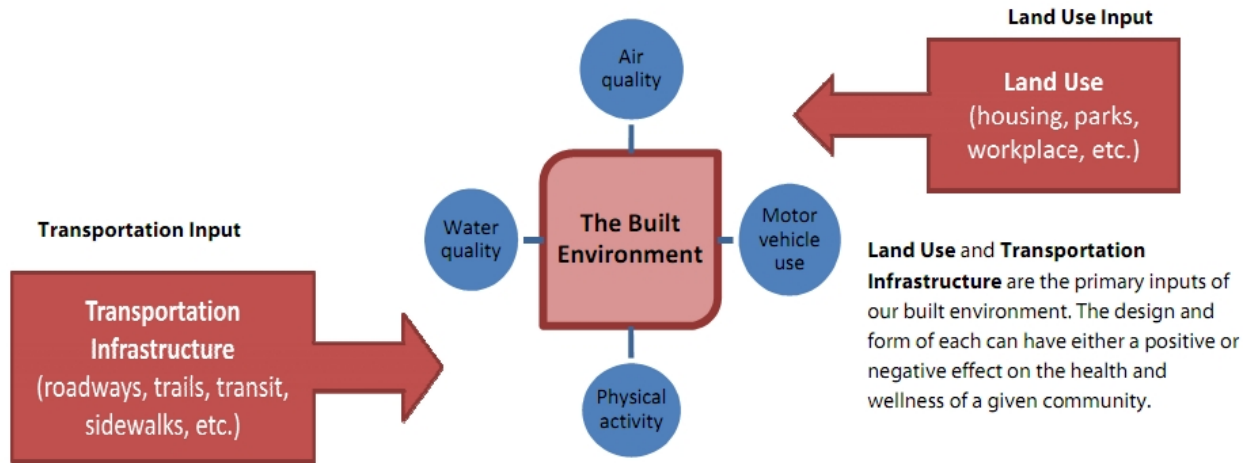
Land use development, water quality, and other environmental conditions in the planning area are influenced by continued out-migration from Bertie County and the repetitive flooding of the Town by the Cashie River. Both of these issues result in depressed economic conditions. In addition, the following CAMA issues will be discussed: public access, land use compatibility, infrastructure carrying capacity, natural hazard areas, and water quality.

D. Health, Wellness, and the Built Environment

Public health and wellness is affected in many ways by the design of the built environment, which is defined as the environment as humans have shaped it - including roadways, buildings, parks, and neighborhoods. In Windsor, as in other places across the country, the design of our roadways, residential developments, and settlement patterns all contribute to the relative health and wellness of citizens. For the purposes of this plan, wellness is defined in the physical dimension as the need for regular physical activity and physical development that encourages learning about diet and nutrition. The diagram below summarizes the impact of land use and transportation systems on our built environment. Land use and transportation planning lay the foundation for changes to our built



environment, and in turn, the effects to our air and water quality, level of motor vehicle use, and ease of access to open space amenities (physical activity opportunities).



In the United States, the automobile is often the dominant force driving urban design. The vast demand for private vehicular transportation regularly dictates the scale of our streets, the relationship between buildings, and the speed at which we experience our environment.

Land use decisions can also have an effect on the health and wellness of individuals. Studies have shown that urban areas with a range of land uses increase the walkability of an area and subsequently lessen vehicular miles of travel. Traditional zoning districts often restrict multiple uses making new development single use in nature and thus contributing to a lack of walkability and interconnectivity.



Human Scale - A built environment more tailored to the needs of pedestrians and cyclists versus the automobile. Photo Courtesy of HCP, Inc.

The creation of the health and wellness related elements in the comprehensive plan use multiple academic and research based reports to establish an information base related to health and the built environment. Local health related data has been gleaned from public health officials, and the 2010 Bertie County Community Health Assessment.

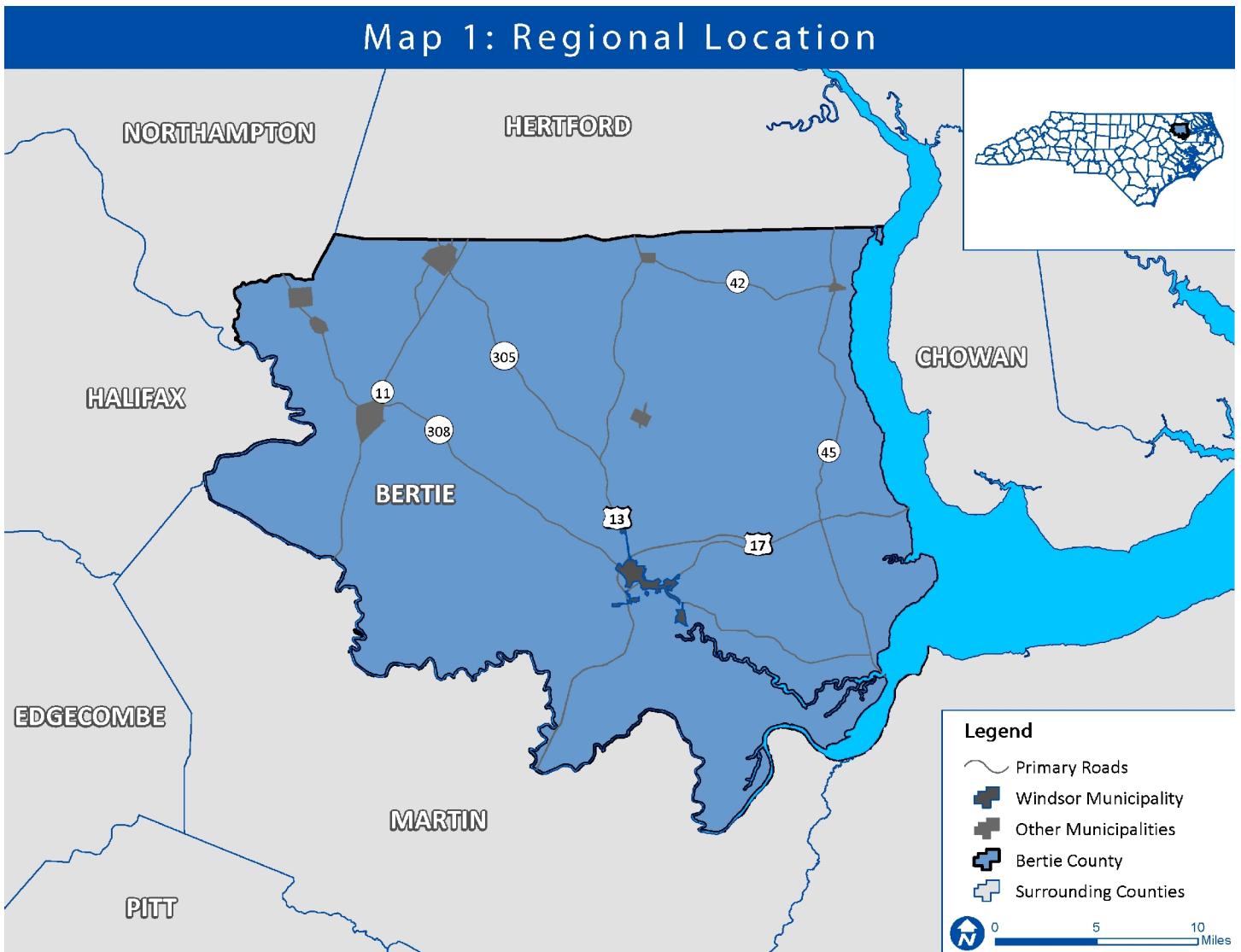
E. Regional Location

The Town of Windsor is located in south-central Bertie County, which is located in northeastern North Carolina, in the Coastal Plain region of the state. The county is situated approximately 65 miles west of the Atlantic Ocean. The nearest metropolitan area is Greenville, North Carolina which is located 35 miles to the south. The county is 75 miles from the Outer Banks, 100 miles east of Raleigh, and 90 miles southwest of Norfolk, Virginia.



Bertie County's western border is shared with Halifax County. To the north, the county is bounded by Hertford County, to the south by Martin County and the Roanoke River, and to the east by Chowan County, the Chowan River, and the Albemarle Sound. The nearest interstate highway is Interstate 95, 50 miles west of the county. US Highways 13 and 17 run through the center of Bertie County. These roads provide a direct connection with US 64, which leads to the Outer Banks to the east and Raleigh to the west. US Highway 17 connects the county to Wilmington in the south; US Highway 11 connects the county to Southern Virginia to the north and Greenville, NC to the south.

Windsor is situated within the county at approximately the midway point between Raleigh/Wake County, North Carolina to the west and the North Carolina coast to the east. US Highways 17 and 13 are the major roads that regionally connect with the Town. Map 1 depicts the Town's regional location.





F. History

The following history of the Town of Windsor is excerpted from the town's website:

"In Bertie County from 1722 to 1769, the county seat was what we call Hoggard Mill. The first courthouse, public warehouses, jail, grist mill, saw mill and various other commercial buildings were located at Hoggard Mill. For many years court met and ships were loaded at the Hoggard Mill section where the bridge stands today. The Cashie, leading up to Hoggard Mill was very long and narrow. There was a landing lower down on the river know as Gray's Landing. John, Lord Carteret, Earl of Granville, sold John Gray 1000 acres of Rose Field Plantation. William Gray inherited this plantation and river landing from his father John. By 1750, the Cashie River had a large population and court activities. Trade shifted from Hoggard Mill to Gray's Landing by the 1760's, so much that William Gray offered 100 acres of Rose Field for the construction of a new town. The petition for a new town was presented to the assembly in the state of North Carolina. The petition said that a certain tract of land at Gray's Landing may be erected into a town. Since there was a courthouse already at what is now know as Hoggard Mill or Cashie. The government took petition under Advisement, and finally a committee voted Gray's Landing as the best site on which to build a new town. The main factors affecting the committees decision was the crooked, narrow condition of the river past Gray's Landing to reach the courthouse at Hoggard Mills. The committee returned a December 1767 report favoring Gray's landing and thus on January 8, 1768, the assembly passed an act to create New Windsor on the Cashie River.



Photo Courtesy of the Town of Windsor.

A group of commissioners were appointed to sell lots upon which the purchaser had two years to build a suitable house at least 16 foot square and with a brick chimney. Upon the establishment of the new town, an additional bill was introduced to move the courthouse and prison to Windsor. However, this met with stiff opposition from the people at Hoggard Mill, and for a number of years no decision was made.

In 1733, a new petition was introduced before the colonial assembly, to create a courthouse at Windsor. In 1774, the assembly appointed a group of men to build a courthouse, prison and county building in the town of Windsor. In 1775, Samuel Milbourn sold these commissioners lot #98 to build the courthouse upon. This is the same location of the courthouse now standing in Windsor.

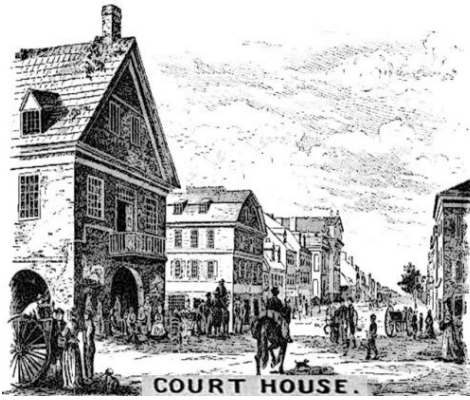


Photo Courtesy of the Town of Windsor.

Since the Revolutionary War was at hand, the courthouse building project had to be set aside for a period of years. Records show that an extension was granted on the courthouse in 1777, 1782 and 1784. Samuel Milbourn was a tavern owner in Windsor and he rented his tavern to the county to hold court for a period of years. The courthouse in Windsor was probably finished in the mid 1780's.

In 1769, a ferry from Windsor over to what is now Bertie, was operated. In 1776 this ferry, over to Virginia's point was replaced with a drawbridge, one of the first in North Carolina. The first business to appear in the new town of Windsor were mostly merchants, shipping and receiving goods from England. The chief products exported were what we refer to as navel products - tar, pitch, turpentine and products used in the ship building industry. Staves and wheat products were also shipped out to England.

One of the earliest industries in Windsor was a brick mill. Samuel Milbourn had a brickyard in the vicinity of king, Spring and Broad Streets. In 1788, another industry had been created in Windsor when William Gray built a shipyard at what is now called county farm. Many small vessels were built and repaired there.

By 1832, Windsor had grown until it had its own newspaper, The Windsor Herald. Numerous businesses were listed in the advertisements of the paper- lawyers, medical students, free medical doctors, carpenters, tailors, blacksmiths, ice houses, cotton merchants, turpentine stills, printing offices and over twenty other dwellings. On the social side, most activities were centered around churches and religion, but just north of Windsor, on what is now the Powell & Stokes farm, there was a racetrack and every Sunday races were held. Most of the town came out to bet on and watch the horses race. It became the scene of social gatherings in the state.

Also by 1722, a Masonic lodge was born in Windsor, Chartered as Royal Edmond Lodge, IV. It was renamed Charity Lodge in 1842. They have maintained their building in downtown Windsor since 1843. It is one of the oldest continuous masonic lodges in the state.

Windsor's role in the Civil War was basically that of many of the small rural towns in the south, they furnished whole companies commanded by elected officers from membership in this county. Windsor was not spared from the ravages of the Civil war because after the fall of Roanoke Island, several forces occupied the entire area. Frequently, troops came through Windsor. There were several small scrimmages in and around Windsor and Edenton between union and confederate forces. During the civil War, the price of everything available soared



out of sight. Food, clothing and metal products were all extremely scarce and only available at extremely high prices. The cotton market dried up and they could not get cotton out to England where it could be sold. Some small amounts of cotton were smuggled to England, but farming was at a standstill. At the end of the war, the trade gradually built back up.

The development of several steamship lines, one being Windsor and Plymouth steamship route, was completed in 1874. Steamships began to carry the products raised in this section out to Norfolk, Virginia and Baltimore, Maryland. Fertilizers, farm supplies and food supplies were brought in by steamship lines. To travel to Norfolk by land was almost impossible. The people traveled by boat on the freight lines back and forth to productive cities.



Photo Courtesy of the Town of Windsor

In 1888, Windsor suffered a terrible fire. Almost an entire block of the town of Windsor was destroyed. Most of the buildings were wood and once a fire started it was almost impossible to put it out. The wind was blowing in such a way that a good portion of the town was spared, but it was the most disastrous fire that Windsor ever had.



Photo Courtesy of the Town of Windsor

Soon by the early 1900's the railroads became a connecting link between the steamship lines and points north. Products including lumber from various mills were brought by rail to Windsor making it somewhat of a port of entry for the area. Over the next few years more railroads were built causing the steamship lines to become a thing of the past. The railroads were responsible for the development of the lumber industries and expedited the handling of farm produce that was grown in the area.



Section 2. Community Profile

A. Introduction

This section provides a synopsis of the current population, housing, and economic conditions in Windsor. Public Health and Wellness statistics have been summarized based on the 2010 Bertie County Community Health Assessment. Demographic data is sourced from the US Census Bureau, NC Office of State Budget & Management (NC OSBM), and the NC Department of Commerce, Division of Employment Security.

B. Health & Wellness Issues

According to the 2013 Bertie County Community Health Assessment, the "Top 3 Most Important Health Problems" were listed as the following:

1. Obesity/Overweight
2. Cancer
3. Diabetes

These three problems were identified in a survey conducted by members of the Albemarle Regional Health Services Assessment Team, assisted by members of the region's Healthy Carolinians coalitions and community volunteers. Surveys were taken to places where people were gathered for other purposes, for example, meetings, workplaces, waiting rooms, community events, etc. The design of the built environment plays a role in both chronic disease and obesity. According to the Centers for Disease Control (CDC), chronic diseases - such as heart disease, stroke, and diabetes - are among the most common, costly, and preventable of all health problems in the United States.

Obesity is a leading cause of chronic disease in the United States and increases the risk for a variety of chronic diseases including heart disease, strokes, glucose intolerance, and some forms of cancer. It is not a direct cause of most diseases, but unfavorably alters the risk factor profile. For example, obesity may lead to increases in blood pressure and blood cholesterol, which in turn, can lead to cardiovascular disease and strokes. According to the US Centers for Disease Control and Prevention (CDC), in 2016, Bertie County's obesity rate was over 35%.

"Chronic diseases – such as heart disease, stroke, cancer, diabetes, and arthritis – are the leading cause of death and disability in the United States."

Source: Centers for Disease Control



Chronic disease differs from infectious disease (or communicable disease) in the way it occurs in individuals. Infectious diseases usually occur because of contact with an affected host, while chronic diseases may occur solely because of a sedentary lifestyle. Common infectious diseases of current and past years include Tuberculosis, Ebola, Malaria, Measles, and HIV/AIDs.

Infectious diseases were once the primary cause of death in the United States a century ago, but proper hygiene, environmental design, and immunization has led to the downfall of such disease in the United States. In Bertie County, the primary causes of death are cancer and heart disease. In 2010, members of the Three Rivers Healthy Carolinians met to identify leading community health problems. Health concerns identified through the surveys, work groups, and stakeholder interviews were presented. Three Rivers Healthy Carolinians developed community action plans prioritizing health issues, strategies, and steps to implement change. The completed action plans included a description of each health issue/problem and specified the proposed actions and community organizations that will provide and coordinate the intervention activities. The plans also identified how progress towards the outcome will be measured.

Obesity Mechanisms

Obesity results from a positive caloric balance, meaning that the intake of calories is greater than caloric expenditure. Nutrition plays a direct role in determining caloric balance because it is the sole variable when accounting for caloric intake. Caloric output, however, is dependent on three specific variables. These include physical activity, resting metabolism, and the thermogenic effect of food. Thermogenesis occurs when your body raises its core temperature. When your body increases its heat or energy output, your metabolism increases and your fat cells are used as the main source of energy. Of the three variables, physical activity is the most often altered in order to increase caloric expenditure.

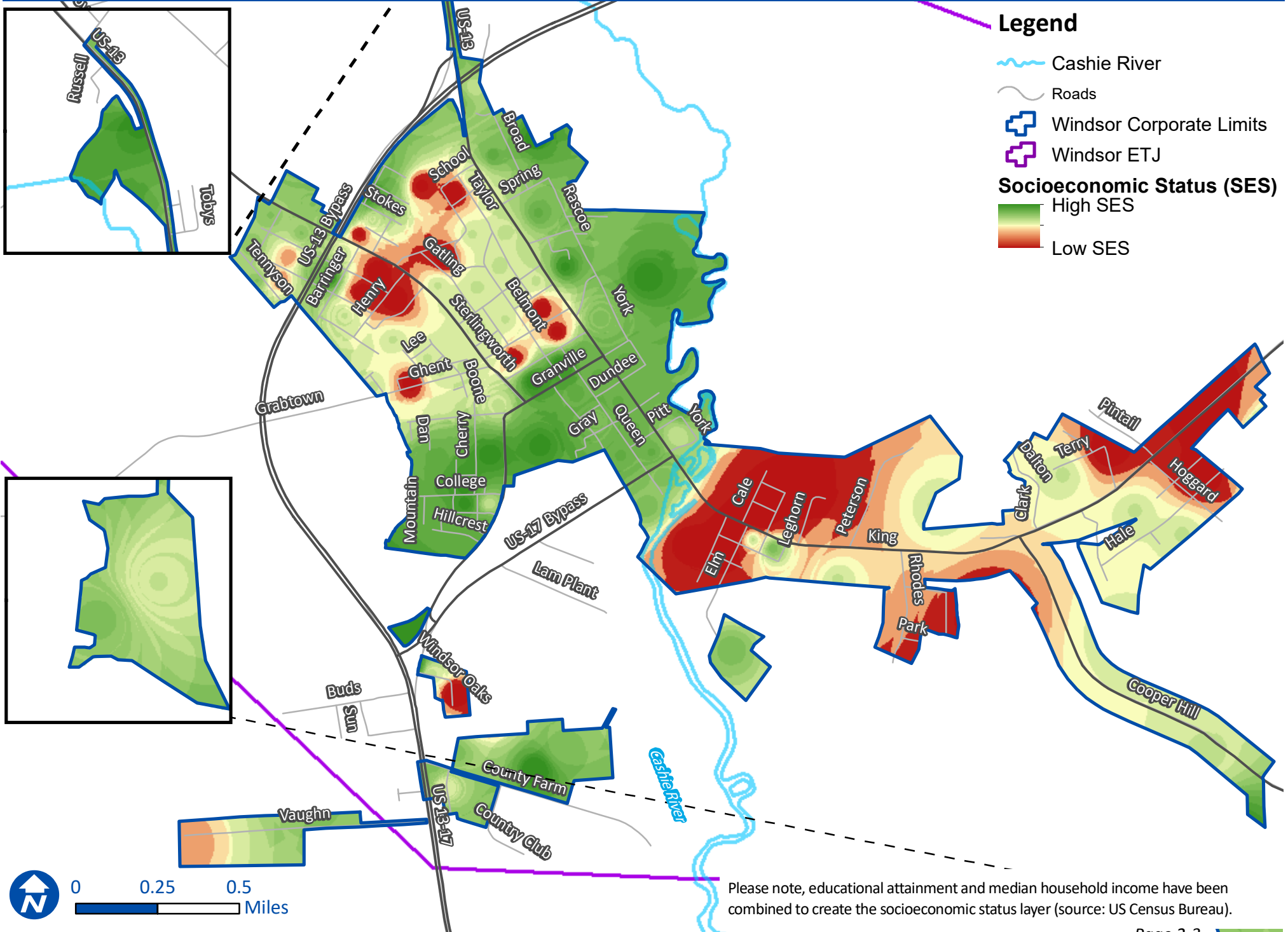
In general, obesity tends to be a multi-faceted problem with no one solution to combat its occurrence. However, there are certain segments of the population that are more likely to be obese as it is more prevalent in the low socioeconomic status (SES) segments of society. Investigations have shown similar results in urban, suburban, and rural communities.

"Two of the four most common causes of chronic disease include lack of physical activity and poor nutrition. Both causes can be altered by lifestyle changes."
Source: Centers for Disease Control

In addition, a childhood spent in poor social and economic conditions has been shown to lead to a less healthy adulthood. In both adolescent boys and girls, low SES and parental education levels were related to an unfavorable risk factor profile indicating a need for early intervention in low SES communities.

To identify areas of Windsor that are considered low in socioeconomic status, GIS analysis was used. Census estimates for educational attainment, employment, and income levels were combined to locate these areas. Concentrations of low SES are shown on Map 2.

Map 2: Socioeconomic Status (SES)





C. Population

1. *Population Growth*

Windsor is part of North Carolina’s Northeast Region. The Northeast Commission is the regional economic development organization for sixteen (16) counties running from Interstate 95 to the Atlantic Coast, positioned just south of the Port of Virginia. The Northeast Commission establishes a climate for job growth and economic improvement of the region by promoting the area for new business and assisting with business expansions. The Commission also fosters an increase visitor awareness of the many natural, historical, cultural and recreational opportunities found throughout North Carolina’s Northeast by promoting travel and tourism opportunities within the region. The Commission includes the counties of Beaufort, Bertie, Camden, Chowan, Currituck, Dare, Gates, Halifax, Hertford, Hyde, Martin, Northampton, Pasquotank, Perquimans, Tyrrell, and Washington.

According to the US Census Bureau, the Northeast Region had a 2014 population of 363,786, a 14.8% increase from the 1990 population of 316,792. By comparison, North Carolina’s population increased by 47.2% from 1990 to 2014 (see Table 1). While population growth within Bertie County was minimal, Windsor experienced a significant population increase, growing from 2,209 in 1990 to 3,546 in 2014, a 60.5% increase.

Table 1. Population Growth, 1990 to 2014

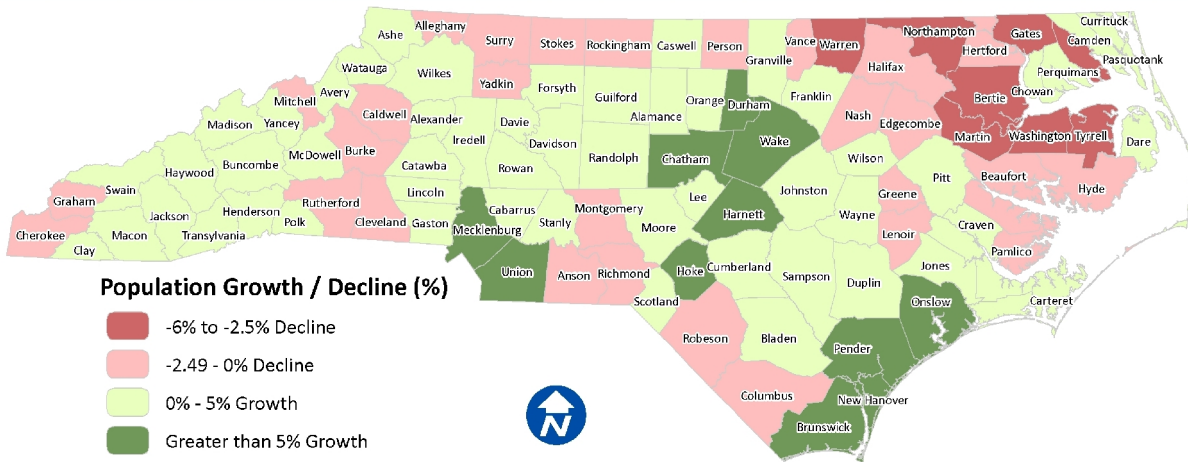
Area	1990	2000	2010	2014	% Change '90-'00	% Change '00-'10	% Change '10-'14	% Change '90-'14
Windsor	2,209	2,283	3,630	3,546	3.4%	59.0%	-2.3%	60.5%
Bertie County	20,388	19,757	21,282	20,677	-3.1%	7.7%	-2.8%	1.4%
Beaufort County	42,283	44,958	47,759	47,587	6.3%	6.2%	-0.4%	12.5%
Camden County	5,904	6,885	9,980	10,127	16.6%	45.0%	1.5%	71.5%
Chowan County	13,506	14,150	14,793	14,703	4.8%	4.5%	-0.6%	8.9%
Currituck County	13,736	18,190	23,547	24,212	32.4%	29.5%	2.8%	76.3%
Dare County	22,746	29,967	33,920	34,530	31.7%	13.2%	1.8%	51.8%
Gates County	9,305	10,516	12,197	11,877	13.0%	16.0%	-2.6%	27.6%
Halifax County	55,516	57,370	54,691	53,803	3.3%	-4.7%	-1.6%	-3.1%
Hertford County	22,523	22,977	24,669	24,460	2.0%	7.4%	-0.8%	8.6%
Hyde County	5,411	5,826	5,810	5,757	7.7%	-0.3%	-0.9%	6.4%
Martin County	25,078	25,546	24,505	23,947	1.9%	-4.1%	-2.3%	-4.5%
Northampton County	20,798	22,086	22,099	21,310	6.2%	0.1%	-3.6%	2.5%
Pasquotank County	31,298	34,897	40,661	40,233	11.5%	16.5%	-1.1%	28.5%
Perquimans County	10,447	11,368	13,453	13,507	8.8%	18.3%	0.4%	29.3%
Tyrrell County	3,856	4,149	4,407	4,219	7.6%	6.2%	-4.3%	9.4%
Washington County	13,997	13,723	13,228	12,837	-2.0%	-3.6%	-3.0%	-8.3%
Northeast Region	316,792	342,365	367,001	363,786	8.1%	7.2%	-0.9%	14.8%
North Carolina	6,626,118	8,049,313	9,535,483	9,750,405	21.5%	18.5%	2.3%	47.2%

Source: US Census Bureau.

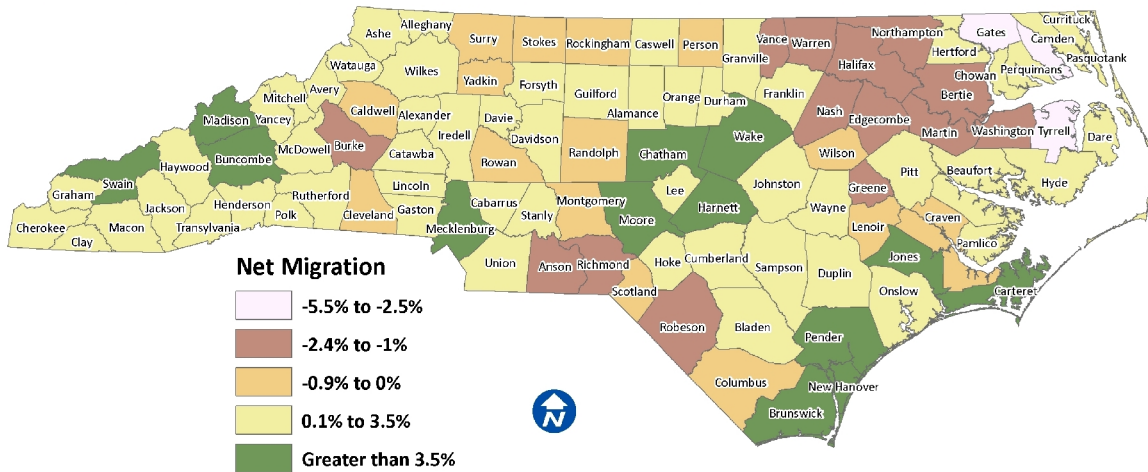


Most of the growth in the Northeast Region occurred in Camden, Currituck, Dare, Gates, Pasquotank, and Perquimans counties. These counties are influenced by in-county urban growth and outward growth from the Chesapeake, Virginia area. The remaining portions of the Northeast Region experienced little consistent population growth. In fact, seven of the counties experienced population growth of less than 15% while the remaining three experienced a population decline. The population decline is the result of out-migration. This out-migration is evident throughout most of eastern North Carolina. Maps 3 and 4 depict 2010-2013 population change and net migration for North Carolina's counties.

Map 3: North Carolina Population Change 2010 - 2013



Map 4: North Carolina Net Migration 2010 - 2013





2. Seasonal Population

Seasonal population in Windsor is negligible. In 2000 and 2010, only 20 units out of a 1,193 total units (2010) as compared to 1,080 units in 2000 were considered “for seasonal, recreational, or occasional use.” Significant growth in the seasonal population is not expected. Additionally, the explanation for the existing seasonal units can be attributed to what is commonly known as “heir property.” An heir property may be visited at varying rates of frequency; it is estimated that these units accommodate approximately fifty (50) people at maximum occupancy.

3. Population by Age

As the population of the nation ages, so too does that of rural Eastern NC. In fact, rural areas face many challenges in providing resources for the elderly. Over ninety percent of seniors (65+) have at least one chronic disease, and more than 75% have at least two. To exacerbate the issue, in the next thirty years, the portion of the population over the age of 65 is expected to more than double. By 2030, more than nine percent of the United States population is estimated to be over the age of 85.

The Town of Windsor, however, appears to have a young population profile, with its median age in 2000 at 41.7 years and in 2010, 38.6 years. Just over half of Windsor’s population (52.1%) is under the age of 40 years. This figure is comparable to the county’s and the state’s population under the age of 40 (52.7% and 53.8%, respectively). Table 2 provides a detailed breakdown of age composition for the town, Bertie County, and North Carolina.

Table 2. Population by Age, 2010

Age Group	Windsor		Bertie County		North Carolina	
	Number	%	Number	%	Number	%
Under 40	1,892	52.1%	11,222	52.7%	5,126,689	53.8%
40 to 64	1,139	31.4%	6,404	30.1%	3,174,715	33.3%
Over 65	599	16.5%	3,656	17.2%	1,234,079	12.9%
Total	3,630	100.0%	21,282	100.0%	9,535,483	100.0%
2010 Median Age	38.6		42.9		37.3	
2000 Median Age	41.7		38.6		35.3	

Source: US Census Bureau.

4. Gender & Racial Composition

The gender composition in Windsor has changed significantly from 2000 to 2010. In 2000, the male population was 43.1% and the female 56.9%. According to the 2010 Census, 59.3% of the Windsor population was male and 40.7% female.



The 2010 Census shows that the racial composition in Windsor was 32.8% White, 62.6% African American, and 4.7% Other. This racial mixture is different from that of the state as a whole (see Table 3). Bertie County is one of the 10% of United States counties that are majority-minority; its combined population of African American and other minority residents comprise almost 65% of the total population. In 2000, the racial composition of Windsor was nearly identical to that of 2010 with 36.3% of the population White, 62.3% African American, and 1.4% other.

Table 3. Population by Race, 2010

Race	Windsor		Bertie County		North Carolina	
	Number	%	Number	%	Number	%
White	1,190	32.8%	7,488	35.2%	6,528,950	68.5%
Black or African American	2,271	62.6%	13,296	62.5%	2,048,628	21.5%
American Indian and Alaska Native	25	0.7%	96	0.5%	122,110	1.3%
Asian	71	2.0%	103	0.5%	208,962	2.2%
Native Hawaiian and Other Pacific Islander	0	0.0%	6	0.0%	6,604	0.1%
Some Other Race	6	0.2%	96	0.5%	414,030	4.3%
Two or More Races	67	1.8%	197	0.9%	206,199	2.2%
Total	3,630	100.0%	21,282	100.0%	9,535,483	100.0%

Source: US Census Bureau.

The US Census Bureau distinguishes Hispanic or Latino as terms to define region of origin, not a person’s race, and uses the terms to describe any person, regardless of race, creed, or color, whose origins are of Mexican, Puerto Rican, Cuban, Central or South American, or of some other Hispanic origin. Of Windsor’s total population (3,630), 40 people are of Hispanic or Latino origin.

D. Housing

1. Dwelling Unit Growth

Table 4 provides a history of dwelling unit growth for the Town of Windsor and the state from 2000 to 2010. Windsor experienced a 37.8% increase in dwelling units from 2000 to 2010. Simultaneously, the state’s dwelling unit inventory increased by 20%.

Table 4. Housing Characteristics, 2000 and 2010

	2000 Census				2010 Census			
	Windsor		North Carolina		Windsor		North Carolina	
	Number	%	Number	%	Number	%	Number	%
Owner-occupied	590	54.6%	2,172,355	61.6%	847	56.9%	2,468,489	58.4%
Renter-occupied	348	32.2%	959,658	27.2%	485	32.6%	1,157,690	27.4%
Vacant	142	13.1%	391,931	11.1%	156	10.5%	603,373	14.3%
Total	1,080	100.0%	3,523,944	100.0%	1,488	100.0%	4,229,552	100.0%

Source: US Census Bureau.



2. Dwelling Unit Type/Condition

Approximately 78.0% of the year-round dwelling units in Windsor are detached, single-family units. Approximately 10.5% of the dwellings units are manufactured homes. Table 5 provides detailed information on housing type and condition. There are no housing units lacking complete plumbing facilities and/or complete kitchen facilities in Windsor.

Table 5. Dwelling Unit Type/Condition, 2010

Type and Condition	Windsor		Bertie County		North Carolina	
	Number	% of Total	Number	% of Total	Number	% of Total
Type						
Single-family, detached	1,160	78.0%	6,327	64.9%	2,754,734	65.1%
Single-family, attached	44	3.0%	125	1.3%	152,868	3.6%
Duplex	47	3.2%	86	0.9%	95,094	2.2%
3 or 4 units	17	1.1%	42	0.4%	120,154	2.8%
5 to 9 units	0	0.0%	7	0.1%	185,129	4.4%
10 to 19 units	0	0.0%	5	0.1%	171,697	4.1%
20 or more units	64	4.3%	69	0.7%	143,130	3.4%
Manufactured home or trailer	156	10.5%	3,055	31.3%	605,418	14.3%
Other	0	0.0%	37	0.4%	1,328	0.0%
Total	1,488	100.0%	9,753	100.0%	4,229,552	100.0%
Condition						
Lack complete plumbing facilities	0	0.0%	118	1.4%	16,548	0.5%
Lack complete kitchen facilities	0	0.0%	147	1.8%	22,500	0.6%

Source: US Census Bureau.

3. Dwelling Unit Age

In 2010, over 70% of Windsor’s housing units were more than 30 years old (see Table 6). This percentage is higher than both the county and state’s percentage of older housing units (57.1% and 43.8%, respectively). For comparison, in 2000, 57.3% of housing units in Windsor were more than 30 years old. The age of the housing inventory has increased significantly.

Table 6. Dwelling Unit Age, 2010

Year Built	Windsor		Bertie County		North Carolina	
	Number	%	Number	%	Number	%
2005 or later	45	3.0%	173	1.8%	242,715	5.7%
2000-2004	40	2.7%	743	7.6%	513,028	12.1%
1990-1999	193	13.0%	1,867	19.1%	896,428	21.2%



Year Built	Windsor		Bertie County		North Carolina	
	Number	%	Number	%	Number	%
1980-1989	126	8.5%	1,397	14.3%	725,467	17.2%
Prior to 1980 (over 30 yrs)	1,084	72.8%	5,573	57.1%	1,851,914	43.8%
Total	1,488	100.0%	9,753	100.0%	4,229,552	100.0%

Source: US Census Bureau.

4. Housing Cost and Affordability

In 2010, the median home value in Windsor was \$84,000 and Bertie County’s median home value was \$77,400 . Statewide, the median housing value is \$149,100 - practically double that of housing units in Windsor and Bertie County. It is difficult to obtain a precise picture of housing affordability in any jurisdiction. However, most measures of housing affordability consider 30% of gross income an allowable/affordable expenditure for housing. For homeowners, the cost includes mortgage payments, taxes, insurance, and utilities. For renters, housing cost includes rent and utilities.

In 2010, 24.8% of homeowners in Windsor have a mortgage exceeding 30% or more of their income. According to the 2000 Census, 23.9% of homeowners in the town allocated that level of income to their mortgage - representing a slight increase (3.8%) in homeowners burdened by a large mortgage payment over last decade.

The number of renters paying a significant portion of household income for living purposes also grew from 2000 to 2010. In 2000, 34.9% of renters used more than 30% of their income to pay rent. By 2010, the percentage of renters burdened by their living costs increased to 60.3%, almost doubling the amount of individuals facing difficulties paying rent. Across the state, this trend held true as burdened mortgage owners and renters increased from 20.7% and 33.4%, respectively, to over 32% of mortgage owners and close to half (48.9%) of all renters in 2010.

Table 7. Housing Cost/Affordability, 2010

	Windsor		Bertie County		North Carolina	
	Number	%	Number	%	Number	%
Median Housing Value	\$87,000		\$77,400		\$149,100	
Mortgage Greater than 30% of Income	111	24.8%	1,199	38.3%	535,120	32.2%
Rent Greater than 30% of Income	236	60.3%	1,045	70.7%	509,691	48.9%

Source: US Census Bureau.



E. Economy

1. *Employment by Industry*

According to the 2010 US Census, the Education Services, and Health Care and Social Assistance sector has the largest number of employees in Windsor. Almost 40% of the workforce is employed in the Education Services, and Health Care and Social Assistance industry, followed by the Manufacturing industry, which employs approximately 16.7% of the workforce.

Table 8. Windsor Employment by Industry, 2010

Industry	Number	% of Total
Agriculture, forestry, fishing and hunting, and mining	44	2.9%
Construction	100	6.6%
Manufacturing	252	16.7%
Wholesale trade	38	2.5%
Retail trade	150	10.0%
Transportation and warehousing, and utilities	28	1.9%
Information	11	0.7%
Finance and insurance, and real estate and rental and leasing	21	1.4%
Professional, scientific, and management, and administrative and waste management services	115	7.6%
Education services, and health care and social assistance	593	39.4%
Arts, entertainment, and recreation, and accommodation and food services	55	3.7%
Other services, except public administration	22	1.5%
Public administration	78	5.2%
Total	1,507	100.0%

Source: 2010 US Census.

Perdue Products Incorporated is the single largest employer in the Bertie County. Other significant employers are the Bertie County Board of Education, NC Department of Public Safety, Qsi, County of Bertie, Vidant Medical Center, Solid Foundation, and Avoca, Inc., (see Table 9). Unemployment in Bertie County has declined since January 2013, when it was 12.3%. The unemployment rate recorded for January 2016, was slightly less at 8.0%.

Table 9. Bertie County Top 25 Employers (2015 4th Quarter)

Company Name	Industry	Employment Range
Perdue Products Incorporated	Manufacturing	1,000+
Bertie County Board of Education	Education & Health Services	500-999
NC Department of Public Safety	Public Administration	250-499
Qsi	Professional & Business Services	250-499
County of Bertie	Public Administration	100-249



Company Name	Industry	Employment Range
Vidant Medical Center	Education & Health Services	100-249
Solid Foundation	Education & Health Services	100-249
Avoca, Inc.	Manufacturing	100-249
Liberty Healthcare Group, LLC	Education & Health Services	50-99
Home Life Care, Inc.	Education & Health Services	50-99
Valley Protein, Inc.	Manufacturing	50-99
Golden Peanut Company	Natural Resources & Mining	50-99
White Oak Medical Transport Service	Education & Health Services	50-99
Food Lion	Trade, Transportation & Utilities	50-99
Heritage Collegiate Leadership Academy	Education & Health Services	50-99
Bertie Ambulance Service, Inc.	Education & Health Services	50-99
Brian Ctr Health & Retirement	Education & Health Services	50-99
Bojangles Famous Chicken & Biscuits	Leisure & Hospitality	Below 50
Town of Windsor	Public Administration	Below 50
US Department of Agriculture	Public Administration	Below 50
Positive Step, Inc.	Education and Health Services	Below 50
Windsor House	Education & Health Services	Below 50
Livermans Metal Recycling, Inc.	Professional & Business Services	Below 50
Powell & Stokes, Inc.	Trade, Transportation & Utilities	Below 50
Republic Services, Inc.	Professional & Business Services	Below 50

Source: NC Department of Commerce, Division of Employment Security.

2. Income

In 2010, the median household income in Windsor was \$32,596. The town still lags behind the state and some of the more urban counties located in North Carolina’s Northeast Region. However, Windsor’s median income is higher than that of Bertie County (see Table 10).

Table 10. Median Household Income, 2000 and 2010

	Median Household Income		Persons Below Poverty Level (%)	
	2000	2010	2000	2010
Windsor	\$25,256	\$32,596	25.8%	22.9%
Bertie County	\$25,177	\$29,110	23.5%	23.3%
Beaufort County	\$31,066	\$40,653	19.5%	17.2%
Camden County	\$39,493	\$61,091	10.1%	9.3%
Chowan County	\$30,928	\$36,761	17.6%	17.4%
Currituck County	\$40,822	\$55,736	10.7%	8.5%
Dare County	\$42,411	\$53,889	8.0%	10.5%
Gates County	\$35,647	\$45,682	17.0%	20.5%
Halifax County	\$26,459	\$30,349	23.9%	23.8%
Hertford County	\$26,422	\$30,878	18.3%	24.1%



	Median Household Income		Persons Below Poverty Level (%)	
Hyde County	\$28,444	\$38,265	15.4%	20.4%
Martin County	\$28,793	\$34,766	20.2%	23.4%
Northampton County	\$26,652	\$30,578	21.3%	21.7%
Pasquotank County	\$30,444	\$44,085	18.4%	18.1%
Perquimans County	\$29,538	\$43,041	17.9%	18.0%
Tyrrell County	\$25,684	\$32,215	23.3%	21.9%
Washington County	\$28,865	\$32,716	21.8%	24.8%
North Carolina	\$39,184	\$45,570	12.3%	15.5%

Source: US Census Bureau.

The poverty rate in Windsor is consistent with many other counties in North Carolina’s Northeast Region. It should also be noted that Bertie County is a Tier 1 County - a designation given to the forty (40) most economically distressed counties in the state.

3. Vehicle Availability & Travel Time to Work

Over 15% of people in the occupied housing units in the town have no vehicle available for private use compared to 10.1% for the county. In North Carolina as a whole, 6.5% of residents are faced with this issue. In Bertie County, the travel time to work is similar to the state overall. Travel time to work for Windsor residents is slightly less than that of the county and state.

Table 11. Vehicle Availability and Travel Time to Work, 2010

	Windsor		Bertie County		North Carolina	
	Number	%	Number	%	Number	%
Occupied Housing Units	1,332	100.0%	8,160	100.0%	3,626,179	100.0%
No Vehicles Available	205	15.4%	828	10.1%	234,435	6.5%
1 or More Vehicles	1,127	84.6%	7,332	89.9%	3,391,744	93.5%
Mean Travel Time to Work	18.3		25.7		23.4	

Source: US Census Bureau.

4. Educational Attainment

Table 12 provides a summary of educational attainment for Windsor from 2000 to 2010. In 2010, 76% of the town’s population 25 years old or older had a high school diploma or higher. In addition, 42.5% had some college or a complete college education. Relative to many other rural towns, Windsor has a well-educated population.



Table 12. Educational Attainment, 2000 to 2010

	2000 Census		2010 Census	
	Number	% of Total	Number	% of Total
Less than 9 th grade	205	13.4%	224	9.4%
9 th to 12 th grade, no diploma	309	20.2%	347	14.6%
High school graduate (includes equivalency)	426	27.9%	797	33.5%
Some college, no degree	220	14.4%	495	20.8%
Associate’s degree	76	5.0%	119	5.0%
Bachelor’s degree	201	13.2%	285	12.0%
Graduate or professional degree	89	5.8%	112	4.7%
Population 25 years and over	1,526	100.0%	2,379	100.0%

Source: US Census Bureau.

5. *Quality of Life*

Quality of life factors are increasingly important to businesses when selecting their locations. Though Gross Domestic Product (GDP) is often a common factor in determining the economic performance and living standards of our society, this is not always enough to provide a comprehensive picture of how well-off the citizens in a particular society are. Table 13 summarizes some key quality of life indicators for Bertie County.

Table 13. Bertie County Key Quality of Life Indicators

Taxes

FY2015-16 Property Tax Rate per \$100 Value	\$0.84
FY2014-15 Annual Taxable Retail Sales (\$mil)	\$79
2016 Tier Designation	1

Childcare

2015 Q1 Licensed Child Care Facilities	21
2015 Q1 Licensed Child Care Enrollment	437

Healthcare Providers

2013 Number of Physicians	9
2013 Physicians per 10,000 Population	4.4
2013 RNs per 10,000 Population	53.4
2013 Dentists per 10,000 Population	0.5
2013 Pharmacists per 10,000 Population	3.8

Source: NC Department of Commerce.



F. Community Profile Summary

HEALTH AND WELLNESS

- In 2013, the three most important health problems were: obesity/overweight, cancer, and diabetes.
- According to the US Centers for Disease Control and Prevention, in 2016, Bertie County's obesity rate was over 35%.
- The leading causes of chronic disease are lack of physical activity and poor nutrition.

POPULATION

- From 1990 to 2014, the Northeast Region population increased only 14.8% compared to 47.2% for North Carolina.
- From 1990 to 2014, Windsor's population increased 60.5%.
- Windsor's 2010 median age was 38.6, compared to 37.3 for North Carolina.
- Windsor's 2010 African American population comprised 62.6% of the town's total population, compared to 21.5% for the state.



HOUSING

- In 2010, 56.9% of the town's dwelling units were owner-occupied.
- In 2010, approximately 78% of the year-round dwelling units were detached, single-family units.
- In 2010, 72.8% of the town's dwelling units were 30 years old or older, compared to only 43.8% for the state.
- In 2010, 24.8% of homeowners had a mortgage cost at greater than 30% of income, compared to 32.2% for the state.
- In 2010, 60.3% of renters had a gross rent greater than 30% of income, compared to 48.9% for the state.

ECONOMY

- Almost 40% of the town's 2010 workforce was employed in the education services, health care and social assistance sector.
- Manufactured was the second largest sector at 16.7%.
- The agriculture/forestry sector was only 2.9% of total employment.
- In 2015, the largest individual employers were: Perdue Products, Bertie County Board of Education, NC Department of Public Safety, and Qsi.
- In 2010, Windsor's median household income was \$32,956, compared to \$45,570 for the state.
- In 2010, 76% of the town's population 25 years and over had a high school diploma or higher.
- In 2010, 22.9% of the town's population was below the poverty level, as compared to 15.5% for North Carolina.



Section 3. Environment/Existing Conditions

A. Health Services

1. *Medical Facilities*

According to the 2010 Bertie County Community Health Assessment, the town/county has several health resources, including Vidant Bertie Hospital, Albemarle Hospital, Chesapeake Regional Medical Center, Vidant Chowan Hospital, Vidant Roanoke-Chowan Hospital, Outer Banks Hospital, Bertie Rural Health Association, and the Bertie County Health Department. Additional resources such as nursing homes, hospice care, and assisted living programs are also located throughout the area.

Vidant Bertie Hospital

Vidant Bertie Hospital is a non-profit, six-bed facility located at 1403 South King Street in Windsor. The hospital provides surgical, 24-hour emergency and diagnostic services, speciality clinics, and primary care clinics (family medicine and internal medicine). The hospital's primary care physician practice operates the Vidant Family Medicine - Windsor and the facility has a telemedicine link with the Brody School of Medicine at East Carolina University in Greenville, NC.



Vidant Bertie Hospital in Windsor provides service to the town and surrounding areas. *Photo courtesy of Vidant Health*

Albemarle Hospital

Albemarle Hospital, located in Elizabeth City (Pasquotank County), NC, is a regional not-for-profit, 182-bed community hospital serving a seven-county region of more than 130,000 residents. With a medical staff of more than 100 physicians representing 30 medical specialties, the hospital provides a complete range of care, including inpatient hospitalization, advanced surgery, a rehabilitation program, a diagnostic center, same-day ambulatory surgery, urgent and emergency care, and a regional oncology center, as well as a wide array of community education and support groups. The Albemarle Hospital Foundation is supported by hospital employees, physicians, and volunteers in efforts to develop and fund community outreach programs like the Community Care Clinics, which serve the region's indigent, underinsured, and uninsured residents.



Chesapeake Regional Medical Center

Chesapeake Regional Medical Center provides a broad range of care to the people of southeastern Virginia and northeastern North Carolina through Chesapeake General Hospital and its affiliate services. The hospital has a medical staff of nearly 600 members from every major specialty and 310 all-private beds. Services include cancer services, cardiac care, home health, hospice, community outreach, diabetes services, nutrition counseling, obstetrical services, orthopedic services, outpatient testing, and women’s services.

Vidant Chowan Hospital



Vidant Chowan Hospital provides outstanding services and quality care to patients with a wide range of health needs. *Photo courtesy of Vidant Health*

Vidant Chowan Hospital is located in Edenton (Chowan County), NC, and provides services and programs to 45,000 people in four counties. The facility offers a wide range of services and health care specialties provided by a medical staff that includes practitioners in primary care, pediatrics, internal medicine, and surgery. Special

medical and surgical services at Vidant Chowan Hospital include intensive care, a surgical center, emergency department, an expanded labor and delivery suite, and bone density screening. The hospital also has a telemedicine link with the Brody School of Medicine at East Carolina University in Greenville, NC.

The Outer Banks Hospital

The Outer Banks Hospital, located in Nags Head (Dare County), NC, is a private not-for-profit acute care 21-bed hospital with services that include emergency services, inpatient and outpatient surgery, labor and delivery, physical therapy, respiratory therapy, speech therapy, laboratory, blood bank, and radiology. The hospital offers consultations with medical experts in other locations via interactive television provided in conjunction with the East Carolina University Brody School of Medicine. The Outer Banks Hospital is a partnership between Vidant Health and Chesapeake Regional Medical Center .

Vidant Roanoke-Chowan Hospital

Vidant Roanoke-Chowan Hospital is a 124-bed, not-for-profit hospital located in Ahoskie (Hertford County), NC. The facility provides a wide range of health services to about 39,000 residents in a four-county area. The medical staff includes primary care, pediatric and internal



medicine physicians, as well as specialists in orthopedics, general surgery, urology, cardiology and obstetrics and gynecology.

Bertie County Rural Health Association

The Bertie County Rural Health Association is an administrative organization that runs two year-round Federally-qualified health center clinics providing medical services to people in Bertie County who otherwise confront financial, geographic, language/cultural, and other barriers to adequate health care. The Bertie County Rural Health Association clinics are located in Windsor and Lewiston, NC. Both community health centers offer primary medical care services to the rural, underserved population. Everyone is eligible to use the health services at the Rural Health clinics, and those without health insurance may be eligible to pay on a sliding-fee scale or pay in part at the time of their visit and pay the rest of the cost later.

Bertie County Health Department

The Bertie County Health Department is part of the Albemarle Regional Health Services (ARHS), a seven-county regional, accredited Public Health Department headquartered in Elizabeth City, NC. Bertie County joined ARHS in 2002. Comprehensive clinical services include Women’s Preventive Health, Adult Health, Communicable Diseases programming, Immunizations, School and Community Health Education, Breast and Cervical Cancer Control program, Diabetes Management, Child Health, WIC, Albemarle Hospice, Albemarle Home Care, Albemarle Life Quest/Health Promotion, Environmental Health, and Solid Waste Management Authority. Regional landfill services are provided in the Bertie area. Bertie County Home Health agency is located within the health department.



The Bertie County Health Department is located at 102 Rhodes Avenue in Windsor. *Photo courtesy of Albemarle Regional Health Services*

2. Mental Health

Local Management Entities (LMEs) are where people can go to find information on receiving mental health, developmental disability, or substance abuse services. East Carolina Behavioral Health (ECBH) oversees mental health services in a 19-county LME area, which includes the following counties: Beaufort, Bertie, Camden, Chowan, Craven, Currituck, Dare, Gates, Hertford, Hyde, Jones, Martin, Northampton, Pamlico, Pasquotank, Perquimans, Pitt, Tyrrell, and Washington. ECBH operates a 24/7/365 Access to Care line (1-877-685-2415) staffed by licensed clinicians to assist individuals in need of services. ECBH has contracts with more than 350 providers of service throughout the catchment area.



North Carolina has a plan to change the way Medicaid pays for mental health, developmental disabilities, and substance abuse services. The change is known as the 1915(b)/(c) Medicaid Waiver and was expected to serve a total population of 500,000 by July 1, 2013. The goal of the change is to make sure that people needing help are able to easily get high quality services. ECBH made the change on April 1, 2012.

3. *Adult and Senior Care Services*

According to the 2013 Bertie County Community Health Assessment, the County has a several facilities that cater to the needs of both adult and senior citizens throughout the town and county. Nursing homes are facilities that provide nursing or convalescent care for three or more person unrelated to the licensee. A nursing home provides long term care of chronic conditions or short term convalescent or rehabilitative care of remedial ailments. There are two nursing homes in Bertie County, both are located in Windsor, with a total of 142 certified beds.

Adult care homes are residences for aged and disabled adults who may require 24-hour supervision and assistance with personal care needs. People in adult care homes typically need a place to live, some help with personal care (such as dressing, grooming, and keeping up with medications), and some limited supervision. These facilities, which are also called domiciliary homes, rest homes, or family care homes, vary in capacity from 2 to 100. Adult care homes differ from nursing homes in the level of care and qualifications of staff. As of March 2014, there were over 600 adult care homes licensed by the State of North Carolina; two of these facilities are located in Bertie County. Windsor House is licensed for 60 residents and Winston Gardens is licensed for 25 residents; both facilities are located in Windsor.

Adult day care provides an organized program of services during the day in a community group setting for the purpose of supporting the personal independence of older adults and promoting their social, physical, and emotional well-being. There are several facilities in Windsor and the surrounding communities that provide these services.

In addition, the Bertie County Council on Aging provides the following services to all Bertie County senior citizens, aged 60 or older, and their spouses:

- ▶ Congregate Nutrition
- ▶ Home Delivered Meals
- ▶ Transportation
- ▶ In Home Respite
- ▶ Senior Center
- ▶ Senior's Health Insurance Information Program (SHIIP)
- ▶ AARP Tax Aide Volunteers
- ▶ Wellness and Exercise
- ▶ Health Services



4. Dental Health

North Carolina ranks 47th in the nation in dentists per capita at 4.3 dentists per 10,000 population. In fact, only eight North Carolina counties have dentist-to-patient ratios which exceed the national average of 6.0 dentists per 10,000 population (Wake, Durham, Orange, Alamance, Guilford, Forsyth, Mecklenberg, and New Hanover Counties). Seventy-nine North Carolina counties are recognized as federally designated dental shortage areas.

Bertie County ranks well below the state average of dentists per capita at 0.5 dentists per 10,000 residents and is recognized as a federally designated dental shortage area. The East Carolina University School of Dental Medicine is working to improve access to dentistry throughout eastern North Carolina by building Community Service Learning Centers (CSLCs) in rural and underserved areas across the state. CSLCs in Ahoskie and Elizabeth City currently serve patients. CSLCs in Sylva, Lillington, Spruce Pine, and Davidson County are under construction. CSLCs are staffed by full-time faculty, residents, dental hygienists, dental assistants, and business staff.

5. Access to Care

Bertie County falls significantly behind the state in all health professionals categories (see Table 14). Of the other fifteen counties comprising the Northeast Region, all but two counties (Chowan and Pasquotank) also rank below the statewide average for health professionals.

Table 14. Health Professionals per 10,000 Population Ratios (2013)

County	Population*	Physicians	Primary Care Physicians	Dentists	Registered Nurses	Pharmacists
Bertie	20,595	4.37	2.43	0.49	53.41	3.88
Beaufort	47,777	11.51	6.91	3.35	82.68	9.63
Camden	10,174	0.00	0.00	0.00	15.73	0.98
Chowan	14,815	22.27	8.77	2.70	109.35	8.10
Currituck	24,506	3.26	2.45	2.04	21.99	1.63
Dare	35,273	16.73	8.22	5.67	66.06	10.77
Gates	11,880	0.84	0.84	0.84	16.84	0.84
Halifax	54,705	13.22	6.52	2.05	82.30	8.38
Hertford	24,621	15.43	7.31	2.84	130.78	9.34
Hyde	5,806	1.72	1.72	0.00	55.12	0.00
Martin	23,750	8.42	5.47	2.11	66.53	9.68
Northampton	21,244	2.82	2.35	0.47	29.66	2.35
Pasquotank	39,458	26.86	9.38	2.79	119.87	10.39
Perquimans	13,771	2.18	1.45	1.45	12.34	3.63
Tyrrell	4,143	0.00	0.00	0.00	21.72	4.83
Washington	12,826	5.24	3.90	2.34	49.12	5.46
North Carolina	9,861,952	22.73	8.60	4.55	101.01	10.17

*Population Estimate.
Source: 2013 North Carolina Health Professions Data Book.



B. Environmental Factors

1. Climate

Windsor/Bertie County is hot and humid in summer, but the coast is frequently cooled by sea breezes. Winter is cool with occasional brief cold spells. Rains occur throughout the year and are fairly heavy. Snowfall is rare. Annual precipitation is adequate for all crops.

In winter, the average temperature is 42 degrees F and the average daily minimum temperature is 30 degrees. The lowest temperature on record, which occurred on January 13, 1962, is -1 degree. In summer, the average temperature is 76 degrees and the average daily maximum temperature is 88 degrees. The highest recorded temperature, which occurred on August 1, 1980, is 105 degrees.

Of the total annual precipitation, about 27 inches usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 22 inches. Thunderstorms occur on about 45 days each year, and most occur in summer. The average seasonal snowfall is less than one inch.

The average relative humidity in mid-afternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 65 percent of the time possible in summer and 60 percent in winter.

2. Geology and Topography

The Windsor area is underlain by the Cretaceous aquifer system and surficial (groundwaters which are at or just below the surface) wells which top the Cretaceous System. Windsor obtains most of its portable water from the Cretaceous system. This system is underlain by granite bedrock and is located approximately 250 feet to 600 feet below the surface. The surficial wells which top the Cretaceous aquifer are normally less than 500 feet deep. Recharge of the aquifer is primarily provided by rainfall within the Windsor region. Approximately 20% of the area's annual precipitation enters the surficial aquifer. The major recharge area is generally located west of Windsor in the vicinity of the transition from the coastal plain to the Piedmont. While the quality of water within the Cretaceous system varies areally and vertically, the water is generally low in mineral content and suitable for all municipal purposes.

During the 1980s, the Department of Environmental Quality, Division of Groundwater collected data and monitored water levels in the region to determine groundwater conditions and the effects of large withdrawals. At times, large withdrawals, primarily in Virginia, have resulted in some lowering of the water level. However, water supplies have not been adversely affected and the groundwater supply should continue to be adequate throughout the planning period. Long-range monitoring of the groundwater supply by the Town of Windsor, other local units of government within the region, and the state will be crucial to ensuring the continuation of an adequate water supply.



The topography in Windsor's planning jurisdiction does not pose a constraint to development. There are low areas along the Cashie River which are discussed in the Flood Hazard section. The lowest areas are at or slightly below sea level. Other areas within Windsor's jurisdiction are generally flat to gently sloping. Most elevations within Windsor's jurisdiction are in the range of 10 to 20 feet above mean sea level.

3. *Water Resources*

The Town of Windsor lies within the Roanoke River Basin. The following provides an overview of water resource quality within the basin.

The Roanoke River Basin extends from its source in the Blue Ridge Mountains of Virginia to the Albemarle Sound in North Carolina, encompassing mountainous, piedmont, and coastal topography as it flows generally east-southeastward. Its five subbasins constitute approximately 3,500 square miles of drainage area and approximately 2,400 miles of streams and rivers in North Carolina, and contains diversity with classified trout streams in the western portion and swamp classified waters in the eastern portion. Seventeen counties and 42 municipalities are within the NC portion of the basin.

Within the Roanoke River Basin, the Town of Windsor falls within the Lower Roanoke River Subbasin. This subbasin is the eastern most subbasin and empties into the Albemarle Sound. The watershed contains a mix land use of forest, agriculture, and wetlands. There are 7 major NPDES permitted facilities and 11 minor NPDES permitted facilities. The subbasin contains three Impaired streams.

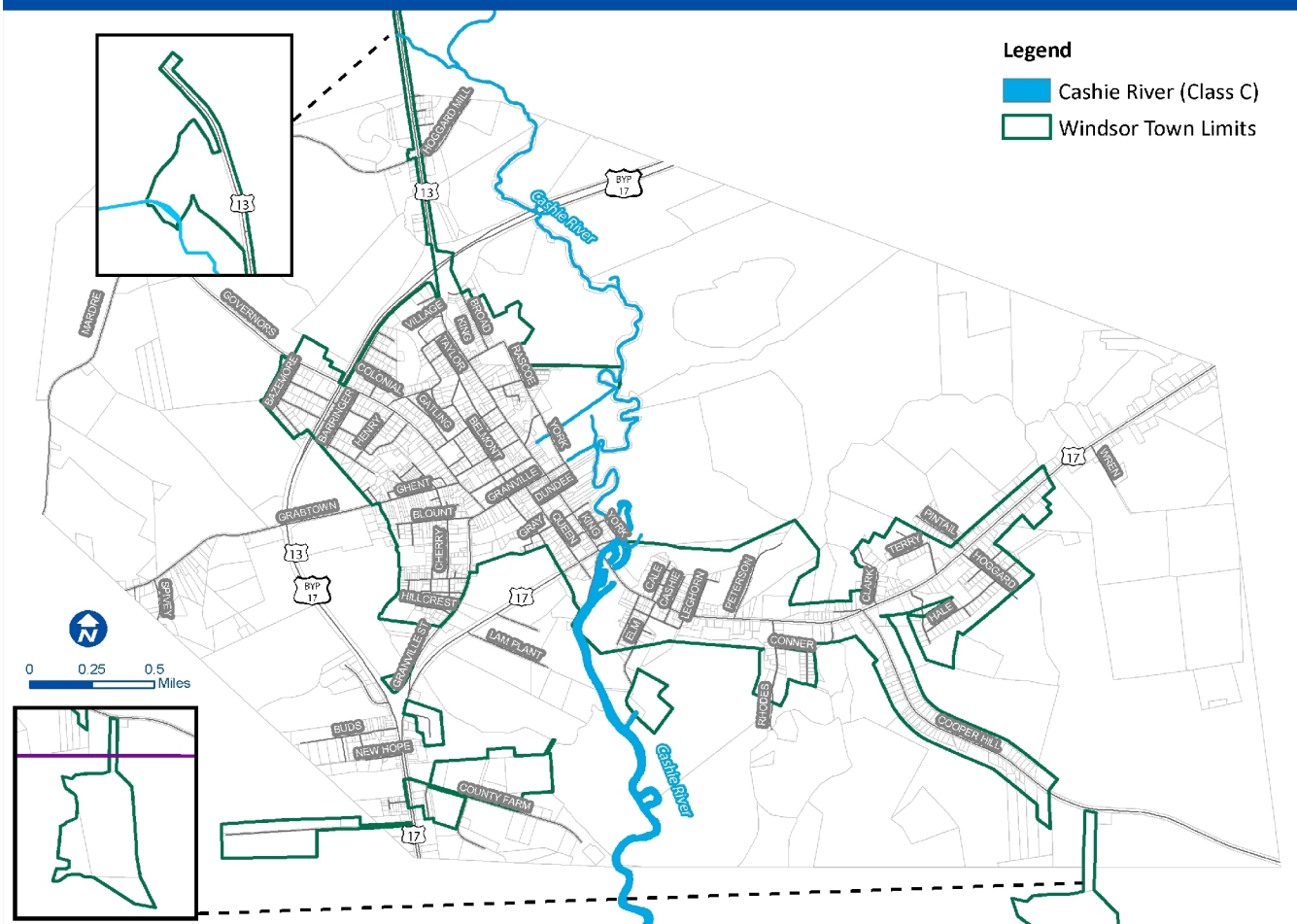
All surface waters in North Carolina are assigned a primary classification by the NC Division of Water Resources (DWR). All waters must at least meet the standards for Class C (fishable/swimmable) waters. The other primary classifications provide additional levels of protection for primary water contact recreation (Class B) and drinking water (Water Supply Classes I through V). Map 5 delineates the Windsor surface water classifications which were applicable in September 2013. The following describes the water classifications:

- **Class 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.
- **Class 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. The portion of the Cashie River that flows through Windsor's planning jurisdiction is classified as Class C.



- **Water Supply II (WS-II).** Waters used as sources of water supply for drinking, culinary, or food processing purposes where a WS-I classification is not feasible. These waters are also protected for Class C uses. WS-II waters are generally in predominantly undeveloped watersheds. All WS-II waters are HQW by supplemental classification. HQ waters are those which are rated excellent based on biological and physical/chemical characteristics.
- **Water Supply III (WS-III).** Waters used as sources of water supply for drinking, culinary, or food processing purposes where a more protective WS-I or II classification is not feasible. These waters are also protected for Class C uses. WS-III waters are generally in low to moderately developed watersheds.
- **Water Supply IV (WS-IV).** Waters used as sources of water supply for drinking, culinary, or food processing purposes where a WS-I, II, or III classification is not feasible. These waters are also protected for Class C uses. WS-IV waters are generally in moderately to highly developed watersheds or Protected Areas.

Map 5: Surface Water





4. Flood Hazard Areas

Flooding is a localized hazard that is generally the result of excessive precipitation. It is the most common environmental hazard, due to the widespread geographical distribution of rivers and coastal areas, and the attraction of residents to these areas. However, in coastal regions, storm surge and wind-driven waves are significant components of flooding. Floods can be generally considered in two categories: flash floods, the product of heavy localized precipitation in a short time period over a given location; and general floods, caused by precipitation over a longer time period and over a given river basin. While flash floods occur within hours of a rain event, general flooding is a longer-term event, and may last for several days. The primary types of general flooding are riverine flooding, coastal flooding, and urban flooding.

Floodplains are divisible into areas expected to be inundated by spillovers from stream flow levels associated with specific flood-return frequencies. The National Flood Insurance Program (NFIP) uses flood zone designations to indicate the magnitude of flood hazards in specific areas. The following are flood hazard zones located within the Town of Windsor and a definition of what each zone means.

- **Zone A.** Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations are shown or flood hazard factors determined.
- **Zone AE.** Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown at selected intervals.
- **Floodway.** The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without causing any cumulative increase in the water surface elevation. The floodway is intended to carry the dangerous and fast-moving water.

The following summarizes floodplain acreage for Windsor:

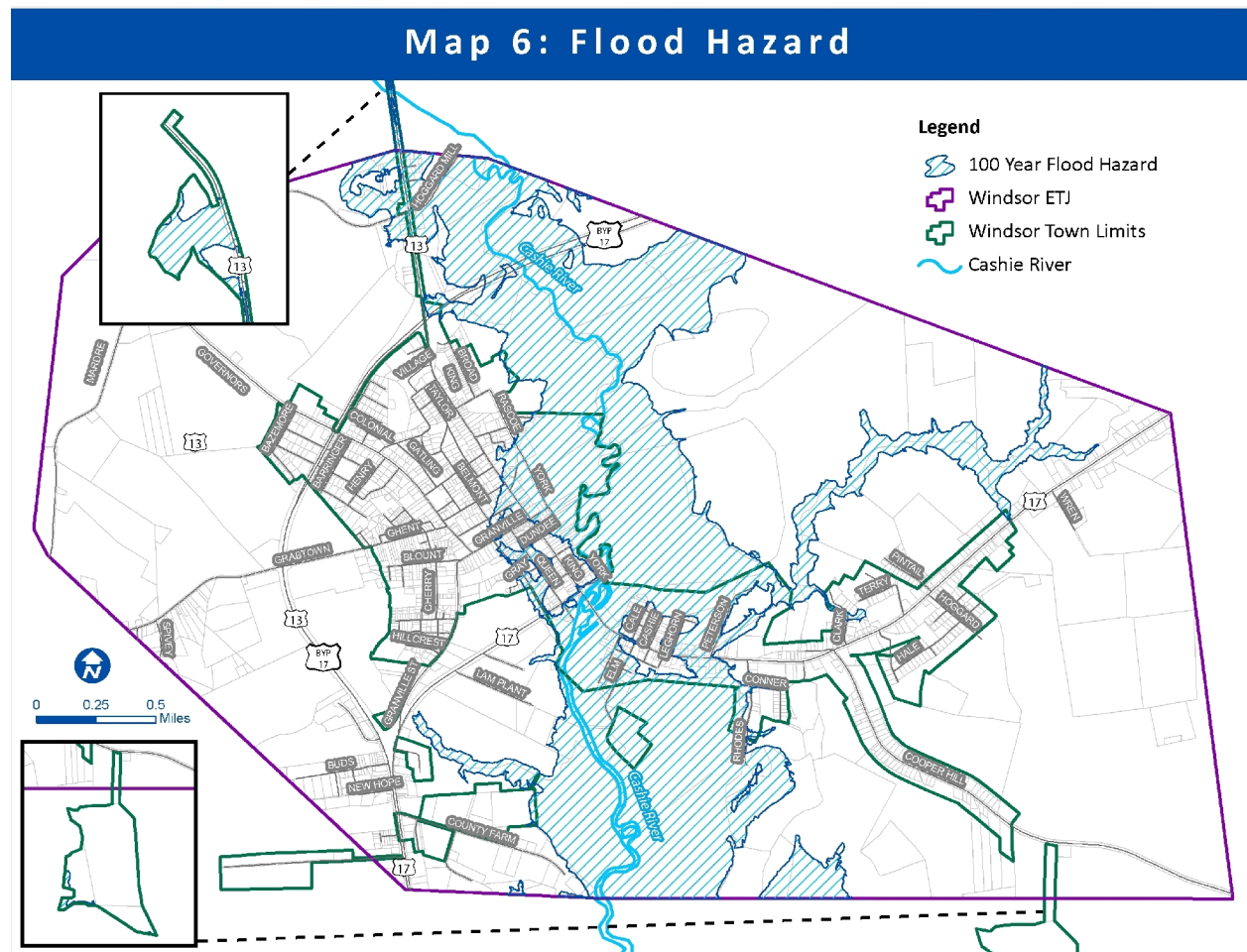
Table 15. Town of Windsor Flood Hazard Acreage

Jurisdiction	Acres	% of Town Acreage
Corporate Limits	387.44	4.9%
Extraterritorial Jurisdiction	1,345.86	16.9%
Total	1,733.30	21.7%

Source: NC Flood Mapping Program.



There is approximately 1,733 acres of flood hazard in the town (see Map 6). This equates to just over twenty percent (21.7%) of the total land in Windsor. Most of the town's flood area is located along the Cashie River. Development throughout defined flood hazard areas in the town is regulated by the Town of Windsor Flood Damage Prevention Ordinance. This Ordinance is enforced by the Bertie County Inspections Department (through a contractual agreement with the town).



The Town of Windsor experienced extreme flooding during and following the Tropical Storm Nicole event on or about September 30, 2010. This particular event, teamed with the devastating flooding from Hurricane Floyd in September of 1999, and other hurricanes occurring in 1993, 1996, 1998, and 2003, have resulted in significant flood damage to many dwelling units in the Town of Windsor. The flooding experienced by property owners after Tropical Storm Nicole ranged in depth from 18" to 48". The town successfully applied for mitigation assistance following both Hurricane Floyd and Tropical Storm Nicole to acquire and demolish several flood-prone structures in an effort to prevent substantial flood damage from occurring again. In 2016, Hurricane Matthew flooded 81 structures which are currently being considered for either buyout or elevation. Recurrent flooding in each of the above-mentioned events occurred in almost all of the 100-year flood hazard area shown on Map 6. There are currently seven (7) structures in Windsor identified by the National Flood Insurance



Program (NFIP) as a “Repetitive Loss Structure,” meaning that it has had two or more claims paid against the National Flood Insurance Program. Flood insurance data about private property, including repetitive loss properties, are protected under the Privacy Act of 1974 and cannot be mapped. Refer to the Northeastern NC Regional Hazard Mitigation Plan which is incorporated herein by reference for more information on repetitive loss areas.

Windsor is also at risk of flooding from storm surge inundation. Maps 7 and 8 show the general areas of Windsor that may be affected by hurricane-generated storm surge based on the SLOSH (Sea, Lake, Overland, Surges from Hurricanes) model. The SLOSH model was developed by the US Army Corps of Engineers and the model is run by the National Hurricane Center. The model plots hurricane-related flooding for slow and fast moving storms that may result from a number of characteristics including wind speed, wind direction, time, and tide. Fast moving hurricanes are hurricanes that have a forward velocity of greater than or equal to 15 miles per hour. Slowing moving hurricanes are hurricanes that have a forward velocity of less than 15 miles per hour.

Hurricane intensity is measured using the Saffir-Simpson Scale, ranging from 1 (minimal) to 5 (catastrophic). The following scale categorizes hurricane intensity linearly based upon maximum sustained winds, minimum barometric pressure and storm surge potential.

- **Category 1:** Winds of 74 to 95 miles per hour. Damage primarily to shrubbery, trees, foliage, and unanchored mobile homes. No appreciable wind damage to other structures. Some damage to poorly constructed signs. Storm surge possibly 3 to 5 feet above normal. Low-lying roads inundated, minor pier damage, some small craft in exposed anchorage torn from moorings.
- **Category 2:** Winds of 96 to 110 miles per hour. Considerable damage to shrubbery and tree foliage; some trees blown down. Major damage to exposed mobile homes. Extensive damage to poorly constructed signs. Some damage to roof materials of buildings; some window and door damage. No major wind damage to buildings. Storm surge possibly 6 to 8 feet above normal. Coastal roads and low-lying escape routes inland cut by rising water 2 to 4 hours before arrival of hurricane center. Considerable damage to piers. Marinas flooded. Small craft in unprotected anchorages torn from moorings. Evacuation of some shoreline residences and low-lying island areas required.
- **Category 3:** Winds of 111 to 130 miles per hour. Foliage torn from trees; large trees blown down. Practically all poorly constructed signs blown down. Some damage to roofing materials of buildings; some window and door damage. Some structural damage to small buildings. Mobile homes destroyed. Storm surge possibly 9 to 12 feet above normal. Serious flooding at coast and many smaller structures near coast destroyed; larger structures near coast damage by battering waves and floating debris. Low-lying escape routes inland cut by rising water 3 to 5 hours before hurricane center arrives.



- Category 4:** Winds of 131 to 155 miles per hour. Shrubs and trees blown down; all signs down. Extensive damage to roofing materials, windows, and doors. Complete failure of roofs on many small residences. Complete destruction of mobile homes. Storm surge possibly 13 to 18 feet above normal. Major damage to lower floors of structures near shore due to flooding and battering by waves and floating debris. Low-lying escape routes inland cut by rising water 3 to 5 hours before hurricane center arrives. Major erosion of beaches.
- Category 5:** Winds greater than 155 miles per hour. Shrubs and trees blown down; considerable damage to roofs of buildings; all signs down. Very severe and extensive damage to windows and doors. Complete failure of roofs on many residences and industrial buildings. Extensive shattering of glass in windows and doors. Some complete building failures. Small buildings overturned or blown away. Complete destruction of mobile homes. Storm surge possibly greater than 18 feet above normal. Major damage to lower floors of all structures less than 15 feet above sea level. Low-lying escape routes inland cut by rising water 3 to 5 hours before hurricane center arrives.

The following table provides the inundation acreage in Windsor for varying hurricane categories. The model estimates 11.3% of Windsor’s planning jurisdiction will be inundated by a Category 1 or 2 fast moving hurricane, 1.3% will be inundated by a Category 3 fast moving storm, and 2.1% will be inundated by a Category 4 or 5 fast moving storm. For slowing moving hurricanes, 11.6% of Windsor’s planning jurisdiction will be inundated by a Category 1 or 2 hurricane, 5.2% will be inundated by a Category 3 storm, and 5.9% will be inundated by a Category 4 or 5 storm.

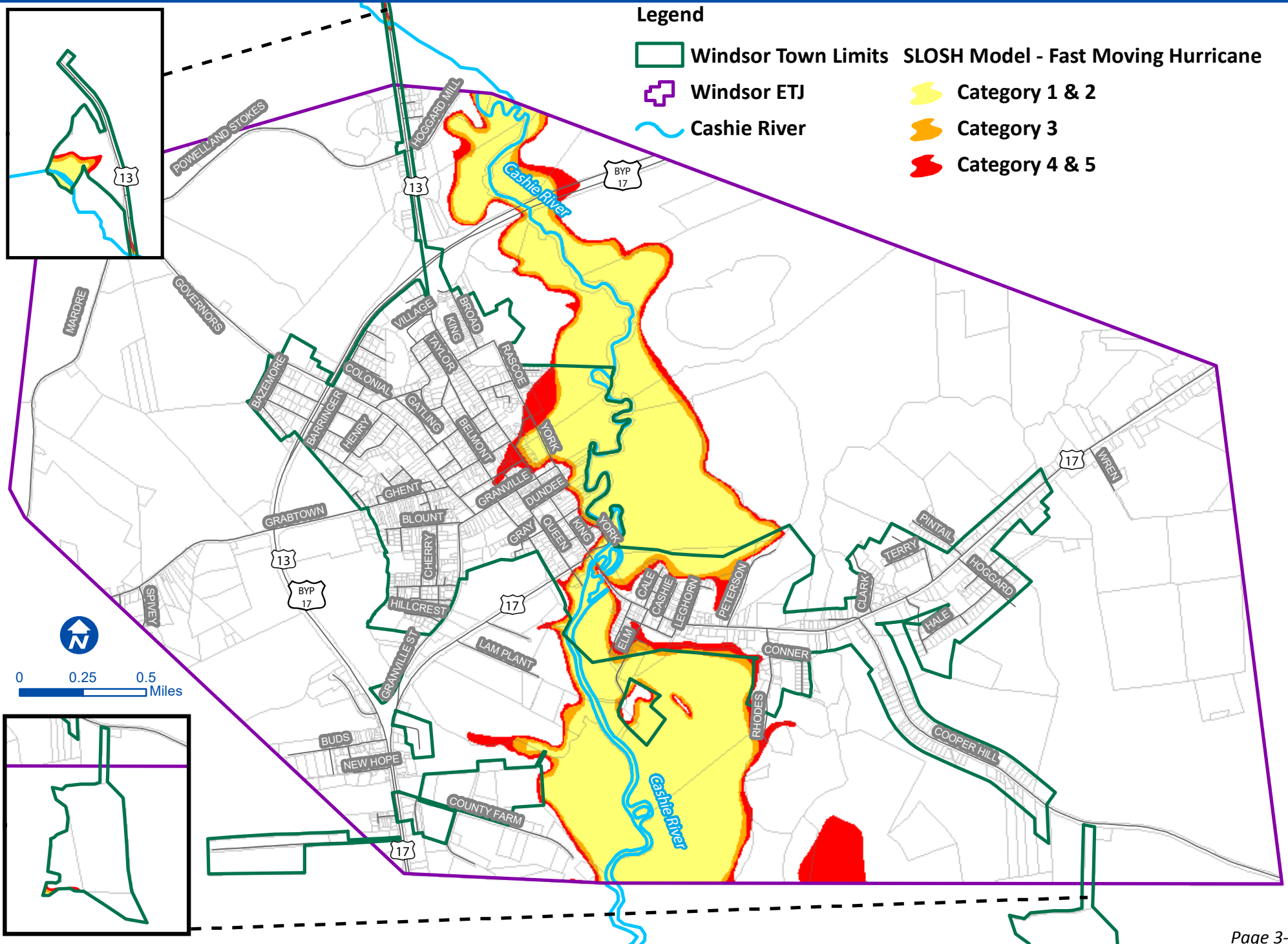
Table 16. Town of Windsor Hurricane Storm Surge Inundation

Fast Moving Storm	Corporate Limits		ETJ		Planning Jurisdiction	
	Acres	% of Total	Acres	% of Total	Acres	% of Total
Categories 1 and 2	150.54	8.8%	749.62	12.0%	900.16	11.3%
Category 3	37.28	2.2%	68.94	1.1%	106.22	1.3%
Categories 4 and 5	64.17	3.8%	105.36	1.7%	169.53	2.1%
Total	251.99	14.7%	923.92	14.8%	1,175.91	14.8%

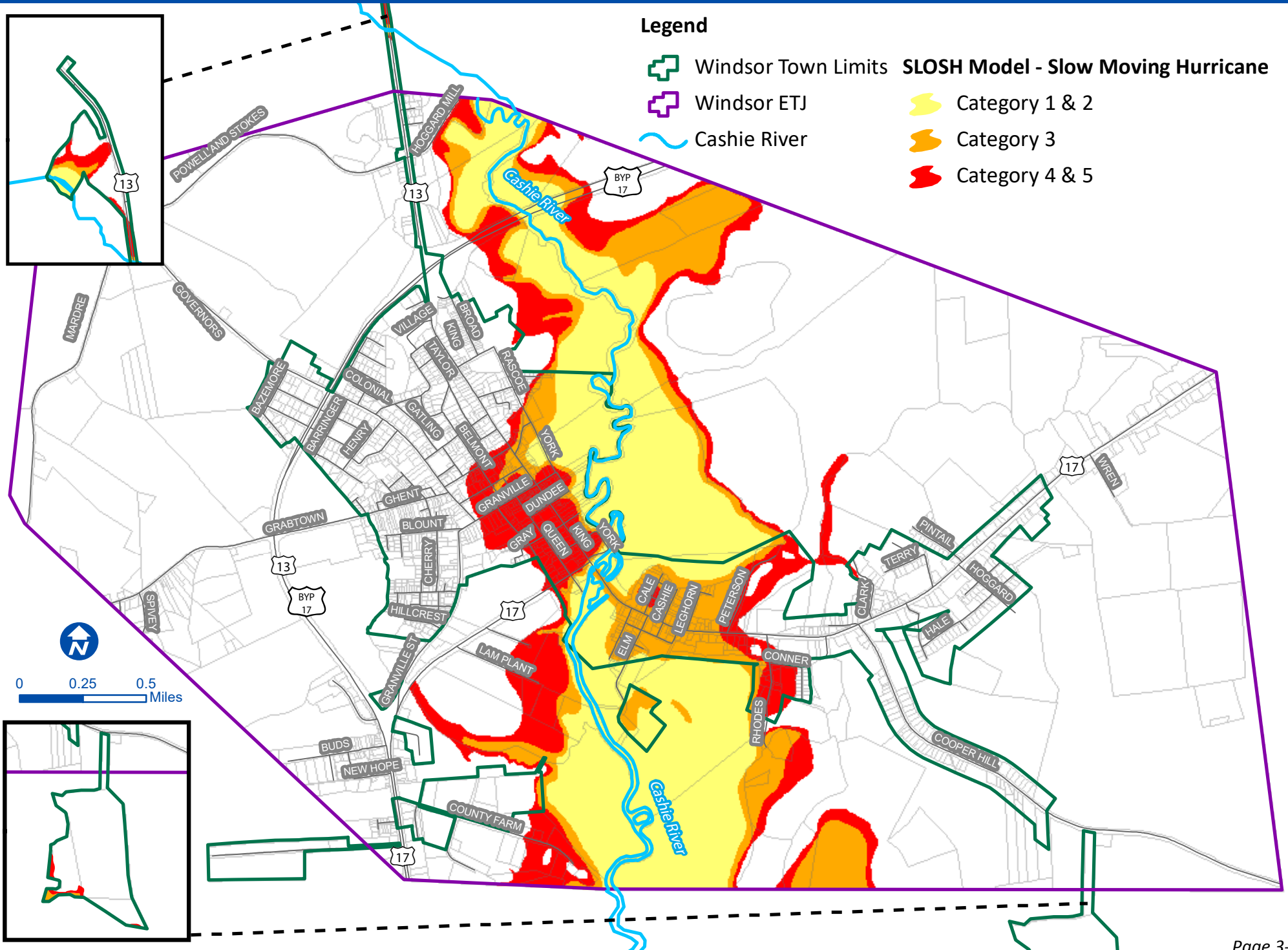
Slow Moving Storm	Corporate Limits		ETJ		Planning Jurisdiction	
	Acres	% of Total	Acres	% of Total	Acres	% of Total
Categories 1 and 2	160.47	9.4%	761.18	12.2%	921.65	11.6%
Category 3	154.86	9.1%	256.65	4.1%	411.51	5.2%
Categories 4 and 5	186.15	10.9%	280.44	4.5%	466.59	5.9%
Total	501.48	29.3%	1,298.27	20.7%	1,799.75	22.6%

Source: Federal Emergency Management Agency.

Map 7: SLOSH - Fast Moving Hurricane



Map 8: SLOSH - Slow Moving Hurricane



Legend

- ⊕ Windsor Town Limits
- ⊕ Windsor ETJ
- ~ Cashie River
- SLOSH Model - Slow Moving Hurricane
- Category 1 & 2
- Category 3
- Category 4 & 5



5. Manmade Hazards

There are some significant manmade hazards within the Town of Windsor. The greatest concentrations of hazardous materials are the storage of gasoline and fuel oil. In addition to fuel storage, chemicals and pesticides are stored at a limited number of areas. The EPA requires that facilities report certain chemical substances located on site. Specifically, under this regulatory requirement, facilities with chemicals on the EPA's list of Extremely Hazardous Substances present in a quantity equal to or in excess of their established Threshold Planning Quantity or a 500 pound threshold (whichever number is less), as well as any hazardous chemical present on site in a quantity equal to or greater than 10,000 pounds must be included on an annual report called the Tier II. This report must be submitted by March 1st each year to the North Carolina Emergency Response Commission, the Local Emergency Planning Committee, and the local fire department with jurisdiction over the reporting facility. A list of the current Tier II reporters within the Town of Windsor's planning jurisdiction can be obtained from the North Carolina State Emergency Response Commission.

Although there are no hazardous waste sites within the town's corporate limits, the Division of Waste Management has identified a hazardous waste site within the extraterritorial jurisdiction. The Powell and Stokes, Inc., site (NONCD 000 2326) is located just within the town's ETJ on NC 13 at the northern edge of this jurisdiction. The site had a nitrate spill that contaminated the groundwater. The NC Inactive Hazardous Sites Branch monitors the annual groundwater analytical results. A consistent attenuating trend in the nitrate levels has been observed over the past years.

6. Soils

A detailed soils survey was issued for Bertie County in 1990. The Natural Resources Conservation Service is updating and publishing soil surveys on a continuing basis. A current soils survey for Bertie County is available via the Natural Resources Conservation Services Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/>). The current soils survey identifies 30 soils series located in the Town of Windsor. Twenty-two of the 30 soil series are considered very limited for septic tank absorption fields. The soils series characteristics are summarized in Appendix E.

In terms of land use in relation to development and economic development, there are several factors that should be acknowledged including environmentally sensitive areas and soils as well as areas considered prime farmlands. The following sections provide an overview of these issues and their impact on the town overall.

Prime Farmlands

The preservation of prime farmland is important to Windsor's and Bertie County's agricultural interest and economy. Prime farmland is one of several kinds of important farmland defined by the US Department of Agriculture. It is of major importance in meeting the nation's short- and long-range



needs for food and fiber. Because the supply of high-quality farmland is limited, the US Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of the nation's prime farmland.

Prime farmland, as defined by the US Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are factors needed for the soil to economically produce sustained high yields of crops when proper management techniques, including water management and acceptable farming methods, are applied.

Generally, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, an acceptable salt and sodium content, and few or no rocks. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it is either not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 6 percent. About 5,610 acres, or 70.4% of Windsor's planning jurisdiction, meets the soil requirements for prime farmland. This farmland normally occurs on uplands and stream terraces mainly in areas near major drainageways. The main crops are corn, soybeans, tobacco, and wheat. The following soils are identified as prime farmland (this list does not constitute a recommendation for a particular land use):

All Areas are Prime Farmland

- AtA Altavista fine sandy loam, 0 to 3 percent slopes
- CrA Craven fine sandy loam, 0 to 1 percent slopes
- CrB Craven fine sandy loam, 1 to 4 percent slopes
- DgA Dogue sandy loam, 0 to 2 percent slopes
- DgB Dogue sandy loam, 2 to 6 percent slopes
- GoA Goldsboro sandy loam, 0 to 3 percent slopes
- NoA Norfolk sandy loam, 0 to 2 percent slopes
- NoB Norfolk sandy loam, 2 to 6 percent slopes
- WkA Wickham fine sandy loam, 0 to 2 percent slopes
- WkB Wickham fine sandy loam, 2 to 6 percent slopes

Farmland of Statewide Importance

- BoB Bonneau loamy sand, 0 to 6 percent slopes
- CnB Conetoe loamy sand, 0 to 5 percent slopes
- Lf Leaf loam
- Ln Lenoir fine sandy loam
- Wa Wahee sandy loam
- WkC Wickham fine sandy loam, 6 to 10 percent slopes
- WtD Winton fine sandy loam, 8 to 15 percent slopes



Prime Farmland If Drained

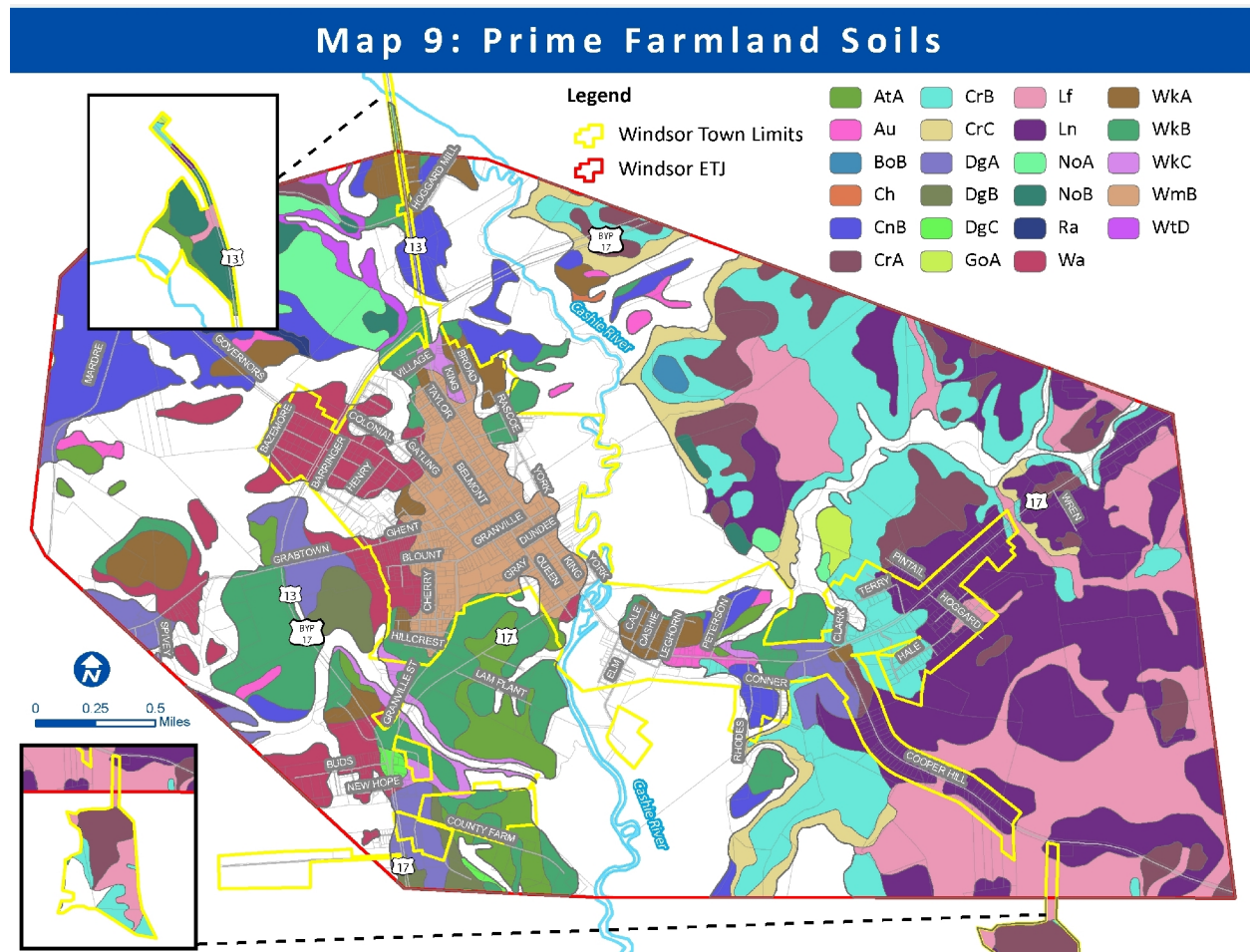
- Au Augusta fine sandy loam
- Na Nahunta very fine sandy loam
- Ra Rains sandy loam
- Ch Chewacla loam, frequently flooded

Windsor’s prime farmland areas are delineated on Map 9. The following summarizes the prime farmland acreage within the town’s jurisdiction.

Table 17. Town of Windsor Prime Farmland Acreage

Jurisdiction	Acres	% of Town Acreage
Corporate Limits	1,240.25	15.6%
Extraterritorial Jurisdiction	4,369.98	54.8%
Total	5,610.23	70.4%

Source: Holland Consulting Planners, Inc.





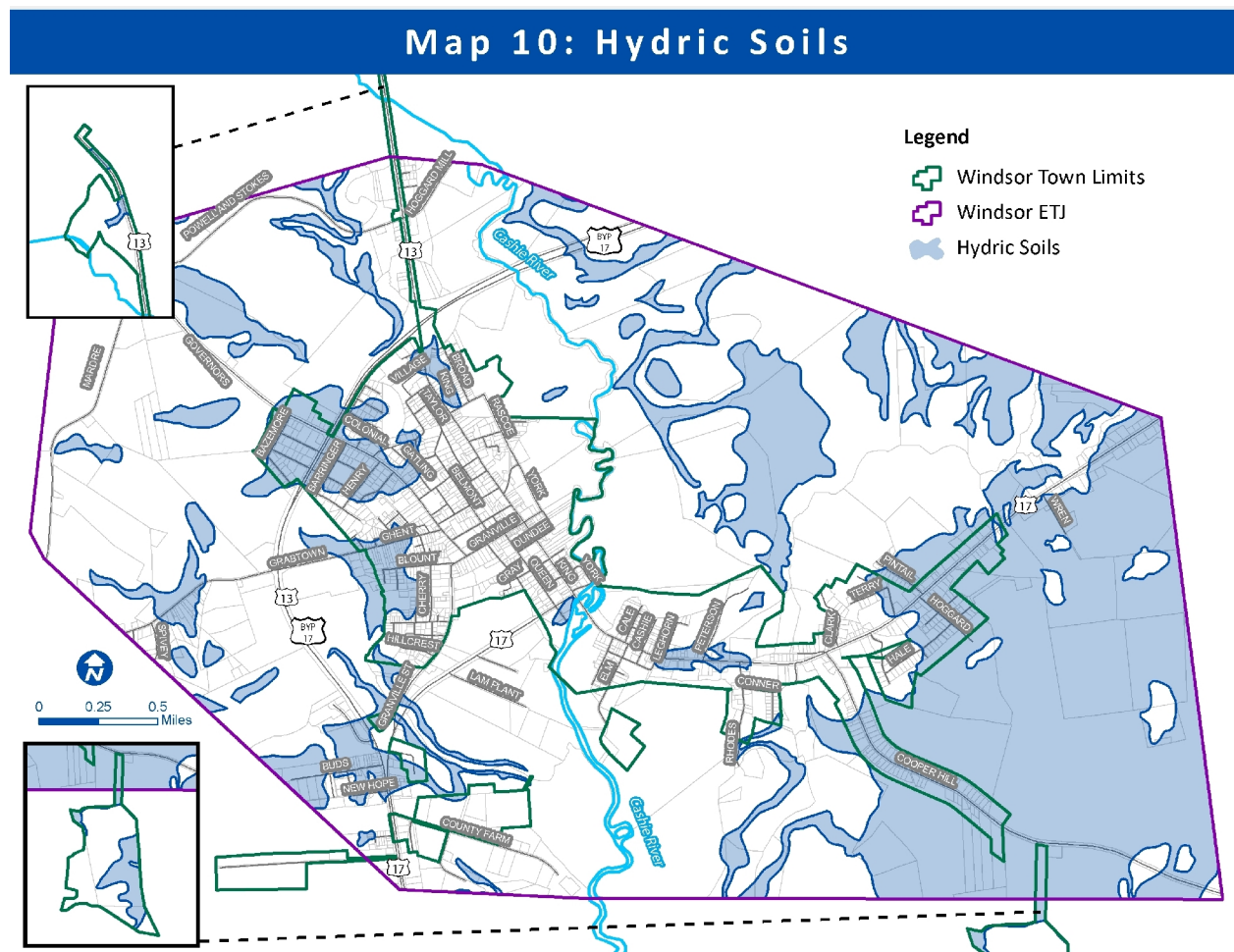
Hydric Soils

Hydric soils, as defined by the US Department of Agriculture, are soils that are wet frequently enough to periodically produce anaerobic conditions, thereby influencing the species composition or growth, or both, of plants on those soils. Hydric soils may or may not be subject to 404 wetlands regulations. Map 10 delineates hydric soils in the town’s jurisdiction. The following summarizes the hydric soils acreage within the town’s jurisdiction.

Table 18. Town of Windsor Hydric Soils Acreage

Jurisdiction	Acres	% of Town Acreage
Corporate Limits	423.32	5.3%
Extraterritorial Jurisdiction	2,071.98	26.0%
Total	2,495.30	31.3%

Source: Holland Consulting Planners, Inc.





7. Environmentally Fragile Areas

Areas of Environmental Concern (AEC) are the foundation of the Coastal Resources Commission's permitting program for coastal development. An AEC is an area of natural importance. It may be easily destroyed by erosion or flooding or it may have environmental, social, economic, or aesthetic values that make it valuable.

The Coastal Resource Commission designates areas as AECs to protect them from uncontrolled development that may cause irreversible damage to property, public health or the environment, thereby diminishing their value to the entire state. Statewide, AECs cover almost all coastal waters and less than 3% of the land in the 20 coastal counties. There are no environmentally fragile areas where resource functions are being impacted as a result of development, this includes areas that are being impacted or loss as a result of incompatible development.

Fragile areas are those areas that are not explicitly defined as AECs but that could cause significant environmental damage or other diminution of quality of life if not managed. These include wetlands, natural heritage areas, areas containing endangered species, prime wildlife habitats, or maritime forests. These areas must be evaluated pursuant to State regulations at 15A NCAC 7H for the CAMA Land Use Planning process.

This section of the plan evaluates the following AECs and fragile areas in Windsor: public trust areas, coastal shorelines, wetlands, and significant natural heritage areas/ protected lands.

Public Trust Areas

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

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



Public trust areas must be delineated by on-site analysis. Under CAMA regulations, all lands 30 feet landward of public trust areas are subject to the restrictions specified for estuarine shorelines. In Windsor, the waters of the Cashie River and its tributaries are considered public trust areas and inland waters.

Coastal Shorelines

The Coastal Shorelines category includes estuarine shorelines and public trust shorelines. Estuarine shorelines AEC are those non-ocean shorelines extending from the normal high water level or normal water level along the estuarine waters for a distance of 75 feet landward. The areas support the ecological function of estuaries and are highly vulnerable to erosion caused by wind or water and to damage caused by development. Development along estuarine shorelines can exacerbate water quality problems within estuarine waters and expedite the threats of shorefront erosion and flooding. There are no estuarine waters or estuarine shorelines in Windsor's planning jurisdiction.

Public trust shorelines AECs are those non-ocean shorelines immediately contiguous to public trust areas, as defined in Rule 07H.0207(a), located inland of the dividing line between coastal fishing waters and inland fishing waters as set forth in that agreement and extending 30 feet landward of the normal high water level or normal water level. Public trust shorelines in Windsor are located along the public trust areas of the Cashie River and its tributaries.

Wetlands

Wetlands are lands that are saturated or covered with a shallow layer of water for part of the year and are not necessarily permanently wet. Many wetlands occur in areas where surface water collects or where underground water discharges to the surface, making the area wet for extended periods of time. Coastal wetlands are any marsh in a coastal area that regularly or occasionally floods by lunar or wind tide, and that include certain plant species. 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.

Wetlands provide natural functions that benefit the area around them. Wetlands are critical for water quality protection. Stormwater runoff that may have toxins washes into water bodies contaminating them. Wetlands provide a buffer between the two that traps sediment, removes nutrients, and detoxifies chemicals. Wetlands are also useful for flood protection by storing water and slowly releasing it. Wetlands assist with the stabilization of shorelines to protect from erosion, and they also provide a safe wildlife habitat.

Section 404 of the Clean Water Act establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including freshwater wetlands. Activities in waters of the United States that are regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and



conversion of wetlands to uplands for farming and forestry. The basic premise of the program is that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation’s waters would be significantly degraded. On-site evaluation is needed to determine the exact locations of 404 wetlands.

Section 401 of the Clean Water Act states that any activity requiring a Federal 404 permit (a US Army Corps of Engineers permit for the discharge of dredged or fill material) that results in a discharge to waters or freshwater wetlands, then a 401 Water Quality Classification is also required. When the state issues a 401 classification, this certifies that a given project will not degrade waters of the state or otherwise violate water quality standards.

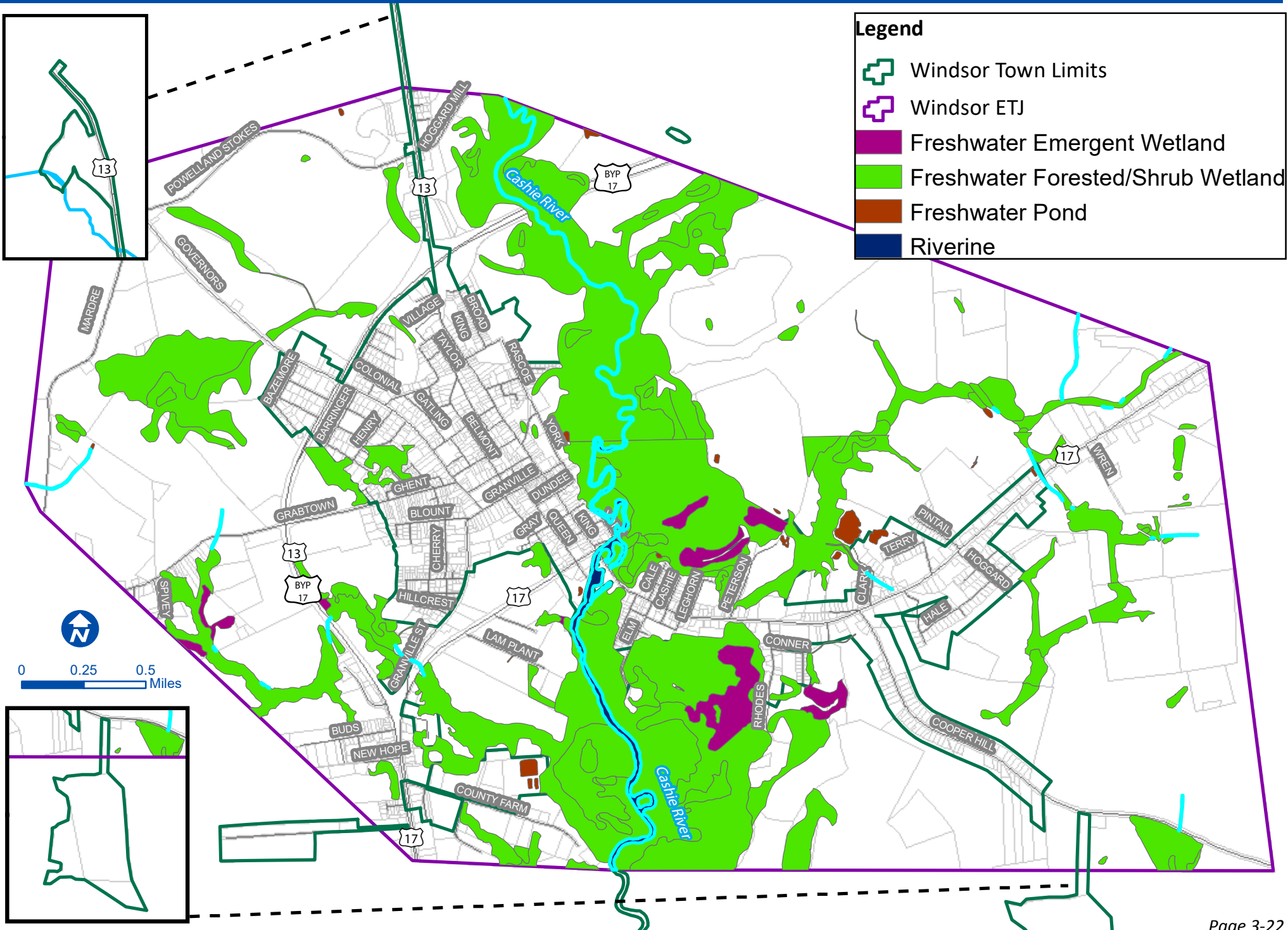
According to the North Carolina Coastal Regional Evaluation of Wetland Significance (NC-CREWS), approximately 19.3% of the Windsor planning jurisdiction is considered to be a wetland. The locations of these wetlands are delineated on Map 11. Almost all of the town’s wetlands are freshwater forested/shrub wetlands. There are very limited amounts of freshwater emergent, freshwater pond, and riverine wetlands.

Table 19. Town of Windsor Wetland Acreage

Type	Town Acres	% of Town Acreage	ETJ Acres	% of ETJ Acreage	Total Acres	% of Total Acreage
Freshwater Emergent Wetland	11.60	0.7%	64.08	0.8%	75.69	0.8%
Freshwater Forested/Shrub Wetland	227.12	13.3%	1,446.80	18.8%	1,673.92	17.8%
Freshwater Pond	7.56	0.4%	9.12	0.1%	16.68	0.2%
Riverine	16.01	0.9%	29.79	0.4%	45.79	0.5%
Total	262.29	15.3%	1,549.79	20.2%	1,812.08	19.3%

Source: Holland Consulting Planners, Inc.

Map 11: Wetlands





Natural Heritage Natural Areas/Protected Lands

Natural resource fragile areas are generally recognized to be of educational, scientific, or cultural value because of the natural features of the particular site. Features in these areas serve to distinguish them from the vast majority of the landscape. These areas include complex natural areas, areas that sustain remnant species, pocosins, wooded swamps, prime wildlife habitats, or registered natural landmarks.

The North Carolina Natural Heritage Program of the Division of Parks and Recreation works to identify and facilitate protection of the most ecologically significant natural areas remaining in the state. Natural areas may be identified because they provide important habitat for rare species or because they contain outstanding examples of the rich natural diversity of this state.

There is only one natural heritage area which is located in the Town of Windsor planning jurisdiction (see Table 20 and Map 12). Appendix A provides a US Fish & Wildlife Services list of endangered/threatened species in Bertie County. Appendix B provides a NC Heritage Program list of plant species which exists in the County.

Table 20. Town of Windsor Natural Heritage Natural Area (Refer to Map 12)

Map Ref.#	Natural Heritage Area Site	Acres	% of Total Planning Jurisdiction
1	Roquist Creek/Cashie River Swamp	270.66	3.40%

Source: North Carolina GIA, North Carolina Parks & Recreation, Holland Consulting Planners, Inc.

Slopes in Excess of 12%

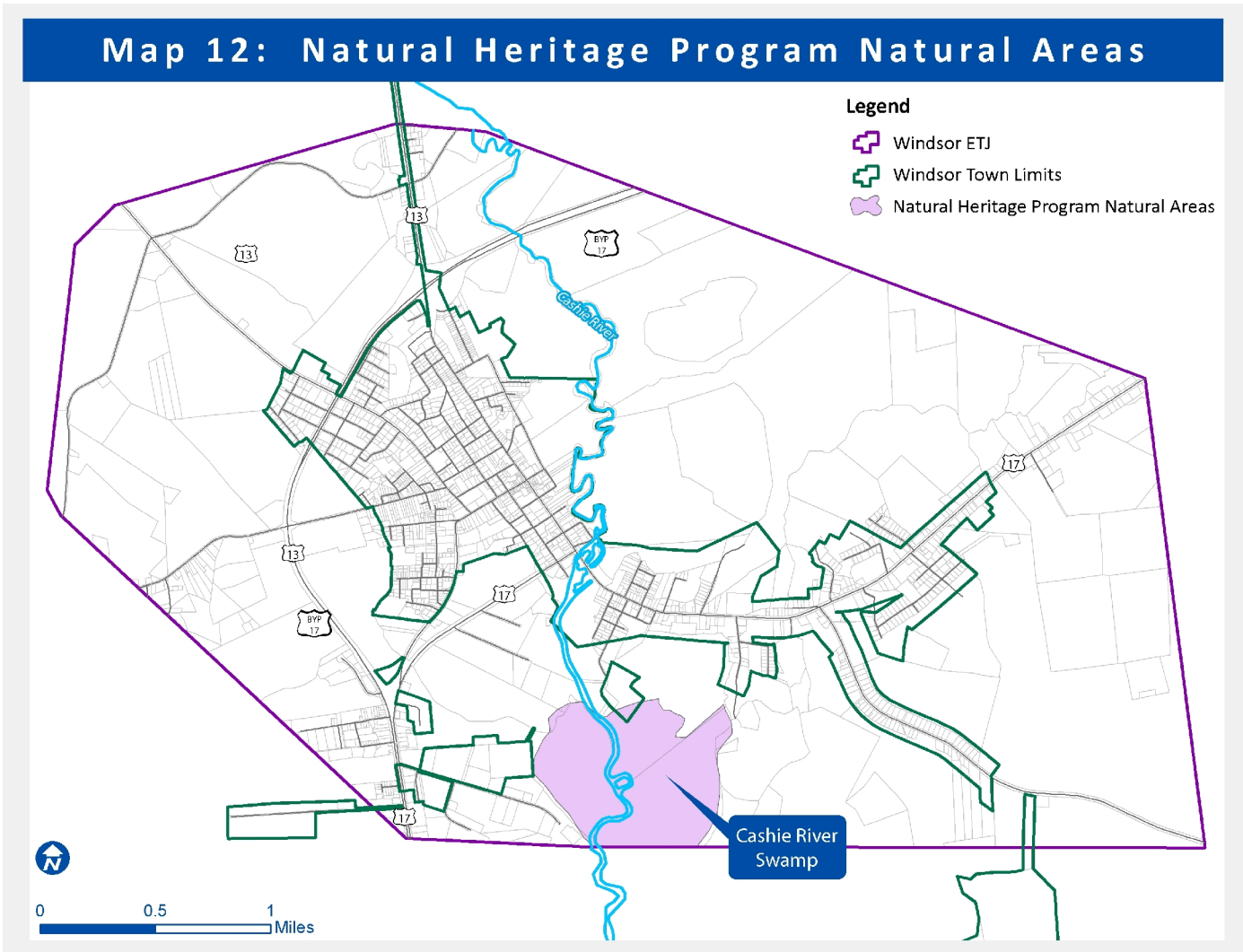
Areas of excessive slope are considered to be areas with slopes in excess of 12%. The topography in Windsor is relatively flat; however, some areas along the Cashie River may be exceptions. According to the Soil Survey of Bertie County, North Carolina, there is only one soil with the possibility of being in excess of 12% in Windsor’s planning jurisdiction. Excess slope has had little impact on land use and/or development within Windsor.

Excessive Erosion Areas

Excessive erosion of shoreline areas has not been a problem within Windsor’s planning jurisdiction.



Map 12: Natural Heritage Program Natural Areas



8. Areas of Resource Potential

Regional Significant Parks

There are several recreational facilities located within Windsor. They are identified in the Analysis of Existing Community Facilities/Services. Both the Livermon Park and Mini Zoo and the Roanoke-Cashie River Center are public parks located within the Town's planning jurisdiction which have regional significance.

Marinas and Mooring Fields

Marinas are defined as any publicly- or privately-owned dock, basin, or wet boat storage facility constructed to accommodate more than ten boats and providing any of the following services: permanent or transient docking spaces, dry storage, fueling facilities, haulout facilities, and repair



service. Excluded from this definition are boat ramp facilities allowing access only, temporary docking, and none of the preceding services.

A “freestanding mooring” is any means to attach a ship, boat, vessel, floating structure, or other water craft to a stationary underwater device, mooring buoy, buoyed anchor, or piling (not associated with an existing pier, dock, or boathouse). When more than one freestanding mooring is used in the same general vicinity it is commonly referred to as a mooring field. The Town of Windsor has not regulated the establishment of mooring fields within its planning jurisdiction and they have not been a problem.

Floating Homes

A floating home or structure is any structure, not a boat, supported by a means of flotation, designed to be used without a permanent foundation, which is used or intended for human habitation or commerce. A structure will be considered a floating structure when it is inhabited or used for commercial purposes for more than thirty days in any one location. A boat may be deemed a floating structure when its means of propulsion has been removed or rendered inoperative and it contains at least 200 square feet of living space area. Currently, there are no floating homes located within Windsor’s planning jurisdiction.

Aquaculture

As defined under N.C. General Statute 106-758, aquaculture is the propagation and rearing of aquatic species in controlled or selected environments, including, but not limited to ocean ranching. Aquaculture has not been an issue in the Windsor planning jurisdiction.

Channel Maintenance

The Cashie River provides a route for fisherman and recreational boat traffic. Proper maintenance of channels is very important to Windsor. If silt or other deposits fill in the channels, safe and efficient movement of vessels could be impeded. At the present time, there is no channel maintenance program in Windsor.

Marine Resources (Water Quality)

The North Carolina Division of Water Resources assigns water quality classifications to all named waters of the State of North Carolina. The classifications are based upon the existing or contemplated best usage of the various streams and segments of streams within a basin, as determined through studies, evaluations, and comments received at public hearings. The state water classification system is summarized in Table 21.



Table 21. NC Division of Water Resources Water Body Classifications

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

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

Water quality classifications vary slightly within Windsor’s planning jurisdiction. Table 22 provides a listing of the water bodies within the Windsor planning jurisdiction that are classified by the NC Division of Water Resources along with their assigned classification. There are no HQW/ORW waters or shellfishing waters located within Windsor’s planning jurisdiction. Additionally, there are no water supply watersheds or wellhead protection areas in Windsor.

Table 22. Town of Windsor Water Bodies and Classifications

Name of Stream	Description	Current Classification	Stream Index #
Cashie River	From source to a point 1.0 mile upstream from Bertie County SR 1500	C; Sw	24-2-(1)

Source: NC Division of Water Resources.

Under section 303(d) of the Clean Water Act, states, territories and authorized tribes (included in the term State here) are required to submit lists of impaired waters. These are waters that are too polluted or otherwise degraded to meet water quality standards. There are currently no 303(d) waters in Windsor. Additionally, non-point source surface runoff is not a significant contributor to local or regional water quality issues.



Finfish, Finfish Habitat, and Primary Nursery Areas

The North Carolina Marine Fisheries Commission (MFC) has adopted definitions in rule for anadromous spawning and nursery areas. Anadromous fish spawning areas are those areas where evidence of spawning of anadromous fish has been documented by direct observation of spawning, capture of running ripe females, or capture of eggs or early larvae [NCAC 31.0101(20)(C)].

Anadromous fish nursery areas are those areas in the riverine and estuarine systems utilized by post-larval and later juvenile anadromous fish [NCAC 31.0101(20)(D)].

Wetlands are of great importance to fisheries production serving as sources of biological productivity, directly and indirectly, nursery areas and reducing sedimentation/turbidity to improve water quality. The waters of the Roanoke River basin are an important habitat for several anadromous fish species. Anadromous species found in the basin include Shad, Striped Bass, and River Herring. According to the NC Division of Water Resources, there are no primary nursery areas located within Windsor's planning jurisdiction.

9. Chronic Wastewater Treatment System Malfunctions

The Windsor Waste Treatment Plant sits in the southern portion of the Town's corporate limits. The facility has not experienced any chronic system malfunctions.

10. Public Health Hazards

There are no significant septic tanks issues in Windsor's planning jurisdiction.

11. Water Quality, Natural Hazards, and Natural Resources

Basinwide water quality planning is a watershed-based approach to restoring and protecting the quality of North Carolina's surface waters. Basinwide water quality plans are prepared by the NC Division of Water Resources (DWR) for each of the 17 major river basins in the state. Each basinwide plan is revised at 5-year intervals. The Town of Windsor is located in the Roanoke River Basin. Water quality has basinwide implications and does not start or stop at geo-political boundaries; therefore, the Town of Windsor is affected by the water quality within the entire basin as a whole. The first Basinwide Water Quality Plan for the Roanoke River Basin was completed in 1996, the second in 2001, the third in 2006, and the fourth in 2012 (which remains the current, applicable plan). The following are the goals of basinwide program:

- Identify water quality problems and restore full use to Impaired waters.
- Identify and protect high value resource waters.
- Protect unimpaired waters while allowing for reasonable economic growth.

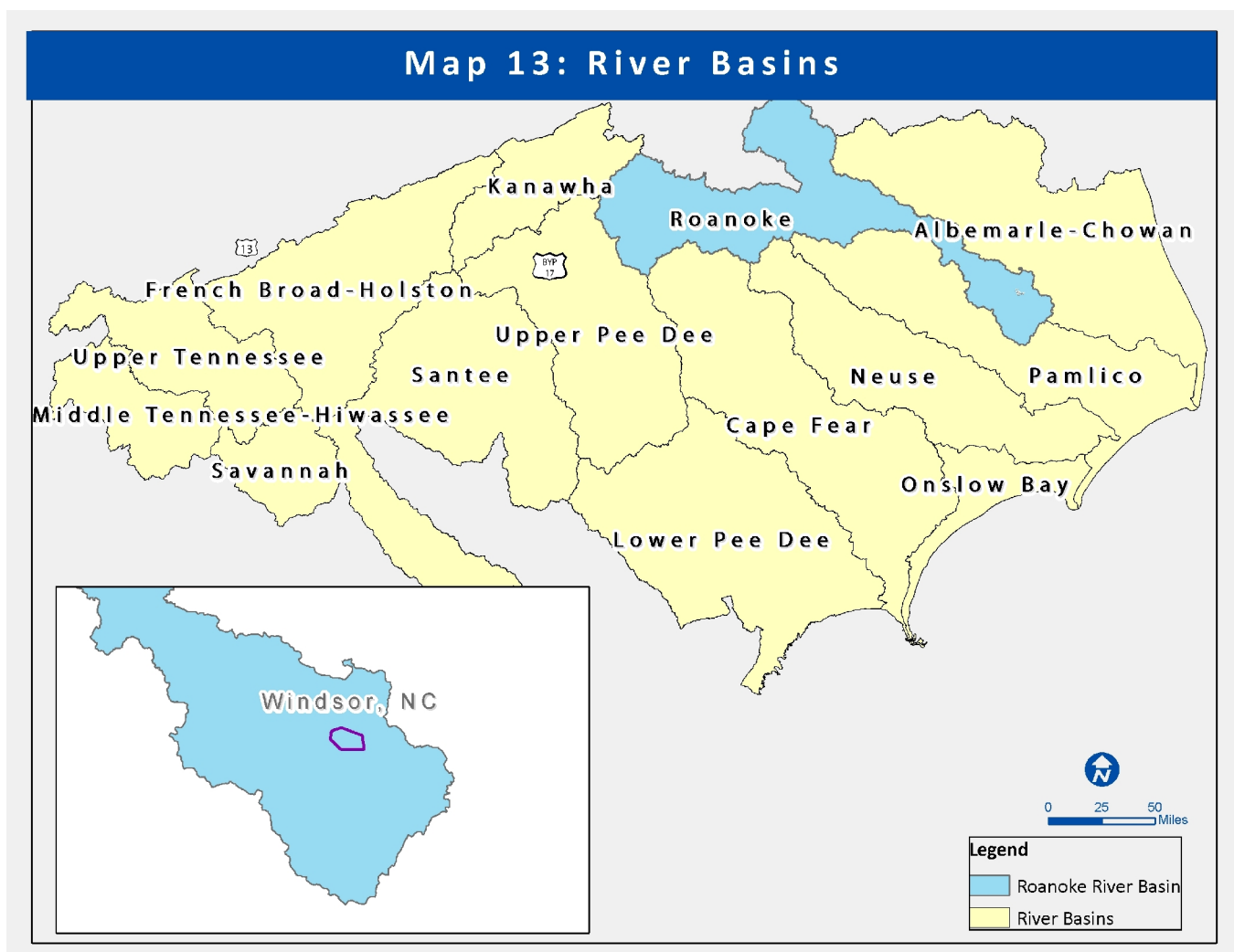


These goals are accomplished through the following objectives:

- Assure equitable distribution of waste assimilative capacity.
- Better evaluate cumulative effects of pollution.
- Improve public awareness and involvement.

As existing and future land uses are considered within Windsor, these goals should be kept in mind.

Windsor is located entirely within the Roanoke River Basin's subbasin 03010107. The Roanoke River Basin and subbasin 03010107 boundaries are shown on Map 13.





The following provides a summary of existing conditions in the Roanoke River Basin and subbasin 03010107 along with the DWR recommendations from the 2012 Basinwide Plan:

Water Quality (Roanoke River Basin)

The Roanoke River begins in the Blue Ridge Mountains of northwestern Virginia and flows in a generally southeastern direction for 400 miles before emptying into the Albemarle Sound in eastern North Carolina. By the time it reaches the fall line near Roanoke Rapids, it has captured water from nearly 8,000 square miles of land. From Roanoke Rapids to the coast, the river drains another 2,000 square miles, carrying more water than any other river in North Carolina. The North Carolina portion of the basin (roughly 36% of the entire watershed) is composed of two major drainages: the Dan River and its tributaries in the western section; and the Roanoke River from Virginia to the Albemarle Sound in the eastern section. The Roanoke River enters North Carolina through John H. Kerr Reservoir and then flows into Lake Gaston and Roanoke Rapids lake before regaining its riverine form.

The Roanoke River Basin encompasses all or portions of 17 counties and 42 municipalities. In 2010, the overall population in the basin was 289,784. The most populated areas are located north of the Winston-Salem/Greensboro area, and around the larger municipalities in the basin, such as Roanoke Rapids, Eden, Williamston, and Plymouth.

Though some urban and suburban development has occurred in the Roanoke River basin, according to 2006 data, the greatest portion of land cover in the basin has remained forest and, to a lesser extent, agriculture-based. Also characteristic of activities throughout the state, nonpoint source runoff and numerous small point source dischargers associated with development and agricultural activities have potential to affect water quality in the basin.

Water Quality (Subbasin 03010107)

Windsor is located in subbasin 03010107. The subbasin is located entirely within the lower coastal plain. Most of the streams are slow moving and often stop flowing in the summer months. This subbasin is the least densely populated and has the lowest estimated population projection in the entire river basin. Most of this subbasin is located in Bertie County, which is expected to decrease by 8% in population by 2020. There are four major and eight minor NPDES permitted facilities and three registered animal operations in subbasin 03010107.

Use support ratings were assigned for waters in subbasin 03010107 in the aquatic life, recreation, fish consumption, and water supply categories. All waters are Impaired on an evaluated basis in the fish consumption category because of fish consumption advice that applies to the entire basin. In the water supply category, all waters are Supporting on an evaluated basis based on reports from DEH regional water treatment plant consultants.



The following recommendations were provided in the Water Quality Management Plan for waterbodies in Windsor.

Cashie River

2012 Recommendation. DWR will continue to monitor fish tissue in the Cashie River and will work to identify sources of mercury.

Current Status and 2012 Recommendations. The Cashie River is Supporting for aquatic life and recreation. Since 2002, the Cashie River has been on the Impaired Waters list due to fish consumption advisory. This advisory was put in place by NCDHHS as a result of a 2003 study of mercury in fish tissue. This advisory has been lifted causing the river to be removed from the list. A Statewide Mercury TMDL is also in development stages to address this issue.

In the Roanoke River Basin, there are a variety of water quality stressors. These include, but are not limited to, habitat degradation, low dissolved oxygen, turbidity, fecal coliform bacteria, dioxin, and mercury in fish tissue. While some of these occur naturally, management of various land use activities may be needed to maintain water quality. Actions that can reduce impacts to coastal waters are: Stormwater Control Program Improvements and Growth Management Initiatives.

Natural Hazards/Natural Resources

For detailed information on natural hazards and natural resources in Windsor, refer to Sections 3.B.4 (page 3-9), 3.B.7 (page 3-19), and 3.B.8 (page 3-25). In addition, refer to Sections 3.C, Existing Land Use (pages 3-31 and 3-32) and 3.F, Land Suitability, Preference, and Conflict (pages 3-50 to 3-60).

C. Existing Land Use

1. Introduction

The following discussion provides a traditional existing land use analysis for the Windsor planning area. Existing land use conditions are classified by building types/uses and include eight categories: Commercial, Office/Institutional, Single Family Residential, Multi Family Residential, Rural Residential/Agriculture, Industrial, Recreational, and Vacant/Unimproved.

2. Existing Land Use Conditions

Within the total planning area, the majority of intensive land use has generally occurred along US 117 Bypass and the Downtown area. This trend has primarily occurred because of conditions such as transportation corridors and location of the Central Business District and County Courthouse.



A detailed existing land use survey was conducted involving several available data resources. A comprehensive analysis involving Bertie County tax parcel data, aerial photography, and field observations resulted in the development of a parcel-by-parcel account of existing conditions throughout the Windsor planning area. Each piece of property was classified by the current use. The following defines the characteristics of each existing land use category:

- Commercial - retail, service, and shopping establishments
- Office and Institutional - government and public service, church, offices, and schools
- Single-Family Residential - parcels accommodating a single-family detached or duplex dwelling
- Multi-Family Residential - parcels with three or more dwelling units on a single parcel
- Rural Residential/Agricultural - all residential properties greater than five (5) acres, may include some agricultural use
- Industrial - wastewater treatment facilities and sanitary sewer facilities
- Recreation - lands committed to public use for open or active recreational purposes
- Vacant - parcels void of any development and not committed to an agriculture or forestry use
- Right-of-Way - All state and town maintained roads, streets, and sidewalks.

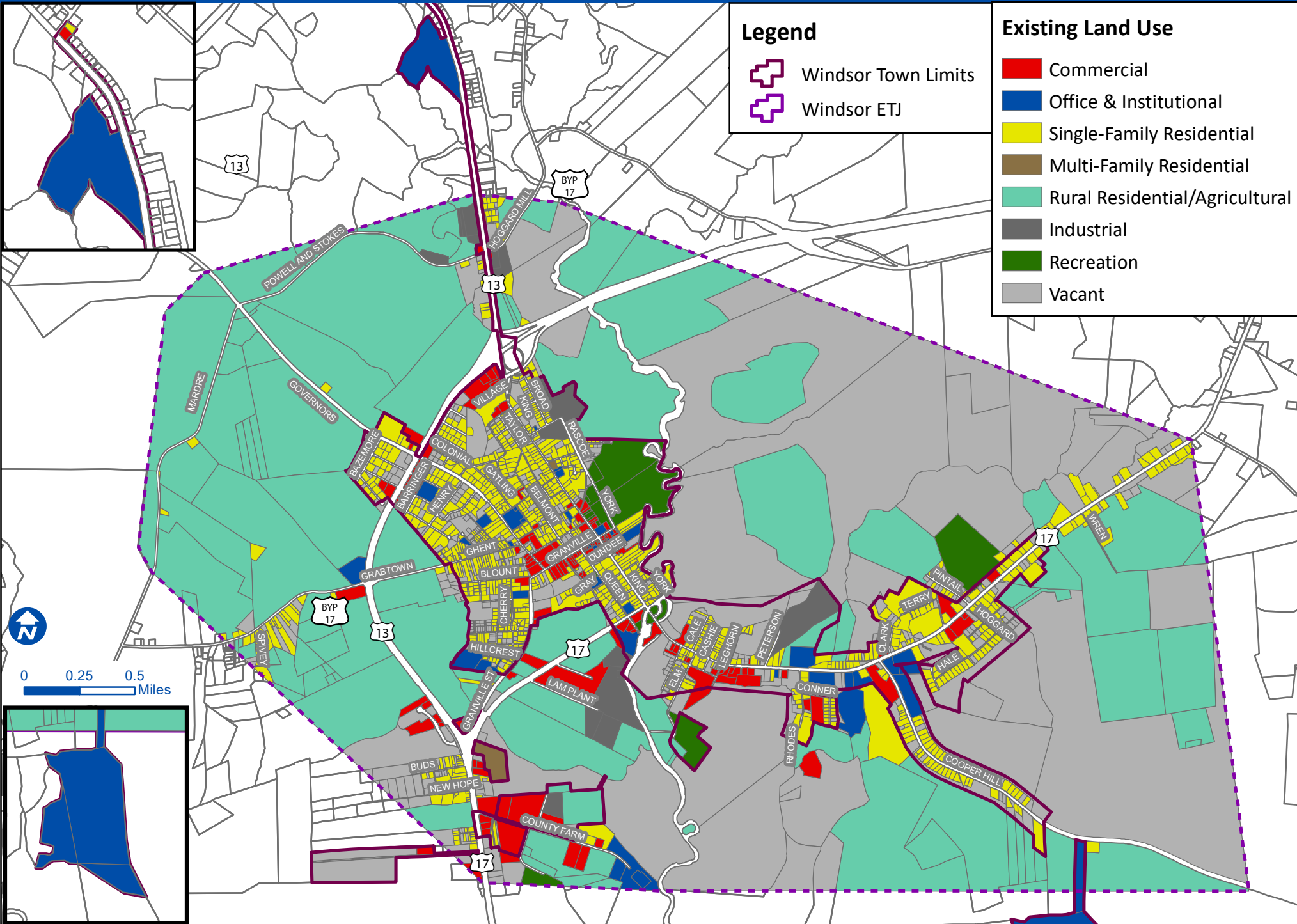
Map 14 depicts the existing land use for Windsor and its extraterritorial jurisdiction. The land use acreages are provided in Table 23. For comparison, Table 23 also provides the normal range of land use acreages for eastern North Carolina communities (corporate limits). Windsor appears to have higher than normal Office/Institutional land use and higher than normal Industrial land use. The corporate limits vacant land use is lower than normal. As in most communities, residential land use occupied the most acreage.

Table 23. Existing Land Use



Land Use Category	Corporate Limits	% of Total	ETJ	% of Total	Total Planning Area	% of Total	Corporate Limits % of Land Use Range
Commercial	150.99	8.8%	70.06	1.1%	221.05	2.8%	8% - 14%
Office and Institutional	299.13	17.5%	41.56	0.7%	340.69	4.3%	7% - 9%
Single Family Residential	489.09	28.6%	148.84	2.4%	637.93	8.0%	20% - 30%
Multi Family Residential	10.72	0.6%	0.00	0.0%	10.72	0.1%	
Rural Residential/Agricultural	39.99	2.3%	3,109.82	49.7%	3,149.81	39.5%	
Industrial	55.63	3.3%	58.40	0.9%	114.03	1.4%	<1%
Recreation	88.05	5.2%	45.15	0.7%	133.20	1.7%	
Vacant	351.92	20.6%	2,509.70	40.1%	2,861.62	35.9%	30% - 45%
Right-of-Way	223.30	13.1%	277.42	4.4%	500.72	6.3%	8% - 12%
Total	1,708.8	100.0%	6,260.95	100.0%	7,969.77	100.0%	

Source: Holland Consulting Planners, Inc.









Map 14: Existing Land Use



Legend

-  Windsor Town Limits
-  Windsor ETJ

Existing Land Use

-  Commercial
-  Office & Institutional
-  Single-Family Residential
-  Multi-Family Residential
-  Rural Residential/Agricultural
-  Industrial
-  Recreation
-  Vacant



D. Community Facilities

Map 15 provides the locations of Windsor’s community facilities.

1. Law Enforcement

Law enforcement is provided to the area by the Town of Windsor Police Department, located at 128 South King Street. The department has one (1) Chief, one (1) Sergeant, one (1) Detective, and seven (7) patrol officers. Officers have their own cars and utilize radars and four (4) Mobile Data Computers. In addition, there are six (6) in-car cameras. The department responds to 3,000 to 4,000 calls per year. Emergency calls to the department are dispatched through Bertie County Communications.



The Windsor Police Department is located at 128 South King Street in Windsor, NC. Photo Courtesy of the Town of Windsor.

According to crime data obtained from the State Bureau of Investigation, Windsor has seen decreases in total offenses since 2007. The number of Aggravated Assault had the biggest decrease at 42.8% followed by Larceny decreasing 9.3%. While there were increases since 2007 in the Robbery and Motor Vehicle Theft crime categories, those categories experienced decreases between 2012 and 2014. Table 24 provides information regarding crime rates for the Town between 2007 and 2014.

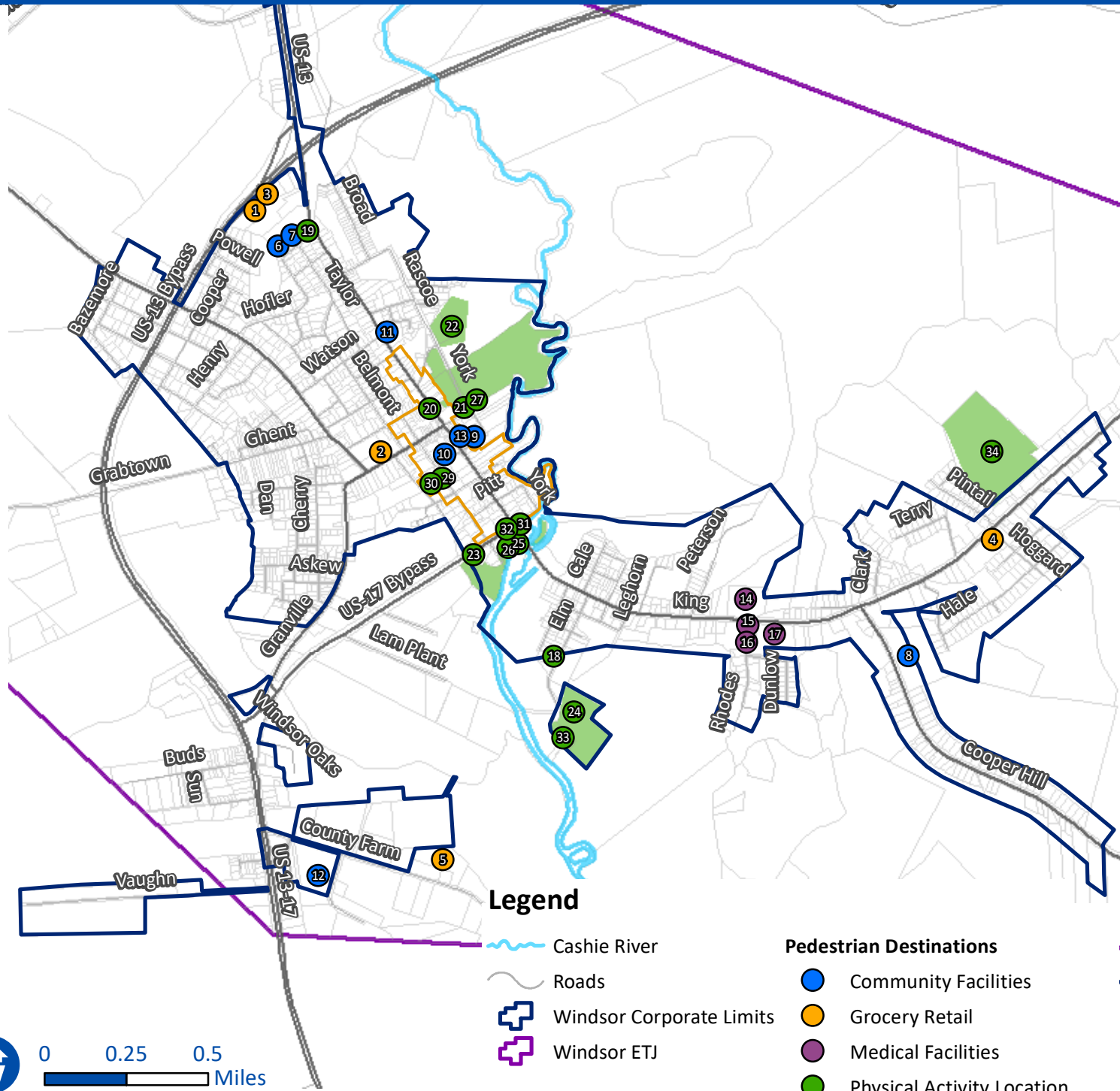
Table 24. Town of Windsor Crime Data, 2007-2014

Crime	2007	2008	2009	2010	2011	2012	2013	2014
Rape	0	0	0	0	0	1	0	1
Robbery	1	2	2	1	2	1	1	0
Aggravated Assault	7	4	5	2	7	6	9	4
Burglary	17	22	18	13	19	8	10	18
Larceny	54	33	27	32	42	37	42	49
Motor Vehicle Theft	0	2	2	1	3	0	0	1
Total Offenses	79	63	54	49	73	53	62	73

Source: North Carolina State Bureau of Investigations.

Map 15: Community Facilities

- 1 Food Lion
- 2 Dollar General
- 3 Duck Thru Food Store
- 4 Butcher Block
- 5 Cucumber Market
- 6 Bertie County Aging Council
- 7 Bertie County Parks & Rec Dept.
- 8 Windsor Elementary School
- 9 Lawrence Memorial Public Library
- 10 Bertie County Magistrate
- 11 Windsor Fire Department
- 12 Heritage College Leadership Academy
- 13 Windsor Police Department & Town Hall
- 14 Brain Center Health & Rehab
- 15 Bertie County Health Dept.
- 16 Bertie County Rural Health
- 17 Vidant Bertie Hospital
- 18 Windsor Disc Golf
- 19 YMCA
- 20 Windsor Municipal Park
- 21 Livermon Park & Mini-Zoo
- 22 Davis Ball Park
- 23 Roanoke Cashie River Center
- 24 Cashie River Campground and Treehouses
- 25 Cashie River Boat Access
- 26 Cashie Riverwalk
- 27 Cashie Wetland Walk & Canoe Trail
- 28 Hoggard Mill Road ADA Boat Access
- 29 Windsor Community Building
- 30 Sutton Drive Tennis Courts
- 31 Rotary Park
- 32 Williford Park
- 33 NCWRC Cashie River Boating Access
- 34 Bertie County Recreation Complex





2. Fire Services

The Town of Windsor Fire Department serves three (3) fire districts: the Windsor Town District (comprised of the corporate limits) and two (2) response districts. The Department of Insurance (DOI) rating for the Windsor Town District area is a Class 5. One of the response districts is a six (6) mile response district and has a DOI rating of Class 9. The other response district covers approximately 90 square miles and is not rated. The fire station is located at 501 North King Street in Windsor and houses two (2) engines, one (1) ladder truck, one (1) tanker, and one (1) equipment truck. The department has one (1) chief and 35 volunteers. The volunteer staff includes two assistant chiefs, three captains, three lieutenants, a treasurer, and a secretary. The department responds to approximately 200 calls per year, the majority of which are motor vehicle crashes, with the remaining calls being grass or structural fires. The department is also involved with public education programs for schools in the area, as well as local businesses and organizations.



The Windsor Fire Department, through its members, is dedicated to protecting life and property through public safety education, fire prevention, fire suppression and search/rescue. Photo Courtesy of the Windsor Fire Department.

3. Emergency Medical Services

Emergency Medical Services are provided to residents of Windsor by the Bertie County Emergency Services department. Bertie County provides paramedic service throughout the County with operation bases in Aulander, Colerain, and Windsor.

4. Education

Windsor is served by the Bertie County School System. Windsor Elementary School serves grades K-5 and is located at 104 Cooper Hill Road in Windsor. Bertie Middle School serves grades 6-8 and is located at 652 US Highway 13 North in Windsor. Bertie High/Bertie STEM High serves grades 9-12 and is located at 715 US Highway 13 North in Windsor. Bertie Academy/Bertie Early College serves grades 7-12 and is located at 819 Governor’s Road in Windsor. Windsor is also served by Heritage Collegiate Leadership Academy (charter school) which serves K-5 and Lawrence Academy (private) serving Pre-K through 12th grade. The following table provides a summary of the schools that serve Windsor’s school age children.

Table 25. Bertie County Public Schools Serving Windsor (2012-2013 School Year)

School	Enrollment	Staffing	Capacity	Recreational Facilities
Windsor Elementary	460	59	500	Gym and playground
Bertie Middle	638	78	900	Gym
Bertie High	528	95	1,800	Gym, football, baseball, softball fields



School	Enrollment	Staffing	Capacity	Recreational Facilities
Bertie STEM High	166	13		Shared with Bertie High
Bertie Academy	23	10	50	Shared with Bertie Early College
Bertie Early College	115	22		Gym
Heritage Collegiate Leadership Academy	315	46	320	

Source: Bertie County Schools.

There are several opportunities for higher education in Bertie County, including Martin Community College and Roanoke-Chowan Community College. The main campus of Martin Community College (MCC) is located in Williamston and offers area residents a variety of degree programs ranging from curriculum-based programs for degree completion to continuing education. In addition, the community college offers training to start-up businesses through its Small Business Center (SBC) that is part of the North Carolina Small Business Center Network (SBCN). Training is offered as seminars and workshops, mostly at no charge. A Small Business Resource Center is available in the Williamston campus library. In addition to books, periodicals, and other materials, the resource center includes access to a personal computer for business planning and research. In 2007, Martin Community College was ranked among the top 30 community colleges in the nation by the Washington Monthly magazine. The magazine ranked MCC 19th in excellence in teaching methods linked to increased student achievement. MCC’s Bertie Campus is located on Granville Street in Windsor. This 12,000 square foot facility includes a 20-seat networked computer lab and a multipurpose room with a 175-person seating capacity. Services provided at this multi-use center include adult basic skills, adult high school education, and occupational and technical programming.

Roanoke-Chowan Community College is located in Ahoskie, NC, and currently has about 20 curricular programs in which students may seek degrees, diplomas, and short term skills based certificates. Most recently, the College has added an Associate of Fine Arts Degree in Visual Arts, in addition to diplomas in high demand occupational training in Building Construction, Plumbing, and other construction related technologies. The College offers a Lateral Entry Teacher Certificate tailored to meet the need of public schools within the region desiring to fully credential educators who have entered the classroom without the advantage of full unrestricted licensure. The Continuing Education & Workforce Development Division meets business needs by setting up basic or occupational related classes within local industries as well as developing Focused Industrial Training (FIT) opportunities. Its Small Business component works on a one-to-one basis with individuals and small companies wanting to start and or enhance a small business enterprise. The Hertford County JobLink Career Center is also located on the R-CCC Campus.

Additionally, Chowan University, East Carolina University, Elizabeth City State University, and Shaw University Cape Center are all within a 45-minute drive of Windsor.



5. Library

The mission of the Albemarle Regional Library is to improve the quality of life in Bertie, Gates, Hertford, and Northampton counties by providing the best library services, collections, and programs in accordance with the library's role as an educational institution. The library system includes eight (8) library branches with the main branch located in Winton, NC. The Town of Windsor is served by the Lawrence Memorial Public Library located on E. Dundee Street in Windsor. The library is open on Monday, Tuesday, Wednesday, and Friday from 10:00 am to 6:00 pm, Thursday from 10:00 am to 8:00 pm, and Saturday from 9:00 am to 12:00 pm.

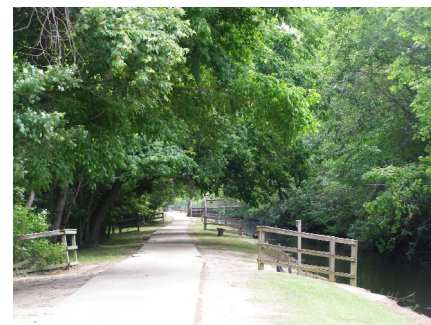


Lawrence Memorial Public Library in Windsor, NC. Photo Courtesy of Albemarle Regional Library

6. Parks and Recreation

The Town of Windsor has six (6) major recreation areas: Rotary Park, Elm Street Campground/Treehouse Village, Livermon Park and Mini Zoo, Cashie Wetland Walk and Canoe Trail, Roanoke/Cashie River Center, and Sutton Drive Tennis Courts. Rotary Park is primarily a passive open space area which offers opportunities for fishing, walking, and nature viewing/bird watching. The one-acre park is only accessible by foot or bicycle via King Street and currently has no parking spaces available. The property was the site of the original wooden bridge that crossed the Cashie River to bring commerce and visitors to the town. The Elm Street Campground is located just east of the Cashie River and south of US 17. The campground is owned and operated by the town. There are eleven (11) spots available for camping with electricity, water, and sewer hookups. The campground caters mostly to recreational vehicle campers, but offers spots for tent campers as well as access to the Cashie River via the Wildlife Resource Commission Boat Launch.

The Livermon Park and Mini Zoo is a unique attraction for residents and visitors from across eastern North Carolina. The facility spans approximately ten (10) acres and is connected to the Cashie Wetland Walk and Canoe Trail. The facility is owned and operated by the town and is free to visitors. The Mini Zoo includes buffaloes, llamas, peacocks, alpacas, long horn sheep, ostriches, emus, a zebra, and other animals available for viewing. The recreation area offers picnic shelters, a restroom, basketball court, and children's playground area. The Cashie Wetlands Walk offers visitors a trip into a natural wetlands environment with cypress trees and other swampland flora. The Wetlands Walk entrance is located on York Street adjacent to Livermon Park. The walk takes visitors to the edge of the Cashie River. An observation deck allows views of several different species of endangered waterfowl as well as other swampland animals in their natural habitats. Canoes and kayaks are available for \$10 a day.



The Cashie Wetlands Walk has a 1,800 foot handicapped walkway to the Cashie River. Photo Courtesy of HCP.



The Roanoke/Cashie River Center is located on Sutton Drive just south of Water Street (US 17 Business). The site spans approximately 7.5 acres and includes water access to the Cashie River. The facility opened in 2000 and has a primary exhibits building, exhibit outbuildings on the grounds, and a boardwalk/boat ramp along the river available to the public at no charge. An outdoor classroom is available for educational opportunities or events. Cashie River boat tours are also offered free to visitors every Saturday from April through October. In 2009, a structure was built on site to house the Windsor Farmers Market. The Sutton Drive Tennis Courts are located on the corner of Nichols Street and Sutton Drive. The courts were built six years ago and were resurfaced in July 2013. The facility includes three courts, parking, and a covered seating area.

7. *Historic, Cultural, and Scenic Areas*

Windsor includes numerous historically significant sites. One of the town's most important assets is the Windsor Historic District, which was approved for inclusion in the National Register of Historic Places on July 29, 1991. The district is primarily located in Windsor's Central Business District and generally defined as the area of King Street between Byrd and Water Streets, and Queen Street from Camden Street to Water Street.

In addition to the Historic District, the following structures are of architectural or historic interest, or are specifically listed in the National Register. Map 16 delineates the locations of the National Register sites located within Windsor's planning jurisdiction.

National Register

Bertie County Courthouse, Windsor (5/10/1979)
Bertie Memorial Hospital, Windsor (6/22/2004)
Elmwood (Watson-Mardre House), Windsor vicinity (6/8/1982)
Freeman Hotel, Windsor (9/9/1982)
Rosefield, Windsor (8/26/1982)

Other Places of Architectural/Historic Interest

Earley House, 402 South Queen Street
The Inn at Gray's Landing, 401 South King Street
Gray-Gillam House, 305 South King Street
Mardre-Roscoe House, 208 South King Street
Freeman-Mizelle House, 101 West Granville Street
L.F. Pierce House, 304 North King Street
St. Thomas Episcopal Church, 207 West Gray Street
Spelling-Bond-Sutton House, 402 South King Street
Webb-Askew-Mizelle House, 308 South King Street
Matthews-Williford House, 204 South King Street
Dr. Henry Vaughan Dunstan's Office, 127 North King Street
Cherry House, 403 York Street

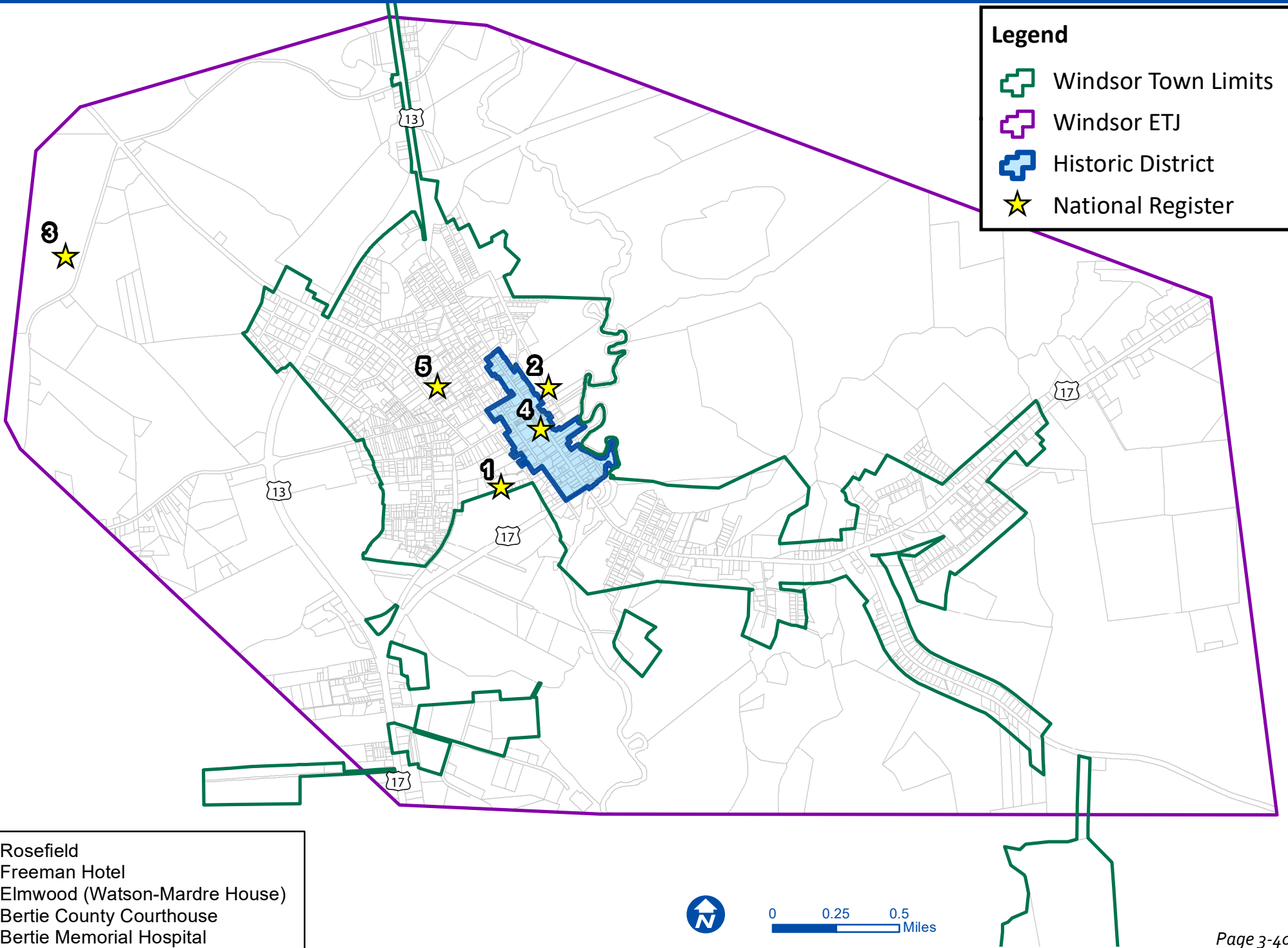


Other Places of Architectural/Historic Interest (continued)





E. S. Dail House, 313 King Street
Britton-Bell House, 407 South King Street
P. R. Gillam, Sr. House, 301 South King Street
Cashie Baptist Church, 203-205 South Queen Street
T. P. Gurley House, 111 South Queen Street
W. L. Lyon House, 102 South Queen Street
Pritchard-Gillam-Outlaw House, 103 South Queen Street
R. C. Bazemore General Store, 112-114 East Granville Street
Hoggard's Barber Shop, 109 East Granville Street
Windsor Small Business Center, 119 East Granville Street
Joyner and Associates, 129 East Granville Street
Butler House, 306 South King Street
One Room School House, North King Street
A. E. Bowen and Sons Wholesale, 209 North King Street
J. P. Freeman House, 310 North King Street
Dr. Rachel Lutton Boyce House, 212 North King Street
Powell and Stokes Warehouse, 204-206 North King Street
Masonic Lodge Building, 118 South King Street
Bertie Arts Council, 124 South King Street
Windsor Municipal Building, 128 South King Street
Richard W. Cooper Agency, 103 South King Street
J. B. Cherry Agency, 105 South King Street
Ivey Lane Florist, 119 South King Street
Spruill Building, 125-127 South King Street
Windsor Market Place Antiques, 129 South King Street
Wilson-Nicholls-Gillam-Hoggard House, 302 South King Street
Sheriff John W. Cooper House, 310 South King Street

In addition to the historic sites, there may be archaeologically significant sites scattered throughout Windsor's planning jurisdiction. In particular, the Windsor area is considered an ancient Indian habitat. As a result, anyone undertaking land-disturbing activities in Windsor should contact the NC Department of Cultural Resources, Division of Archives and History.

Map 16: Historic Properties



Legend

-  Windsor Town Limits
-  Windsor ETJ
-  Historic District
-  National Register

1. Rosefield
2. Freeman Hotel
3. Elmwood (Watson-Mardre House)
4. Bertie County Courthouse
5. Bertie Memorial Hospital



0 0.25 0.5 Miles



8. Administration

The Town of Windsor is governed by a Board of Commissioners-Administrator form of government. The Administrative office is located at 128 South King Street. There are eleven departments and 31 employees. Following is a list of departments and the number of employees for each one.

- Governing Body 6 elected officials
- Administration 4 full-time
- Public Buildings 1 full-time
- Police 9 full-time, 5 part-time
- Fire 1 full-time, 1 part-time
- Streets 3 full-time
- Sanitation 4 full-time
- Recreation 1 full-time, 8 part-time
- Water 2 full-time
- Sewer 3 full-time
- Electric 3 full-time

9. Water System

The Town of Windsor currently owns and operates a potable water system which includes water supply, storage, and distribution facilities serving residents and businesses within the Town Limits and a few outside of the Town Limits. There are 1,071 residential and 314 commercial/industrial/institutional water customers. Eighty-three (83) of those customers are outside the corporate limits. Map 17 provides water and sewer infrastructure for Windsor's planning jurisdiction. There are no existing or planned private water supply service areas.

The water supply facilities include five (5) deep wells drawing water from the Castle Hayne Aquifer. Those wells are located at Sutton Drive, Wall Street, Country Club Drive in the Industrial Park, and York Street (2). The Sutton Drive well has a depth of 370 feet and a diameter of 8 inches; it has the ability to pump at 250 gpm. The Wall Street well has a depth of 390 feet and a diameter of 10 inches; it has the ability to pump at 300 gpm. The Country Club Drive well has a depth of 376 feet and a diameter of 12 inches; it has the ability to pump at 400 gpm. The York Street well site has two (2) wells; Well 6b has a depth of 81 feet and a diameter of 6 inches while Well 6c has a depth of 364 feet and a diameter of 8 inches. The York Street wells have the ability to pump 200 gpm and 400 gpm, respectively.

The water system has a 1,368,000 mgd capacity to pump. Table 26 provides the 2013 water system consumption by type of use. The distribution system includes one (1) elevated storage tank that has a 300,000 gallon capacity. The distribution main sizes include 12, 10, 8, and 6 inch mains. The system includes 30 miles of water distribution lines. Groundwater is treated with zinc orthophosphate for iron and is disinfected with a chlorine solution. There are no problems with the existing water system



including quality, infrastructure, and capacity. Due to low population projections for the Town of Windsor, there are no anticipated future water supply needs.

Table 26. Town of Windsor 2015 Water Use/Consumption

Type of Use	Metered Connections	Metered Average Use (MGD)*	Non-Metered Connections	Non-Metered Estimated Use (MGD)
Residential	1,071	0.113	0	0.000
Commercial	294	0.055	0	0.000
Industrial	1	0.015	0	0.000
Institutional	19	0.055	6	0.012

*Million gallons per day.
 Source: 2015 Provisional Town of Windsor Water Supply Plan.

10. Sewer System

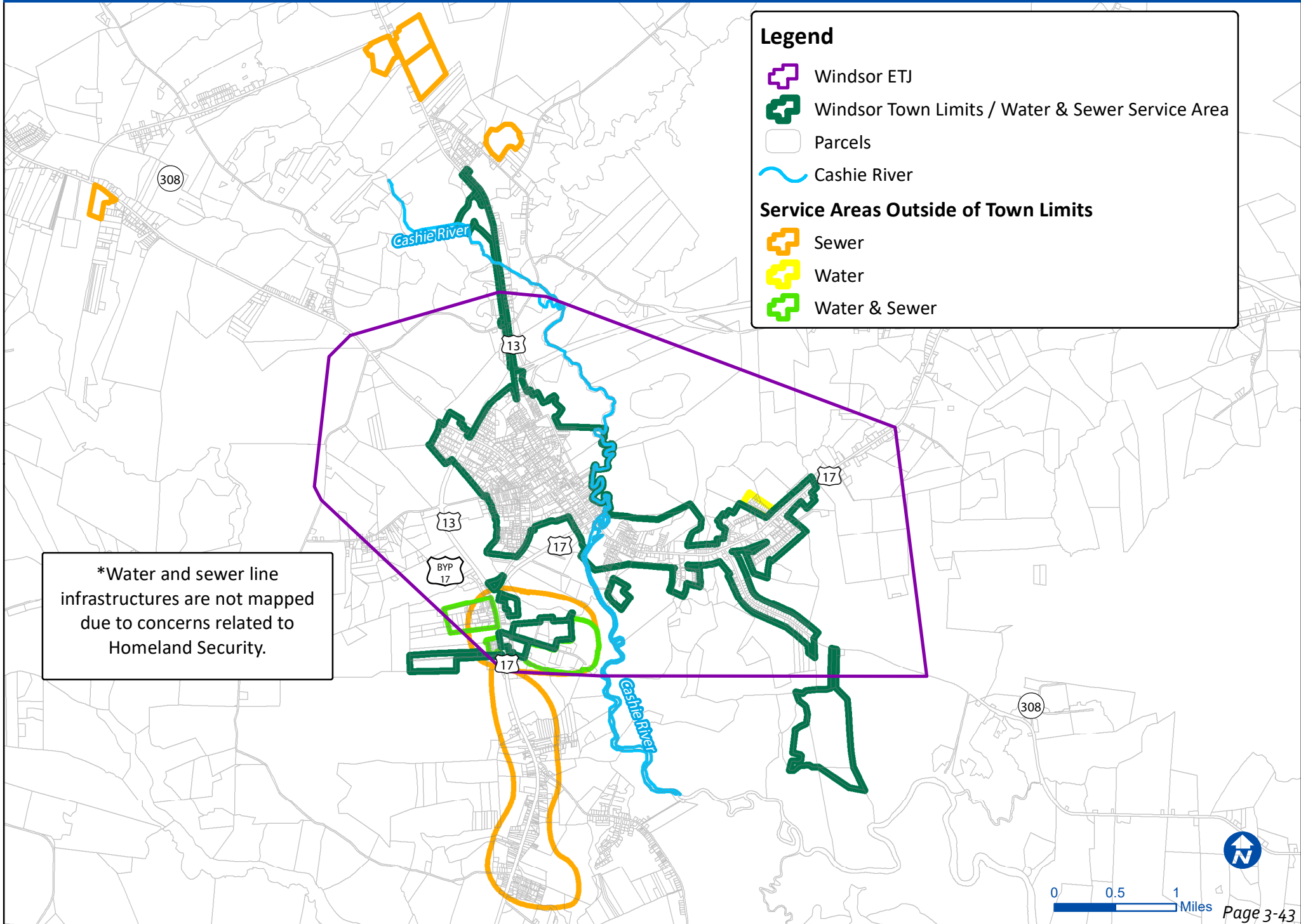
Windsor maintains a extended aeration sewage treatment plant with a design capacity of 1.15 mpd. The sewer system has 1,459 sewer connection, including one bulk customer. The bulk customer is the Town of Askeville; the Town of Windsor treats all of Askeville’s sewage. The sewer line is owned and maintained by the Town of Askeville. The current flow in the system is approximately 584,000 gpd, 52.0% of the system’s capacity. The Town of Windsor has a NPDES permit to discharge treated wastewater into Broad Branch, a tributary of the Cashie River. The current permit expired on May 31, 2017. The Town’s application for a new NPDES permit is pending approval by the NC Division of Water Resources. There are no private package treatment plants operating within the town. There are no problems with the existing sewer system, including quality, infrastructure, and capacity; therefore, the Town has no plans to expand the system. According to the Bertie County Environmental Health Director, there are no septic tank failures within the Town’s corporate limits or occurrences of fecal coliform leaving the WWTP as a result of stormwater runoff. Table 27 provides the 2012 sewage discharge by month. Due to low population projections for the Town of Windsor, there are no anticipated future sewer needs.

Table 27. Town of Windsor 2015 Sewer Discharge

Month	Average Daily Discharge (MGD)	Month	Average Daily Discharge (MGD)	Month	Average Daily Discharge (MGD)
January	0.829	May	0.523	September	0.559
February	0.807	June	0.651	October	0.727
March	0.731	July	0.523	November	0.770
April	0.610	August	0.501	December	0.770

Source: Town of Windsor 2015 Provisional Water Supply Plan.

Map 17: Water and Sewer Infrastructure





11. *Solid Waste Services*

The Town of Windsor provides for the removal of household garbage, yard waste, and recyclables. Pick up is once a week for residential and basic commercial customers. Large businesses that use containers have pick up approximately twice a week. Once picked up by the Town, garbage is taken to the Bertie County Landfill.

12. *Electric Service*

The Town of Windsor owns its own electrical distribution system and is responsible for the operation and maintenance of that system. Electricity is purchased by the Town from North Carolina Dominion Power. Electrical service is provided to between 2,070 customers.

13. *Natural Gas*

Natural gas service is provided to the Town by Piedmont Natural Gas.

14. *Stormwater Management*

Stormwater is generated by runoff from land and impervious areas such as paved streets, parking lots, and building rooftops during rainfall and snow events. These surfaces often contain pollutants in quantities that can adversely affect water quality and create flooding problems. When roads, parking lots, sidewalks, homes, and offices replace the natural and permeable landscape, rainfall that would once soak into vegetated ground is now stormwater runoff. One of the effects of increased runoff is that this stormwater reaches streams and other water bodies because there is less opportunity for it to infiltrate the ground, negatively affecting water quality. Velocities in streams increase causing more erosion potential and base flow is lower during dry weather because of a lack of infiltration.

Existing Drainage Problems

The Town of Windsor's stormwater drains into Cashie River which flows to the east ultimately into the Albemarle Sound. The town currently maintains a stormwater system consisting of road side drainage ditches and swales. Localized drainage is a concern for the town; however, the town's most significant flooding problems result from riverine flooding of the Cashie River. The town has experienced significant flooding over the last 20 years from hurricane activity – most recently Hurricane Matthew in 2016 – and has taken steps to mitigate damage through housing acquisition and elevation projects. The town will continue to address localized flooding on a case-by-case basis, while monitoring the impacts of flooding resulting from hurricanes and tropical storm activity. There are no existing drainage problems or water quality issues related to point source discharges or runoff.



Water Quality

Stormwater runoff is a significant problem with respect to water quality. The major cause of any impaired waters is fecal coliform bacteria. The possible sources include marinas and urban runoff.

EPA Regulation

The Environmental Protection Agency (EPA) has begun implementation of Phase II of the Stormwater Management Plan. The Town is not required to comply with Phase II stormwater regulations.

Coastal Stormwater Rules

In 2008, the NC Legislature adopted revised stormwater regulations that apply to all of the twenty coastal CAMA-regulated counties. These rules are intended to increase stormwater management standards throughout coastal areas, and in particular those sites within close proximity to shellfishing (SA) waters.

The following summary defines what properties/projects within the Town of Windsor planning jurisdiction will be subject to stormwater permitting under the newly adopted coastal stormwater rules.

Properties located within ½ mile and draining to shellfishing (SA) waters:

Non-Residential Development will require a stormwater permit if:

The project requires a CAMA Major Permit

The project requires a Sedimentation & Erosion Control Permit (disturbs one acre or greater)

The project adds more than 10,000 square feet of built upon area (BUA)

Residential Development will require a stormwater permit if:

The project requires a CAMA Major Permit

The project requires a Sedimentation & Erosion Control Permit (disturbs one acre or greater)

The project disturbs less than one acre but meets the following criteria:

- Project adds more than 10,000 square feet of BUA; and
- Results in an overall site coverage over 12%.

Properties not located within ½ mile of defined SA waters:

Non-Residential Development will require a stormwater permit if:

The project requires a CAMA Major Permit

The project requires a Sedimentation & Erosion Control Permit (disturbs one acre or greater)

The project adds more than 10,000 square feet of built upon area (BUA)



Residential Development will require a stormwater permit if:

The project requires a CAMA Major Permit

The project requires a Sedimentation & Erosion Control Permit (disturbs one acre or greater)

Additionally, the summary above outlines what projects are subject to the new coastal stormwater requirements. The permitting requirements for the various development types outlined above vary. In general, properties requiring a stormwater permit through NCDEQ must meet the following performance standard with respect to stormwater retainage and treatment: retain onsite the first 1.5 inches of rainfall or the runoff generated by the 1 year 24 hour storm whichever is greater. The proposed system must also treat this runoff for 85% of all total suspended solids (TSS).

The town does not need to adopt any local ordinance requirements in order to establish compliance with current state regulations. All current regulations are triggered by disturbance area on a project by project basis. The town is currently requiring this through the project review process, and will continue to do so.

North Carolina Shoreline Buffering

In August of 2000, the State of North Carolina developed a 30-foot buffering rule for all new development in the 20 coastal counties governed by the Coastal Area Management Act (CAMA). This rule applies to all navigable waters, excluding the ocean, which has previously established setback requirements. The development of this buffer does not restrict the construction of water dependent structures, such as docks and boat ramps. The benefits of the buffering include the following:

- (1) Flood Control – by reducing the velocity and providing a collection area for stormwater runoff and precipitation. Buffers encourage water infiltration into the ground, rather than flooding low-lying areas.
- (2) Groundwater Recharge – buffers are also beneficial to recharging the groundwater supply and promoting groundwater flow.
- (3) Soil Erosion Prevention – vegetated buffers stabilize the soil and reduce sedimentation.
- (4) Conservation of Coastal Riparian Wildlife Habitats – these natural areas provide breeding, nesting, and habitat, and protect wildlife from predation. Vegetated buffers help increase the diversity of wildlife while providing site for foraging and corridors for dispersal.



E. Transportation

1. Roads

US Highways 13 and 17 and NC Highway 308 are the major transportation routes in Windsor. US Highway 13 connects Windsor to Ahoskie on the north and to Williamston on the south. US Highway 17 connects the Town with Williamston to the south and Edenton to the east. NC Highway 308 crosses Bertie County in a north-south direction and connects Windsor with NC Highways 42 to the west and 45 to the east. Windsor is located within the North Carolina Department of Transportation's (NCDOT) Division 1. According to the NCDOT 2012-2018 State Transportation Improvement Program, there is one project planned within the Windsor area. The project includes the widening of US Highway 13 to multi-lanes and a bridge replacement along the bypass.

2. Public Transportation

Choanoke Public Transportation Authority (CPTA) is a community transportation program dedicated to meet the transportation needs of Bertie, Halifax, Hertford and Northampton Counties citizens. CPTA provides local services Monday through Friday for trips to human service agencies, medical appointments, community colleges, daycares, dialysis, Headstart, individual shopping trips, older American nutrition sites and many other destinations. CPTA is funded by the North Carolina Department of Transportation, Public Transportation Division and is a member of the North Carolina Public Transportation Association, Inc.

3. Bicycle, Pedestrian, and Multi-Use Facilities

The Cashie Wetlands Walk and Canoe Trail offers visitors a trip into a natural wetlands environment with cypress trees and other swampland flora. A pedestrian bridge provides handicap access by boardwalk to the swamp floor and allows visitors to experience the wetlands first hand. The Wetlands Walk has an 1,800 foot handicapped accessible walkway to the Cashie River and features a fishing pier at its end. The Roanoke/Cashie River Center also offers a boardwalk along the river which is available to the public. Providing more options for alternative travel choices is a goal the town wishes to pursue. The Town has future plans for a proposed greenway which would connect the Elm Street Campground to the downtown area via a ten foot asphalt multi-use path. The proposed facility would connect to the sidewalk running parallel to King Street, just east of the bridge. The Town owns several parcels along Elm Street and Maple Avenue. The proposed greenway would utilize several of these vacant parcels to construct the facility. Refer to Section 4 for further information.



4. *Air Transportation*

There are no airport facilities located within Windsor's planning jurisdiction. Bertie County/Windsor travelers utilize the services offered at nearby Pitt-Greenville Airport (40 miles away). US Air Express serves the region from Pitt-Greenville Airport daily, providing connecting flights to the major airline hubs at Charlotte, Raleigh-Durham, Baltimore, and Washington-Dulles airports. Connecting flight schedules make one-day business trips possible to almost all metro areas east of the Mississippi River.

Raleigh-Durham International, Charlotte International, and Norfolk International airports each have international flights to Europe and the Far East available daily. Raleigh-Durham is the East Coast hub for American Airlines, while Charlotte is the hub for US Air.

The Martin County Airport is located approximately 24 miles from Windsor and has a paved 5,000 foot lighted runway available for private and chartered planes. Fuel is also available. The recent upgrade of the runway allows for almost all corporate jets to be able to utilize the county airport. Construction of a parallel taxiway was completed in March of 2013. Other projects, including the addition of a ramp extension and self service Avgas and jet fuel, were planned for Fall 2013. Services provided by the airport include tie-downs (available nightly, weekly, or monthly), hangars, and fuel sales. Juliet-Charlie Aviation also provides services to the airport. These include flight training, aerial application, contract pilot services, ferry services, aircraft recovery, aerial photography, airplane detail, and call ahead service.

Air cargo service is offered by several air freight carriers including Federal Express, Airborne Express, Emery, and UPS, as well as US Air.

5. *Rail and Port Facilities*

There are no rail or port facilities located within Windsor's planning jurisdiction.

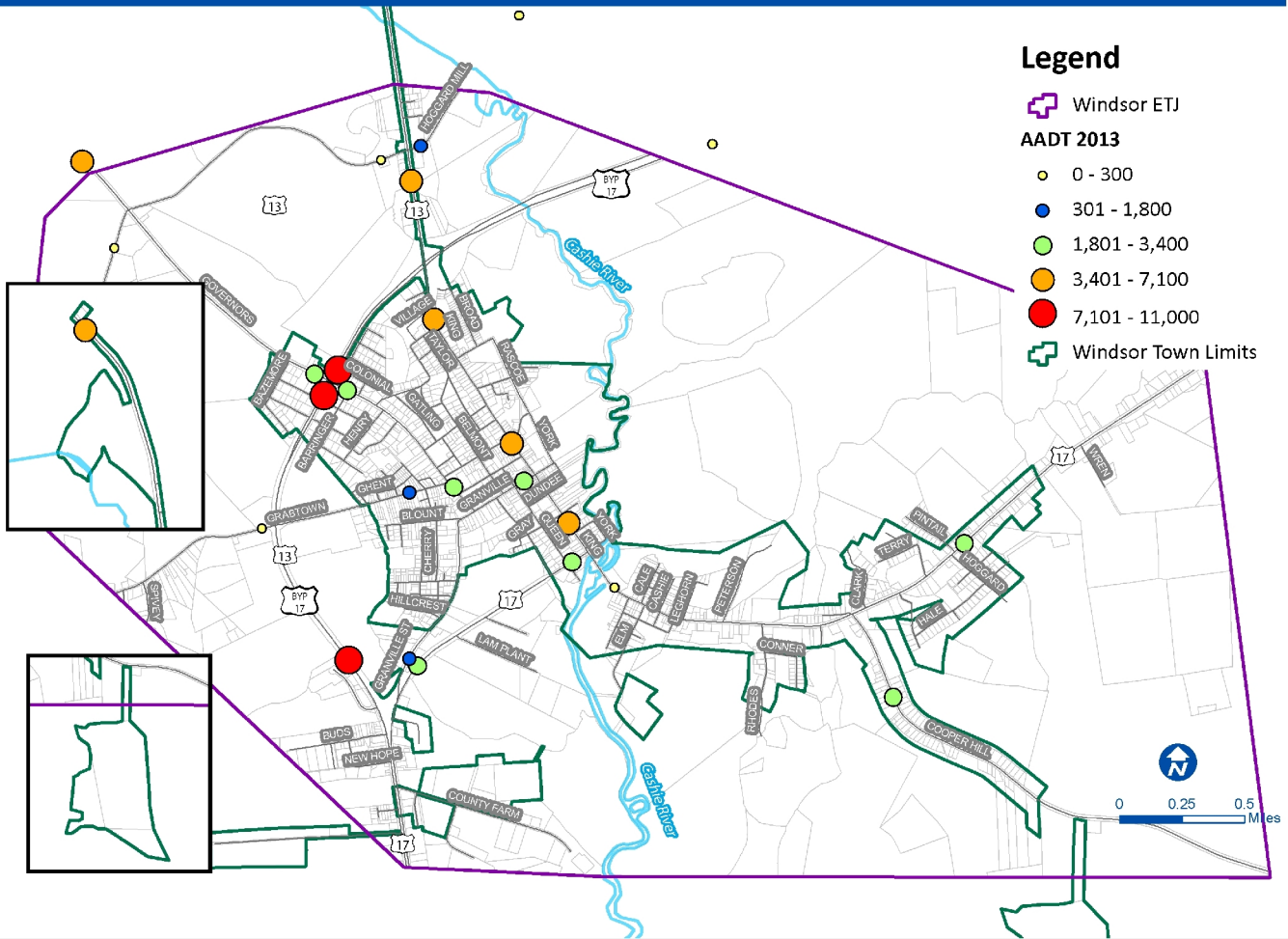
6. *Traffic Volume Maps*

Map 18 provides an overview of the annual average daily traffic counts documented by NCDOT throughout the town's planning jurisdiction. These counts were documented in 2013, and provide an effective snapshot of traffic volumes present within Windsor on a day-to-day basis. The most significant traffic impact is clearly along the US 13/17 Bypass. This thoroughfare serves as a main artery for the region, connecting Raleigh and Greenville with the Norfolk/Chesapeake region located to the north across the Virginia state line. Aside from the Bypass, the town experiences a significant volume of daily traffic along US 13/King Street. This route serves as both a connector to the Bypass through the Central Business District, and as a collector street providing access to both commercial and residential portions of Windsor's planning jurisdiction.



Bertie County is within 35 to 45 minutes of Interstate 95, the state’s major North/South corridor. As previously noted, US Highways 13 and 17 pass through Bertie County and are significant east coast north-south routes. These routes allow easy access to all points north, south, east, and west. North Carolina Highways 11, 42, 45, 305, and 308 also serve the county. There are currently no highway segments having unacceptable levels of service. Additionally, based on the existing land use analysis outlined in this plan, existing development patterns should not have an impact on the regional thoroughfare plan during the planning period.

Map 18: Annual Average Daily Traffic (AADT)





F. Land Suitability, Preference, and Conflict

1. Introduction

Land use suitability, preference, and conflict refers to a process used to identify locations where a particular land use type may yield the greatest benefit to a given jurisdiction. Such a process is helpful in providing a tool for identifying lands that may be best suited for relatively intensive human activity, conservation purposes, or productive agricultural lands, in addition to those locations poised for future conflicting land uses. This process is gleaned from the Land Use Conflict Identification Strategy (LUCIS) Model created by the University of Florida's GeoPlan Center.

These three land use typologies - urban, conservation, and agriculture - are inherently different in both their financial obligations, ecological impacts, and productivity. Urban land uses, such as commercial, retail, or residential development often require investments in roadway, water, and sewer infrastructure and require services such as police and fire. These urban land uses are necessary to sustain community cohesion and business function, but it is vital to identify - through processes such as this - which areas of a community are best suited for such. Conservation lands may require little municipal investment and services, but may also require landowner agreement to relinquish future development rights. Further, agricultural lands produce food, fiber, and fuel, but are the most susceptible to future urban development because they pose few development constraints. In fact, from 2010 to 2011, North Carolina lost over 1,000 farms and 100,000 acres of prime farmland to development. See Table 28 below for more information on differing attributes of the three land use types used in this analysis.

Table 28. Land Use Analysis Attribute Types

Land Use	Municipal Investment & Service Obligations	Ecological Impact	Land Productivity
Agriculture	Moderate	Moderate	High
Conservation	Minimal	Minimal	Moderate
Urban	High	High	Minimal

Source: Holland Consulting Planners, Inc.

Establishing a land suitability analysis for each respective land use classification yields spatial locations within Windsor's planning jurisdiction best and worst suited for each class. Each respective suitability analysis should serve as tool for future decision making as it pertains to land use. Once this analysis is completed, each suitability map is compared to one another to identify areas which may necessitate compromise on the part of the community and land owners. These compromise areas are locations that future conflict may arise as they may be highly suitable for all three land use typologies - agriculture, urban, and conservation. The process for establishing each land suitability map and land use conflict/preference areas are described in the following sections.



2. Land Suitability Analysis Description

The land suitability analysis (LSA) is a Geographic Information Systems (GIS) based tool for evaluating the relative suitability of land for agriculture, conservation, and urban development. The end product is a generalized map showing areas of the Windsor planning jurisdiction as having either low, moderate, or high suitability for each land use typology. The analysis does not provide site-specific results, nor does it make recommendations about how individual landowners may or may not use their land.

Suitability, for the purpose of this analysis, can be primarily defined in terms of physical land characteristics, proximity to supporting services/infrastructure, and environmentally sensitive areas. Physical land characteristics such as poorly drained soils make land less suitable for urban development, but may provide an ideal opportunity for conservation lands.

3. Objectives and Limitations

The results of each LSA will be used to support planning efforts throughout the Windsor planning jurisdiction. Objectives of each LSA and appropriate uses of the final analysis include the following:

- Identify areas that are more or less suitable for each land use type on a coarse scale;
- Identify data gaps that may be filled during later planning stages;
- Develop a tool that will assist the city in the implementation of new policies;
- Provide a base for GIS analysis to be used in other long range planning projects.

Limitations of each LSA include the following:

- The LSA results are not a zoning map, but will be used to support planning processes in Windsor;
- Results and analyses do not support site-specific planning;
- Each LSA does not make recommendations about how an individual landowner may or may not use their land;
- Each LSA does not result in recommendations about where particular land uses (i.e., commercial vs. residential) should be concentrated;
- Results do not factor in projected population, carrying capacity, or commercial/housing demand.



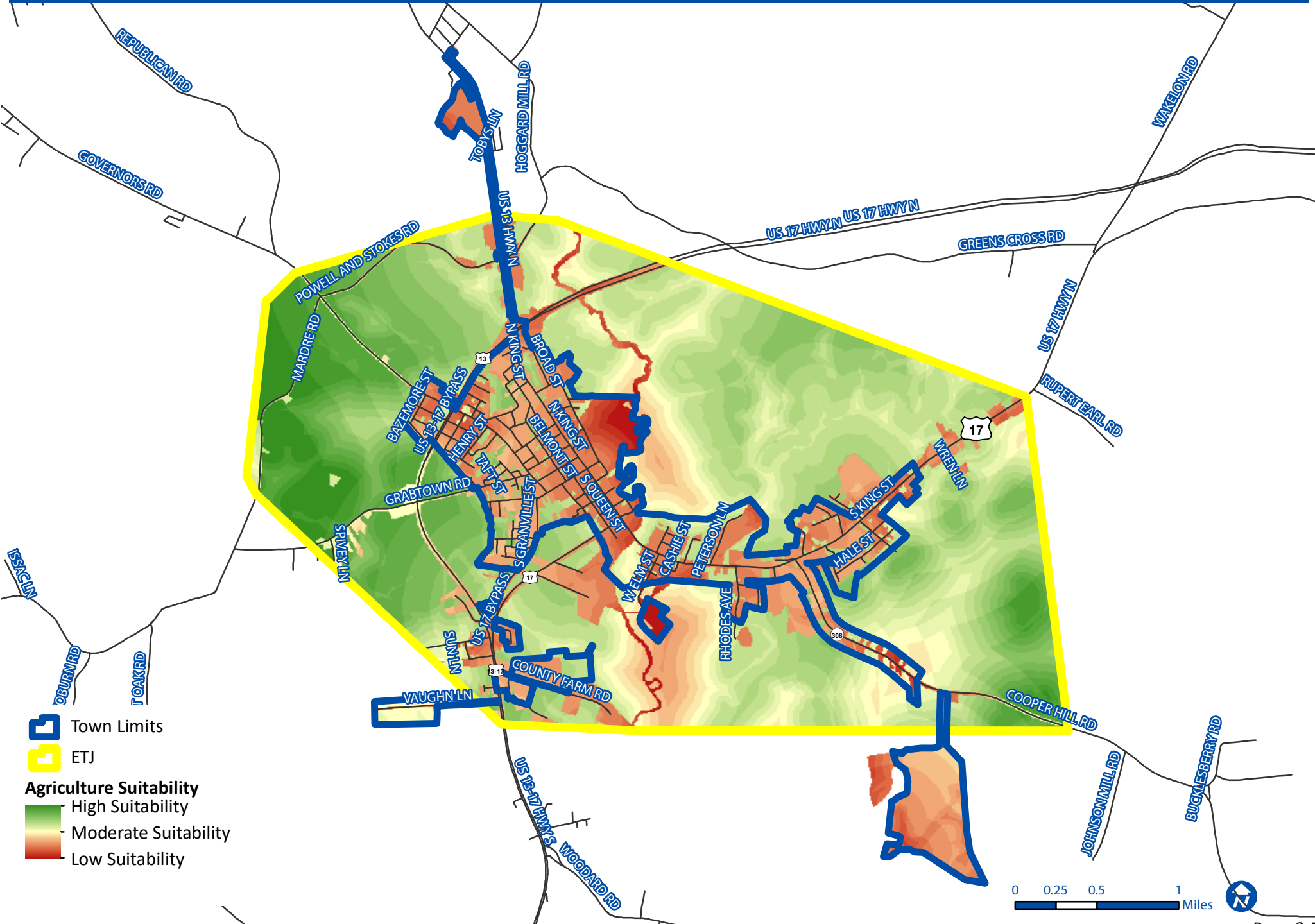
4. Agriculture Suitability

The agriculture suitability was created to identify areas within Windsor's planning jurisdiction best suited for agricultural production. To determine which areas of Windsor are most suited to agriculture, the following spatial data components were combined in an overlay analysis to create Map 19.

- Prime farmland soils, as defined by the U.S. Department of Agriculture (USDA), are soils that are best suited to food, feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops.
- Farmland of statewide importance soils, as defined by the U.S. Department of Agriculture (USDA), is land other than Prime Farmland which has a good combination of physical and chemical characteristics for the production of crops.
- Undeveloped lands or lands categorized as rural residential/agriculture.
- Well-drained, non-hydric soils.
 - Hydric soils, as defined by the U.S. Department of Agriculture, are soils that are wet frequently enough to periodically produce anaerobic conditions, thereby influencing the species composition or growth, or both, of plants on those soils.

Areas of Windsor's planning jurisdiction most suited for agricultural productivity are shown as green on Map 19. Lands west of the Windsor corporate limits are well suited for agricultural purposes. The majority of land within the corporate limits are not suitable for agricultural purposes, as many areas are developed and lack non-hydric prime farmland soils.

Map 19: Agriculture Suitability





5. Conservation Suitability

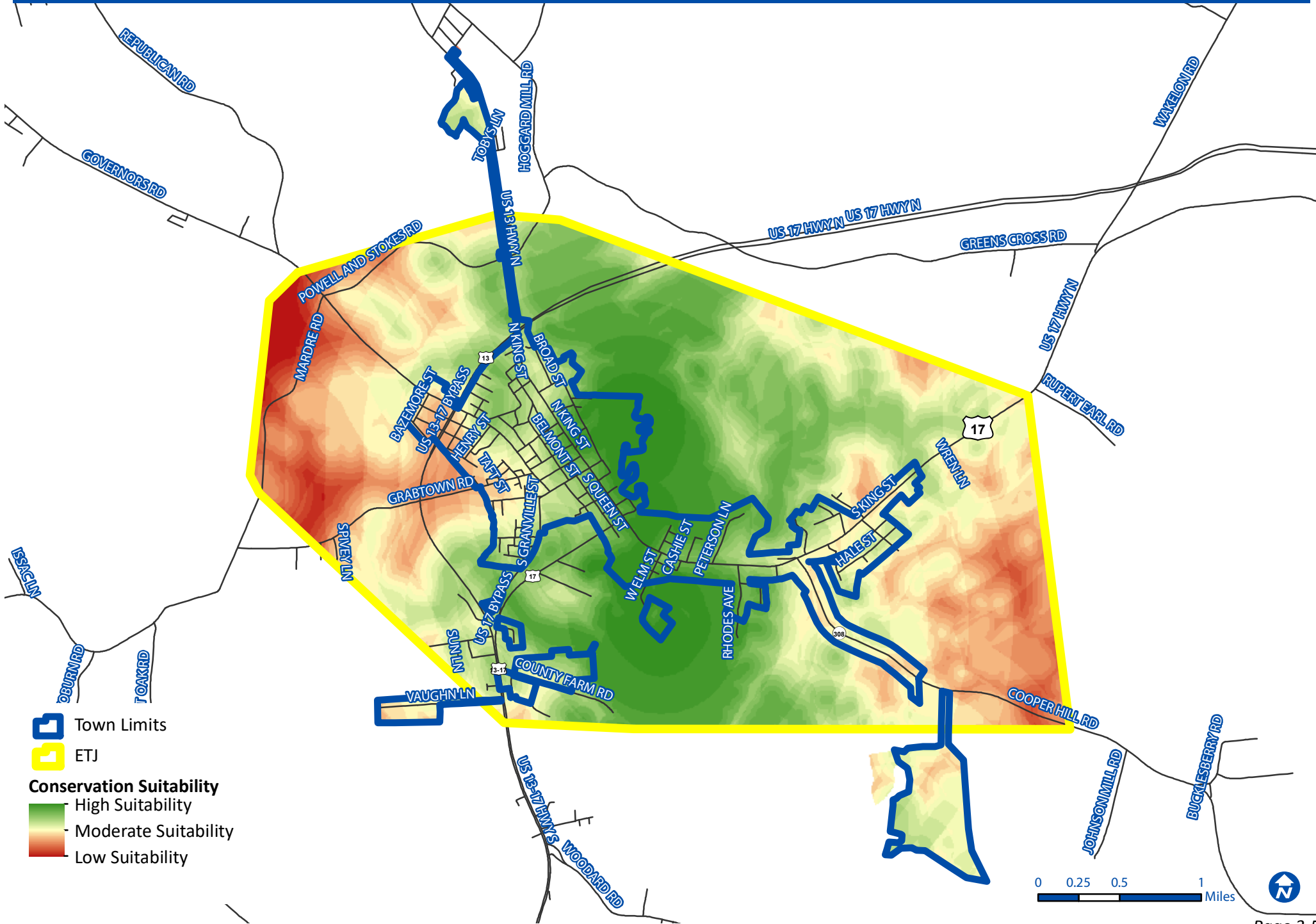
To complete the conservation suitability analysis, it was necessary to identify areas of the Windsor planning jurisdiction that are considered environmentally sensitive and may provide ecological benefits in the form of stormwater management and/or natural habitat for wildlife. These lands may be suitable for permanent conservation through various conservation strategies such as easements.

The following spatial components were combined in an overlay analysis to create the conservation suitability map.

- Wetlands, as classified by the U.S. Fish and Wildlife Service.
- Flood Hazard Areas.
 - 100 Year Flood Plain: Areas subject to a one percent or greater annual chance of flooding in any given year. Digital flood data was compiled by the North Carolina Flood Mapping program.
 - Floodway: the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.
- Existing parks and recreation land.

Land within Windsor's planning jurisdiction, most suited for conservation purposes (shown as green on Map 20), are located along the Cashie River and include the wetland/flood hazard areas that run adjacent to creeks and surface waters.

Map20: Conservation Suitability





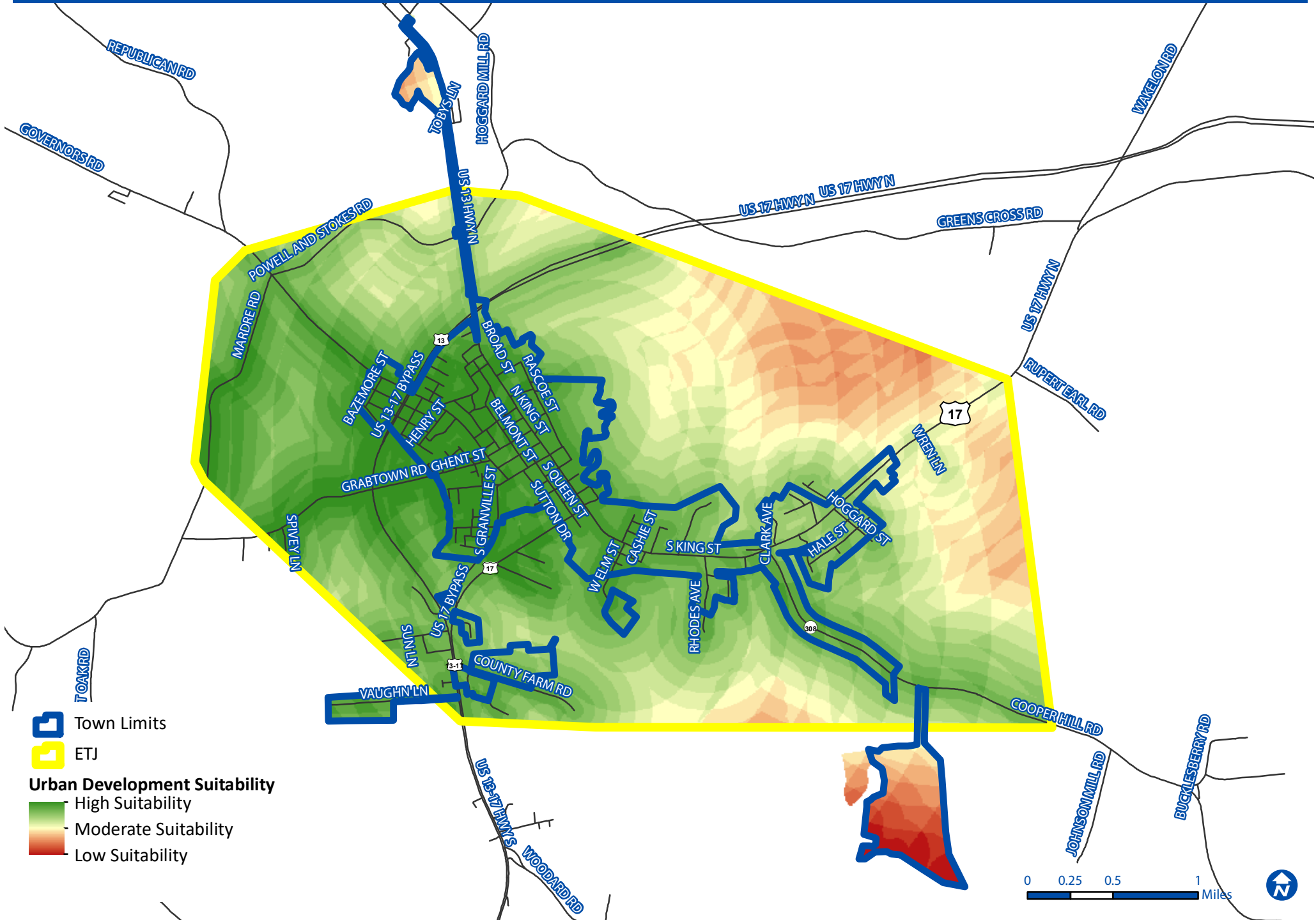
6. Urban Development Suitability

In order to identify lands most suitable for urban development, factors such as proximity to roadways and water/sewer infrastructure were included. The following spatial components were combined in an overlay analysis to create the urban development suitability (see Map 21).

- Proximity to schools.
- Proximity to parks/recreation facilities.
- Proximity to water/sewer infrastructure.
- Proximity to roadways.
- Lands outside of Flood Hazard Areas (100 year flood plain and floodway).

The majority of land classified as highly suitable for development is within the Windsor corporate limits. The suitability analysis suggests that infill development will be necessary to accommodate urban uses where they are most suited. Areas with particularly high suitability for urban development, include land along Grabtown Road and in the town center.

Map 21: Urban Development Suitability





7. Land Use Conflict Areas

To identify land use conflict areas, all three suitability analyses were combined to create a composite surface (see Map 22). The Land Use Preference and Conflict map depicts locations in Windsor's planning jurisdiction that may necessitate compromise to accommodate one of the three land use typologies - agriculture, conservation, or urban. These compromise or conflict areas should stem discussion about Windsor's goals for future growth and development within its planning jurisdiction. A description of each land use preference and conflict area is provided below.

- Agriculture Preference: Land most suitable for agriculture, less suitable for conservation and urban development.
- Conservation Preference: Land most suitable for conservation, less suitable for agriculture and urban development.
- Urban Preference: Land most suitable for urban development, less suitable for conservation and agriculture.
- Agriculture - Conservation Conflict: Land most suitable for agriculture and conservation, less suitable for urban development.
- Agriculture - Urban Conflict: Land most suitable for agriculture and urban development, less suitable for conservation.
- Conservation - Urban Conflict: Land most suitable for conservation and urban development, less suitable for agriculture.
- Maximum Conflict: Lands suitable for all classifications - agriculture, conservation, and urban development.
- No Preference: Lands least suitable for all classifications - agriculture, conservation, and urban development.

See Map 22 for more information.

The Conservation Preference category is the most significant land use preference/conflict area in Windsor's planning jurisdiction, followed by the Urban Preference category. The Urban Preference category spans much of Windsor's corporate limits. Areas of Agriculture Preference (shown as orange on Map 22) are located directly east and west of the corporate limits, consistent with the Agriculture Suitability map. Conservation Preference lands run adjacent to the Cashie River, bisecting the town east and west. These areas consist primarily of wetlands and floodplain.

In terms of conflicting land uses, the Conservation-Urban Conflict category accounts for the largest of these areas. Conservation-Urban Conflict lands run along US 17 and adjacent to the Cashie River. Areas of Agriculture-Urban Conflict are shown as yellow on Map 22, and account for just over 1,100 acres (14.27%) of Windsor's planning jurisdiction. This category, suitable for both urban development and agriculture, is concentrated west of the corporate limits. Agriculture-Conservation Conflict areas span the periphery of the northeastern boundary of the ETJ.



Lands considered in Maximum Conflict, or highly suitable for all three categories, are scattered throughout Windsor's planning jurisdiction. Concentrated areas of Maximum Conflict lands are located just outside the corporate limits along roadways. Additionally, the majority of the Maximum Conflict lands are undeveloped or underutilized (see Map 14, Existing Land Use). Lands considered as No Preference account for a very small percentage of Windsor's planning jurisdiction.

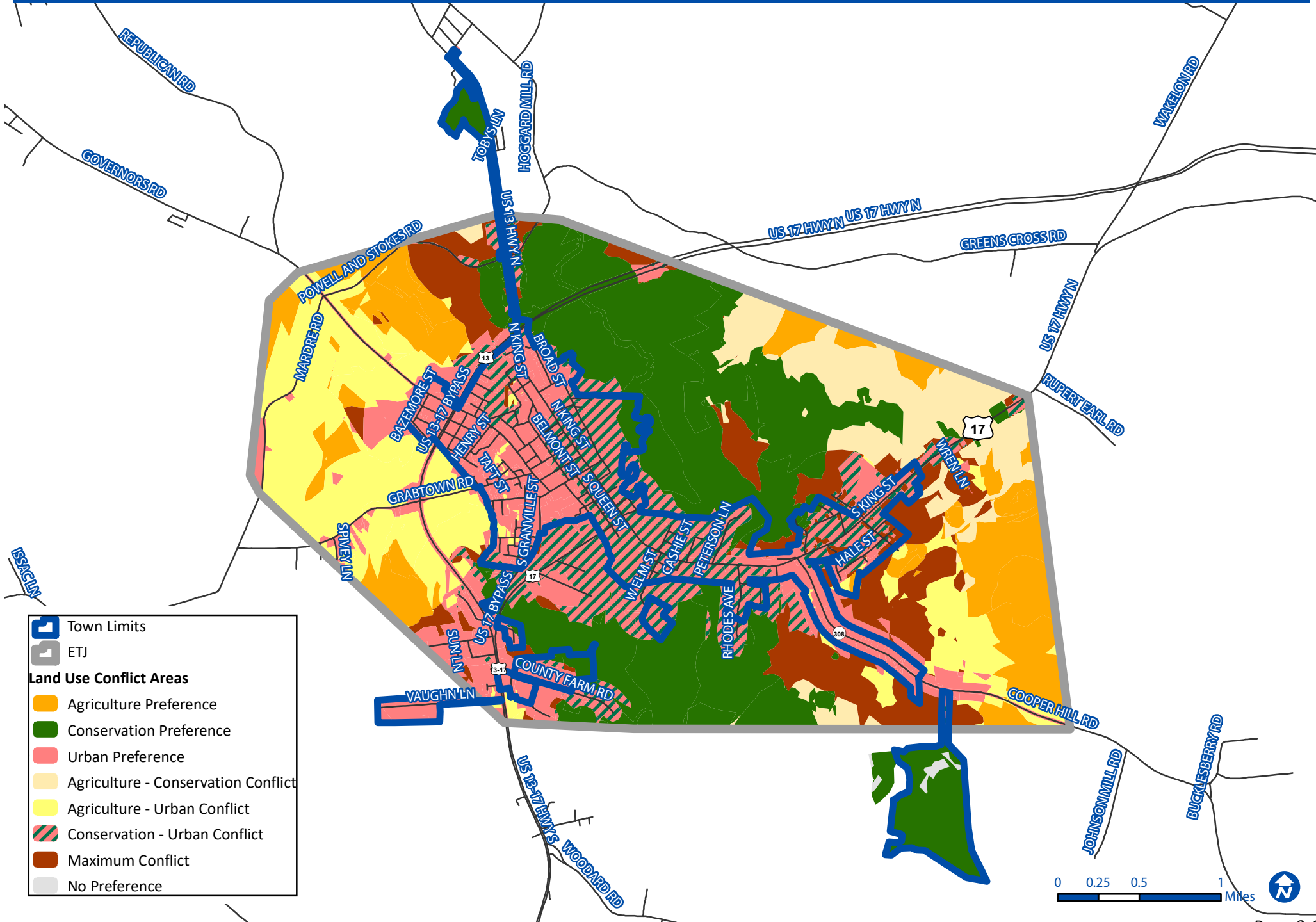
Table 29. Land Use Preference and Conflict Areas

Land Use Preference & Conflict Areas	Acres	% of Total
Agriculture Preference	881.40	11.04%
Conservation Preference	2,161.64	27.08%
Urban Preference	1,210.54	15.17%
Agriculture-Conservation Conflict	578.74	7.25%
Agriculture-Urban Conflict	1,139.01	14.27%
Conservation-Urban Conflict	1,173.94	14.71%
Maximum Conflict	821.45	10.29%
No Preference	15.48	0.19%
Total	7,982.20	100.00%

*Acreage includes right-of-way.

Source: Holland Consulting Planners, Inc.

Map 22: Land Use Preference & Conflict





G. Current Plans, Policies, and Regulations

The Town of Windsor operates under the authority of a Mayor-Commissioner-Administrator form of government. There are five Commissioners in addition to the Mayor. The Town Administrator is responsible for town management, planning, and building inspection responsibilities. The Town has an active seven-member Planning Board which reviews and comments on proposed developments. There is also a nine-member Board of Adjustment. The Town Clerk serves as secretary to the Planning Board and clerk to the Board of Adjustment.

The following provides a summary of the Town's land use-related codes and regulations:

1. Unified Development Ordinance

The Town of Windsor Unified Development (UDO) Ordinance was adopted in 2011, and includes amendments through 2016. The UDO is intended to coordinate with a comprehensive plan and is designed to lessen congestion in the streets; to secure safety from fire, panic, and other dangers; to promote health and the general welfare; to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentration of population; to facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements; to control development of floodprone areas and regulate stormwater runoff/discharge; to regulate signs; and to establish proceedings for the subdivision of land. The UDO combines the town's Zoning Ordinance, Subdivision Ordinance, Mobile Home and Trailer Park Ordinance, and other development regulations into one document. A total of twelve zoning districts are provided. They include the following:

- RA-20 Single-Family Residential District
- R-10 Single- and Two-Family Residential District
- R-7 Single- and Two-Family Residential District
- R-5 Single- and Two-Family Residential District
- R-75 Residential District
- R-15 Single-Family Residential District
- R-5MH Single-Family Residential District
- R-10MH Single-Family and Two-Family Residential District
- O-1 Office and Institutional District
- C-1 Central Commercial District
- C-2 Highway Commercial District
- M-1 Industrial District

The UDO, which is available at the Town of Windsor municipal building, should be referred to for lot sizes/dimensional requirements and the definitions of allowable uses. In addition, the future land use categories identified in this plan are coordinated with the UDO categories. The UDO is enforced by the Town Administrator who also serves as the building inspector.



2. *Utilities Extension Policies*

The Town maintains a mandatory water and sewer hook-up policy. The sewer policy applies to all customers who generate sewage at an amount equal to an average domestic user. Hook-up is mandatory for all customers located within 200 feet of sewer and water lines. Requests for the extension of water and sewer lines are analyzed on a case-by-case basis. Fees are set at a higher rate for customers located outside the corporate limits.

3. *Minimum Housing Code*

The Town of Windsor has a minimum housing code which was adopted in 1979. The code is enforced by the Town Administrator who serves as the building inspector. The code has been an important element in Windsor's community development housing improvements programs.

4. *Federal Flood Insurance Program*

The Town of Windsor participates in the Federal Emergency Management Flood Program. The building inspector (Town Administrator) coordinates the program and aids in ensuring compliance. The current National Flood Insurance Program Flood Insurance Rate Maps were revised on February 4, 2009.

5. *North Carolina State Building Code*

The Town of Windsor enforces the North Carolina State Building Code for all new construction and rehabilitation. As evidenced by the small number of building permits currently being issued, a full-time building inspector is not required. Therefore, the Town Administrator serves as building inspector.

6. *Historic District Ordinance*

The Windsor Historic District Ordinance was established in 1981. The ordinance requires that land uses in the defined district remain consistent with the district's historic theme. In 1991, the Town succeeded in having the Windsor Historic District entered in the National Register of Historic Places. Within the district, no major alteration, moving, destruction, remodeling, or restoration should occur without notifying the Town of Windsor.



7. *Town of Windsor CAMA Land Use Plan Update, 2009*

The Town of Windsor prepared CAMA-funded land use plan in 2009. This document responded to the state's 15A NCAC 7B planning guidelines and provided policy statements for areas of environmental concern.

The 2009 Windsor CAMA Land Use Plan Update was prepared as a continuation of the CAMA land use plan requirements as specified in 15A NCAC 7B. The 2009 plan supported the 15A NCAC 7H requirements for areas of environmental concern and does not include any policies or implementing actions which exceed the 15A NCAC 7H minimum use standards.

The following significant implementing actions were accomplished based on recommendations of the 2009 CAMA Land Use Plan:

- Improved shoreline access along the Cashie River.
- Preserved the Cashie River Swamp forest area.
- Reduced substandard housing.
- Supported applicable 15A NCAC 7H minimum use standards for application in public trust waters.
- Preserved the Windsor Historic District.
- Preserved the Central Business District.
- Regulated land use through enforcement of its zoning and subdivision ordinances.

The Town of Windsor Board of Commissioners and Planning Board have supported the 2009 Land Use Plan and believe that the plan has been an effective planning tool. Current local ordinances were amended, including an update to the Town's Unified Development Ordinance, to ensure consistency with the Land Use Plan. The Land Use Plan has been utilized as a guide for planning administration and decision making.

8. *Town of Windsor Water Supply Plan*

A Local Water Supply Plan is an assessment of a water system's current and future water needs and its ability to meet those needs. North Carolina General Statutes 143-355(I) requires all units of local government that provide or plan to provide public water service to prepare a Local Water Supply Plan. Local governments are required to electronically submit an annual water use update based on their water use and system conditions each year. The Town's 2015 water supply plan is still under review by the NC Division of Water Resources.



9. *Hazard Mitigation Plan*

The Town of Windsor participates in the Northeastern NC Regional Hazard Mitigation Plan which was adopted by the Town on June 8, 2017, and approved by the Federal Emergency Management Agency (FEMA) on July 7, 2017, in response to Federal and State legislation. The Disaster Mitigation Act of 2000 (DMA2K), the Federal legislation, and Senate Bill 300, the State legislation, require that all local governments have a FEMA approved Hazard Mitigation Plan in place in order to receive Hazard Mitigation Grant Program (HMGP) funding or Public Assistance (PA) funding following a natural disaster. The plan identifies those hazards to which the participating jurisdictions are most susceptible, analyzes the vulnerability of Windsor to those hazards (i.e., building development and value, and number of people at risk), and analyzes the Town's ability to respond to those hazards. The primary output of the plan is the Mitigation Strategies that assist with the prevention of loss due to hazards (see Appendix C).



H. Environment/Existing Conditions Summary

HEALTH SERVICES

- All but two of the 15 counties in the Northeast Economic Region fall behind the state average for health professionals (see Table 14, page 3-5).
- Bertie County lags well behind the state in all health professionals categories.

ENVIRONMENTAL FACTORS

- All surface waters within Windsor's planning jurisdiction are classified as C (see page 3-7).
- 21.7% of Windsor's planning jurisdiction lies in the Cashie River 100-year flood hazard area (see page 3-9).
- Approximately 11.6% of Windsor's planning jurisdiction will be inundated by a Category 1 or 2 slow moving storm (see page 3-12).
- There are no hazardous waste sites within the town's corporate limits and only one identified site in the ETJ (see page 3-15).
- Approximately 70.4% of Windsor's planning jurisdiction is considered prime farmland (see page 3-17).
- Approximately 31.3% of Windsor's planning jurisdiction contains hydric soils (see page 3-18).
- Approximately 19.3% of Windsor's planning jurisdiction includes wetland soils (see page 3-21).
- There is only one significant natural heritage area, Cashie River Swamp, located within Windsor's planning jurisdiction (see page 3-23).



COMMUNITY FACILITIES

- From 2007 to 2014, the annual total of criminal offenses declined by 8.2%.
- In spite of serving one fire district with a 6-mile response distance, the Town of Windsor Fire Department maintains a DOI rating of Class 5.
- There are multiple opportunities for higher education within 45 minutes drive time from Windsor.
- Martin County Community College is ranked among the Top 30 community colleges in the nation.
- There are multiple local and regionally significant opportunities for active outdoor recreation within the Town of Windsor.
- The Town has extensive historic resources.
- The Town of Windsor water system operates at 38.7% of the system's capacity.
- The Town's sewer system operates at 52% of capacity.
- Windsor experiences both localized and major storm event flooding.

TRANSPORTATION

- The Town of Windsor has excellent regional accessibility.
- The most significant traffic counts are located along US 13/17 Bypass.

LAND SUITABILITY

- Most of Windsor's corporate limit area has an urban land preference classification.
- Most of Windsor's extraterritorial jurisdiction has an agricultural preference classification.



Section 4. Projections/Future Demand

A. Introduction

This section addresses the Town of Windsor's future demand, services, and facilities. Because of low historical and projected population growth, the demand for new and/or expanded facilities and services is minimal. Windsor's population base will have to increase to generate and fiscally support additional needs.

B. Population

The Town of Windsor's location in northeastern North Carolina presents many growth challenges. The northeast region is one of North Carolina's most economically depressed regions and an area of expected low population growth. Table 30 provides population forecasts through 2045 for Windsor and Bertie County, in addition to all adjacent counties in the Northeast Region and North Carolina. Of the 17 counties included, over half are expected to experience a population decrease. The total Northeast Region is expected to have an average population rate increase of 3.31%.

In spite of the negative population growth in the area surrounding Windsor, the Town has managed to sustain and slightly increase its population base (excluding prison population). Windsor's population is forecast to continue minimum population growth to 4,845 in 2045, an increase of approximately 28%. One of the greatest challenges facing Windsor will be expanding its non-prison population base.



Table 30. Northeast Region Population Projections, 2015-2045

	2015	2020	2025	2030	2035	2040	2045	%	%	%	%	%	%	
	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Change	Change	Change	Change	Change	Change	
								'15-'20	'20-'25	'25-'30	'30-'35	'35-'40	'40-'45	
													'15-'45	
Beaufort County	47,712	47,712	47,712	47,712	47,713	47,713	47,713	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Bertie County	20,367	19,077	17,791	16,502	15,216	14,031	12,938	-6.33%	-6.74%	-7.25%	-7.79%	-7.79%	-7.79%	-36.48%
Camden County	10,329	10,597	10,707	10,751	10,770	10,789	10,809	2.59%	1.04%	0.41%	0.18%	0.18%	0.19%	4.65%
Chowan County	14,670	14,670	14,670	14,671	14,670	14,669	14,667	0.00%	0.00%	0.01%	-0.01%	-0.01%	-0.01%	-0.02%
Currituck County	25,386	27,533	29,678	31,822	33,968	36,257	38,701	8.46%	7.79%	7.22%	6.74%	6.74%	6.74%	52.45%
Dare County	35,495	35,975	36,296	36,509	36,651	36,794	36,937	1.35%	0.89%	0.59%	0.39%	0.39%	0.39%	4.06%
Gates County	11,946	11,948	11,949	11,946	11,948	11,950	11,953	0.02%	0.01%	-0.03%	0.02%	0.02%	0.03%	0.06%
Halifax County	52,878	51,332	49,782	48,234	46,683	45,136	43,683	-2.92%	-3.02%	-3.11%	-3.22%	-3.31%	-3.22%	-17.39%
Hertford County	24,524	24,180	23,831	23,486	23,141	22,801	22,466	-1.40%	-1.44%	-1.45%	-1.47%	-1.47%	-1.47%	-8.39%
Hyde County	5,736	5,671	5,611	5,548	5,488	5,429	5,370	-1.13%	-1.06%	-1.12%	-1.08%	-1.08%	-1.09%	-6.38%
Martin County	23,603	23,059	22,514	21,967	21,420	20,711	20,195	-2.30%	-2.36%	-2.43%	-2.49%	-3.31%	-2.49%	-14.44%
Northampton County	21,065	20,311	19,557	18,800	18,046	17,322	16,628	-3.58%	-3.71%	-3.87%	-4.01%	-4.01%	-4.01%	-21.06%
Pasquotank County	39,890	40,240	40,273	40,275	40,276	40,276	40,276	0.88%	0.08%	0.00%	0.00%	0.00%	0.00%	0.97%
Perquimans County	13,544	13,645	14,068	14,567	15,082	15,616	16,169	0.75%	3.10%	3.55%	3.54%	3.54%	3.54%	19.38%
Pitt County	175,377	179,731	184,086	188,442	192,795	197,249	201,805	2.48%	2.42%	2.37%	2.31%	2.31%	2.31%	15.07%
Tyrrell County	4,135	4,136	4,137	4,135	4,132	4,129	4,126	0.02%	0.02%	-0.05%	-0.07%	-0.07%	-0.07%	-0.22%
Washington County	12,648	12,312	11,980	11,645	11,309	10,982	10,665	-2.66%	-2.70%	-2.80%	-2.89%	-2.89%	-2.89%	-15.68%
Northeast Region	539,305	542,129	544,642	547,012	549,308	553,894	557,146	0.52%	0.46%	0.44%	0.42%	0.83%	0.59%	3.31%
North Carolina	10,054,498	10,573,611	11,093,530	11,607,489	12,119,680	12,654,158	13,212,206	5.16%	4.92%	4.63%	4.41%	4.41%	4.41%	31.41%
Windsor	3,785	3,944	4,110	4,283	4,463	4,650	4,845	4.20%	4.21%	4.21%	4.20%	4.19%	4.19%	28.01%

NOTE: Seasonal population projections are not included because seasonal population is not a factor in Windsor.
 Source: US Census Bureau and NC Office of State Budget and Management.



The Town of Windsor currently has 342 acres of vacant land zoned for residential development (see Table 31). Map 23 delineates the vacant land by zoning district. The R-10 MH and R-7 districts can accommodate either single or multi-family development. The vacant residential property could accommodate 1,546 to 1,932 single-family dwelling units which, at an average family size of 2.29 (2010 Census average family size), would accommodate a population of 3,540 to 4,424. (NOTE: The range in single-family dwelling units allows for some consumption of land for streets and other infrastructure which cannot be determined until final site design is approved). The R-10 MH and R-7 vacant land could accommodate approximately 1,265 multi-family dwelling units with a population of 2,897. (NOTE: The single-family and multi-family populations are not additive. For example, some multi-family construction would exclude single-family construction). The vacant land inventory will accommodate any conceivable population growth through 2030.

Table 31. Windsor Vacant Zoning Acreages

Zoning Classification	# Parcels	Acreage
C-1	1	0.0285
C-2	14	8.1556
O-1	2	0.5432
R-10	140	70.9364
R-10MH	31	30.1373
R-5	17	4.1110
R-5MH	51	18.1369
R-7	84	85.2640
R-75	1	0.1747
RA-20	18	356.3985
Totals	342	573.8861

Source: Holland Consulting Planners, Inc.

C. Housing Trends

Residential development will be minimal within the Town of Windsor throughout the planning period. As of 2010, there were 156 (see Table 4, page 2-7) vacant year-round dwellings within the town, and residential development has slowed over the last ten years. The table below provides a summary of increased residential demand based on the population projections outlined within Table 25 (page 5-1) of the land use plan. The 2010 average household size for all units was 2.29 persons per household. For forecast purposes, through 2045 this trend has been continued. The forecast growth of households is provided in Table 32.

Table 32. Town of Windsor – Estimated Population Growth and Household Characteristics, 2010-2045

	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	Net Total Change
Total Population Increase	+155	+159	+166	+173	+180	+187	+195	+1,215
Persons per Households	2.29	2.29	2.29	2.29	2.29	2.29	2.29	N/A
# of Households	67	69	72	75	78	81	85	527

Source: Population forecast and persons per household – Office of State Planning, and Holland Consulting Planners, Inc.



D. Economy

One of the greatest challenges facing Windsor will be the development of a vibrant and integrated economy. There are many economic challenges which must be addressed including:

- The identify/recognition of Windsor
- Protection of natural resources as a basis for eco-tourism
- Provision of job training to develop a skilled labor force
- Protection of prime agricultural lands
- Support of entrepreneurialship in Windsor

Windsor is located directly off US 17. Its proximity to this key transportation route makes Windsor a potentially key location for business. Eco-tourism may be the strongest and most valuable return on investment available to Windsor. The Cashie River is being met with nearby development to allow the town to further utilize the natural resource that it provides.

E. Commercial Land Use

Commercial development within Windsor primarily serves town residents; however, Windsor does serve as a regional center for goods and services. Commercial development within Windsor is expected to be minimal throughout the planning period, and will involve both infill and redevelopment. Additionally, it is anticipated that the new NC Highway 13 will result in some new retail commercial growth. A major focus will be attracting business/development to the Town's central commercial core.

F. Industrial Land Use

The Town of Windsor currently does not have any significant industrial operations. The Town will continue to seek opportunities related to the development of light industrial operations; however, industry within Bertie County is centered around agriculture, and this trend is expected to continue. It should be noted that there are several large farming operations located within the town's extraterritorial jurisdiction. For the following reasons, Windsor desires to reduce the area of its extraterritorial jurisdiction. Because of the revision of the North Carolina annexation statutes in 2012, Windsor and other municipalities have effectively lost the ability to undertake forced annexation. Dwindling fiscal resources make it increasingly difficult for Windsor to provide services. Windsor is expecting minimal population growth within its planning jurisdiction.

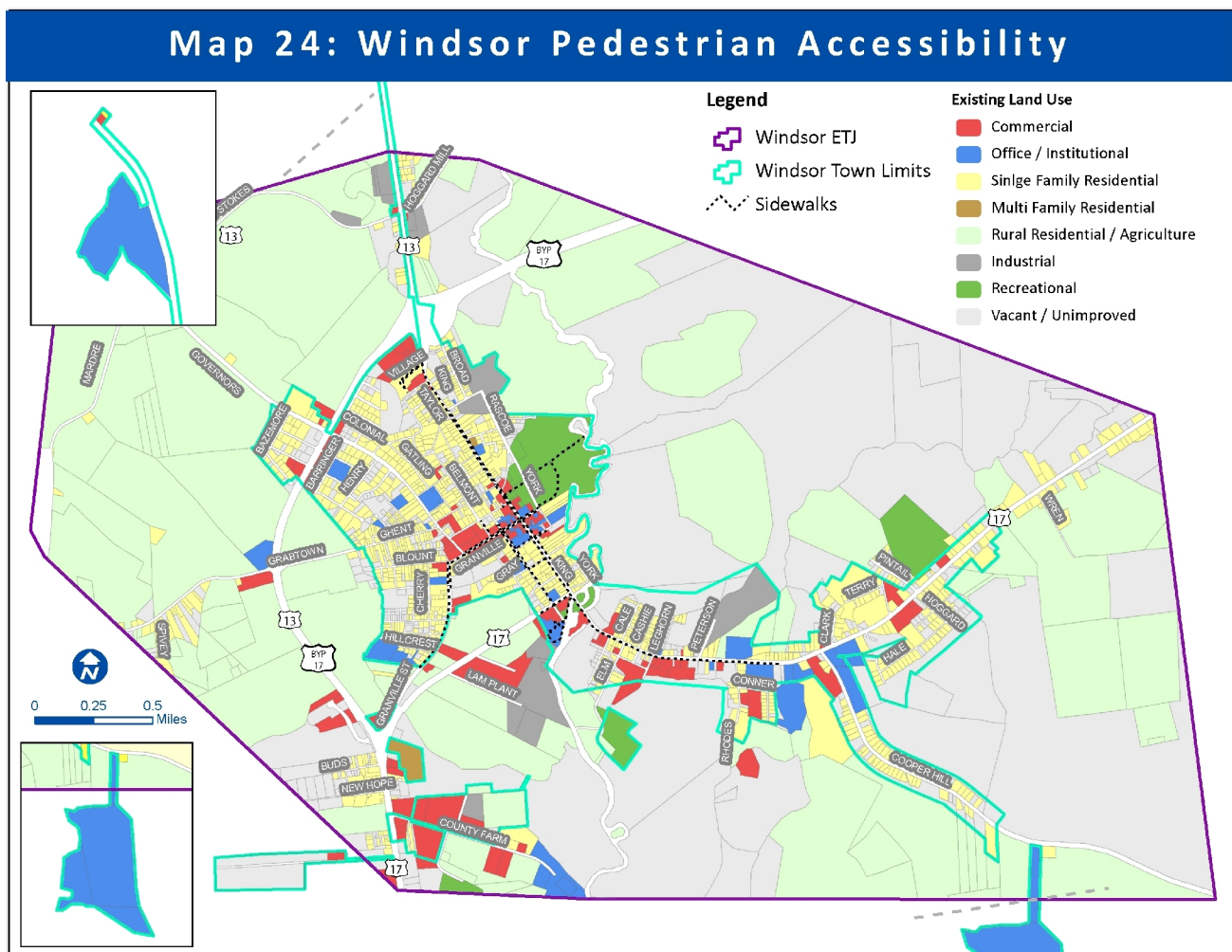


G. Transportation

During the planning period, the primary road improvement, as reported in the North Carolina Department of Transportation’s (NCDOT) Transportation Improvement Program (TIP) 2012-2018 report (as updated May 2015), is the following:

ID No.	Description	Length (Miles)	Total Project Cost	Prior Years Cost
R-2506	US 13, from US 13 Business north of Windsor to NC 42. Widen to multi-lanes and replace bridge along bypass.	17.2	\$99,465,000	\$65,000

Map 24 delineates the existing sidewalk system in Windsor. Pedestrian facilities are seriously deficient. Residential areas and recreational facilities are under-served. At the time of this plan update, the Town was in the process of preparing a Comprehensive Bicycle & Pedestrian Plan.





The existing transportation system has, and will continue to have, a significant impact on Windsor's commercial land use. Outside of the Town's Central Business District, the primary commercial area is scattered along the US 17 Bypass on the west side of Windsor. The majority of the Town's commercially zoned vacant land is located in this corridor. Most future commercial development is expected to occur in this area. Caution must be taken to carefully control ingress and egress along the corridor. The land use within the Town's ETJ remains primarily rural agricultural with some scattered residential usage. North Carolina secondary roads, US 13, and US 17 provide access to the ETJ. There are no current land use/transportation issues within the ETJ. The existing road system is expected to adequately serve the forecast future land use.

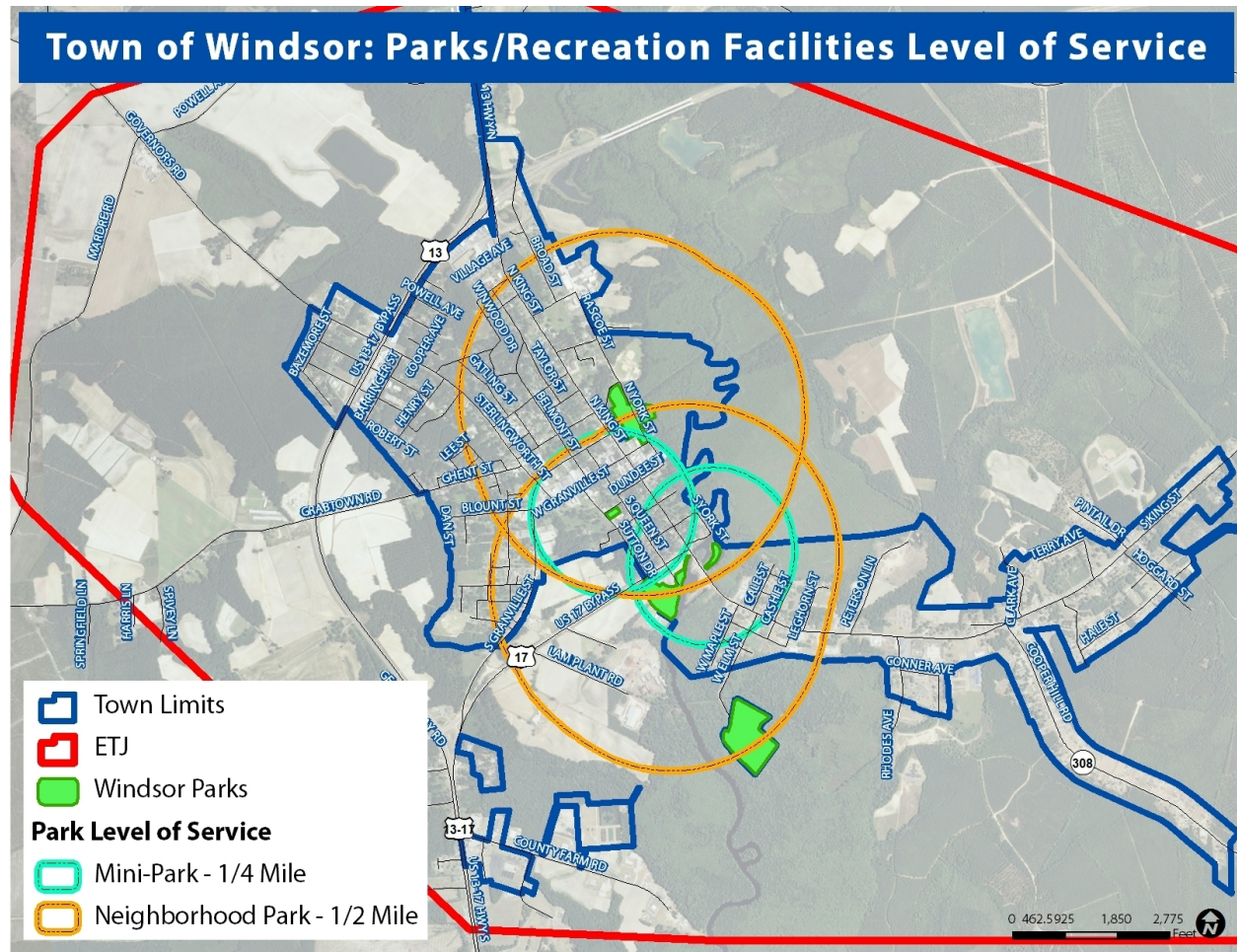
H. Recreation

The Town of Windsor completed a Parks and Recreation Master Plan in December 2013. The plan includes an inventory of existing facilities, the results of a recreational needs survey, a level of service analysis, and proposed future amenities. Findings in the plan included the need to expand water-based recreation opportunities and park/recreation facilities that will serve children and teens. It should be noted that the town's recreational facilities are a draw to not only residents, but also to educational and tourists groups located across eastern North Carolina.

Information regarding the recently adopted Parks and Recreation Master Plan includes the level of service analysis and proposed facilities. More detailed analysis and a comprehensive inventory and suggested improvements can be found in the 2013 Parks and Recreation Master Plan, which is incorporated herein by reference.

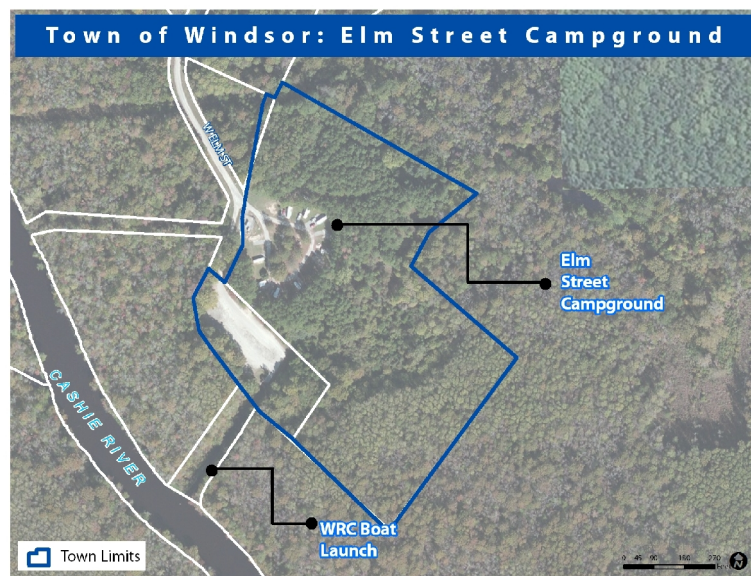
1. Windsor Parks/Recreation Facilities Level of Service

The figure below depicts the Parks/Recreation Facilities Level of Service for Windsor residents. Areas not currently being served by a recreational facility include the northwest portion of town.

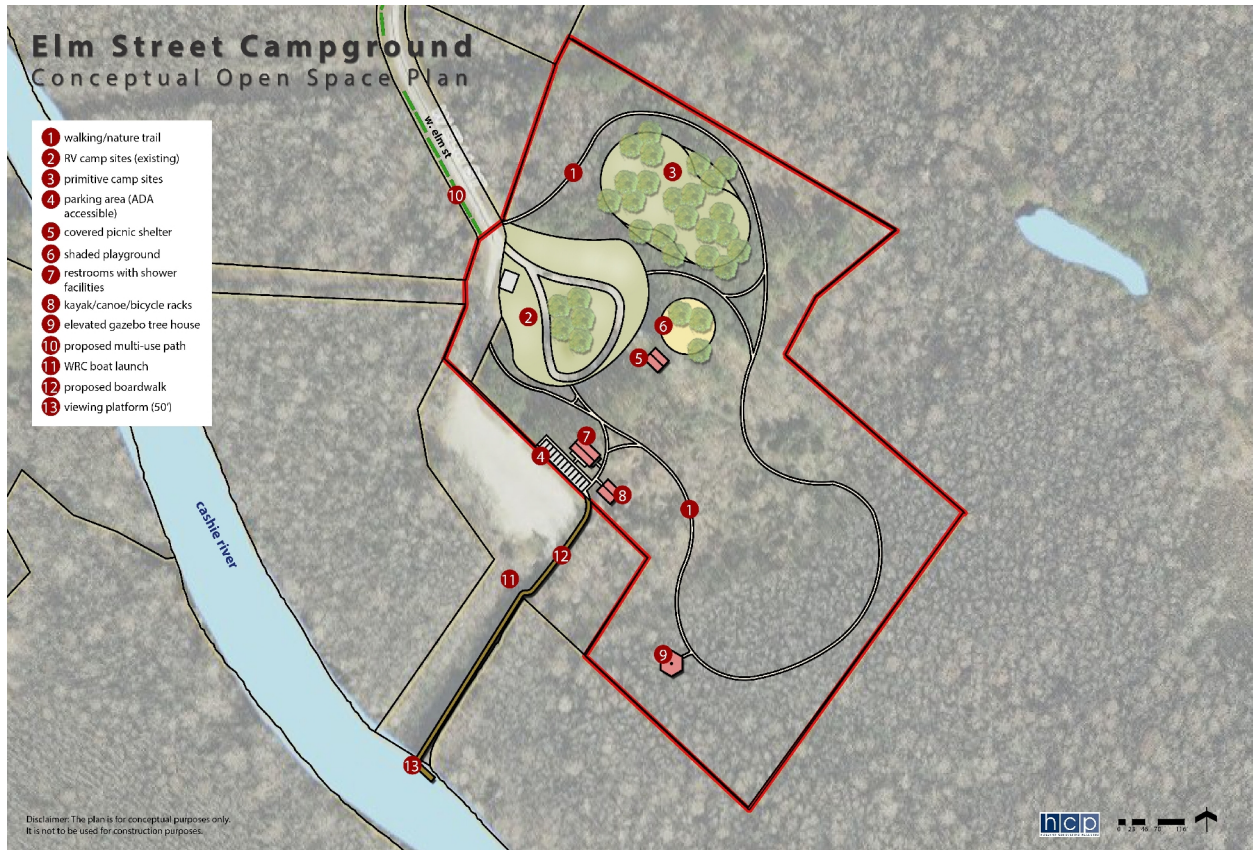


2. *Elm Street Campground*

The Elm Street Campground is located just east of the Cashie River and south of US 17. The campground is owned and operated by the town. There are 11 spots available for camping with electricity hookups. The campground caters mostly to recreational vehicle campers, but offers spots for tent campers as well. There is a small restroom and shower facility available to campground users.



The town applied for a Division of Coastal Management grant to enhance water access along the Cashie River adjacent to the Elm Street Campground. Specific improvements to the campground are expected to be constructed in phases. Proposed improvements include, but are not limited to, a new parking area, small boat launch, "tree house" viewing platform, walking/nature trail, new restroom facilities, primitive campground sites, and a shaded playground area. See the rendering below for more information. The Town recently added the following improvements: two (2) tree houses, a comfort station, and handicap accessible facilities.



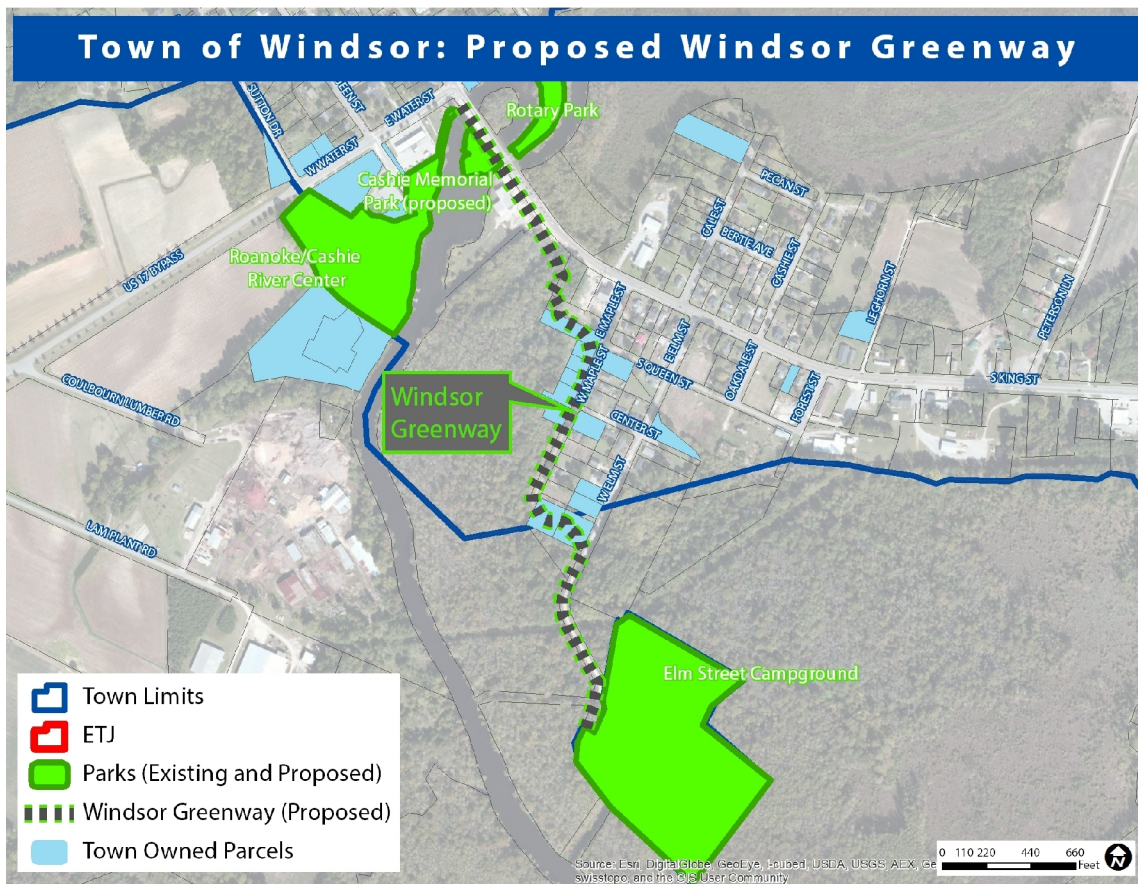
3. Windsor Greenway

Providing more options for alternative travel choices is a goal the town wishes to pursue. Currently, the Elm Street Campground is only accessible by vehicle. The campground's location on the east side of town limits its accessibility to downtown and other retail options. Providing an off-street multi-use path that would connect the campground and wildlife ramp to Windsor's downtown would provide both an amenity and an active transportation option for residents.

The proposed greenway is approximately 2,680 feet in length (see the figure on the next page). The greenway would be constructed as a ten-foot (10') asphalt multi-use path and would take advantage of several of the parcels purchased as part of the Hurricane Floyd buyout program. The proposed facility would connect to the sidewalk running parallel to King Street, just east of the bridge.



As noted above, the town owns several parcels along Elm Street and Maple Avenue. The proposed greenway would utilize several of these vacant parcels such as the one shown below (left) to construct the facility. The rendering below (right) depicts the proposed ten-foot multi-use path. See figure below for the proposed greenway location.





I. Education

The Town of Windsor is currently served by five (5) schools as noted on page 4-26 of the plan. These facilities include: Windsor Elementary, Bertie Middle, Bertie High, Bertie Academy, and the Heritage Collegiate Leadership Academy. Bertie County and the Town of Windsor are prepared to address any future population growth. There continues to be a need for a new bus garage and transportation maintenance building. The current facility is insufficient to support current needs.

J. Water System

There are no improvements to the Town's water system currently planned. The focus will be on maintaining the existing system. The town will continue to rely on its current groundwater services with emergency/back-up supply provided by the Bertie County Water System. The population projections in this plan have been considered.

K. Sewer System

The Town of Windsor will continue to rely on its current sewer treatment system. Currently, the system is at 52.0% of its capacity. There are no problems with the existing sewer system, including quality, infrastructure, and capacity; therefore, the Town has no plans to expand the system during the planning period. The population projections in this plan have been considered.

L. Solid Waste

The Town of Windsor will continue curbside garbage service which will be delivered to the East Carolina Landfill. The County Landfill still has over 15 years of life based on current capacity. The landfill has a standing contract with the county for approximately 10 more years. The county will address this contract at some point during the planning period to ensure that trash removal services within the County are not compromised. The landfill also has land area available to extend well beyond the current 15-year life span.

M. Police, Fire, and Rescue Services

The police, fire, and emergency medical services within the Town of Windsor are currently adequate to support current demands. Based on the population growth rates provided in Table 30 (page 4-2), it is not anticipated that these services will need to be expanded throughout the planning period. The town will continue to monitor needs and will respond as deemed necessary.

The police department has several equipment and facility needs that need to be addressed during the planning period. The police department continues to need a new facility. The town will review grant opportunities relating to the potential development of this facility on an annual basis.



N. Stormwater Management

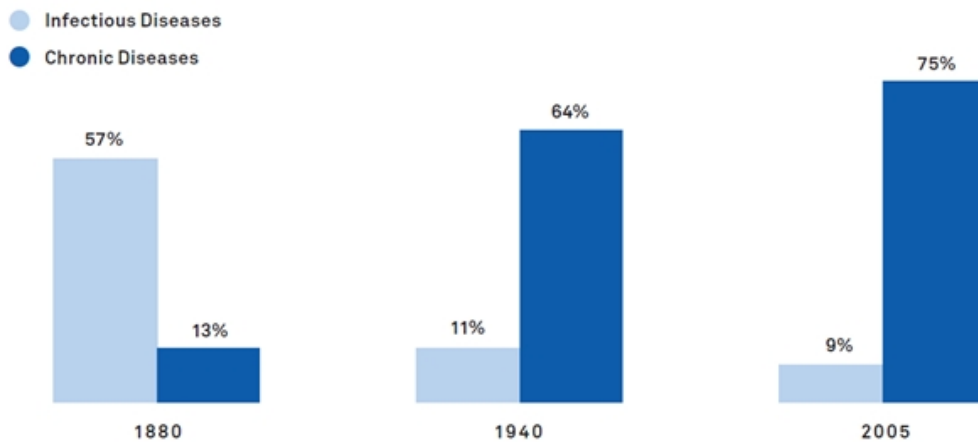
As discussed in the existing conditions portion of the plan (pages 3-45 to 3-46), the Town of Windsor enforces the NC Coastal Stormwater regulations in partnership with the NC Division of Water Resources. The Town will continue these efforts and will consider establishing local non-point source runoff regulations, if deemed necessary.

O. Health and Wellness Assessment/Future Land Use Impact

1. *Chronic Disease Factors*

Chronic disease differs from infectious disease (or communicable disease) in the way it occurs in individuals. Infectious diseases usually occur because of contact with an affected host, while chronic diseases may occur solely as a result of a sedentary lifestyle. Common infectious diseases of current and past years include tuberculosis, Ebola, malaria, measles, and HIV/AIDs.

Infectious diseases were once the primary cause of death in the United States a century ago, but proper hygiene, environmental design, and immunization has led to the downfall of such disease in the United States (see Figure 1).



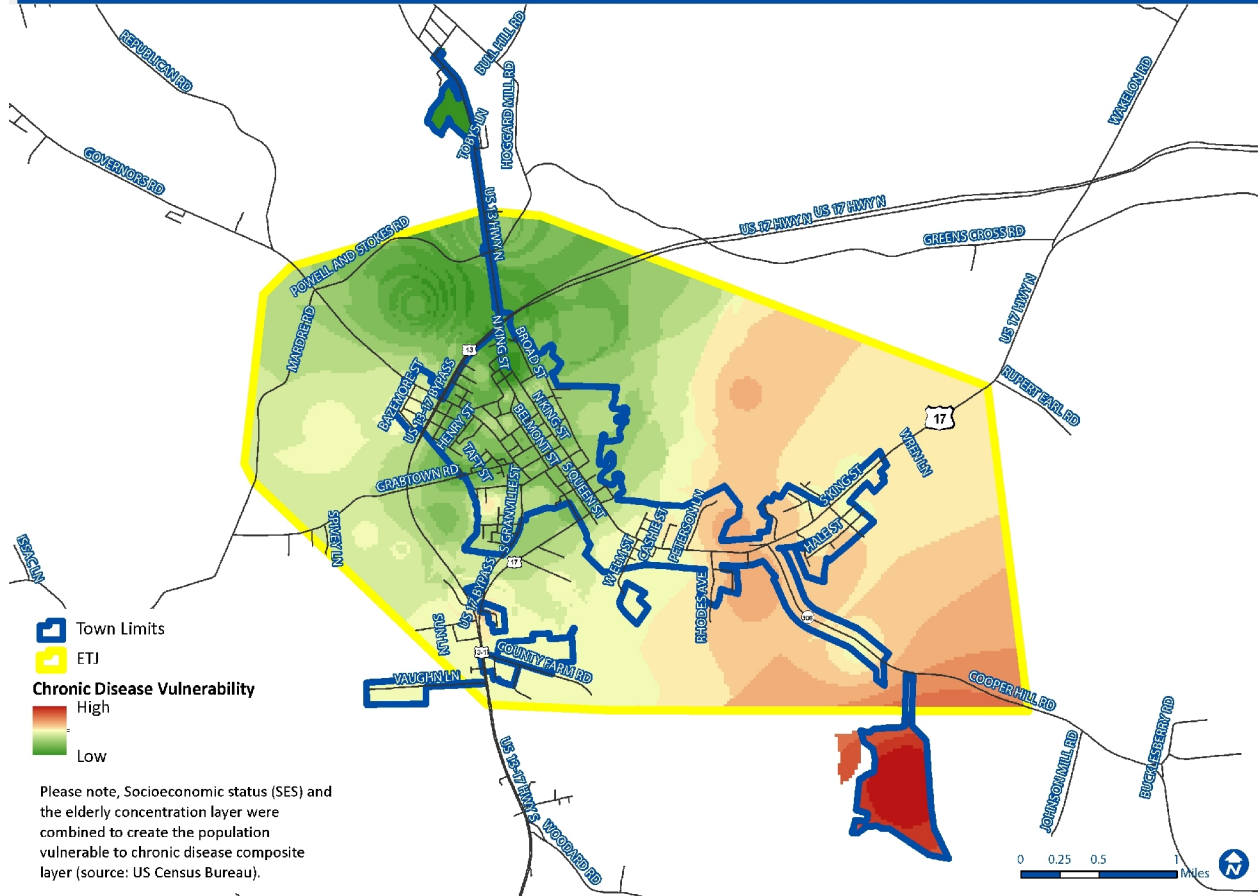
Source: The City of New York Summary of Vital Statistics 2005

Figure 1. Infectious Diseases Versus Chronic Diseases, 1880 - 2005

Whereas infectious diseases were the gravest health threats of an earlier era, the largest killers of our time are chronic diseases such as heart disease and strokes, cancers, and diabetes, for which the leading risk factors are obesity, physical inactivity, poor diets, and smoking. Map 25 delineates population vulnerable to chronic disease.



Map 25: Population Vulnerable to Chronic Disease



2. Food and Nutrition

Food is essential for life. Yet unlike other enduring necessities - water, air, and shelter - food has not been considered a priority for planning by state and local officials and decision makers. Increasing access to and encouraging consumption of fresh, healthy foods are important ways to address disease incidence and health care expenditures.

North Carolinians face a number of health challenges related to our food system. Food insecurity is present across the state, which exists when an individual or family lacks adequate or consistent access to the foods necessary to lead an active, healthy lifestyle.

Children's health and wellbeing are connected to diet, nutrition, and food security. Access to an ample quantity and variety of fruits and vegetables at school, at home, and in the community is critical. Access is especially important for school age children, given that poor dietary habits can linger or worsen into the high school years and adulthood.

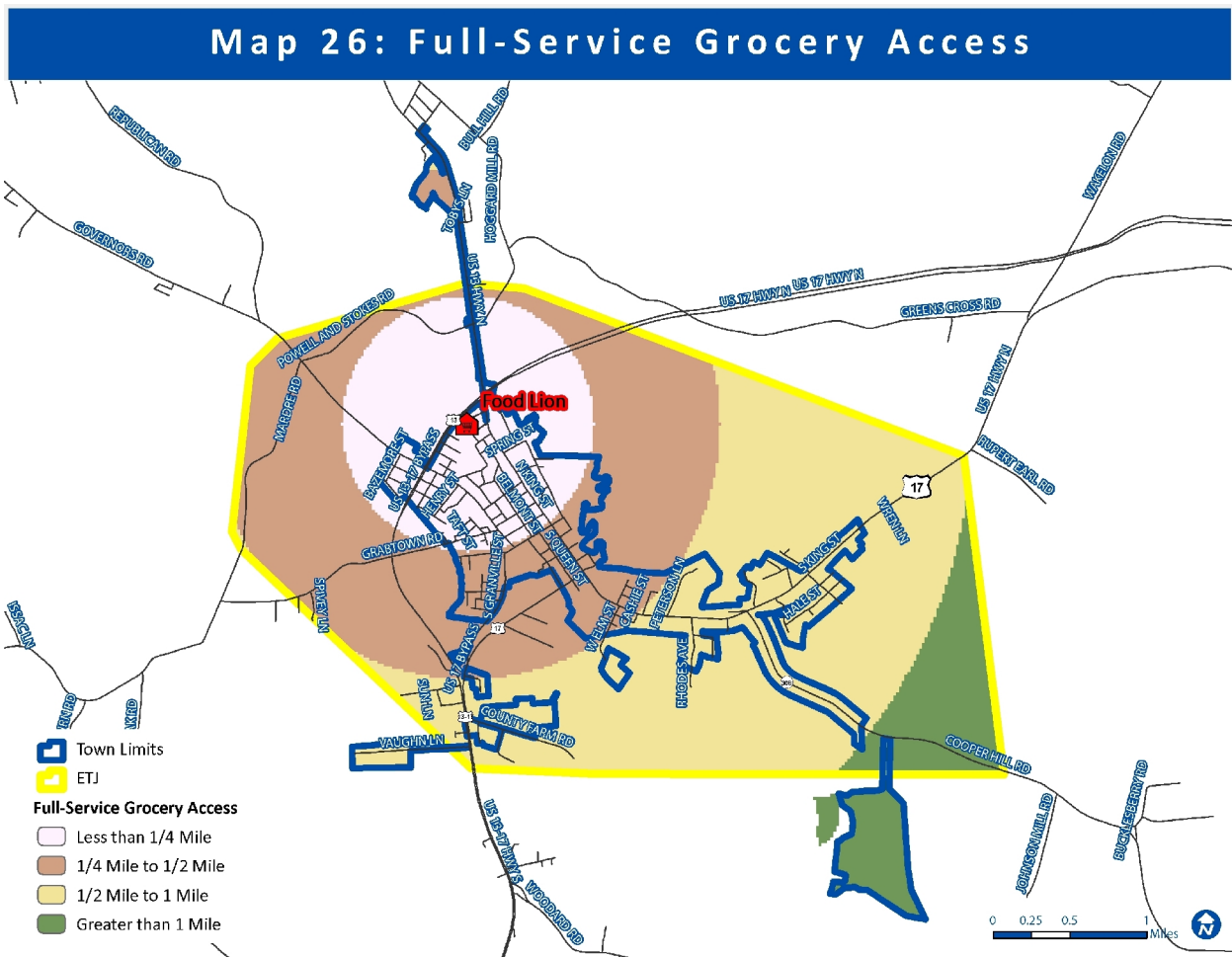


In Windsor, there is one establishment that offers full service grocery items. For the purposes of this assessment, a "full service grocery" is defined as an establishment that is open 7 days a week, offers a variety of fresh fruits and vegetables at a competitive price, and accepts EBT (Electronic Benefits Transfer) and WIC (Benefits for Women, Infants, and Children).

Table 33. Full Service Groceries in Windsor

Company	Address
Food Lion	117 US Hwy. 13 Bypass

Source: Holland Consulting Planners, Inc.





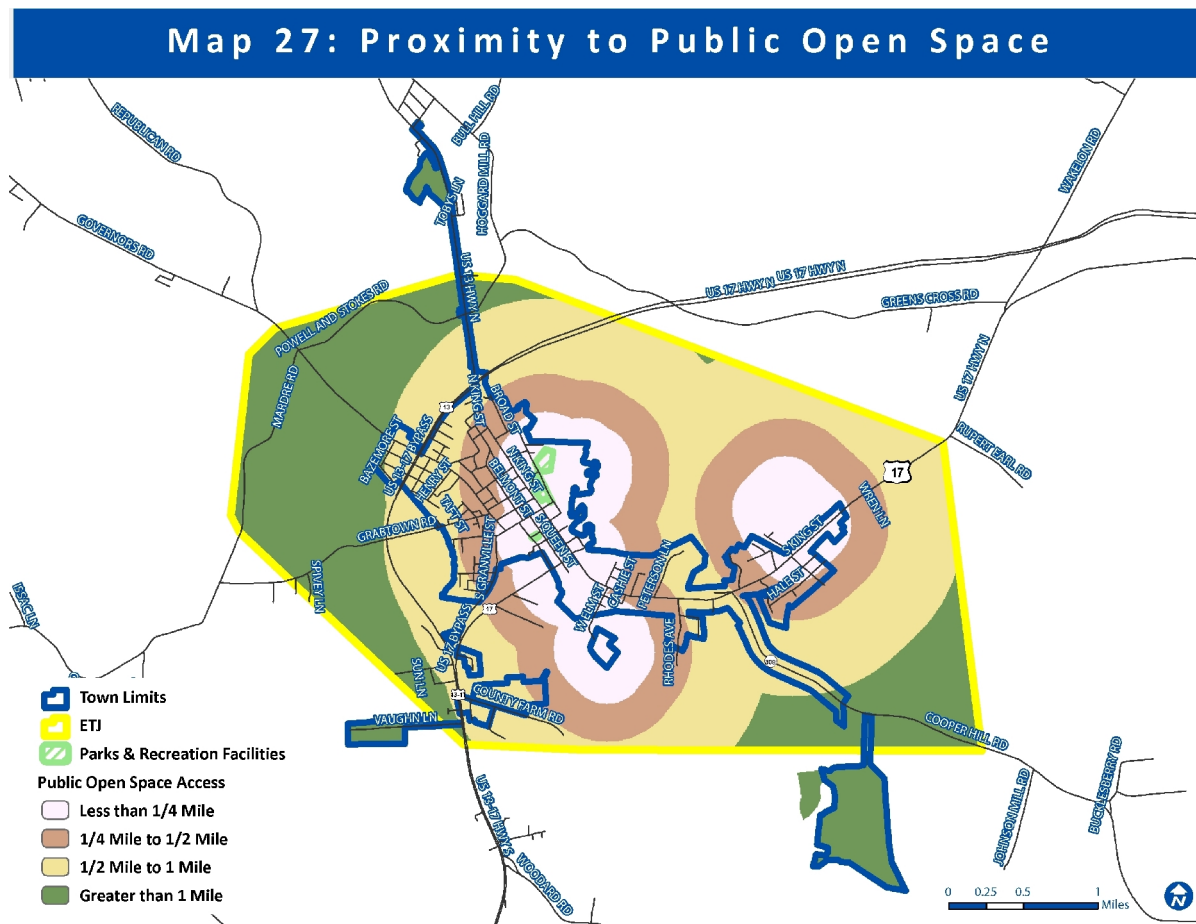
3. Access to Physical Activity and Recreation Facilities

Research shows that one of the number one ways to offset weight gain is through increased physical activity. Coincidentally, individuals looking to increase physical activity encounter barriers when access to recreational facilities is limited.

According to the Centers for Disease Control, the following is a list of items that can be accomplished through increased or regular physical activity:

- Weight control;
- Reduced risk of cardiovascular disease;
- Reduced risk of Type 2 diabetes and metabolic syndrome;
- Reduced risk of some cancers;
- Stronger bones and muscles;
- Improved mental health and mood;
- Improved ability to do daily activities and prevent fall (older adults);
- Increased chances of living longer.

Map 27 delineates access to active recreational facilities and public open space opportunities.

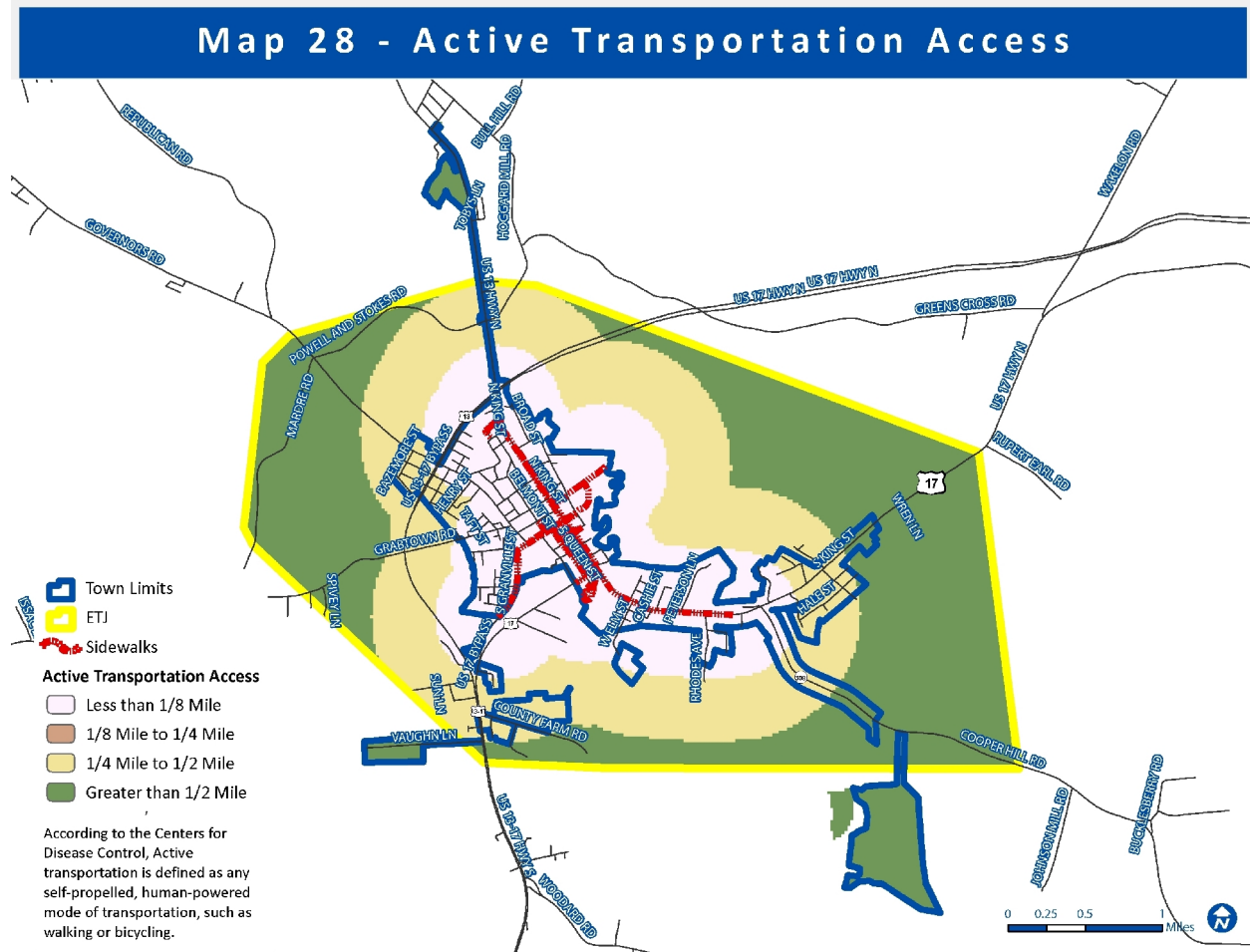




4. Active Transportation Access

Active transportation options include travel modes that require an individual to expend energy to reach his or her destination. Bicyclist and pedestrian are the two most common modes recognized as active transport, but public transit riders also fit into this category.

Investments in transportation can either discourage or encourage use by non-motorized travelers. Research suggests that providing pedestrian and cyclist infrastructure will increase use of non-motorized facilities while also promoting physical activity and healthy lifestyles¹. These investments also make non-motorized travel safer and more viable transportation option. Map 28 shows where sidewalks are available to use to Windsor residents.



¹Associations of Perceived Social and Physical Environmental Supports with Physical Activity and Walking Behavior. Addy, C, Wilson, D and Kirkland, K. 2004, American Journal of Public Health, pp. 440-443.



Section 5. Future Land Use

A. Introduction

The future land use map (Map 29) depicts application of the policies for growth and development and the desired future patterns of land use and land development through 2030. The future land use map should include the following:

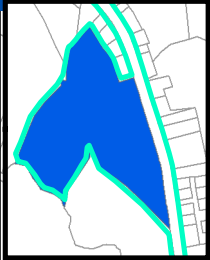
- Area and locations planned for conservation or open space and a description of compatible land uses and activities.
- Areas and locations appropriate for future development with descriptions of the following characteristics:
 - Predominant and supporting land uses that are encouraged in each area;
 - Overall density and development intensity planned for each area; and
 - Infrastructure required to support planned development in each area. (NOTE: The locations of areas suitable for more intensive development are consistent with the town's existing/proposed infrastructure systems).
- The information depicted on the Land Use Preference and Conflict Map (Map 22).

The Town of Windsor Future Land Use Plan was drafted with consideration given to the following:




- The policies and implementing actions included in this plan.
- Land Suitability, Preference, and Conflict Analysis (Map 22).
- Preservation of existing residential neighborhoods.
- Key land use issues and vision statement (see pages 1-3).
- Preservation of the Central Business District.
- Preservation of the Historic District.

The future land use map is intended to depict where the various types of land uses will be acceptable, not necessarily the demand in terms of acreage.









Map 29: Future Land Use

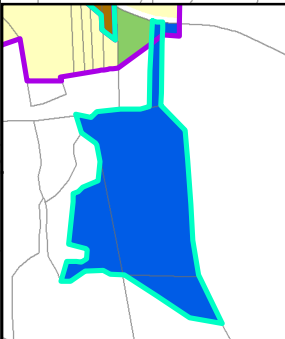
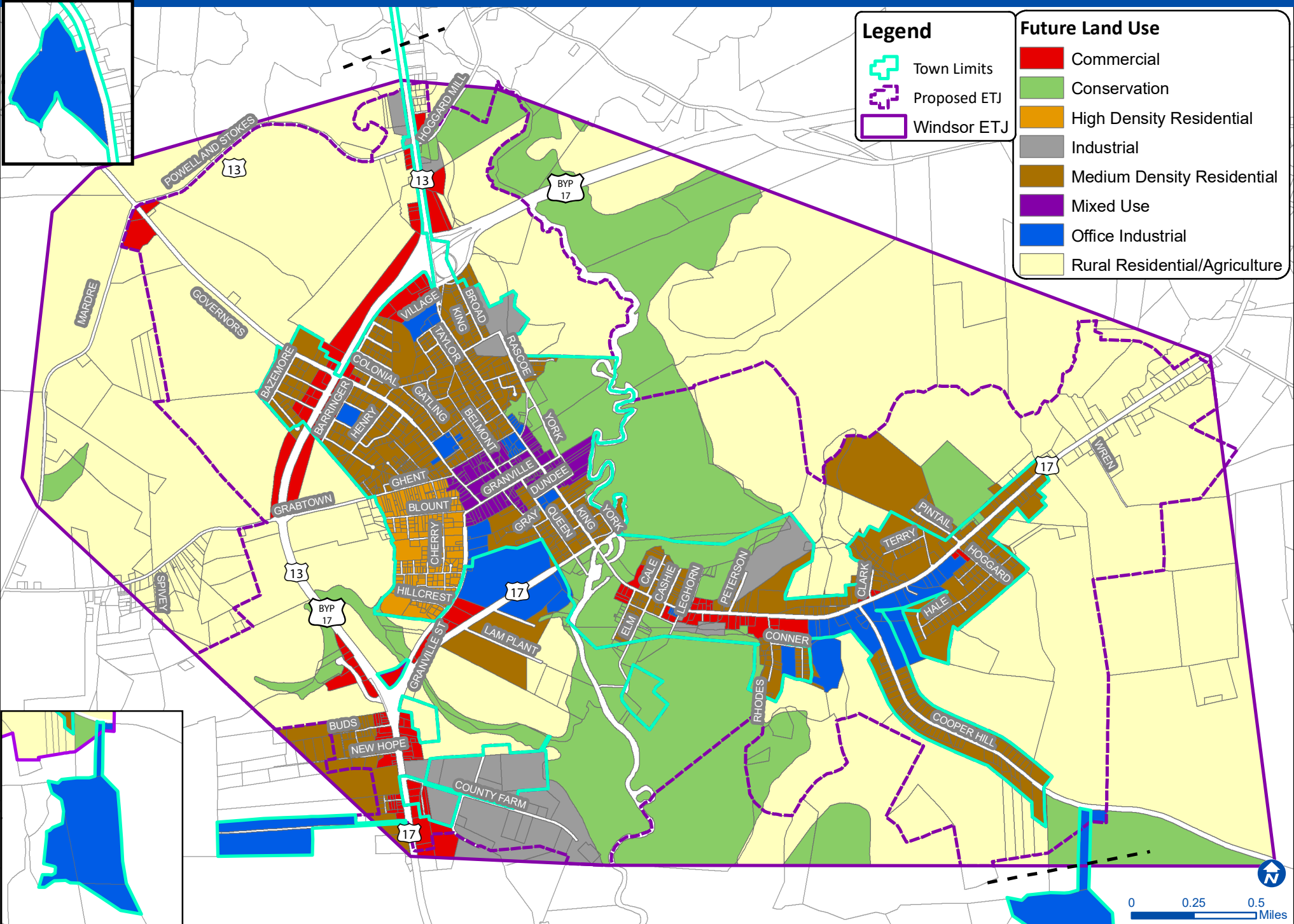


Legend

-  Town Limits
-  Proposed ETJ
-  Windsor ETJ

Future Land Use

-  Commercial
-  Conservation
-  High Density Residential
-  Industrial
-  Medium Density Residential
-  Mixed Use
-  Office Industrial
-  Rural Residential/Agriculture





B. Land Use Acreages

Table 34 summarizes the acreages for the future land uses depicted on Map 29. These acreages reflect the desirable distribution of land uses as depicted on the map. The build-out of all land outlined within the Town of Windsor’s corporate limits and ETJ will occur well beyond 2030.

Table 34. Town of Windsor Future Land Use Map Acreages

Land Use	Corporate Limits		ETJ		Planning Jurisdiction	
	Acres	% of Total	Acres	% of Total	Acres	% of Total
Commercial	74.95	4.4%	116.29	1.9%	191.24	2.4%
Mixed Use	61.01	3.6%	0.00	0.0%	61.01	0.8%
Office & Institutional	350.03	20.5%	81.31	1.3%	431.34	5.4%
High Density Residential	85.95	5.0%	0.00	0.0%	85.95	1.1%
Medium Density Residential	576.13	33.7%	193.55	3.1%	769.68	9.7%
Rural Residential/Agricultural	20.18	1.2%	4,386.34	70.1%	4,406.52	55.3%
Conservation	202.89	11.9%	1,106.55	17.7%	1,309.44	16.4%
Industrial	114.36	6.7%	99.49	1.6%	213.85	2.7%
Right-of-Way	223.30	13.1%	277.42	4.4%	500.72	6.3%
Total	1,708.80	100.0%	6,260.95	100.0%	7,969.75	100.0%

Source: Holland Consulting Planners, Inc.

This Land Use Plan includes eight separate future land use categories. Included in these eight future land use categories are the following: Commercial, Mixed Use, Office/Institutional, High Density Residential, Medium Density Residential, Rural Residential/Agricultural, Conservation, and Industrial (see Map 29). These categories are intrinsically tied to the policy section of the plan.

The following sections will categorize/define the allowable uses and net density of land under each category, as shown on the Future Land Use Map.

1. *Commercial*

Commercial areas are those intended for the retail sale of goods and services, including professional services. This is a non-residential multiple use category that will provide a wide range of businesses to serve the needs of the community and region.

Allowable Density: The objective lot density shall be 50% lot coverage by the principal structure.



Impervious Surface: The maximum impervious surface coverage shall be consistent with North Carolina Stormwater Regulations.

Maximum Building Height: No building in this category is permitted to exceed 50 feet.

Permitted Uses: Desirable land uses in this category include high volume/traffic generating uses including retail and wholesale goods and services.

Uses Not Permitted: Residential uses and other uses which are not related to retail and wholesale goods and services.

Applicable Zoning District: C-2.

2. *Mixed Use*

The Mixed Use land use category provides an environment where convenient shopping and service facilities exist by promoting compact development of commercial, office, and service uses while preserving Windsor's historic character. This category is intended to correspond with the Central Business/Historic District and surrounding residential and commercial areas. This area allows for a rich mixture of diverse land uses while requiring review and approval of development proposals by the Town.

Allowable Density: There is no minimum lot size. The residential density should not exceed twelve (12) dwelling units per acre.

Impervious Surface: The maximum impervious surface coverage shall be consistent with North Carolina Stormwater Regulations.

Maximum Building Height: The maximum building height is 50 feet.

Permitted Uses: Mixtures of commercial office, institutional, single-family, and multi-family uses will be allowed. This will be an area of high density development.

Uses Not Permitted: Industrial uses will be prohibited.

Applicable Zoning Districts: C-1, C-2, O-1 (NOTE: It is recommended that the UDO be revised to incorporate specific flexible mixed-use provision).



3. Office/Institutional

The Office/Institutional future land use category has two primary purposes:

- To provide a buffer between residential areas and commercial/industrial areas; and
- To provide office, institutional and multi-family land uses needing access to transportation corridors.

The O&I category is primarily designed to accommodate a compatible mix of business, professional, institutional, and multi-family uses, in addition to providing a desirable buffer between commercial and low-density residential uses.

Allowable Density: Minimum lot size shall be 15,000 square feet with a residential density of twelve (12) dwelling units per acre. Commercial use shall not exceed 50% lot coverage.

Impervious Surface: The maximum impervious surface coverage shall be consistent with North Carolina Stormwater Regulations.

Maximum Building Height: No building in this category is permitted to exceed 35 feet.

Permitted Uses: This district is intended to provide a buffer between established residential districts and commercial and industrial centers. Desirable land uses in this district include low impact/traffic generating uses as follows: office space, medical/veterinary offices, home occupations, churches, civic buildings, parks, municipal structures, and multi-family homes.

Uses Not Permitted: Primarily commercial and industrial development will be prohibited within this district. As stated, the primary intent of this district is to minimize traffic generation and noise associated with land uses generating either large volumes of consumer traffic and/or industrial traffic related to the shipping or delivery of goods and materials, and to be utilized as a buffer between incompatible uses.

Applicable Zoning Districts: O-I, Mixed Use/CBD District to be added to UDO.

4. High Density Residential

The High Density Residential future land use category is intended to encourage dense residential development of mobile homes on individual lots, multi-family properties, mobile home park developments, and single-family developments on small lots of at least 5,000 square feet in size.

Allowable Density: Densities will be eight (8) dwelling units per acre or fewer for single-family and eleven (11) units per acre for multi-family units.



Impervious Surface: The maximum impervious surface coverage shall be consistent with North Carolina Stormwater Regulations.

Maximum Building Height: No building in this category is permitted to exceed 35 feet.

Permitted Uses: Single-family, multi-family, recreational, and open space land uses.

Uses Not Permitted: All non-residential land uses will be prohibited.

Allowable Zoning Districts: R-5, R-7, R-75, R-5MH.

5. *Medium Density Residential*

The Medium Density Residential future land use category is primarily intended for residential development of single-family homes on 10,000 square-foot lots.

Allowable Density: Densities will be six (6) dwelling units per acre, depending on lot size.

Impervious Surface: The maximum impervious surface coverage shall be consistent with North Carolina Stormwater Regulations.

Maximum Building Height: The maximum building height shall be 35 feet.

Permitted Uses: Single-family residential (including duplexes), open space, recreation, and conservation.

Uses Not Permitted: All non-residential land uses will be prohibited.

Allowable Zoning Districts: RA-10, R-10MH, R-15.

6. *Rural Residential/Agricultural*

The Rural Residential/Agricultural future land use category is intended to accommodate a compatible mixture of single-family dwellings and agricultural uses at lower densities of approximately two (2) units or fewer per acre.

Allowable Density: Minimum lot size of 20,000 square feet, or two (2) dwelling units per acre.

Impervious Surface: The maximum impervious surface coverage shall be consistent with North Carolina Stormwater Regulations.

Maximum Building Height: The maximum building height is 35 feet.



Permitted Uses: Single-family residential, agricultural, open space, recreation, and conservation.

Uses Not Permitted: All non-residential land uses will be prohibited.

Allowable Zoning District: R-20A.

7. Conservation

The Conservation category includes park lands and lands identified as least suitable and of low suitability for development. The Conservation category is intended to provide for effective long-term management of significant limited or irreplaceable areas. The Town's policy statements and implementing actions support the 15A NCAC 7H CAMA regulations for protection of AECs.

Allowable Density: The minimum lot size for development within the Conservation category is 20,000 square feet.

Impervious Surface: The maximum impervious surface coverage shall be consistent with North Carolina Stormwater Regulations.

Maximum Building Height: The maximum building height for this category is 35 feet.

Permitted Uses: This category was established in response to environmentally sensitive and natural hazard areas identified through the land suitability analysis and environmental composite discussion earlier in this plan. Due to these factors, land use within this category should consist of low density residential housing and recreational/open space with accessory support uses. All development should be contingent on whether all environmental impacts have been assessed, and potential effects of natural hazards taken into account. Development within this category will primarily rely on on-site wastewater treatment facilities.

Uses Not Permitted: Non-residential uses are not routinely permitted in this district. However, proposals for non-residential development will be assessed on a case-by-case basis by making a determination regarding a given adverse development impact on environmental conditions.

Allowable Zoning Districts: RA-20 preferred. All uses in flood hazard areas must comply with the Town of Windsor Flood Damage Prevention Ordinance, Article 15 of the Town of Windsor UDO.



8. *Industrial*

This land use category is intended to accommodate those industrial, wholesale, warehouse, and other uses which by their nature do not create an excessive amount of noise, odor, smoke, dust, airborne debris, or other objectionable impacts which might be detrimental to the health, safety, or welfare of surrounding areas. Industrial areas indicated on the Land Use Plan should be buffered with either Office/Institutional/Multi-Family or Conservation/Open Space land uses.

Allowable Density: There is no minimum allowable lot size.

Impervious Surface: The maximum impervious surface coverage shall be consistent with North Carolina Stormwater Regulations.

Maximum Building Height: The maximum building height is 50 feet.

Permitted Uses: Industrial uses which are not detrimental to Windsor's health, safety or welfare.

Uses Not Permitted: Heavy industrial uses, residential uses, and all other uses not related to industry/manufacturing services.

Allowable Zoning District: M-1.

The Future Land Use Map indicates areas which are least suitable for development (refer to the Land Suitability, Preference, and Conflict Analysis, page 3-50). This is an overlay, and the underlying land use categories apply. However, the least suitable areas are those to which particular attention should be paid by the Town during its review and approval of specific development proposals. Mitigative action may be required to minimize adverse environmental impacts.



Section 6. Goals and Implementing Strategies

A. Introduction

This section of the plan is intended to guide the development and use of land in Windsor's planning jurisdiction. The future land use map (see Section 5) and policies are intended to support the Town's and CAMA's goals. Specifically, this section includes the Town of Windsor's goals and land use development policies. The future land use map and the specified development goals are based on the Town of Windsor community concerns (identified on page 1-3 of this plan).

In addition, this document is intended to serve as Windsor's Comprehensive Plan and Future Land Use Plan, replacing the August 27, 2009, Town of Windsor CAMA Core Land Use Plan. The future land use plan or "map" is an essential tool for implementing land use planning. The map is intended to serve as a guide for the Planning Board and Board of Commissioners when they review private development proposals and make decisions on the location of public facilities.

The land use plan also provides a framework upon which zoning and subdivision regulations and the capital improvements program should be based. In fact, the preparation of a land use plan and map is mandated by legislation as a prerequisite for zoning. North Carolina General Statute 160A-383 states that:

"Zoning regulations shall be made in accordance with a comprehensive plan and designed to lessen congestion in the streets; to secure safety from fire, panic, and other dangers; to promote health and the general welfare; to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentration of population; and to facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements. The regulations shall be made with reasonable consideration, among other things, as to the character of the district and its peculiar suitability for particular uses, and with a view to conserving the value of buildings and encouraging the most appropriate use of land throughout the town's planning jurisdiction."

A land use plan is intended to accomplish three primary objectives. These objectives are as follows:

- To promote economic efficiency by coordinating the size and location of publicly provided future community facilities with the location and intensity of future private residential, commercial, and industrial activity.



- To optimize resources by allocating land for its most suitable use. For example, a town may want to encourage industrial development on sites accessible to existing water and sewer lines and in areas with suitable soil conditions. Or, a town may choose to arrange land uses in such a way as to protect environmentally sensitive areas.
- To provide a land use form that reflects the vision of the town's residents, is unified, avoids conflicting land uses, optimizes resources, preserves the town's character and is pleasing: providing open space, vistas, and distinguishable districts.

It is important that the Town of Windsor understands that merely completing the land use plan, illustrating the Town's vision for the future, does not ensure that its objectives will be met. The Town must continuously work at accomplishing plan implementation and maintaining an effective planning program.

B. Policies Regarding Land Use and Development in AEC's

The Town of Windsor accepts state and federal law regarding land uses and development in AECs. By reference, all applicable state and federal regulations are incorporated into this document. No policies exceed the use standards and permitting requirements found in Subchapter 7H, State Guidelines for Areas of Environmental Concern. However, Windsor does not consider the following issues to be relevant/applicable within its planning jurisdiction:

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

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

- Public trust areas as defined in 15A NCAC 7H.0207 public trust areas.
- 404 jurisdiction determinations can only be made by Corps of Engineers personnel through individual on-site analysis.
- Coastal shorelines as defined in 15A NCAC 7H.0209.

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



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

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

All policies and implementing actions are to be utilized by the State of North Carolina for consistency review. Note the following:

- No policy is subordinate to another.
- All management topics have equal status.
- The future land use map may show some areas in a developed category which may also include sensitive habitats or natural areas. The intent is that development should be designed/permitted to protect these areas through utilization of concepts such as cluster development. Development/project approval will be based on project design which avoids substantial loss of important habitat areas.
- The US Army Corps of Engineers maintain jurisdiction over freshwater wetlands.



C. Land Use Plan Management Topics

1. Introduction

A key objective of any comprehensive plan is the creation of a robust and achievable set of goals, policies, and implementing actions. Implementation of these strategies is the responsibility of Windsor community leaders, staff, and citizens. Decisions made as a result of this plan should serve to enhance the quality of life for residents, support long-term economic growth, and promote viable land use and development patterns. This plan serves as the Town's overall comprehensive plan and provides for compliance with the CAMA land use planning requirements.

CAMA land use plans must support the goals of CAMA, define the CRC's expectations for the land use policies, and provide a basis for land use plan review and certification. Goals, policies, and implementing actions are provided for each of the following CAMA management topics: Public Access, Land Use Compatibility, Infrastructure Carrying Capacity, Natural Hazard Areas, and Water Quality, in addition to other areas of concern including Transportation and Economy. Each management topic includes two components: a management goal and planning objectives. These concerns and issues were utilized to develop the goals and objectives which are included in this plan. Most of the implementing actions are continuing activities. In most situations, specific timelines are not applicable. The policies and implementing actions frequently utilize the following words: should, continue, encourage, enhance, identify, implement, maintain, prevent, promote, protect, provide, strengthen, support, work. The intent of these words is defined in Appendix D.

Please note: Policies and Implementing Actions are numbered consecutively throughout this document with the letter "P" denoting a policy and the letter "I" denoting an implementing action.

This plan is intended to support Windsor's vision statement (page 1-3). No negative impacts are anticipated by the implementation of the goals, policies, and implementing actions which are included in this plan.

2. Public Access

Public access is important to the Town of Windsor for the provision of recreational access and as a contributor to the Town's tourism industry. The Town is strongly tied to its natural assets which is reflected on the future land use map.

Management Goal 1: To ensure that the Town of Windsor will maximize public access to its shorelines and public trust waters. Specifically, this goal includes developing facilities for additional public trust water access. Strong consideration should be given to developing access facilities that allow for progressive and continual ingress and egress of users for environmental protection and eco-tourism development.



Policies - Public Access:

- P.1 The Town opposes any use which significantly interferes with the public's right to navigate or access the Cashie River or any other public trust waters.
- P.2 The Town believes that, where possible, public shoreline access sites should be accessible to persons with disabilities.
- P.3 The Town supports new development and redevelopments that promote Windsor as an eco-tourist and hunting/recreational destination. The Town intends for these developments to protect and preserve the natural environment and supports the private and public development of waterfront access through private funds and grant monies.
- P.4 Windsor supports state/federal funding of piers for fishing, boating, or public estuarine access. The Town also supports the preservation and maintenance of areas that have traditionally and historically been used for public access.

Implementing Actions - Public Access:

- I.1 The Town will consider applying for public access funding to extend the riverwalk located along the Cashie River. **Schedule: Continuing Activity.**
- I.2 The Town will consider partnering with private entities to secure funds for routine maintenance of the Cashie Riverwalk. **Schedule: Continuing Activity.**
- I.3 Windsor desires the Cashie River to be a navigable river. The Town will look for resources to assist with debris removal, and channel depth maintenance. **Schedule: Review Annually**
- I.4 The town will consider increasing advertising for the Livermon Park, Rotary Park, and the Elm Street Campground in an effort to increase awareness about these facilities. **Schedule: Continuing Activity.**
- I.5 Windsor will pursue funding under the North Carolina CAMA Shoreline Access funding program for other eligible projects that provide access for its citizens, including persons with disabilities. (15A NCAC 7M, Section .0300, Shorefront Access Policies). **Schedule: Continuing Activity.**
- I.6 The Town will continue to cooperate with the Clean Water Management Trust Fund in an effort to acquire/reserve additional property along the Cashie River as open space. **Schedule: Continuing Activity.**



3. Land Use Compatibility

Land use compatibility has not historically been an issue in the Windsor planning jurisdiction. Because of low population growth, major changes in the current land use patterns are not expected. The Town desires to protect its sensitive natural and open space areas. The future land use map reflects a continuation of current land use patterns.

Management Goal 2: The Town of Windsor will ensure that development and use of resources or preservation of land minimizes direct and secondary environmental impacts, avoids risks to public health, safety, and welfare, and is consistent with the capability of the land based on considerations or interactions of natural and manmade features.

Policies - Residential:

- P.5 Windsor supports maintaining an inventory of standard housing. The Town supports repair and reconstruction of privately-owned dwelling units through private funds and/or grants.
- P.6 Windsor supports the development of affordable housing options for low to moderate income persons and seniors.
- P.7 The Town supports the establishment of buffers between residential areas and non-residential areas or adjacent thoroughfares. These buffers should be comprised of low intensity land uses, and/or the establishment of landscaped buffers.
- P.8 Windsor desires to protect established residentially-developed areas and discourages the rezoning of existing residentially-developed or zoned areas to a non-residential classification when reasonably possible. Such rezoning and amendments in land use classifications to the future land use map should be carefully considered to be the best overall land development policy.
- P.9 Windsor supports creating a mix of uses offering the convenience of retail facilities to property owners in an effort to reduce traffic flow on main thoroughfares.
- P.10 Windsor supports densities that are appropriate to the services accessible to the area. Low density land uses, such as residential agricultural and conservation, should be located in areas that do not have public water or sewer service.

Implementing Actions - Residential:

- I.7 The Town will apply for grant funding to rehabilitate substandard houses and clear dilapidated houses for low to moderate income persons and the elderly. Some sources for this funding are North Carolina Housing Finance Agency funding and United States Department of Agriculture funding. **Schedule: Review Annually**



- I.8 The Town will prepare a pedestrian access study that identifies the locations of current sidewalks, the need for sidewalk additions, and the need for walking/hiking trails. This study will focus on tying together the town's various recreational facilities. The Town will support implementation of the 2013 Town of Windsor Parks and Recreation Master Plan (Appendix F lists the recreation improvements which are recommended in the plan). **Schedule: Fiscal Year 2016-2017.**
- I.9 Windsor will allow the reconstruction of any residential structures demolished by natural disasters when the reconstruction complies with all applicable local, state, and federal regulations. **Schedule: Continuing Activity.**

Policies - Commercial/Industrial:

- P.11 Windsor supports commercial development along the Main Street Corridor and in other areas consistent with the Town's future land use map (see Map 29).
- P.12 Windsor desires for new commercial developments to blend with surrounding neighborhoods.
- P.13 Windsor discourages industrial development within areas deemed as AECs within this plan. This policy applies to both new industrial development and to expansion of existing industrial facilities.
- P.14 Windsor supports the recruitment and siting of environmentally compatible light industrial and commercial establishments within its planning jurisdiction in areas that are already similarly developed or in public or private industrial parks.
- P.15 The Town supports the protection of agricultural operations.
- P.16 Windsor desires industrial developments to be located adjacent to and/or with direct access to major thoroughfares.
- P.17 The Town supports the development of new industries that are accessible to existing public water and sewer services.
- P.18 The Town wishes to closely regulate industries which are noxious by reason of the emission of smoke, dust, glare, noise, odor, and vibrations, and those which deal primarily in hazardous products such as explosives.
- P.19 Windsor will continue to work with Bertie County to establish a coordinated approach to recruiting industrial operations within Windsor, as well as the County.



P.20 The Town Windsor will continue to support the Downtown Main Street Program geared towards revitalizing exterior building facades, as well as the overall aesthetic quality of King Street.

P.21 Windsor will support mixed use development in the Central Business District.

Implementing Actions - Commercial/Industrial:

I.10 The Town will enforce its zoning regulations for type and location of commercial and industrial development. **Schedule: Continuing Activity.**

I.11 Windsor will rely on its zoning ordinance and the CAMA permitting program, if required, with regard to new industrial development and expansion of existing industrial facilities. **Schedule: Continuing Activity.**

I.12 Windsor will continue to seek grant funding from the NC Main Street Program to be utilized for facade improvements in conjunction with the town's downtown revitalization program. **Schedule: Continuing Activity.**

I.13 The Town will pursue grant funding to assist with the identification and "clean-up" of brownfield sites. **Schedule: Continuing Activity.**

Policies - Conservation:

P.22 The Town supports the preservation and maintenance of its environmentally sensitive areas, while capitalizing on its natural resources through active promotion of eco-tourism and outdoor recreation.

P.23 Except as otherwise permitted in this plan, residential, commercial, and industrial development should not be supported in natural heritage areas or wetlands.

Implementing Actions - Conservation:

I.14 The Town will endeavor to educate the public about environmentally sensitive areas and what actions they can take to help do their part in preservation. Education may be done through public service announcements or through programs run within the Roanoke/Cashie River Center. **Schedule: Continuing Activity.**

I.15 The Town will meet with appropriate agencies to discuss marketing the Town as a tourist destination because of its natural resources. **Schedule: Continuing Activity.**



- I.16 The Town will strive to protect Windsor's fragile areas from inappropriate, unplanned, or poorly planned development through the following:
- (1) Limit certain land uses in the vicinity of historic sites and natural heritage areas through enforcement of the Windsor zoning ordinance. **Schedule: Continuing Activity.**
 - (2) Coordinate all housing code enforcement/ redevelopment projects/public works projects with the NC Division of Archives and History to ensure the preservation and identification of significant historic structures and archaeological sites. Significant historic sites are identified on page 4-29 of this plan. **Schedule: Continuing Activity.**

Policies - Stormwater Control:

- P.24 The Town wishes for runoff and drainage from developments to be of a quality and quantity that is as close to natural occurrences as is practicable.
- P.25 The Town discourages the clear cutting of land for development.
- P.26 Windsor supports reducing soil erosion, runoff, and sedimentation to minimize the adverse effects on surface and subsurface water quality.
- P.27 The Town supports the enforcement of all controls and regulations, specifically design standards, tie-down requirements, construction and installation standards, elevation requirements, flood-proofing, CAMA regulations, and FEMA regulations, to mitigate the risks of lives and property caused by severe storms and hurricanes.
- P.28 The Town of Windsor supports efforts to reduce pollutants in stormwater runoff within the Cashie River, through the use of innovative stormwater management systems, such as low impact development.

Implementing Actions - Stormwater Control:

- I.17 The town will continue to monitor state stormwater policy, and respond to any new regulations through update of the town's zoning ordinance. **Fiscal Year: Review Annually**
- I.18 The Town of Windsor will cooperate with the NCDOT, the North Carolina Division of Water Resources, and other state agencies in mitigating the impact of stormwater runoff on all conservation classified areas. The town will support the Division of Water Resources stormwater runoff retention permitting process through its zoning permit system by verifying compliance prior to issuance of a zoning permit. **Schedule: Continuing Activity.**



- I.19 The Town of Windsor will attempt to apply for grant funds, and utilize Powell Bill funds, to improve stormwater drainage systems associated with existing rights-of-way. **Schedule: Continuing Activity.**
- I.20 The Town of Windsor will support existing state regulations relating to stormwater runoff resulting from development (Stormwater Disposal Policy 15A NCAC 2H.001-.1003), including coastal stormwater rules, through enforcement of the town's subdivision ordinance. **Schedule: Continuing Activity.**

Implementing Action - General:

- I.21 The Town will pursue reduction of its extraterritorial jurisdiction as indicated on Map 29, Future Land Use. **Schedule: Fiscal Year 2017-2018.**

4. *Infrastructure Carrying Capacity*

Diversification of the Town's economy is dependent upon maintaining and improving the current infrastructure systems. Currently, there are no major problems with the infrastructure systems. The Town's future capital improvements programming will reflect support for maintaining the current systems.

Management Goal 3: To ensure that public systems and services are sized, located, and managed to protect or restore the quality of areas of environmental concern or other fragile areas while providing adequate levels of service to meet the needs of citizens.

Policies - Public Infrastructure Systems:

- P.29 The Town encourages in-fill development in an effort to promote efficient use of land and cost effectiveness for providing public services and to increase the Town's population.
- P.30 Windsor supports providing sufficient water and sewer service to promote economic development and to alleviate public health problems.
- P.31 The Town will not permit package sewer treatment plants within its corporate limits. Pretreatment systems will be required where industrial facilities have the need for pretreatment prior to entry into the public system.

Implementing Actions - Public Infrastructure Systems:

- I.22 Windsor will consider revising water and sewer extension policies to ensure that public/private cooperation in the provision of infrastructure to serve new development is encouraged. This process may be utilized to support voluntary annexations. **Schedule: Fiscal Year Review as necessary.**



- I.23 In cases where package treatment plants are approved (within the ETJ), the Town will 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. **Schedule: As plants are approved.**
- I.24 Windsor will amend the future land use map, when needed, to reflect any water and/or sewer extension projects. **Schedule: Continuing Activity.**
- I.25 Windsor will consult the future land use map when considering the locations of new public facilities and private developments. **Schedule: Continuing Activity.**
- I.26 The Town will rely on the Division of Water Resources to oversee the operation and management of all package treatment plants in the ETJ, if applicable. **Schedule: Continuing Activity.**
- I.27 The Town will request the North Carolina Rural Water Association to prepare a wellhead protection plan. **Schedule: Fiscal Year 2018-2019.**

Policies - Transportation:

- P.32 Windsor supports limiting “strip” residential development along highways and certain roads carrying heavy traffic and encourages service roads or an internal street pattern to eliminate direct driveway connections to highways and roads.
- P.33 Windsor supports the proper location of development along the US Highway 17 bypass corridor and other major roads within the planning jurisdiction to provide safe ingress and egress.
- P.34 The Town encourages development plans that have an attractive appearance and utilize green space or open areas to provide buffers between developments on US Highway 17 Bypass.
- P.35 Windsor supports subdivision developments which utilize the North Carolina Department of Transportation Traditional Neighborhood Development Street Design Guidelines. A Traditional Neighborhood Development (TND) is a human scale, walkable community with moderate to high residential densities, a mixed-use core, and a dense network of narrow streets with reduced curb radii.
- P.36 Windsor specifically supports the following transportation improvement project for Bertie County: R-2506, US 13, from US 13 Business north of Windsor to NC 42. Widen to multi-lanes and replace bridge along bypass.



- P.37 The Town supports maintaining an effective signage and addressing system for all streets, roads, and highways.

Implementing Actions - Transportation:

- I.28 The Town may pursue the planting of street trees along the US Highway 17 Bypass corridor. **Schedule: Fiscal Year 2017-2020.**
- I.29 Windsor will encourage the construction of acceleration/deceleration lanes for the entrances to major commercial and residential developments. **Schedule: Continuing Activity.**

5. *Natural Hazard Areas*

The preservation of natural hazard areas is important to the Town’s quality of life and the economy. Nature-based tourism is important to the Town of Windsor. The future land use map delineates approximately 16.4% of the Town’s planning jurisdiction as conservation.

Management Goal 4: To preserve and maintain natural hazard areas and other coastal features for their natural storm protection functions and their natural resources giving recognition to public health, safety, and welfare issues.

Policies - Natural Hazard Areas:

- P.38 The Town supports development projects that do not weaken or eliminate natural barriers to erosion.
- P.39 To minimize the hazards to life, health, public safety, and property, Windsor will discourage development within flood hazard areas.
- P.40 The Town supports the US Army Corps of Engineers 404 Wetlands program, the guidelines of the Coastal Area Management Act, and the use of local land use ordinances to regulate development of freshwater swamps, marshes, and 404 wetlands. The Town does not want any development as defined by the Town’s zoning ordinance to result in any net loss of wetlands.
- P.41 The Town supports the construction of bulkheads if they fulfill the use standards set forth in 15A NCAC 7H.
- P.42 Windsor supports relocation of structures endangered by erosion and flooding, if the relocated structure will be in compliance with all applicable policies and regulations.



- P.43 Windsor recognizes the difficulty in predicting sea level rise and determining policy decisions regarding it. Therefore, the Town will support cooperation with local, state, and federal efforts to inform the public of the anticipated effects of sea level rise.
- P.44 Windsor supports hazard mitigation planning. The Town participated in the FEMA-approved Northeastern NC Regional Hazard Mitigation Plan (HMP), dated July 7, 2017, that is to be updated every five years. The Land Use Plan and Hazard Mitigation Plan should be consistent with one another. Should there ever be conflicting policies, the Land Use Plan takes precedence. The Hazard Mitigation Plan strategies for the Town of Windsor included in the 2017 Regional HMP are included as policy herein (see Appendix C). Should a LUP policy be found in conflict with the HMP, an amendment to the HMP shall be made and presented to the State Hazard Mitigation Officer, NC Emergency Management, for incorporation into the HMP.

Implementing Actions:

- I.30 Windsor will cooperate with the US Army Corps of Engineers in the regulation and enforcement of the 404 wetlands permit process. **Schedule: Continuing Activity.**
- I.31 Windsor will coordinate all development within the special flood hazard area with the Town's Zoning and Code Enforcement personnel, North Carolina Division of Coastal Management, FEMA, and the US Army Corps of Engineers. **Schedule: Continuing Activity.**
- I.32 Windsor will continue to enforce its existing zoning and flood damage prevention regulations found in the town's zoning ordinance. **Schedule: Continuing Activity.**
- I.33 Windsor permits redevelopment of previously developed areas, provided the projects comply with all applicable policies, regulations, and ordinances. **Schedule: Continuing Activity.**
- I.34 Windsor will enforce the density controls in the town's zoning ordinance. **Schedule: Continuing Activity.**
- I.35 Windsor will utilize the future land use map to assist with controlling the locations and types of development. **Schedule: Continuing Activity.**
- I.36 Continue to participate in and support the County's Hazard Mitigation planning efforts. This effort will include working with Bertie County on the five-year update of the Northeastern NC Regional Hazard Mitigation Plan. **Schedule: Fiscal Year 2016-2017.**



6. Water Quality

Water quality is important to the Town's quality of life and economic development. Water quality impacts the Town's natural assets and the activities of the Town's population. Preservation of the Town's water quality demands a reduction of stormwater runoff.

Management Goal 5: To maintain, protect, and where possible, enhance water quality of public trust waters.

Policies - Water Quality:

- P.45 Windsor will allow additional boat ramp and waterfront access facilities provided they meet local, state, and federal requirements.
- P.46 The Town of Windsor opposes the construction of package treatment plants within its sewer system service area, except in industrial facilities where pretreatment is necessary. The Town opposes the installation of package treatment plants and septic tanks or discharge of waste in any areas classified as freshwater wetlands (404) or natural heritage areas.
- P.47 The Town supports the guidelines of the Coastal Area Management Act and the efforts and programs of the North Carolina Department of Environmental Quality, Division of Coastal Management and the Coastal Resources Commission to protect the public trust waters in Windsor.
- P.48 Windsor supports conserving its surficial groundwater resources.
- P.49 Windsor supports regulation of underground storage tanks in order to protect its groundwater resources.
- P.50 Windsor opposes the disposal of any toxic wastes, as defined by the US Environmental Protection Agency's Listing of Hazardous Substances and Priority Pollutants (developed pursuant to the Clean Water Act of 1977), within its planning jurisdiction.
- P.51 Windsor supports the control of stormwater runoff to aid in the preservation of water quality. The Town will support existing state regulations relating to stormwater runoff resulting from development (Stormwater Disposal Policy 15 NCAC 2H.001-.1003).
- P.52 Windsor supports implementation of the Roanoke River Basinwide Water Quality Management Plan.



- P.53 The Town supports management of problem pollutants, particularly biological oxygen demand and nutrients, in order to correct existing water quality problems and to ensure protection of those waters currently supporting their uses.

Implementing Actions - Water Quality:

- I.37 Windsor will work with the Roanoke/Cashie River Center to promote and educate citizens about ways to reduce stormwater pollutants. **Schedule: Continuing Activity.**
- I.38 The Town of Windsor will conserve its surficial groundwater resources by enforcing CAMA and the NC Division of Water Resources stormwater runoff regulations and by coordinating local development activities involving chemical storage or underground storage and installation/abandonment with Bertie County Emergency Management personnel and the NC Division of Water Resources. The Town will plan for an adequate long-range water supply. In the planning process, Windsor will cooperate with adjacent local governments to protect water resources. **Schedule: Continuing Activity.**
- I.39 The Town will enforce its zoning ordinance to aid in protecting sensitive shoreline areas. It will rely on state and federal agencies to promote and protect environmentally sensitive areas. **Schedule: Continuing Activity.**
- I.40 Windsor will rely on the technical requirements and state program approval for underground storage tanks (40 CFR, Parts 280 and 281), and any subsequent state regulations concerning underground storage tanks adopted during the planning period. **Schedule: Continuing Activity.**
- I.41 The Town of Windsor will encourage low impact development techniques. **Schedule: Continuing Activity.**

7. *Local Areas of Concern*

The Town of Windsor wishes to integrate local areas of concern (cultural, historic, and scenic areas; economic development; and general health and human services needs) with the overall goals of CAMA in the context of land use planning.

Management Goal 6: To identify local concerns and issues and provide actions to address them.

Policies - Cultural, Historic, and Scenic Areas:

- P.54 Windsor will protect its historic resources as a valuable cultural and economic asset.
- P.55 The Town supports development that is consistent with the surrounding areas.



P.56 The Town supports efforts to protect historic properties within its planning jurisdiction and to perpetuate its cultural heritage.

Implementing Actions - Cultural, Historic, and Scenic Areas:

I.42 The Town will work with the US Army Corps of Engineers to coordinate local approval of industrial projects with the "404" permitting process. **Schedule: Continuing Activity.**

I.43 Windsor will guide development so as to protect historic and potentially historic properties within the Town. **Schedule: Continuing Activity.**

I.44 Windsor will coordinate all housing code enforcement and/or redevelopment projects with the NC Division of Archives and History, to ensure that any significant architectural details or buildings are identified and preserved. **Schedule: Continuing Activity.**

I.45 Windsor will coordinate all Town public works projects with the NC Division of Archives and History, to ensure the identification and preservation of significant archaeological sites. **Schedule: Continuing Activity.**

Policies - Economic Development:

P.57 Windsor supports activities that promote the Town as an eco-tourist destination.

P.58 Windsor supports North Carolina Department of Transportation projects to improve access to the Town.

P.59 The Town encourages economic and community growth and development.

P.60 The Town encourages industrial and commercial development in areas with existing infrastructure.

P.61 Windsor supports the extension of public infrastructure from existing systems and encourages the use of central systems for new developments whether residential, commercial, or industrial in nature.

Implementing Actions - Economic Development:

I.46 The Town of Windsor will work with the Chamber of Commerce and other services to recruit companies to the area. **Schedule: Continuing Activity.**



- I.47 Windsor will pursue the approval of the Town as a North Carolina certified retirement community. **Schedule: Fiscal Year 2017-2018.**
- I.48 The Town will continue to support "Downtown Windsor" to study downtown revitalization efforts. **Schedule: Continuing Activity.**
- I.49 Windsor will support the following in the pursuit of industrial development: New heavy industrial developments should be located so that there is no adverse effect on the Town's ecosystem and be encouraged in areas where such uses can utilize available infrastructure. **Schedule: Continuing Activity.**

Policies - General Health and Human Services Needs:

- P.62 The Town desires to have a variety of recreational opportunities for its citizens.
- P.63 Windsor supports a comprehensive program of both active and passive recreational opportunities.
- P.64 Windsor supports the continued public provision of public water, public sewer, street maintenance and related drainage, police protection, fire protection, and solid waste disposal to all citizens.
- P.65 Windsor supports recycling efforts.
- P.66 The Town supports local, state, and federal efforts to minimize the adverse impact of man-made hazards.
- P.67 Windsor supports the construction of water systems with adequate line sizes to ensure adequate water pressure and fire protection.

Implementing Actions - General Health and Human Services Needs:

- I.50 The Town of Windsor will consider design and funding sources for upgrading municipal facilities. **Schedule: Continuing Activity.**
- I.51 The Town will continue to enforce the flood hazard reduction provisions of the Windsor zoning ordinance. **Schedule: Continuing Activity.**
- I.52 The Town will prohibit the installation of underground storage tanks in the 100-year floodplain. **Schedule: Continuing Activity.**



- I.53 Windsor will provide sufficient emergency services to all residents by ensuring the implementation of the following:
- (1) Require that all necessary infrastructure firefighting capability/capacity be provided in new subdivisions and developments. **Schedule: Continuing Activity.**
 - (2) Continue to maintain an effective signage and addressing system for all streets, roads, and highways. **Schedule: Continuing Activity.**

Implementing Actions - Funding Options:

- I.54 Windsor will continue to support state and federal programs that are deemed necessary, cost-effective, and within the administrative and fiscal capabilities of the Town. These include:
- (1) Community Development Block Grant Program
 - (2) Emergency Medical Services
 - (3) Coastal Area Management Act, including shoreline access funds
 - (4) Small Business Association
 - (5) Economic Development Administration Funds
 - (6) Rural Development/USDA
 - (7) Federal Emergency Management Program
 - (8) Parks and Recreation Trust Fund
- Schedule: Continuing Activity.**
- I.55 Windsor will selectively support state and federal programs related to the Town. The Town, through its boards and committees, will monitor state and federal programs and regulations. It will use opportunities as they are presented to voice support for or to disagree with programs and regulations that are proposed by state and federal agencies. **Schedule: Continuing Activity.**
- I.56 Windsor officials will continue to work with the Army Corps of Engineers and any other state and federal agencies to ensure continued dredging and maintenance of river channels as needed to keep these facilities open to navigation. **Schedule: Continuing Activity.**



8. Health and Wellness

Health and wellness involves multiple inter-related subcategories including: General Health and Wellness, Active Living and Healthy Eating, Healthy and Safe Physical Environments, and Aging in Place. No health/wellness policies were included in the August 27, 2009, Town of Windsor CAMA Core Land Use Plan. Implementing strategies only are provided for this section of the Comprehensive Plan. **All strategies are considered continuing activities unless otherwise noted.**

Implementing Strategies - General Health and Wellness:

- I.57 As Planning Board membership vacancies occur, recruit members who have interest and/or expertise in public health.
- I.58 Promote social cohesion through community programming by the Health Department, faith-based organizations, or local non-profits.

Implementing Strategies - Active Living and Healthy Eating:

- I.59 Work with the Bertie County Extension Office and the Bertie County Public Health Department to achieve the following:
- Increase the opportunities for citizens to purchase and grow healthy foods in the Town.
 - Support new opportunities for distribution of locally and regionally produced foods.
 - Work to address disparities in access to healthy foods in inadequately served populations and neighborhoods.
- I.60 Consider the establishment of zoning overlay districts, which may modify the regulations of the underlying land use zone categories that guide the development of FRESH food stores to promote and protect public health, safety, and general welfare. These general goals include, among others, the following purposes:
- Encourage a healthy lifestyle by facilitating the development of FRESH food stores that sell a healthy selection of food products.
 - Provide greater incentives for FRESH food stores to locate in neighborhoods underserved by such establishments.
 - Encourage FRESH food stores to locate in locations that are easily accessible to nearby residents.

A "FRESH food store" is a food store, where at least 6,000 square feet of floor area, or storage space is utilized for retailing the sale of a general line of food and non food grocery products, such as dairy, canned and frozen foods, fresh fruits and vegetables, fresh and prepared meats,



fish and poultry, intended for home preparation, consumption, and utilization. Such retail space utilized for the sale of a general line of food and non food grocery products shall be distributed as follows:

- At least 3,000 square feet or 50% of such retail space, whichever is greater, shall be utilized for the sale of a general line of food products intended for home preparation, consumption, and utilization; and
- At least 2,000 square feet or 30% of such retail space, whichever is greater, shall be utilized for the sale of perishable goods that shall include dairy, fresh produce, frozen foods, and fresh meats of which at least 500 square feet of such retail space shall be designated for the sale of fresh produce.

I.61 Consider incentivizing the development of neighborhood based retail and service outlets aimed at addressing the daily needs for residents of adjacent neighborhoods. Facilities should be developed in a manner that aims to ensure the following:

- Promotes compatibility with neighborhood character.
- Helps reduce vehicle trip lengths and frequency.
- Encourages convenient and ready access, particularly for pedestrians and cyclists.
- Serves as a gathering and meeting place within the community.
- Maintains a compact size.

I.62 Consider the development and adoption of a complete streets policy. This policy should focus on providing a wide range of transportation options including: bicycle lanes and sharrows, and pedestrian access facilities. Increased attention should be given to streets programmed for resurfacing and/or expansion.

I.63 Consider street and sidewalk improvements adjacent to existing school sites. This effort shall involve the installation of raised crosswalks to help reduce vehicle speeds and improved pedestrian visibility. Curb extensions may also be considered to shorten pedestrian crossing distance, eliminate parking on or near the crosswalk, and improve sight distance for pedestrians.

I.64 Consider amending the zoning and subdivision regulations to require the establishment of bicycle parking for new and redeveloped commercial, industrial, and institutional uses.

Schedule: Fiscal Year 2017-2018.

I.65 Consider engaging in the following in order to promote alternative means of transportation:

- Encourage clinics to teach safe cycling to school age children.
- Strategically place signs and provide maps outlining existing and proposed pedestrian and bicycle routes.



- Work with the Region 9 Active Routes to School Coordinator to assess schools within Windsor most suited for enhanced pedestrian infrastructure to connect neighborhoods.
- I.66 Partner with Bertie County to apply for a NCDOT Division of Bicycle and Pedestrian Transportation planning grant to complete countywide Greenways Master Plan. **Schedule: Fiscal Year 2018-2019.**
- I.67 Continue to support the proposed improvements outlined in the 2013 Parks and Recreation Master Plan. Specifically, the town should seek funding to construct the proposed greenway facility connecting the Elm Street Campground to downtown.
- I.68 Consider creating a Community Garden Produce and Education Organization to establish, maintain, and educate residents in areas in need of physical activity and healthy foods.

Implementing Strategies - Healthy and Safe Physical Environments:

- I.69 Consider factoring issues relating to the promotion of public safety into the normal review process for development proposals. Themes associated with Crime Prevention through Environmental Design (CPTED) should be utilized to improve upon overall community safety and appearance. This effort should address a range of issues including lighting, building deterioration, increasing "eyes on the street", and open space design. The four principles of CPTED are provided below:
- Surveillance - ensuring that places are casually observed by the public, "Eyes on the Street."
 - Territorial enforcement - ensuring and promoting sense of ownership of place.
 - Access management - designing and providing safe pathways, routes, and entrances that are well defined, well-lit and convenient.
 - Quality environment - designing a quality environment that is well-maintained, attractive, and provides for a range of activities to ensure high usage.
- I.70 Consider the development of neighborhood pocket parks in underserved portions of the town.

Implementing Strategies - Aging in Place:

According to the CDC, aging in place is defined as "the ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level." Specific strategies related to implementation are provided below.



- I.71 In order to provide a wide variety of housing choices and affordability, the Town should:
- Look for opportunities to provide housing choices that will support the aging and retirement community.
 - Explore different approaches to creating an ample workforce and financially achievable housing stock within the county.
 - Develop a community information strategy to promote housing options for seniors.
- I.72 Promote aging-in-place as a preference for seniors with services such as home modification and maintenance program.
- I.73 Offer and promote awards for planning, designing and building age-friendly built environments.
- I.74 Provide adequate street and park furniture: benches, resting places and awnings for shade.
- I.75 Encourage and support physical activity programs for seniors-fitness, strength, flexibility and balancing activities.



Section 7. Tools for Managing Development

A. Guide for Land Use Decision Making

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

B. Existing Development Program

The existing management program includes the following plans/ordinances: 2011 Unified Development Ordinance, 1981 Historic District Ordinance, 2009 CAMA Land Use Plan Update, 2015 Water Supply Plan, 2007 Strategic Plan, 2011 Bertie County Multi-Jurisdictional Hazard Mitigation Plan, and 2014 Comprehensive Plan. The ordinances are administratively enforced/managed by the Town of Windsor. The Town has a Planning Board and Board of Adjustment which provide legislative and quasi-judicial oversight of the ordinances. The Town Board of Commissioners have final adoption and approval authority for all ordinances.

C. Continuing Planning Process

This plan provides the framework upon which zoning and subdivision regulations and the capital improvements programs should be based. In fact, the preparation of a land use plan and map is mandated by North Carolina legislation as a prerequisite for zoning for both cities and counties.

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

- Consider the future land use map as part of the policies included in this plan.
- Consult this plan, including the future land use map, during the deliberation of all rezoning requests and proposed text amendments.
- Consider the following in deliberation of all zoning petitions:
 - All deliberations should consider this plan's goals, implementing strategies, and future land use map.
 - All uses that are allowed in a zoning district must be considered. A decision to re-zone or not to re-zone a parcel or parcels of property cannot be based on consideration of only one use or a partial list of the uses allowed within a zoning district.



- Requests for zoning changes should not be approved if the requested change will result in spot zoning. Spot zoning is a form of discriminatory zoning whose sole purpose is to serve the private interests of one or more landowners instead of furthering the welfare of the entire community as part of an overall zoning plan. Spot zoning is based on the arbitrary and inappropriate nature of a rezoning change rather than, as is commonly believed, on the size of the area being rezoned.
- Zoning which will result in strip development should be discouraged. Strip development is a melange of development, usually commercial, extending along both sides of a major street. Strip development is often a mixture of auto-oriented enterprises (e.g., gas stations, motels, and food stands), and truck-dependent wholesale and light industrial enterprises. Strip development may severely reduce traffic-carrying capacity of abutting streets by allowing for excessive and conflicting curb cuts.
- Access management should be considered in all land use/zoning decisions.
- The concept of uniformity should be supported in all zoning deliberations. Uniformity is a basic premise of zoning which holds that all land in similar circumstances should be zoned alike; any different circumstances should be carefully balanced with a demonstrated need for such different treatment.
- Specifically, the Planning Board and Board of Commissioners should ask the following questions:
 - Is the request in accordance with this plan? Zoning regulations shall be made in accordance with the Town's Comprehensive Plan (NCGS 160A-383). When adopting or rejecting any zoning amendment, the Board of Commissioners shall also approve a statement describing whether its action is consistent with the Town's Comprehensive Plan and any other officially adopted plan that is applicable, and briefly explaining why the Board of Commissioners considers the action taken to be responsible and in the public interest.
 - Will the request have a serious adverse impact on traffic circulation and other infrastructure?
 - Will the request have an adverse impact on other Town services, including police protection, fire protection, or public works?
 - Will the request have an adverse impact on the Bertie County Schools?
 - Is there a good possibility that the request, as proposed, will result in lessening the enjoyment or use of adjacent properties?



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

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

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

D. Land Use Plan Amendments

At which time the Town of Windsor Comprehensive Plan needs to be amended, the Town will apply the guidelines for Land Use Plan Amendments under Subchapter 7B, Section .0800 of the North Carolina Administrative Code. A brief summary of those guidelines is provided below.

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



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

E. Citizen Participation

Following adoption of this plan, the Town of Windsor will implement the following to ensure adequate citizen participation:

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

F. Required Periodic Implementation Status Reports

The Town of Windsor shall submit an Implementation Status Report to the Division of Coastal Management every two years from the date of initial certification by the CRC. This report will be based on implementation actions that meet the CRC’s Management Topic goals and objectives, as indicated in the action plan pursuant to Subchapter 07B .0702(e)(3). The Implementation Status Report will also identify:

- All local, state, federal, and joint actions that have been undertaken successfully to implement its certified land use plan;
- Any actions that have been delayed and the reasons for the delays;
- Any unforeseen land use issues that have arisen since certification of the land use plan; and
- Consistency of existing land use and development ordinances with current land use plan policies.

U.S. Fish & Wildlife Service

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

Bertie County, North Carolina



Note: Marine Threatened and Endangered Species information can be found at the [National Marine Fisheries Service \(NMFS\) Endangered and Threatened Species website](#)

Updated: 3-28-2016

Common Name	Scientific name	Federal Status	Record Status
Vertebrate:			
American eel	<i>Anguilla rostrata</i>	FSC	Current
Bald eagle	<i>Haliaeetus leucocephalus</i>	BGPA	Current
Cerulean warbler	<i>Dendroica cerulea</i>	FSC	Current
Eastern Henslow's sparrow	<i>Ammodramus henslowii susurrans</i>	FSC	Current
Northern long-eared bat	<i>Myotis septentrionalis</i>	T	Current
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>	FSC	Current
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	Current
Red knot	<i>Calidris canutus rufa</i>	T	Current
Southeastern myotis	<i>Myotis austroriparius</i>	FSC	Current
West Indian manatee	<i>Trichechus manatus</i>	E	Current
Invertebrate:			
Chowanoke crayfish	<i>Orconectes virginianensis</i>	FSC	Current
Vascular Plant:			
Nonvascular Plant:			
Lichen:			

Definitions of Federal Status Codes:

E = endangered. A taxon "in danger of extinction throughout all or a significant portion of its range."

T = threatened. A taxon "likely to become endangered within the foreseeable future throughout all or a significant portion of its range."

C = candidate. A taxon under consideration for official listing for which there is sufficient information to support listing. (Formerly "C1" candidate species.)

BGPA = Bald and Golden Eagle Protection Act. See below.

FSC=Federal Species of Concern. FSC is an informal term. It is not defined in the federal Endangered Species Act. In North Carolina, the Asheville and Raleigh Field Offices of the US Fish and Wildlife Service (Service) define Federal Species of Concern as those species that appear to be in decline or otherwise in need of conservation and are under consideration for listing or for which there is insufficient information to support listing at this time. Subsumed under the term "FSC" are all species petitioned by outside parties and other selected focal species identified in Service strategic plans, State Wildlife Action Plans, or Natural Heritage Program Lists.

T(S/A) = threatened due to similarity of appearance. A taxon that is threatened due to similarity of appearance with another listed species and is listed for its protection. Taxa listed as T(S/A) are not biologically endangered or threatened and are not subject to Section 7 consultation. See below.

EXP = experimental population. A taxon listed as experimental (either essential or nonessential). Experimental, nonessential populations of endangered species (e.g., red wolf) are treated as threatened species on public land, for consultation purposes, and as species proposed for listing on private land.

P = proposed. Taxa proposed for official listing as endangered or threatened will be noted as "PE" or "PT", respectively.

Bald and Golden Eagle Protection Act (BGPA):

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

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

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

Definitions of Record Status:

Current - the species has been observed in the county within the last 50 years.

Historic - the species was last observed in the county more than 50 years ago.

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

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

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

TAXONOMIC_GROUP	SCIENTIFIC_NAME	COMMON_NAME	STATE_STATUS	FEDERAL_STATUS	STATE_RANK	GLOBAL_RANK	HABITAT_COMMENT	COUNTY	COUNTY_STATUS
Freshwater Fish	Acipenser brevirostrum	Shortnose Sturgeon	E	E	S1	G3	brackish water of large rivers and estuaries; spawns in freshwater areas	Bertie	Current
Freshwater Fish	Acipenser oxyrinchus	Atlantic Sturgeon	SC	E	S2	G3	coastal waters, estuaries, large rivers	Bertie	Current
Butterfly	Amblyscirtes carolina	Carolina Roadside-Skipper	W2		S3S4	G3G4	moist woods (mainly hardwoods) near cane; host plant -- cane (<i>Arundinaria</i>)	Bertie	Historical
Butterfly	Amblyscirtes reversa	Reversed Roadside-Skipper	SR		S3	G3G4	flatwoods, savannas, pocosin borders, near cane; host plant -- cane (<i>Arundinaria</i>)	Bertie	Current
Moss	Amblystegium humile	A Thin-net Moss	W7		S2?	G5	wet substrates	Bertie	Current
Bird	Ammodramus henslowii susurrans	Eastern Henslow's Sparrow	SC	FSC	S1B,S1N	G4T4	clearcut pocosins and other damp weedy fields[breeding evidence only]	Bertie	Current
Vascular Plant	Andropogon virginicus var. decipiens	Deceptive Bluestem	W7		S1S2	G5T4	pinelands and disturbed areas	Bertie	Historical
Bird	Anhinga anhinga	Anhinga	W2		S3B	G5	wooded lakes or ponds, or open swamps (for nesting) [breeding evidence only]	Bertie	Current
Freshwater Bivalve	Anodonta implicata	Alewife Floater	T		S2	G5	Chowan, Roanoke, Cape Fear, and Pee Dee drainages	Bertie	Current
Dragonfly or Damselfly	Arigomphus villosipes	Unicorn Clubtail	W3		S3	G5	ponds, lakes, slow-flowing streams	Bertie	Current
Vascular Plant	Asclepias purpurascens	Purple Milkweed	SR-T		S1?	G5?	swamps, bottomlands, edges of moist woods	Bertie	Historical
Moss	Atrichum cylindricum	A Catherinea Moss	W7		S2?	G5	moist soils of ditches and stream banks in bottomlands and swamp forests	Bertie	Historical
Natural Community	Brownwater Bottomland Hardwoods (High Subtype)				S2	G3G4		Bertie	Current
Natural Community	Brownwater Bottomland Hardwoods (Low Subtype)				S2	G4?		Bertie	Current
Natural Community	Brownwater Bottomland Hardwoods (Swamp Transition Subtype)				S3	G3G4		Bertie	Current
Natural Community	Brownwater Levee Forest (High Levee Subtype)				S3	G3G5		Bertie	Current
Natural Community	Brownwater Levee Forest (Low Levee Subtype)				S3S4	G3G4		Bertie	Current
Natural Community	Brownwater Levee Forest (Medium Levee Subtype)				S3S4	G4?		Bertie	Current
Vascular Plant	Carex cherokeensis	Cherokee Sedge	E		S1	G4G5	floodplains	Bertie	Current
Vascular Plant	Carex crus-corvi	Crowfoot Sedge	SR-P		S1	G5	swamp forests	Bertie	Current
Vascular Plant	Carex jamesii	James's Sedge	SR-P		S2	G5	rich woods, especially over mafic rocks	Bertie	Current
Vascular Plant	Carex lupuliformis	False Hop Sedge	SR-P		S1	G4	moist bottomlands, especially in calcareous or mafic areas	Bertie	Current
Vascular Plant	Carya laciniosa	Big Shellbark Hickory	T		S1	G5	brownwater river levees	Bertie	Current
Caddisfly	Ceraclea cancellata	a longhorned caddisfly	SR		S2	G5	Naked Creek, Roanoke River, Elis Creek, Turnbull Creek	Bertie	Current
Vascular Plant	Chasmanthium sessiliflorum	Longleaf Spikegrass	W1		S2S3	G5	hardwood forests	Bertie	Historical
Natural Community	Coastal Plain Semipermanent Impoundment (Cypress-Gum Subtype)				S4	G4G5		Bertie	Current
Natural Community	Coastal Plain Semipermanent Impoundment (Open Water Subtype)				S4	G5		Bertie	Current
Natural Community	Coastal Plain Small Stream Swamp				S4	G4?		Bertie	Current
Animal Assemblage	Colonial Wading Bird Colony				S3	G5		Bertie	Current
Mammal	Corynorhinus rafinesquii macrotis	Rafinesque's Big-eared Bat - Coastal Plain subspecies	SC	FSC	S3	G3G4T3	roosts in hollow trees, old buildings, and beneath bridges, usually near water	Bertie	Current
Reptile	Crotalus horridus	Timber Rattlesnake	SC		S3	G4	wetland forests in the Coastal Plain; rocky, upland forests elsewhere [NHP tracking only den/hibernacula sites and selected isolated populations]	Bertie	Current
Vascular Plant	Cynanchum laeve	Smooth Swallowwort	W7		S1	G5	bottomlands and disturbed areas	Bertie	Current
Natural Community	Cypress--Gum Swamp (Blackwater Subtype)				S4	G4?		Bertie	Current
Natural Community	Cypress--Gum Swamp (Brownwater Subtype)				S4	G5?		Bertie	Current
Natural Community	Cypress--Gum Swamp (Intermediate Subtype)				S3S4	G4		Bertie	Current
Natural Community	Dry-Mesic Oak--Hickory Forest (Coastal Plain Subtype)				S3	G3G4		Bertie	Current
Freshwater Bivalve	Elliptio cistellaeformis	Box Spike	W3,W5		SU	G4	Neuse, Lumber, Pee Dee drainages; Lake Waccamaw	Bertie	Current
Freshwater Fish	Enneacanthus chaetodon	Blackbanded Sunfish	SR		S3	G3G4	many drainages, particularly Lumber and Waccamaw	Bertie	Historical
Freshwater Fish	Enneacanthus obesus	Banded Sunfish	SR		S3	G5	most Atlantic drainages	Bertie	Current
Dragonfly or Damselfly	Epithea spinosa	Robust Baskettail	W3		S3?	G4	ponds and lakes	Bertie	Current
Natural Community	Estuarine Beach Forest				S2?	G2		Bertie	Current
Freshwater Fish	Etheostoma vitreum	Glassy Darter	W5		S3	G4G5	Chowan, Roanoke, Tar, and Neuse drainages	Bertie	Current
Vascular Plant	Eurybia spectabilis	Showy Aster	SR-O		S2?	G5	pine barrens and woodland borders	Bertie	Historical
Reptile	Farancia erytrogramma	Rainbow Snake	SR		S3	G4	swamps, lakes, rivers, and other sluggish water	Bertie	Current
Dragonfly or Damselfly	Gomphus dilatatus	Blackwater Clubtail	W3		S3?	G5	rivers	Bertie	Current
Bird	Haliaeetus leucocephalus	Bald Eagle	T	BGPA	S3B,S3N	G5	mature forests near large bodies of water (for nesting); lakes and sounds (for foraging) [nesting sites only]	Bertie	Current
Vascular Plant	Heteranthera multiflora	Multiflowered Mud-plantain	SR-P		S1	G4	open pools in brownwater or blackwater river floodplains	Bertie	Historical
Vascular Plant	Heteranthera reniformis	Kidneyleaf Mud-plantain	W7		S2?	G5	muddy shores, bars, pools	Bertie	Current
Vascular Plant	Hottonia inflata	Featherfoil	SR-O		S1?	G4	pools in blackwater or brownwater swamps, interdune ponds	Bertie	Current

Appendix B: NCDEQ Heritage Data by County

TAXONOMIC_GROUP	SCIENTIFIC_NAME	COMMON_NAME	STATE_STATUS	FEDERAL_STATUS	STATE_RANK	GLOBAL_RANK	HABITAT_COMMENT	COUNTY	COUNTY_STATUS
Vascular Plant	<i>Hypericum tubulosum</i>	Marsh St. John's-wort	W7		S2?	G4?	wet sites, pools	Bertie	Current
Vascular Plant	<i>Isotria verticillata</i>	Large Whorled Pogonia	W1		S2S3	G5	forests	Bertie	Historical
Vascular Plant	<i>Juncus caesariensis</i>	New Jersey Rush	E	FSC	S1	G2G3	seepage bog	Bertie	Current
Freshwater Bivalve	<i>Lampsilis radiata</i>	Eastern Lampmussel	T		S3	G5	Chowan, Roanoke, Tar, Neuse, Cape Fear, Yadkin--Pee Dee drainages	Bertie	Historical
Vascular Plant	<i>Leersia lenticularis</i>	Catchfly Cutgrass	SR-P		S2?	G5	low woods	Bertie	Current
Freshwater Bivalve	<i>Leptodea ochracea</i>	Tidewater Mucket	T		S2	G3G4	Chowan, Roanoke, and Tar drainages, and abundant in Lake Waccamaw	Bertie	Current
Freshwater Bivalve	<i>Ligumia nasuta</i>	Eastern Pondmussel	T		S2	G4	Chowan, Roanoke, Neuse, Tar, Cape Fear, and Yadkin--Pee Dee drainages	Bertie	Current
Vascular Plant	<i>Listera australis</i>	Southern Twayblade	W1		S3	G4	moist hardwood forest, swamps, wet woods with acidic soils	Bertie	Current
Amphibian	<i>Lithobates kauffeldi</i>	Atlantic Coast Leopard Frog	W3		SU	GNR	freshwater wetlands, such as marshes and pond edges, in the northeastern portion of the province; recently described and range is poorly known	Bertie	Current
Natural Community	Low Elevation Seep (Typic Subtype)				S3	G3?		Bertie	Obscure
Vascular Plant	<i>Matelea decipiens</i>	Glade Milkvine	SR-P		S3	G5	thin woodlands over mafic or calcareous rocks	Bertie	Current
Vascular Plant	<i>Mertensia virginica</i>	Virginia Bluebells	W7		S2	G5	rich forests on slopes and bottomlands	Bertie	Historical
Natural Community	Mesic Mixed Hardwood Forest (Coastal Plain Subtype)				S3	G3		Bertie	Current
Mammal	<i>Mustela frenata</i>	Long-tailed Weasel	W3		S3S4	G5	forests, brushy areas	Bertie	Current
Mammal	<i>Myotis austroriparius</i>	Southeastern Bat	SC	FSC	S2	G3G4	roosts in buildings, hollow trees; forages near water; mainly in the Coastal Plain	Bertie	Current
Mammal	<i>Myotis septentrionalis</i>	Northern Long-eared Bat	SR	T-4(d)	S2	G2G3	roosts in hollow trees and buildings (warmer months), in caves and mines (winter); mainly in the mountains	Bertie	Current
Vascular Plant	<i>Nelumbo lutea</i>	American Lotus	W7		S2	G4	ponds, slow streams, natural lakes, estuarine rivers	Bertie	Historical
Butterfly	<i>Neonympha helicta</i>	Helicta Satyr	SR		S1?	G3G4	sedgy wetlands, including sandhill seeps, pocosin ecotones, and drained beaver ponds in the Sandhills, low pocosins in the northeast Coastal Plain, and wet open swales in the Piedmont; host plants -- sedges (Alamance*, Anson, Beaufort, Bertie*, Chatham*, Cumberland, Dare, Durham*, Gaston*, Gates*, Granville, Halifax, Harnett, Hoke, Hyde, Martin*, Moore, Pitt, Richmond, Scotland, Washington)	Bertie	Historical
Natural Community	Nonriverine Swamp Forest (Cypress-Gum Subtype)				S2	G2G3		Bertie	Current
Natural Community	Nonriverine Swamp Forest (Mixed Subtype)				S3	G3		Bertie	Current
Natural Community	Nonriverine Swamp Forest (Sweetgum Subtype)				S2	G2?		Bertie	Current
Natural Community	Nonriverine Wet Hardwood Forest (Oak Flat Subtype)				S1	G2		Bertie	Current
Natural Community	Nonriverine Wet Hardwood Forest (Oak-Gum Slough Subtype)				S1	G2G3		Bertie	Current
Freshwater Fish	<i>Notropis chalybaeus</i>	Ironcolor Shiner	W1		S2S3	G4	coastal plain rivers and creeks (Beaufort*, Bertie*, Bladen, Brunswick, Carteret, Chowan*, Columbus, Craven*, Cumberland*, Duplin, Edgecombe*, Gates*, Greene*, Halifax*, Harnett, Hertford, Hoke, Johnston, Jones, Lenoir*, Martin, Moore*, Nash*, New Hanover*, Northampton, Onslow, Pender*, Richmond, Robeson, Sampson*, Scotland, Wake, Wayne*, Wilson*)	Bertie	Current
Reptile	<i>Ophisaurus attenuatus</i>	Slender Glass Lizard	SR		S2	G5	old fields, wooded edges, open woods (Beaufort, Bertie, Bladen, Brunswick, Chatham, Cherokee, Chowan, Clay, Columbus, Durham, Edgecombe, Franklin, Gates, Halifax, Harnett, Iredell, Johnston, Lenoir, Orange, Pitt, Stanly, Vance, Wake, Warren, Wilson)½	Bertie	Historical
Crustacean	<i>Orconectes virginienis</i>	Chowanoke Crayfish	SC	FSC	S3	G3	streams and rivers in the Chowan and Roanoke drainages	Bertie	Current
Vascular Plant	<i>Parietaria pensylvanica</i>	Pennsylvania Pellitory	W7		S2	G5	slopes and bottomlands, usually over calcareous or mafic rocks	Bertie	Historical
Vascular Plant	<i>Paspalum fluitans</i>	Horsetail Crown Grass	SR-P		S1	G5	drawdown riverbanks and seepage areas in swamp forests	Bertie	Historical
Vascular Plant	<i>Paspalum praecox</i> var. <i>praecox</i>	Early Crown Grass	W1		S2S3	G4	limesink ponds and savannas	Bertie	Historical
Mammal	<i>Perimyotis subflavus</i>	Tricolored Bat	SR		S3	G3	roosts in clumps of leaves (mainly in summer), caves, rock crevices, and other dark and sheltered places	Bertie	Current
Vascular Plant	<i>Phanopyrum gymnocarpon</i>	Swamp Panic Grass	SR-O		S1	G5	tidal and blackwater cypress-gum swamps	Bertie	Current
Bird	<i>Picoides borealis</i>	Red-cockaded Woodpecker	E	E	S2	G3	mature open pine forests, mainly in longleaf pine [breeding evidence only]	Bertie	Historical
Vascular Plant	<i>Prenanthes trifoliolata</i>	Three-leaved Rattlesnake-root	W6		S4?	G5	forests	Bertie	Current
Vascular Plant	<i>Ranunculus ambigens</i>	Water-plantain Spearwort	SC-H		SH	G4	open wet areas	Bertie	Historical
Vascular Plant	<i>Ranunculus flabellaris</i>	Yellow Water-crowfoot	SC-H		S1	G5	pools in blackwater swamps	Bertie	Current
Vascular Plant	<i>Ruellia strepens</i>	Limestone Wild-petunia	E		S1	G4G5	low woods over marl	Bertie	Current
Vascular Plant	<i>Sabatia quadrangula</i>	Four-angle Sabatia	W7		S2	G4G5	moist to mesic grassy glades, woodland borders, powerline clearings, often with hardpan soils	Bertie	Historical
Mammal	<i>Sciurus niger</i>	Eastern Fox Squirrel	W2		S3	G5	open forests, mainly longleaf pine/scrub oak	Bertie	Current
Bird	<i>Setophaga cerulea</i> (syn. <i>Dendroica cerulea</i>)	Cerulean Warbler	SC	FSC	S2B	G4	mature hardwood forests; steep slopes and coves in mountains, natural levees in Coastal Plain [breeding season only]	Bertie	Current

Appendix B: NCDEQ Heritage Data by County

TAXONOMIC_GROUP	SCIENTIFIC_NAME	COMMON_NAME	STATE_STATUS	FEDERAL_STATUS	STATE_RANK	GLOBAL_RANK	HABITAT_COMMENT	COUNTY	COUNTY_STATUS
Amphibian	<i>Siren lacertina</i>	Greater Siren	W3		S3	G5	lakes, ponds, and streams, especially where muddy or with weedy vegetation	Bertie	Current
Moss	<i>Sphagnum russowii</i>	Russow's Peatmoss	SR-D		S1	G5	bogs	Bertie	Current
Vascular Plant	<i>Spirodela polyrrhiza</i>	Common Water-flaxseed	W7		S2?	G5	pools, stagnant waters	Bertie	Current
Vascular Plant	<i>Stachys tenuifolia</i>	Smooth Hedge-nettle	SR-D		S1	G5	swamp forests, edges of bottomlands	Bertie	Current
Dragonfly or Damselfly	<i>Stylurus amnicola</i>	Riverine Clubtail	W3		S3	G4	rivers	Bertie	Current
Freshwater or Terrestrial Gastropod	<i>Succinea unicolor</i>	Squatty Ambersnail	SR		S1S2	G3G4	marshy areas near streams and lakes	Bertie	Current
Moss	<i>Thuidium allenii</i>	Fernmoss	W7		S2?	G3G5	on soil, logs, exposed roots, and tree bases in swamps, often just above water line	Bertie	Historical
Natural Community	Tidal Freshwater Marsh (Broadleaf Pondlily Subtype)				S2	G4G5		Bertie	Current
Natural Community	Tidal Freshwater Marsh (Mixed Freshwater Subtype)				S1	G2?		Bertie	Current
Natural Community	Tidal Freshwater Marsh (Southern Wild Rice Subtype)				S4	G3G5		Bertie	Current
Natural Community	Tidal Swamp (Cypress--Gum Subtype)				S4	G3G4		Bertie	Current
Vascular Plant	<i>Trichophorum caespitosum</i> ssp. <i>caespitosum</i>	Deerhair Bulrush	SR-D		S2S3	G5	high elevation rocky summits, moist cliffs	Bertie	Current
Vascular Plant	<i>Urtica chamaedryoides</i>	Dwarf Stinging Nettle	E		S1	G4G5	rich blackwater and brownwater levee forests	Bertie	Current
Bird	<i>Vireo gilvus</i>	Warbling Vireo	SR		S2B	G5	groves of hardwoods along rivers and streams [breeding season only]	Bertie	Current
Freshwater or Terrestrial Gastropod	<i>Xolotrema carolinense</i>	Blunt Wedge	W3		S3?	G4	wooded floodplains and slopes, mainly near the Fall Line	Bertie	Current

SECTION 6. MITIGATION STRATEGIES

Table 6-2. Bertie County Mitigation Strategies

Number	Strategy	Goal Addressed (see page 6-3)	Hazard Addressed (see page 3-1)	Applicable Jurisdictions	Priority	Responsible Party/Dept.	Funding Sources
B1	Revise/update regulatory maps upon completion of FIRM update.	1, 2, 3, 4, 5, 6	1, 2, 3, 10, 11	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	High	County Board of Commissioners County Administration Municipal Administrations	GF, NFIP
B2	Continue to develop a Geographic Information System (GIS) to map current land uses and to map proposed future land uses (CAMA Land Use Plan Update) as an aid in assessing community vulnerability	1, 2, 4, 6	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	High	County Administration Municipal Administrations	GF, NCDEQ
B3	Consider participating in the Community Rating System (CRS) to reduce flood insurance premiums for citizens.	2, 5	1, 2, 3, 5, 10, 11	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	Medium	County Board of Commissioners Municipal Administrations	GF, NCDPS, NFIP
B4	Accomplish the following during the next CAMA Land Use Plan update: <ul style="list-style-type: none"> Establish more specific growth guidelines and policies and specifically delineate sensitive environmental areas for protection; Adopt a more limited policy on the types of uses allowed within flood hazard areas; Adopt a policy to not extend public services and utilities into flood hazard or other environmentally sensitive areas to discourage growth. 	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	Medium	County Board of Commissioners Municipal Administrations	GF, NCDEQ

SECTION 6. MITIGATION STRATEGIES

Number	Strategy	Goal Addressed (see page 6-3)	Hazard Addressed (see page 3-1)	Applicable Jurisdictions	Priority	Responsible Party/Dept.	Funding Sources
B5	Consider adopting a zoning ordinance that: <ul style="list-style-type: none"> Establishes zoning districts and sets standards for future development. Includes standards for clustering of residential lot development to help preserve flood hazard areas from development. Includes a flood hazard overlay zone to ensure that inappropriate development is adequately controlled. 	1, 6	1, 2, 3, 4, 5, 6, 7, 11	Bertie Co.	Medium	County Board of Commissioners County Administration	GF, NCDPS
B6	Consider adopting subdivision regulations that include minimum standards for property divisions.	1,6	1, 2, 3, 4, 5, 6, 7, 11	Bertie Co.	Medium	County Board of Commissioners County Administration	GF
B7	Review and update the flood damage prevention ordinance to: <ul style="list-style-type: none"> Ensure maximum protection from flood hazard events. Raise the minimum finished floor elevation to at least 2' above base flood elevation (BFE) to provide more flood protection for new or substantially improved structures. Consider prohibiting any fill within the 100-year floodplain to discourage development. Prohibit enclosures to the lower areas of elevated buildings, including breakaway walls. Continue to require and maintain FEMA elevation certificates for all permits for new buildings or improvements to buildings on lots including any portion of the 100-year floodplain. 	1, 2, 5	1, 2, 3, 10, 11	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	High	County Board of Commissioners County Administration Municipal Administrations	GF, NFIP
B8	Inventory existing lots and structures within flood hazard areas to establish baseline data regarding current state of development within flood hazard areas.	5	1, 2, 3, 10, 11	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	Medium	County Administration Municipal Administrations	GF, NFIP

SECTION 6. MITIGATION STRATEGIES

Number	Strategy	Goal Addressed (see page 6-3)	Hazard Addressed (see page 3-1)	Applicable Jurisdictions	Priority	Responsible Party/Dept.	Funding Sources
B9	Identify repetitive flood loss properties for acquisition and relocation. Seek Federal and State funding (voluntary program).	3	1, 2, 3, 10, 11	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	High	County Administration Municipal Administrations	GF, NFIP
B10	Establish a coordinating committee to ensure that all parties responsible for stormwater management within the county communicate to ensure maximum cooperation in developing and maintaining stormwater drainage systems.	1, 2, 6	1, 2, 3, 10, 11	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	High	County Administration Municipal Administrations	GF, NCDEQ, NCDPS
B11	Establish and maintain a coordinated debris inspection and removal program.	4	1, 2, 3, 4, 5, 6, 7, 8, 9 10, 11, 12	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	High	County Administration Municipal Administrations	GF, NCDPS
B12	Review rebuilding activities in wake of recent hurricanes and flooding and establish policies/procedures for minimizing repetitive flood losses.	1, 2, 5	1, 2, 3, 10, 11	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	High	County Board of Commissioners County Administration Municipal Administrations	GF, NFIP, NCDPS
B13	Advise/assist property owners in retrofitting homes and businesses.	1, 4, 5	1, 2, 3, 10, 11	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	High	County Administration Municipal Administrations	GF, SBA, NCDPS
B14	Continue to support enforcement of the NC State Building Code.	1, 2, 4, 5	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	High	County Building Inspections Municipal Administrations	GF

SECTION 6. MITIGATION STRATEGIES

Number	Strategy	Goal Addressed (see page 6-3)	Hazard Addressed (see page 3-1)	Applicable Jurisdictions	Priority	Responsible Party/Dept.	Funding Sources
B15	Support Bertie County in maintaining a hazard warning system to alert citizens of the possibility of a natural hazard event.	1, 3, 4, 5	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	High	County Emergency Management County Board of Commissioners Municipal Administrations	GF, NCDPS
B16	Continue to monitor trees and branches in public area at risk of breaking or falling in windstorms, or any other natural hazardous event.	1, 2	1, 4, 5	Bertie Co., Askewville, Aulander, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, Windsor	High	County Administration Municipal Administrations	GF, Electric Service Providers

Appendix D

Policy/Implementing Action

Definitions of Common Terms

1. Should: An officially adopted course or method of action intended to be followed to implement the community goals. Though not mandatory as “shall,” it is still an obligatory course of action unless clear reasons can be identified that an exception is warranted. Town staff and Planning Board involved at all levels from planning to implementation.
2. Continue: Follow past and present procedures to maintain desired goal, usually with Town staff involved at all levels from planning to implementation.
3. Encourage: Foster the desired goal through Town policies. Could involve Town financial assistance.
4. Enhance: Improve current goal to a desired state through the use of policies and Town staff at all levels of planning. This could include financial support.
5. Identify: Catalog and confirm resource or desired item(s) through the use of Town staff and actions.
6. Implement: Actions to guide the accomplishment of the Plan recommendations.
7. Maintain: Keep in good condition the desired state of affairs through the use of Town policies and staff. Financial assistance should be provided if needed.
8. Prevent: Stop described event through the use of appropriate Town policies, staff actions, Planning Board actions, and Town finances, if needed.
9. Promote: Advance the desired state through the use of Town policies and Planning Boards and staff activity at all levels of planning. This may include financial support.
10. Protect: Guard against a deterioration of the desired state through the use of Town policies, staff, and, if needed, financial assistance.
11. Provide: Take the lead role in supplying the needed financial and staff support to achieve the desired goal. The Town is typically involved in all aspects from planning to implementation to maintenance.
12. Strengthen: Improve and reinforce the desired goal through the use of Town policies, staff, and, if necessary, financial assistance.
13. Support: Supply the needed staff support, policies, and financial assistance at all levels to achieve the desired goal.
14. Work: Cooperate and act in a manner through the use of Town staff, actions, and policies to create the desired goal.

Appendix E: Town of Windsor Soil Characteristics

Map Symbol	Soil Series	Dwellings with Basements	Local Roads and Streets	Septic Tank Absorption Fields	Erosion	Total Acreage	% of Total
AtA*	Altavista	Very limited: flooding, depth to saturated zone	Somewhat limited: low strength, depth to saturated zone, flooding	Very limited: depth to saturated zone, seepage, slow water movement, flooding	Slight	179.5	2.3%
Au*	Augusta	Very limited: flooding, depth to saturated zone	Somewhat limited: low strength, depth to saturated zone, flooding	Very limited: depth to saturated zone, slow water movement, flooding	Slight	49.9	0.6%
BB*	Bibb	Very limited: flooding, depth to saturated zone	Very limited: depth to saturated zone, flooding	Very limited: flooding, depth to saturated zone, seepage	Slight	190.9	2.4%
BoB*	Bonneau	Somewhat limited: depth to saturated zone	Not limited	Somewhat limited: depth to saturated zone, slow water movement	Slight	10.3	0.1%
Ch*	Chewacla	Very limited: flooding, depth to saturated zone	Very limited: flooding, low strength, depth to saturated zone	Very limited: flooding, depth to saturated zone, seepage, slow water movement	Slight	2.6	0.0%
CnB	Conetoe	Not limited	Not limited	Very limited: seepage	Slight	447.8	5.6%
CrA	Craven	Very limited: shrink-swell, depth to saturated zone	Very limited: low strength, shrink-swell	Very limited: slow water movement, depth to saturated zone, seepage	Slight	380.2	4.8%
CrB*	Craven	Very limited: shrink-swell, depth to saturated zone	Very limited: low strength, shrink-swell	Very limited: slow water movement, depth to saturated zone, seepage	Moderate	678.2	8.5%
CrC*	Craven	Very limited: shrink-swell, depth to saturated zone	Very limited: low strength, shrink-swell	Very limited: slow water movement, depth to saturated zone, seepage	Moderate	161.9	2.0%
DgA	Dogue	Very limited: shrink-swell, depth to saturated zone	Very limited: low strength, shrink-swell, depth to saturated zone	Very limited: depth to saturated zone, slow water movement, seepage	Slight	186.8	2.3%
DgB	Dogue	Very limited: shrink-swell, depth to saturated zone	Very limited: low strength, shrink-swell, depth to saturated zone	Very limited: depth to saturated zone, slow water movement, seepage	Moderate	67.0	0.8%
DgC*	Dogue	Very limited: shrink-swell, depth to saturated zone, slope	Very limited: low strength, shrink-swell, slope, depth to saturated zone	Very limited: depth to saturated zone, slow water movement, seepage, slope	Severe	11.7	0.1%

Map Symbol	Soil Series	Dwellings with Basements	Local Roads and Streets	Septic Tank Absorption Fields	Erosion	Total Acreage	% of Total
Dk*	Dorovan	Very limited: ponding, subsidence, flooding, depth to saturated zone	Very limited: ponding, depth to saturated zone, subsidence, flooding	Very limited: flooding, ponding, depth to saturated zone, subsidence, seepage	Slight	1,021.2	12.8%
GoA*	Goldsboro	Very limited: depth to saturated zone	Not limited	Very limited: depth to saturated zone, slow water movement	Slight	19.0	0.2%
Lf*	Leaf	Very limited: depth to saturated zone, shrink-swell	Very limited: depth to saturated zone, low strength, shrink-swell	Very limited: slow water movement, depth to saturated zone	Slight	758.4	9.5%
Ln*	Lenoir	Somewhat limited: depth to saturated zone, shrink-swell	Very limited: low strength, shrink-swell, depth to saturated zone	Very limited: slow water movement, depth to saturated zone	Slight	1,015.2	12.7%
Na*	Nahunta	Very limited: depth to saturated zone	Very limited: low strength, depth to saturated zone	Very limited: depth to saturated zone, slow water movement	Slight	6.7	0.1%
NoA	Norfolk	Somewhat limited: depth to saturated zone	Somewhat limited: low strength	Somewhat limited: depth to saturated zone, slow water movement	Slight	130.4	1.6%
NoB	Norfolk	Somewhat limited: depth to saturated zone	Somewhat limited: low strength	Somewhat limited: depth to saturated zone, slow water movement	Slight	83.9	1.1%
Ra*	Rains	Very limited: depth to saturated zone	Very limited: depth to saturated zone, low strength	Very limited: depth to saturated zone, slow water movement	Slight	54.5	0.7%
Ro*	Roanoke	Very limited: flooding, depth to saturated zone, shrink-swell	Very limited: depth to saturated zone, flooding, low strength, shrink-swell	Very limited: flooding, slow water movement, depth to saturated zone, seepage	Slight	912.1	11.4%
Se*	Seabrook	Very limited: flooding, depth to saturated zone	Somewhat limited: flooding	Very limited: depth to saturated zone, seepage, filtering capacity, flooding	Slight	97.8	1.2%
TaB	Tarboro	Very limited: flooding	Somewhat limited: flooding	Very limited: filtering capacity, seepage, flooding	Slight	36.8	0.5%
Ud	Udorthents	Not limited	Not limited	Somewhat limited: slow water movement	Slight	36.8	0.5%

Map Symbol	Soil Series	Dwellings with Basements	Local Roads and Streets	Septic Tank Absorption Fields	Erosion	Total Acreage	% of Total
Wa*	Wahee	Very limited: flooding, depth to saturated zone, shrink-swell	Very limited: low strength, depth to saturated zone, shrink-swell, flooding	Very limited: slow water movement, depth to saturated zone, seepage, flooding	Slight	330.6	4.1%
WkA	Wickham	Very limited: flooding	Somewhat limited: flooding	Somewhat limited: slow water movement, flooding	Moderate	197.7	2.5%
WkB	Wickham	Very limited: flooding	Somewhat limited: flooding	Somewhat limited: slow water movement, flooding	Moderate	482.3	6.1%
WkC*	Wickham	Very limited: flooding	Somewhat limited: flooding	Somewhat limited: slow water movement, flooding, slope	Moderate	62.1	0.8%
WmB	Wickham	Very limited: flooding	Somewhat limited: flooding	Somewhat limited: slow water movement, flooding	Moderate	289.1	3.6%
WtD*	Winton	Somewhat limited: slope, depth to saturated zone	Somewhat limited: slope	Very limited: depth to saturated zone, slow water movement, slope	Moderate	38.1	0.5%
w	Water					30.2	0.4%
				TOTAL		7,969.7	100.0%

*Hydric soils.

Source: Soil Survey of Bertie County, North Carolina.

Appendix F

Potential Enhancement Recommendations

2013 Parks & Recreation Master Plan

The following provides potential enhancement recommendations presented for each of the Town's park/recreational facilities:

Rotary Park

- Vegetation clearing
- 500' trail (structure soil trail - crusher fines under vibratory plate compactor)
- Pedestrian scaled lighting (6 spaced at 80')
- Historic placards

Elm Street Campground

- Unit Site Selection and Construction
 - After clearing the trail/road, the design team should mark the perimeter of each unit
 - Clear the marked perimeter of each unit
 - Leave vegetation and trees between sites intact as buffers and barriers
 - Be considerate of uneven ground and drainage issues for each site
 - Rehabilitate existing RV sites
 - Site #2 has the "living site" on the wrong side - should be to the right of the RV
 - Include border around each RV site
 - Incorporate vegetation inside existing RV loop for added privacy
- Primitive Camping Unit Size
 - Sites should be spacious with a level of privacy. May include camp furniture such as picnic tables, grills, established fire pits, and lantern hangers.
 - Unit size on average should be 25 x 25 ft or 625 square ft - good for the average family (1.8 children)
 - Camp units do not have to all be the same size and shape
 - Variety of sizes will help accommodate different types of equipment and campers
 - Recommend one large group site
 - Great for summer camps, boy scouts/girl scouts, family reunions, organizational camp outs, etc.
 - Include large fire pit for group camp site
 - Recommend surfacing unit sites with reinforced material
- Unit Furniture
 - Picnic tables
 - Use side of table to label each camp unit
 - Established fire pits/grills
 - Ground level, tilt back grill set on cement
 - Provides designated fire pits which alleviates clean-up challenges

- When grill grate is in upright position it should not be between the picnic table and the campfire
- Should be placed 5 to 6 feet away from the picnic table
- Lantern hangers
- New Restroom/Shower Facility
 - Full-service shower facility with men/women units
- Park Amenities
 - Most RV parks offer a variety of amenities for its users. Amenities that are recommended for this campground include:
 - Dog pick-up stations
 - Recreation area or sport courts (horseshoe pits)
 - Interpretative signage

Livermon Park and Mini Zoo

- Upgrade restrooms
- New playground equipment

Cashie Wetland Walk and Canoe Trail

- Rehabilitation of concrete walk
- Connection to NC Birding Trail
- New canoes/kayaks (five in process)
- New wayfinding signage on canoe trail
- Directional signage for canoe trail

Roanoke/Cashie River Center

- River walk maintenance
- Additional canoe/kayak launch

Sutton Drive Tennis Courts

- Court resurfacing (complete)
- Additional trash receptacles

Proposed New Facilities

- Cashie Memorial Park
 - Plans include a covered picnic area, a canoe/kayak launch, passive open space, and a fishing area
- Windsor Greenway
 - 10-foot asphalt multi-use path