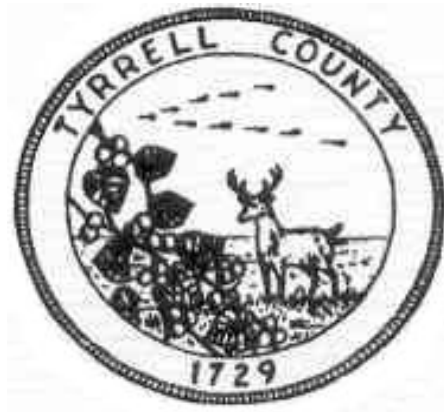


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# TYRRELL COUNTY/ TOWN OF COLUMBIA

## CAMA CORE LAND USE PLAN



Adopted by the Tyrrell County Board of Commissioners: December 15, 2009  
Adopted by the Town of Columbia Board of Alderman: February 1, 2010  
Certified by the Coastal Resources Commission: March 25, 2010

Prepared By:

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 CAMA CORE LAND USE PLAN  
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MATRIX OF REQUIRED ELEMENTS

CAMA CORE LAND USE ELEMENT	ELEMENT DISCUSSED
(a) Organization of the Plan	page 1
(b) Community Concerns and Aspirations	
(1) Significant Existing and Emerging Conditions	page 9
(2) Key Issues	page 9-10
(3) A Community Vision	page 10
(c) Analysis of Existing and Emerging Conditions	pages 11-15
(1) Population, Housing, and Economy	
(A) Population:	
(i) Permanent population growth trends using data from the two most recent decennial Censuses;	
(ii) Current permanent and seasonal population estimates;	
(iii) Key population characteristics;	
(iv) Age; and	
(v) Income	
(B) Housing Stock:	pages 16-19
(i) Estimate of current housing stock, including permanent and seasonal units, tenure, and types of units (single-family, multi-family, and manufactured); and	
(ii) Building permits issued for single-family, multi-family, and manufactured homes since last plan update	
(C) Local Economy	pages 19-25
(D) Projections	page 25
(2) Natural Systems Analysis	
(A) Mapping and Analysis of Natural Features	
(i) Areas of Environmental Concern (AECs);	pages 32-43
(ii) Soil characteristics, including limitations for septic tanks, erodibility, and other factors related to development;	pages 30-32
(iii) Environmental Management Commission water quality classifications and related use support designations, and Division of Environmental Health shellfish growing areas and water quality conditions;	pages 46-48
(iv) Flood and other natural hazard areas;	pages 26-29
(v) Storm surge areas;	
(vi) Non-coastal wetlands including forested wetlands, shrub-scrub wetlands, and freshwater marshes;	pages 44-46
(vii) Water supply watersheds or wellhead protection areas;	page 32



CAMA CORE LAND USE ELEMENT	ELEMENT DISCUSSED
<ul style="list-style-type: none"> <li>(viii) Primary nursery areas, where mapped;</li> <li>(ix) Environmentally fragile areas; and</li> <li>(x) Additional natural features or conditions identified by the local government.</li> </ul>	pages 44-48 pages 32-44 pages 26-30
<ul style="list-style-type: none"> <li>(B) Composite Map of Environmental Conditions:               <ul style="list-style-type: none"> <li>(i) Class I</li> <li>(ii) Class II</li> <li>(iii) Class III</li> </ul> </li> </ul>	pages 48-50
<ul style="list-style-type: none"> <li>(C) Environmental Conditions               <ul style="list-style-type: none"> <li>(i) Water Quality:                   <ul style="list-style-type: none"> <li>(I) Status and changes of surface water quality, including impaired streams from the most recent NC Division of water Quality Basinwide Water Quality Plans, 303(d) List and other comparable data;</li> <li>(II) Current situation and trends on permanent and temporary closures of shellfishing waters as determined by the Report of Sanitary Survey by the Shellfish Sanitation Section of the NC Division of Environmental Health;</li> <li>(III) Areas experiencing chronic wastewater treatment system malfunctions; and</li> <li>(IV) Areas with water quality or public health problems related to non-point source pollution</li> </ul> </li> <li>(ii) Natural Hazards:                   <ul style="list-style-type: none"> <li>(I) Areas subject to storm hazards such as recurrent flooding, storm surges, and high winds;</li> <li>(II) Areas experiencing significant shoreline erosion as evidenced by the presence of threatened structures or public facilities; and</li> <li>(III) Where data is available, estimates of public and private damage resulting from floods and wind that has occurred since the last plan update</li> </ul> </li> <li>(iii) Natural Resources:                   <ul style="list-style-type: none"> <li>(I) Environmentally fragile areas or areas where resource functions may be impacted as a result of development; and</li> <li>(II) Areas containing potentially valuable natural resources</li> </ul> </li> </ul> </li> </ul>	pages 50-54

CAMA CORE LAND USE ELEMENT	ELEMENT DISCUSSED
(3) Analysis of Land Use and Development	pages 82-86
(A) A map of land including the following: residential, commercial, industrial, institutional, public, dedicated open space, agriculture, forestry, confined animal feeding operations, and undeveloped;	see Maps 14A and 14 B, Appendix II
(B) The land use analysis shall including the following: (i) Table that shows estimates of the land area allocated to each land use; (ii) Description of any land use conflicts; (iii) Description of any land use-water quality conflicts; (iv) Description of development trends using indicators; and (v) Location of areas expected to experience development during the five years following plan certification by the CRC and a description of any potential conflicts with Class II or Class III land identified in the natural systems analysis	page 84 pages 82-84
(C) Historic, cultural, and scenic areas designated by a state or federal agency or by local government	page 86
(D) Projections of future land needs	page 141
(4) Analysis of Community Facilities	
(A) Public and Private Water Supply and Wastewater Systems	pages 57-60
(B) Transportation Systems	page 55
(C) Stormwater Systems	pages 61-63
(D) Other Facilities	pages 55-61
(5) Land Suitability Analysis	pages 79-82
(A) Water quality;	
(B) Land Classes I, II, and III summary environmental analysis;	
(C) Proximity to existing developed areas and compatibility with existing land uses;	
(D) Potential impacts of development on areas and sites designated by local historic commission or the NC Department of Cultural Resources as historic, culturally significant, or scenic;	
(E) Land use and development requirements of local development regulations, CAMA Use Standards and other applicable state regulations, and applicable federal regulations; and	
(F) Availability of community facilities, including water, sewer, stormwater, and transportation	

CAMA CORE LAND USE ELEMENT	ELEMENT DISCUSSED
(6) Review of Current CAMA Land Use Plan <ul style="list-style-type: none"> <li>(A) Consistency of existing land use and development ordinances with current CAMA Land Use Plan policies;</li> <li>(B) Adoption of the land use plan's implementation measures by the governing body; and</li> <li>(C) Efficacy of current policies in creating desired land use patterns and protecting natural systems</li> </ul>	pages 64-79
(d) Plan for the Future <ul style="list-style-type: none"> <li>(1) Land Use and Development Goals:               <ul style="list-style-type: none"> <li>(A) Community concerns and aspirations identified at the beginning of the planning process;</li> <li>(B) Needs and opportunities identified in the analysis of existing and emerging conditions</li> </ul> </li> </ul>	pages 9-10  pages 87-91
(2) Policies: <ul style="list-style-type: none"> <li>(A) Shall be consistent with the goals of the CAMA, shall address the CRC management topics for land use plans, and comply with all state and federal rules;</li> <li>(B) Shall contain a description of the type and extent of analysis completed to determine the impact of CAMA Land Use Plan policies on the management topics, a description of both positive and negative impacts of the land use plan policies on the management topics, and a description of the policies, methods, programs, and processes to mitigate any negative impacts on applicable management topics;</li> <li>(C) Shall contain a clear statement that the governing body either accepts state and federal law regarding land uses and development in AECs or, that the local government's policies exceed the requirements of state and federal agencies.</li> </ul>	pages 91-125
(3) Land Use Plan Management Topics.	pages 95-125
(A) Public Access	pages 96-98
(B) Land Use Compatibility	pages 98-108
(C) Infrastructure Carrying Capacity	pages 108-113
(D) Natural Hazard Areas	pages 113-115
(E) Water Quality	pages 115-119
(F) Local Areas of Concern	pages 119-125

CAMA CORE LAND USE ELEMENT	ELEMENT DISCUSSED
<p>(4) Future Land Use Map</p> <p>(A) 14-digit hydrological units encompassed by the planning area;</p> <p>(B) Areas and locations planned for conservation or open space and a description of compatible land use and activities;</p> <p>(C) Areas and locations planned for future growth and development with descriptions of the following characteristics:</p> <p>(i) Predominant and supporting land uses that are encouraged in each area;</p> <p>(ii) Overall density and development intensity planned for each area;</p> <p>(iii) Infrastructure required to support planned development in each area</p> <p>(D) Areas in existing developed areas for infill, preservation, and redevelopment;</p> <p>(E) Existing and planned infrastructure, including major roads, water, and sewer</p> <p>In addition, the plan shall include an estimate of the cost of any community facilities or services that shall be extended or developed. The amount of land allocated to various uses shall be calculated and compared to the projection of land needs. The amount of land area thus allocated to various uses may not exceed projected needs as delineated in Part (c)(3)(A)(iv) - Projection of Future Land Needs.</p>	<p>pages 125-141</p> <p>pages 141-143</p>
<p>(e) Tools for Managing Development</p> <p>(1) Guide for Land Use Decision-Making</p> <p>(2) Existing Development Program</p> <p>(3) Additional Tools.</p> <p>(A) Ordinances:</p> <p>(i) Amendments or adjustments in existing development codes required for consistency with the plan;</p> <p>(ii) New ordinances or codes to be developed</p> <p>(B) Capital Improvements Program</p> <p>(C) Acquisition Program</p> <p>(D) Specific Projects to Reach Goals</p> <p>(4) Action Plan/Schedule</p>	<p>pages 145-155</p> <p>page 145</p> <p>page 145</p> <p>page 145</p> <p>page 146</p>

## SECTION I. INTRODUCTION

### A. BACKGROUND

This Fiscal Year 2005/2006 - 2006/2007 Tyrrell County CAMA Core Land Use Plan is prepared in accordance with the requirements of the North Carolina Coastal Area Management Act (CAMA). Specifically, this document complies with Subchapter 7B, "CAMA Land Use Planning Requirements," of the North Carolina Administrative Code, as amended, August 1, 2002. This plan will serve to address the substantial development pressures and economic development challenges that the county will face over the next five to ten years. The policies and implementing actions included in Section VI of this plan will be used to guide development in the CAMA major and minor permitting process.

The 7B guidelines provide that each of the twenty coastal counties and the municipalities within those counties prepare and adopt a CAMA Core Land Use Plan that meets the planning requirements adopted by the Coastal Resources Commission (CRC). If a County chooses not to prepare a plan, the guidelines specify that the CRC will prepare and adopt a CAMA Land Use Plan for that County and the municipalities in the County which choose not to prepare their own plan. Municipalities not preparing their own plan will be included in the plan for the County in which the municipality is located. There is only one incorporated municipality within Tyrrell County; the Town of Columbia will be participating in the planning process.

In general, 7B requires that a plan include an analysis of existing and emerging conditions, a plan for the future including specific land use/development goals/policies, and tools for managing development. The management tools must specify the actions that Tyrrell County will take to implement this plan.

Tyrrell County adopted a Citizen Participation Plan which is intended to ensure that all interested citizens have an opportunity to participate in the development of this plan through both oral and written comments. A copy of the Citizen Participation Plan is included as Appendix I. An ad hoc committee was appointed by Tyrrell County to oversee the development of this plan. The committee includes representatives from both Tyrrell County and the Town of Columbia.

Land Use Plan Committee Members Mr. J.D. Brickhouse (Tyrrell County) Mr. Willie Mack Carawan Jr. (Tyrrell County) Ms. Penny Rhodes (Tyrrell County) Mr. James Cahoon (Town of Columbia) Ms. Barbara Spencer (Town of Columbia)
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Following adoption of the plan by the Tyrrell County Board of Commissioners and the Town of Columbia Board of Alderman, it was submitted to the CRC for certification. Certification of the plan was achieved on March 25, 2010.

## B. WHY PLAN?

In the early 1970's, North Carolina and other coastal states found that their precious coastal areas, including coastal sound and estuarine areas like those bordering Tyrrell County, were under threat from pollution caused by population growth, industrial development, and increased recreational usage. In response to these threats, the North Carolina legislature passed CAMA in 1974 (see text box below).

As the threats to the coastal environment have only increased since CAMA's adoption, the following goals for coastal management set by CAMA in 1974 continue to summarize the benefits of planning in protecting sensitive coastal areas:

- (1) To provide a management system capable of preserving and managing the natural ecological conditions of the estuarine system, the barrier dune system, and the beaches, so as to safeguard and perpetuate their natural productivity and their biological, economic, and aesthetic values;
- (2) To ensure that the development or preservation of the land and water resources of the coastal area proceeds in a manner consistent with the capability of the land and water for development, use, or preservation based on ecological considerations;
- (3) To ensure the orderly and balanced use and preservation of our coastal resources on behalf of the people of North Carolina and the nation;
- (4) To establish policies, guidelines, and standards for:
  - (a) Protection, preservation, and conservation of natural resources including but not limited to water use, scenic vistas, and fish and wildlife; and management of transitional or intensely developed areas and areas especially suited to intensive use or development, as well as areas of significant natural value;

### What is CAMA?

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

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



Counties covered by CAMA

- (b) The economic development of the coastal area, including but not limited to construction, location and design of industries, port facilities, commercial establishments, and other developments;
- (c) Recreation and tourist facilities and parklands;
- (d) Transportation and circulation patterns for the coastal area including major thoroughfares, transportation routes, navigation channels and harbors, and other public utilities and facilities;
- (e) Preservation and enhancement of the historic, cultural, and scientific aspects of the coastal area;
- (f) Protection of present common-law and statutory public rights in the lands and waters of the coastal area (Source: NCGS 113A-102).

Specifically, the CAMA Land Use Plan will be used by the North Carolina Coastal Resources Commission (CRC) to determine whether any given development proposal subject to a major CAMA permit is consistent with the County/Town's goals for its future development and for environmental protection (see text box to the right for a description of the CAMA permit system). The Land Use Plan will be used by the county and town's Planning Board and Commissions to determine the appropriateness of zoning classifications at specific sites and other land use decisions. Together, these planning documents will help guide the future land use in Tyrrell County and the Town of Columbia.

What is the CAMA Permit System?

The CAMA permit system is divided into major and minor permits, based on the size and possible impacts of a project. Major permits are required for activities that require other state or federal permits, for projects that cover more than 20 acres, or for construction covering more than 60,000 square feet. Applications for major permits are reviewed by ten state and four federal agencies before a decision is made, and this process is coordinated by the CRC. General permits are an expedited form of major permit used for routine projects that usually pose little or no threat to the environment. Minor permits are required for projects, such as single-family houses, that do not require major permits or general permits. They are reviewed, issued, and administered to CRC standards by Tyrrell County and the Town of Columbia under contract with the Division of Coastal Management (Source: Association of National Estuary Programs).

C. REGULATORY AUTHORITY AND PLANNING MODEL

This plan is intended to fulfill the Coastal Area Management Act (CAMA) requirements for the preparation of a Core CAMA Land Use Plan. This plan is organized to adhere to 15A NCAC 7B requirements, specifically rule .0702, which specifies the required content of CAMA land use plans. A matrix is provided immediately following the Table of Contents, which specifies how and where in this Plan compliance with 15A NCAC 7B is accomplished.

## SECTION II. TYRRELL COUNTY AND TOWN OF COLUMBIA HISTORY

(excerpt taken from the Tyrrell County Chamber of Commerce)

Located on the south shore of Albemarle Sound, Tyrrell County was formed in 1729 from Chowan, Bertie, Currituck and Pasquotank counties. Named for Sir John Tyrrell, one of the Lords Proprietors of the Carolina colony, Tyrrell County's original boundaries stretched westward from Roanoke Island to near present-day Tarboro. In 1870, the territory was divided and resulted in what is now known as Tyrrell, Martin, Washington, and Dare counties. Elizabethtown, later renamed Columbia, was established on the banks of the Scuppernong River in 1793 and became the Tyrrell County seat in 1799 (Sharpe 1965: 2125-2128).

While settlers from Virginia streamed southward into the Albemarle region during the early eighteenth century, the development of Tyrrell County proceeded slowly. The county is part of the region's most extensive tract of low-lying, poorly drained land that extends between Albemarle Sound and Pamlico Sound. The swamp forest as well as vast wetlands of muck-peat, pocosins, and pines restricted the penetration of the interior. Consequently, the county has been one of the most isolated and sparsely populated parts of the state. In 1840, there were 4,448 inhabitants in Tyrrell County. The population peaked at 5,556 in 1960, and in 1990 fewer than 4,000 people resided within its borders (Weeden 1990: 10-12).

Geography shaped the pattern of settlement, which took place first along the Albemarle shore and the Alligator River, defining the eastern and northern boundaries of the county. The Secota villages of Mecopen along the Scuppernong River near present day Columbia and Tramaskecoc on the Alligator River near Gum Neck were shown on maps as early as 1585. Artifacts unearthed in fields, dense woodlands, and along waterways testify to communities of inhabitants long before that.

The first permanent white occupation probably occurred about 1700 at Fort Landing, located near the mouth of the Alligator River. Other families later occupied tracts along the Scuppernong River and Kendrick Creek or ventured up the Alligator River and cleared lands along the coves and creeks in the southeastern part of the county. This section became characterized by modest farms, river landings, and hamlets – all linked together by canals that facilitated farming and small-boat transportation. Inland settlement took place later, as small farmers settled along the edges of peat and muck bogs and on the ridges of high ground. However, a great deal of the interior remained undeveloped until the twentieth century, when timber and pulpwood interests cut roads and drainage canals through the swamplands.

The economy during the eighteenth and early nineteenth centuries was largely based on subsistence farming and fishing, though the Albemarle Sound and Alligator and Scuppernong rivers provided for the shipping of forest assets, especially shingles and staves. These products were



transported across the sound to Edenton, the commercial center of the Albemarle region, where they were exported abroad or to the northern markets (Merrens 1964: 96-98). By the antebellum years, goods were regularly shipped up the Pasquotank River to Elizabeth City, where the Dismal Swamp Canal linked Albemarle Sound to the port of Norfolk, Virginia.

Although small-scale agriculture marked the area in the colonial period, this land also sustained a collection of large plantations. In 1736, the first recorded deed in Tyrrell County was filed by Joseph Buncombe, a planter from the West Indies, who bought 1,025 acres of high ground on Kendrick Creek (in present-day Washington County) and erected a residence on the tract (Davis 1963: 21). About 1766, his nephew Edward Buncombe built the plantation seat of Buncombe Hall on the property. On the west side of the Scuppernong River, in present-day Tyrrell County, the Spruill family, whose patriarch was Dr. Godfrey Spruill, established Round About Plantation in the early eighteenth century (Davis 1963: 22-23). No architectural evidence of these early estates survives.

By the late eighteenth century, the local planter class also included the Collinses and Pettigrews. These families, using vast amounts of slave labor, transformed the swamps bordering Lake Phelps into immense agricultural estates. The Collinses established Somerset Plantation in what is today Washington County, and in 1838-39, Josiah Collins III built the substantial Greek Revival residence that still stands by the Lake shore. Adjacent to Somerset, in Tyrrell County, the Reverend Charles Pettigrew established Bonarva Plantation in 1779. Also known as Lake Plantation, Bonarva was developed in the antebellum years by his son Ebenezer. In 1843-1844, Ebenezer Pettigrew built the plantation seat of Magnolia north of Lake Phelps along a stretch of the Bonarva canal. The unusual two-story, two-bay, frame house featured an encircling shed-roofed porch and, tradition has it, gargoyles along the cornice. The house no longer exists.

These lakeside plantations thrived in this thinly settled region of swamplands and bog. With slave labor, canals were laboriously dug from Lake Phelps to the Scuppernong River, a distance of six miles. The first canal was completed at Somerset as early as 1787. Lands were drained and cleared, and sawmill, grist mills, and shingle mills were constructed along the canals. Shallow-draft boats plied the 20-foot-wide canals transporting the forest products as well as rice, cotton, wheat, and corn to the Scuppernong and then on to Edenton or Columbia for export. Canals associated with both Somerset and Bonarva, including the Bonarva and Bee Tree canals in Tyrrell County, survive essentially intact.

During the Civil War, Union forces occupied the Albemarle region beginning with the surrender of Roanoke Island in 1862. Although Tyrrell County saw little serious military action, the Town of Columbia was bombarded. As throughout much of North Carolina, the social and economic ramifications of the war were profound. The Pettigrew and Collins estates never recovered from the war and deteriorated into underutilized, subdivided tenant farms. In 1930, the federal government acquired most of these plantation tracts and launched the Scuppernong Farms Project,

a short-lived resettlement program for small farmers. This part of the county contains a scattering of one-story, frame 1930s farmhouses that may represent this federally sponsored project. In 1939, the State of North Carolina purchased the plantation house at Somerset and a portion of Bonarva for Pettigrew State Park.

The county seat of Columbia was laid off on the east side of the Scuppernong River between 1793 and 1802. Primarily a fishing and trading center before the Civil War, the town grew in the late nineteenth century as a result of the expanding lumber industry. Between the 1880s and turn of the century, the population of Columbia rose from 166 to 382, as lumber mills appeared on the waterfront. The major employer was the Branning Manufacturing Company of Edenton, which built a substantial planing mill at the south end of town and laid a railroad spur into the rich timberlands. In 1908, the Norfolk and Southern Railway extended its tracks to Columbia, but withdrew to Creswell in Washington County in 1948 (Davis 1963: 62; Pezzoni 1994).

The remainder of Tyrrell County developed slowly in the nineteenth and early twentieth centuries, characterized by small, isolated farms and commercial fishing operations. Farm tenantry led to a steady decline in the average size of farms, which dropped from 127 acres in 1890 to only 67 acres in 1940. Farmers raised corn, some cotton, livestock, and, increasingly, Irish potatoes. By the late 1940s, Tyrrell County ranked as the number one potato producer in the state (Davis 1963: 62).

The success of agriculture as well as the lumber and fishing industries was made possible by advancements in transportation. In addition to the Norfolk and Southern Railway, new paved roads and bridges slowly improved access to selected parts of the county. During the 1920s, US Highway 64 was paved through the county and, in 1926, a bridge was built over the Scuppernong River at the west end of Columbia's main street. NC Highway 94 was constructed across the heart of the county in 1933, linking Columbia with Hyde County to the south. The discontinuation of rail service after World War II was partially compensated for by a renewed road-building campaign, and, in 1962, the monumental three-mile-long Lindsay C. Warren Bridge was erected across the Alligator River to Dare County.

In the 1970s, corporations such as First Colony Farms purchased large sections of Tyrrell and adjacent counties for agricultural use (Schoenbaum 1982: 112-115). The result was the systematic transformation of the natural landscape on an unprecedented scale. A vast network of drainage ditches was constructed and thousands of acres of swamp forests were drained and cleared for row crops. Consequently, Tyrrell County is today not only one of the most remote and sparsely populated areas of the state but also one of the most recently transformed. Small, isolated, turn-of-the-century farmsteads and agricultural communities, such as Gum Neck near the south end of the county, stand in juxtaposition to enormous, flat tracts of recently cleared farmland controlled by out-of-state interests.

Tyrrell County's wild and remote nature may have contributed to its sparse population and light development in the past. Today, however, abundant water, forests and wildlife are recognized as some of its most valuable assets and are helping to build a healthy, sustainable future for this beautiful part of North Carolina.

### SECTION III. TYRRELL COUNTY REGIONAL SETTING

Tyrrell County is bordered by the Albemarle Sound on the north and the Alligator River and the Atlantic Intracoastal Waterway to the east. The Town of Columbia serves as the county seat and is centrally located in northern Tyrrell County. Tyrrell County offers a unique opportunity for companies dependent on water transportation, such as fisheries and eco-tourism. The county is located in the northeastern region of North Carolina (see Appendix II, Map 1) and is traversed by US Highway 64 which has recently been expanded to four lanes. The major corridor running north to south through the county is NC Highway 94 which connects with Hyde County to the south. Once considered remote and hard to reach, Tyrrell County is less than a two hour drive to Interstate 95. The county has an abundance of large acreage tracts of land that are affordable and highly suitable for low impact sustainable developments. Moving forward the county will be known as the gateway to the Outer Banks for many people traveling from western portions of the state. Tyrrell County would like to capitalize on this opportunity by maintaining its environmentally pristine nature and quiet setting while promoting smart growth principles.

## SECTION IV. TYRRELL COUNTY CONCERNS AND ASPIRATIONS

### A. KEY ISSUES/DOMINANT GROWTH-RELATED ISSUES

It is very useful for a community to determine the key concerns and growth-related issues at the beginning of the planning process. In order to solicit input from Tyrrell County/Town of Columbia citizens, an issues identification meeting was held on February 8, 2006. Approximately 65 residents attended this work session. At this meeting, an open floor discussion was held regarding issues that residents felt would have a significant impact on the future of Tyrrell County/Town of Columbia. The list provided below is a ranking of the issues identified at this meeting. During the course of this meeting, all issues identified were listed. Subsequent to the discussion portion of the meeting, all attendees were asked to vote on what they felt were the top ten most significant concerns or issues listed. There are several issues whose rank is tied because they received the same number of votes.

Rank	Issue	# of Votes
1	Cleanout of arterial canals	28
2	Stormwater Best Management Practices	23
3	Street/road maintenance	22
4*	Police protection	21
5*	Protection of farmland	21
6*	Preservation of tax base	21
7*	Protection of water quality	20
8*	Medical/mental health services	20
9*	Maintenance of stormwater drainage	20
10	Water and sewer development	18
11	Assisted living/nursing home development	17
12	Public access waterfront	14
13*	Riparian buffers	13
14*	Increased recreational opportunities "YMCA"	13
15*	Racial diversity	12
16*	Affordable housing	12
17*	Address the issue of providing higher educational opportunities	12
18	Overall growth and zoning	11
19*	Encourage mixed use development in downtown Columbia	10
20*	Protection of wetlands	10
21*	Develop a comprehensive plan for the Town of Columbia	10
22	Code enforcement (various codes - junked cars, mobile homes)	9
23	Downtown parking	8

Rank	Issue	# of Votes
24*	Promote tourism (eco tourism)	7
25*	Discourage strip development	7
26*	"Green Building"	7
27	Low impact development	6
28	Minimize land use conflicts	4
29*	Reducing stream sedimentation	3
30*	Height and setback restrictions in AECs	3
31	Limit habitat fragmentation	2
32	Conflicted uses of airspaces	1
33*	Wetland mitigation	0
34*	Air quality	0

## B. VISION STATEMENT

Tyrrell County aims to maintain the county's rural character, while focusing on the preservation of agriculture, affordable housing, and the protection of environmental resources. Tyrrell County will plan for and accommodate future growth while simultaneously maintaining the quality of life for current and future residents. Tyrrell County will pursue accomplishment of the following statements:

- Set high standards for responsible, well managed growth and guide development patterns through comprehensive planning and community development.
- Promote the establishment of programs aimed at providing lifelong education opportunities for Tyrrell County residents, as well as the region.
- Identify goals and propose strategies for the development of new businesses and industries, agribusinesses, seafood products, and eco-tourism.
- Provide county-wide services that enhance the health, safety, and quality of life for Tyrrell County citizens.

SECTION V. ANALYSIS OF EXISTING AND EMERGING CONDITIONS

A. POPULATION, HOUSING, AND ECONOMY

1. Tyrrell County Permanent Population

a. Region R, North Carolina, and Tyrrell County

North Carolina is divided into 18 regions based on locale for the purpose of coordinating planning efforts between neighboring counties. These designated regions are considered the Council of Governments. Tyrrell County is in Region R along with Chowan, Currituck, Dare, Gates, Hyde, Pasquotank, Perquimans, Camden, and Washington counties. It is useful to compare the growth of Tyrrell County to the other counties within Region R due to their geographic proximity. Table 1 provides a summary of population change and population growth percentages for Region R counties and North Carolina. According to the 2000 US Census, Tyrrell County was the least populated county in the region.

Table 1. Tyrrell County, Region R, and North Carolina  
Total Population and Percentage Change, 1970-2000

County	Total Population				Population % Change			
	1970	1980	1990	2000	'70-'80	'80-'90	'90-'00	Overall
Camden	5,453	5,829	5,904	6,885	6.9%	1.3%	16.6%	26.3%
Chowan	10,764	12,558	13,506	14,526	16.7%	7.5%	7.6%	34.9%
Currituck	6,977	11,089	13,736	18,190	58.9%	23.9%	32.4%	160.7%
Dare	6,996	13,377	22,746	29,967	91.2%	70.0%	31.7%	328.3%
Gates	8,525	8,875	9,305	10,516	4.1%	4.8%	13.0%	23.4%
Hyde	5,570	5,873	5,411	5,826	5.4%	-7.9%	7.7%	4.6%
Pasquotank	26,824	28,462	31,298	34,897	6.1%	10.0%	11.5%	30.1%
Perquimans	8,352	9,486	10,447	11,368	13.6%	10.1%	8.8%	36.1%
Tyrrell	3,806	3,975	3,856	4,149	4.4%	-3.0%	7.6%	9.0%
Washington	14,039	14,801	13,997	13,723	5.4%	-5.4%	-2.0%	-2.3%
Region R	97,306	114,325	130,206	150,047	17.5%	13.9%	15.2%	54.2%
North Carolina	5,084,442	5,880,095	6,632,448	8,049,313	15.6%	12.8%	21.4%	58.3%

Source: US Census Bureau.

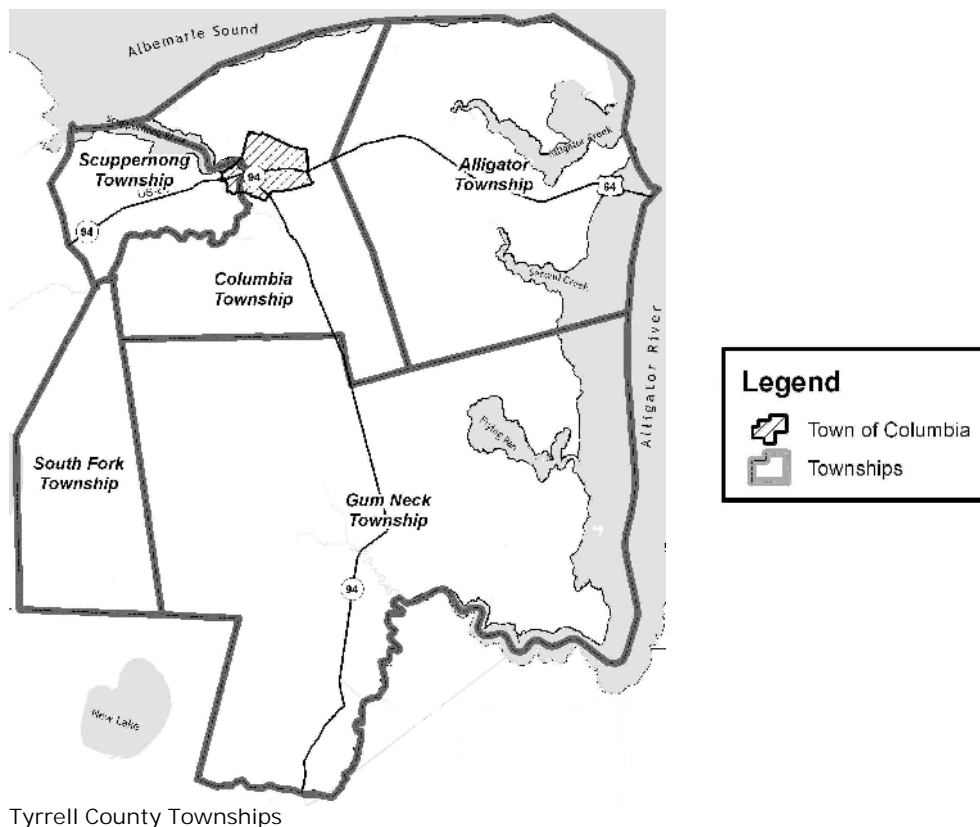
From 1970 to 2000, the county's population increased by 9.0% from 3,806 to 4,149. By comparison, the Region R total population increased by 54.2% while the total state population increased by 58.3%. With the exception of Hyde and Washington, all Region R counties had substantially higher growth rates than Tyrrell.

Table 2 provides a summary of population growth by township from 1970 to 2000. The Columbia Township (see graphic below) has been by far the fastest growing township with a 1970 to 2000 increase of 35.6%. This can mainly be attributed to the fact that this township contains the county's only municipality and provides water and sewer service. Beyond the Columbia Township, the county's population is fairly evenly distributed among the other four townships, although population in South Fork remains low at 43 and has decreased in population by 18.9% since 1970. It is expected that in the next five to ten years the rate of growth in all of these areas will increase dramatically. This issue will be discussed throughout the context of the plan.

Table 2. Tyrrell County and Town of Columbia  
Population Growth by Township

Township	1970	1980	1990	2000	2000 % of Total	'70-'00 Growth
Alligator	482	477	437	381	9.2%	-21.0%
Columbia	1,910	2,098	2,181	2,590	62.4%	35.6%
Gum Neck	523	474	438	462	11.1%	-11.7%
Scuppernong	838	864	755	673	16.2%	-19.7%
South Fork	53	62	45	43	1.0%	-18.9%
Tyrrell County	3,806	3,975	3,856	4,149	100.0%	9.0%
Town of Columbia	902	758	836	819	19.7%	-9.2%

Source: US Census Bureau.





b. Tyrrell County/Town of Columbia Population Profile

Table 3 provides a summary of the Tyrrell County and Town of Columbia populations by racial composition from 1970 to 2000. Overall, the population of Tyrrell County is primarily comprised of White and Black. The percentage of these two racial groups has stayed fairly consistent over this 30-year period. From 1970 to 2000, the White population as a percentage of the county's total population decreased from 56.6% to 56.1%. By comparison, North Carolina's White population as a percent of the state's total population declined from 76.8% to 72.1%. From 1970 to 2000, the Tyrrell County Black population as a percentage of total population declined from 43.4% to 38.4% over the same period. There are no significant non-White or non-Black racial groups in Tyrrell County. Table 3 also indicates that the county's male/female population is 53.9% male and 46.1% female.

The Town of Columbia's population is predominantly Black (51.6%). The Black population within the town has decreased slightly since the 1970 Census by a percentage of 6.3%. This is the earliest census data available for the town that breaks down total population into racial categories. As the Black population has decreased, the White population has also seen a decrease of 6.3% since 1970.

Table 3. Tyrrell County and Town of Columbia Racial Composition, 1970-2000

	Tyrrell County		Town of Columbia	
	Total	Percentage	Total	Percentage
1970 Population*	3,806	100.0%	902	100.0%
White	2,154	56.6%	N/A	N/A
Black	1,652	43.4%	N/A	N/A
Other	0	0.0%	N/A	N/A
1980 Population**	3,975	100.0%	758	100.0%
White	2,417	60.8%	354	46.7%
Black	1,550	39.0%	404	53.3%
Other	8	0.2%	0	0.0%
1990 Population**	3,856	100.0%	836	100.0%
White	2,278	59.1%	352	42.1%
Black	1,546	40.1%	484	57.9%
Asian or Pacific Islander	6	0.2%	0	0.0%
American Indian, Eskimo, Aleut	9	0.2%	0	0.0%
Other	17	0.4%	0	0.0%
2000 Population***	4,149	100.0%	810	100.0%
White	2,327	56.1%	327	40.4%
Black or African American	1,593	38.4%	418	51.6%
Asian or Pacific Islander	7	0.2%	4	0.5%

Table 3 (continued)

	Tyrrell County		Town of Columbia	
	Total	Percentage	Total	Percentage
American Indian and Alaska Native	21	0.5%	4	0.5%
Some Other Race	168	4.0%	45	5.6%
Two or More Races	33	0.8%	12	1.5%
Hispanic or Latino (of any race)****	195	0.5%	64	7.9%
Male	2,237	53.9%	367	45.3%
Female	1,912	46.1%	443	54.7%

\*Racial breakdown not available for the 1970 Census for municipality.

\*\*Racial breakdown available for the 1980 and 1990 Census.

\*\*\*Racial breakdown available for the 2000 Census.

\*\*\*\*In the 2000 Census, the Hispanic race was not considered an ethnic group. However, this is the number of individuals who reported being of Hispanic origin.

Source: 2000 US Census.

Table 4 provides a summary of Tyrrell County and the Town of Columbia's 1990 and 2000 population by age distribution. The county's overall population is fairly young in age. For the county overall, 44.6% of the population is below the age 35, while 44.4% of Columbia's population falls below this age threshold. Additionally, the retired age population is very low in the county. Only 16.8% of the county's overall population is over the age of 65, which is comparable to Columbia (18.9%). The population, however, is aging as evidenced by the increase in the 35 to 54 age group from 1990 to 2000. During the planning period it is anticipated that the retired age population will increase dramatically as a result of in-migration. As development occurs in coastal areas, retirees will flock to the county to take advantage of the affordable land and proximity to the coast. This is an issue that will be discussed in detail throughout the context of this plan.

Table 4. Tyrrell County and Town of Columbia  
Age Composition, 1990 and 2000

	Tyrrell County				Town of Columbia			
	1990 Total	% of Total	2000 Total	% of Total	1990 Total	% of Total	2000 Total	% of Total
0 to 14 years	890	23.1%	762	18.4%	205	24.5%	163	20.1%
15 to 34 years	1,016	26.3%	1,085	26.2%	221	26.4%	197	24.3%
35 to 54 years	886	23.0%	1,238	29.8%	162	19.3%	213	26.3%
55 to 64 years	386	10.0%	370	8.9%	67	8.0%	84	10.4%
65 to 74 years	379	9.8%	393	9.5%	128	15.3%	68	8.4%
75 and over	299	7.8%	303	7.3%	55	6.6%	85	10.5%
Total population	3,856	100.0%	4,151	100.0%	838	100.0%	810	100.0%
Median age	38.7				39.1			

Source: 2000 US Census.

Tyrrell County and the Town of Columbia compare favorably with North Carolina for those individuals having graduated from high school (North Carolina 28.4%) and those having received at least some partial college education or Associate degree (North Carolina 20.5%). Table 5 provides a summary of the county and town's 2000 educational attainment based on persons 25 years old or older. The county lags behind the state in the percent of its population which has received a Bachelor's degree or Graduate/Professional degrees.

Table 5. Tyrrell County and Town of Columbia  
Education Attainment, 2000 Based on Persons 25 Years Old or Older

	Tyrrell County		Town of Columbia	
	Total	% of Total	Total	% of Total
Less than 9 <sup>th</sup> grade	328	11.6%	94	18.2%
Ninth to twelfth grade, no diploma	625	22.1%	130	25.1%
High school graduate	955	33.8%	159	30.8%
Some college, no degree	491	17.2%	61	11.8%
Associate degree	129	4.6%	13	2.5%
Bachelor's degree	222	7.9%	33	6.4%
Graduate/Professional degree	78	2.8%	27	5.2%
Total population 25 years and over	2,828	100.0%	517	100.0%

Source: 2000 US Census.

c. Population Summary

The following provides a summary of the significant demographic factors:

- The county experienced a 9% growth in population during the period of 1970 - 2000.
- Columbia Township is the fastest growing township in the county with a population increase of 35.6% since 1970.
- The county's overall population is fairly young in age with 44.6% of the citizens being below 35 years of age.
- There are no significant non-White or non-Black racial groups in Tyrrell County.
- The population at retirement age is low throughout the county. This situation is expected to change dramatically once additional development occurs.
- Both the Town of Columbia and Tyrrell County are above the state average in terms of high school graduates.

2. Housing

a. Housing Occupancy and Tenure

According to the 2000 Census, Tyrrell County contains a total of 2,032 dwelling units, an increase of 125 units over the 1990 Census. A majority of the homes in the county are occupied (75.6%), and out of these approximately 56.5% are owner-occupants. Approximately 24.4% of the county's existing housing stock is vacant according to the 2000 Census. This housing is primarily made of homes used for seasonal or recreational uses (15.8%). The percentage of owner-occupied housing in the county is significantly higher than the state average. Columbia's housing stock is nearly all occupied with an occupancy rate of 83.4%, this figure is down slightly from the 1990 Census. Table 6 provides a summary of housing occupancy and tenure for both the county and the town.

Overall, housing construction in the county has been very modest over the last ten years. This trend is expected to change drastically during the planning period. According to the Tyrrell County Planning Board, there are currently approximately 282 platted lots that have been approved through the county's site plan review process; however, construction has not yet begun on these properties. It is unclear how rapidly these lots will be sold and developed; however, it is an indication of a substantial increase in development interest in the county. To express just how significant this number is, the total increase in built homes between 1990 and 2000 in the county overall was 125 according to the US Census Bureau.

Table 6. Tyrrell County and Town of Columbia  
Housing Occupancy and Tenure, 1990 and 2000

	Tyrrell County				Town of Columbia			
	1990 Total	1990 % of Total	2000 Total	2000 % of Total	1990 Total	1990 % of Total	2000 Total	2000 % of Total
Total Housing Units	1,907	100.0%	2,032	100.0%	392	100.0%	402	100.0%
Vacant:	436	22.9%	495	24.4%	55	14.0%	67	16.7%
For Rent*	33	1.7%	21	1.0%	11	2.8%	12	3.0%
For Sale Only*	31	1.6%	54	2.7%	0	0.0%	11	2.7%
Rented or sold, not occupied*	0	0.0%	14	0.7%	0	0.0%	4	1.0%
For seasonal, recreational, or occasional use*	209	11.0%	321	15.8%	8	2.0%	20	5.0%
For migrant workers*	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other vacant*	163	8.5%	85	4.2%	36	9.2%	20	5.0%
Occupied:	1,471	71.1%	1,537	75.6%	337	86.0%	335	83.4%
Owner-Occupied**	1,124	58.9%	1,150	56.5%	206	52.6%	178	44.3%
Renter-Occupied**	347	18.2%	387	19.1%	131	33.4%	157	39.1%

\* Indicates breakdown of vacant household types.

\*\* Indicates breakdown of occupied household types.

The categories for "Rented or sold, not occupied", and "For migrant workers" was not reported in the 1990 census.  
Source: US Census Bureau.

b. Structure Age

Table 7 indicates that in 2000, the median age of structures in Tyrrell County was 31 years, and for the Town of Columbia was 51 years. This underscores the historic nature of the housing and overall development within the county, a point that will be drawn upon to promote economic development. A key factor in this plan will be the protection of these historic resources. The town will look at alternatives related to expanding the existing Historic District to further preserve historic properties. In addition, approximately 61.7% of the county's structures were built prior to 1970. Based on the table below, residential development has remained steady in the county. There was a slight housing increase between 1970 and 1990, in both the county overall as well as Columbia; however, this trend tapered off toward the 2000 Census report. As noted, this is not expected to continue.

Table 7. Tyrrell County and Town of Columbia Housing Structure, 2000

Year	Tyrrell County		Town of Columbia	
	Number of Structures	% of Total	Number of Structures	% of Total
1999 to March, 2000	43	2.1%	8	2.0%
1995 to 1998	216	10.6%	25	6.2%
1990 to 1994	149	7.3%	25	6.2%
1980 to 1989	361	17.8%	51	12.7%
1970 to 1979	390	19.2%	40	10.0%
1960 to 1969	193	9.5%	30	7.5%
1940 to 1959	307	15.1%	66	16.4%
1939 or earlier	373	18.4%	157	39.1%
Total Structures	2,032	100.0%	402	100.0%
Median Year Structure Built	1974		1954	

Source: US Census Bureau.

c. Housing Conditions

Table 8 provides a summary of existing household size, as well as the percentage of units lacking general household needs. The statistics in this table provide a good summary of the condition of the county's housing stock.

Homes in Tyrrell County and the Town of Columbia compare favorably to state averages in terms of size, or rooms per unit. The percentage of homes in the county with 3+ bedrooms is 60.0%, compared to 60.8% for the state overall. The percentage of homes lacking complete infrastructure (kitchen and bathroom facilities) is substantially higher than the state overall. The percentages within Columbia are slightly lower due to the availability of infrastructure services.

These high numbers can mainly be attributed to the extreme rural nature of the county. As the county starts to establish additional infrastructure these percentages should begin to decrease.

Table 8. Tyrrell County and North Carolina Housing Conditions

	Tyrrell County	Town of Columbia	North Carolina
Average Rooms Per Unit	5.3	5.3	5.5
Percent with no bedroom	2.0%	0.7%	1.1%
Percent with 3+ bedrooms	60.0%	54.0%	60.8%
Percent lacking complete kitchen facilities	5.0%	3.7%	1.1%
Percent lacking complete plumbing	5.0%	3.7%	1.1%
Percent occupied with telephones	71.0%	71.6%	86.2%

Source: US Census Bureau.

d. Single- and Multi-Family Units

Table 9 provides the number of single-family housing units versus multi-family units and the number of mobile homes in Tyrrell County and the Town of Columbia. The housing stock within the county, as well as Columbia, is dominated by single-family detached homes and mobile homes. As noted in the table below, only 7% of housing within the county overall is not made of either a single-family detached or mobile home. The housing within Columbia is slightly more diverse where this figure is 20%.

Table 9. Tyrrell County and Town of Columbia Units in Structure and Mobile Home Count, 2000

Units in Structure	Tyrrell County		Town of Columbia	
	Total	% of Total	Total	% of Total
1-unit, detached	1,191	58.6%	228	56.7%
1-unit, attached	18	0.9%	2	0.5%
2 units	49	2.4%	40	10.0%
3 or 4 units	33	1.6%	25	6.2%
5 to 9 units	15	0.7%	8	2.0%
10 to 19 units	0	0.0%	0	0.0%
20 units or more	7	0.3%	3	0.7%
Mobile home	708	34.8%	96	23.9%
Boat, RV, van, etc.	11	0.5%	0	0.0%
Total	2,032	100.0%	402	100.0%

Source: US Census Bureau.

e. Housing Summary

- Tyrrell County housing stock increased by 125 units to 2,032 dwelling units between 1990 and 2000.
- The Tyrrell County Planning Board has approved 282 platted lots which are proposed for future development.
- The median age of structures in the Town of Columbia is 51 years. The county's median age is 31 years.
- The percentage of homes lacking complete infrastructure (kitchen and bathroom facilities) is substantially higher than the state overall.
- The housing stock in Columbia as well as the rest of the county is dominated by single-family detached homes and mobile homes.

3. Employment and Economy

a. Introduction/Overview of General Economic Indicators

Based on third quarter 2005 data, Tyrrell County falls into the lowest percentile within many of North Carolina's 100 counties in terms of workforce/education and income/housing and poverty. Tables 10 and 11 provide a summary of significant economic data.

Table 10. Tyrrell County  
Workforce and Education Rank

Workforce & Education	Tyrrell County	North Carolina	County Rank
Employment, August 2005	2,231	4,020,788	100
Unemployed, August 2005	119	235,552	100
Percent High School Graduates, 2000	66.3	78.1	89
Average SAT Score, 2003	946	1,006	72
Percent Bachelor's Degree or Higher, 2000	10.6	22.5	82

\*It should be noted that the rankings are from 1 to 100 with 1 being the most favorable ranking.  
Source: US Census and NC Employment Security Commission.

Table 11. Tyrrell County  
Income, Housing, and Poverty Rank

Income, Housing, and Poverty	Tyrrell County	North Carolina	County Rank
Average Weekly Wage per Employee, 4Q2004	\$424	N/A	96
Median Household Income, 2000	\$25,684	\$46,355	99
Per Capita Personal Income, 1990	\$13,556	\$17,919	73
Per Capita Personal Income, 2003	\$19,082	\$28,071	97
Median Value of Owner-Occupied Housing Units, 2000	\$49,686	\$108,300	100
Percent in Poverty, 2000	23.3	12.3	3

\*It should be noted that the rankings are from 1 to 100 with 1 being the most favorable ranking.  
Source: US Census and NC Employment Security Commission.

b. Household Income

Based on the 2000 US Census, Columbia and Tyrrell County fell well below North Carolina average. In fact, Columbia's median income of \$20,588 is only 53% of the state's average income of \$39,184. Most income ranges below \$50,000 are consistent with the state average, however both Columbia and Tyrrell County fall short of state averages in the upper income ranges. Table 12 provides a summary of Columbia, Tyrrell County, and North Carolina household income.

Table 12. Town of Columbia, Tyrrell County, and North Carolina  
Household Income

	Columbia		Tyrrell County		North Carolina	
	Number	% of Total	Number	% of Total	Number	% of Total
Less than \$10,000	77	23.8%	329	21.2%	328,770	10.5%
\$10,000 to \$14,999	51	15.7%	151	9.8%	201,123	6.4%
\$15,000 to \$24,999	64	19.8%	278	18.0%	431,701	13.8%
\$25,000 to \$34,999	44	13.6%	215	13.9%	435,975	13.9%
\$35,000 to \$49,999	43	13.3%	260	16.8%	553,041	17.7%
\$50,000 to \$74,999	22	6.8%	168	10.9%	608,777	19.4%
\$75,000 to \$99,999	18	5.6%	93	6.0%	279,020	8.9%
\$100,00 to \$149,999	0	0.0%	23	1.5%	188,621	6.0%
\$150,000 to \$199,999	2	0.6%	9	0.6%	50,650	1.6%
\$200,000 or more	3	0.9%	19	1.2%	55,604	1.8%
Total Families	324	100.0%	1,545	100.0%	3,133,282	100.0%
Median Income	\$20,588		\$25,684		\$39,184	

Source: US Census.



c. Employment by Industry

Table 13 provides a summary of employment by industry. The largest employer within the Town of Columbia is government. Meanwhile the County's biggest employment sector is Agriculture, Forestry, Fishing and Hunting, and Mining at 16.8%. According to the NC Division of Marine Fisheries, there are approximately 10-15 commercial seafood dealers in Tyrrell County. The majority of the crabbing operations in Tyrrell County are focused on the hard blue crab.

Table 13. Town of Columbia and Tyrrell County  
Employment by Industry

Industry	Columbia		Tyrrell County	
	# Employed	% of Total	# Employed	% of Total
Agriculture, Forestry, Fishing and Hunting, and Mining	21	7.6%	263	16.8%
Construction	18	6.5%	133	8.5%
Manufacturing	23	8.3%	124	7.9%
Wholesale Trade	13	4.7%	41	2.6%
Retail Trade	39	14.0%	173	11.0%
Transportation, Warehousing, and Utilities	4	1.4%	59	3.8%
Information	2	0.7%	27	1.7%
Finance, Insurance, Real Estate and Rental/Leasing	4	1.4%	50	3.2%
Professional, Scientific, Management	7	2.5%	44	2.8%
Education, Health and Social Sciences	42	15.1%	229	14.6%
Arts, Entertainment, Recreation and Accommodation	66	23.7%	188	12.0%
Other Services (Except Public Administration)	13	4.7%	102	6.5%
Public Administration	26	9.4%	135	8.6%
Total Person Employed 16 years or over	278	100.0%	1568	100.0%

Source: 2000 US Census.

Table 14. Tyrrell County  
Top Employers

Rank	Employer	Employment Range	Industry
1	Tyrrell County Board of Education	100-249	Education and Health Services
2	State of North Carolina	100-249	Public Administration
3	Whitecap Linen	50-99	Other Services
4	BMI Group, LLC	50-99	Natural Resources and Mining
5	County of Tyrrell	50-99	Public Administration
6	Food Lion LLC	Below 50	Trade, Transportation, and Utilities
7	NC Department of Transportation	Below 50	Public Administration
8	Partnership for the Sounds, Inc	Below 50	Professional & Business Services
9	Life Inc	Below 50	Education and Health Services
10	Double Dee Farms, Inc.	Below 50	Natural Resources and Mining
11	Gary G Comstock	Below 50	Natural Resources and Mining
12	Black Gold Farms, Inc.	Below 50	Natural Resources and Mining
13	Colony Tire Corporation	Below 50	Trade, Transportation and Utilities
14	Andy's Cheesesteaks & Cheeseburgers	Below 50	Leisure & Hospitality
15	Cherry Farms Seed Company, Inc.	Below 50	Natural Resources & Mining

Source: NC Economic Security Commission, September 2006.

#### d. Earnings by Industry

Based on third quarter 2005 data, the largest producers of income in Tyrrell County were educational services and manufacturing. These two accounted for 32.6% of the County's employment and approximately \$655 in average weekly wages. However, finance and insurance produced the highest average weekly wage of \$668. Tyrrell County and North Carolina earnings by sector data are summarized in Table 15.

Table 15. Tyrrell County and North Carolina  
Employment and Wages by Sector (3Q2005)

Sector	Tyrrell County			North Carolina		
	Average Employment	% Total	Average Weekly Wage	Average Employment	% Total	Average Weekly Wage
Total All Industries	898	100.0%	\$424	3,791,435	100.0%	\$685
Total Government	454	50.6%	\$582	654,514	17.3%	\$765
Total Private Industry	444	49.4%	\$414	3,136,921	82.7%	\$688
Agriculture, Forestry, Fishing, and Hunting	76	8.5%	\$591	25,707	0.7%	\$472
Mining	N/A	N/A	N/A	3,464	0.1%	\$1,078
Utilities	N/A	N/A	\$0	14,381	0.4%	\$1,369
Construction	20	2.2%	\$366	222,493	5.9%	\$616
Manufacturing	107	11.9%	\$187	570,924	15.1%	\$818
Wholesale Trade	N/A	N/A	N/A	168,623	4.4%	\$972
Retail Trade	87	9.7%	\$275	440,057	11.6%	\$424
Transportation and Warehousing	19	2.1%	\$548	135,026	3.6%	\$685
Information	N/A	N/A	N/A	77,026	2.0%	\$1,151
Finance and Insurance	N/A	N/A	\$668	140,481	3.7%	\$1,519
Real Estate and Rental & Leasing	24	2.7	N/A	47,719	1.3%	\$605
Professional and Technical Services	N/A	N/A	N/A	161,530	4.3%	\$951
Management of Companies and Enterprises	N/A	N/A	N/A	63,507	1.7%	\$1,888
Administrative and Waste Services	N/A	N/A	N/A	214,084	5.6%	\$451
Educational Services	186	20.7%	\$486	354,225	9.3%	\$624
Health Care and Social Assistance	25	2.8%	\$668	479,688	12.7%	\$755
Arts, Entertainment and Recreation	N/A	N/A	N/A	43,977	1.2%	\$434
Accommodation and Food Services	36	4.0%	\$164	299,968	7.9%	\$232
Other Services excl. Public Admin.	28	N/A	\$238	97,178	2.6%	\$429
Public Administration	241	26.8%	\$499	217,810	5.7%	\$685
Unclassified	N/A	N/A	N/A	14,436	0.4%	\$500

Source: US Census and NC Employment Security Commission.

e. Employment Commuting Patterns

The 2000 mean travel time to work for Tyrrell County residents was 32 minutes. Forty-five percent (45.6%) of the total population traveled less than 20 minutes to their place of employment. Many eastern North Carolina counties have mean travel times in excess of 30 minutes. The limited travel time for Tyrrell County is the result of in-County employment opportunities and the surrounding coastal counties. According to the Tyrrell County Chamber of Commerce, approximately 60-70% of county residents rely on work outside of the county. Table 16 provides a summary of travel time to work.

Table 16. Tyrrell County  
Travel Time to Work

Travel Time to Work	Total Employed	% of Total
Total Workers 16 Years and Over	1,531	
Did Not Work At Home	1,464	100.0%
Travel Time:		
Less than 5 Minutes	56	3.8%
5 to 9 Minutes	276	18.9%
10 to 14 Minutes	213	14.5%
15 to 19 Minutes	155	10.6%
20 to 24 Minutes	91	6.2%
25 to 29 Minutes	13	0.9%
30 to 34 Minutes	125	8.5%
35 to 39 Minutes	32	2.2%
40 to 44 Minutes	11	0.7%
45 to 59 Minutes	167	11.4%
60 to 89 Minutes	222	15.2%
90 Minutes or More	103	7.7%
Mean Travel Time to Work	32.5 Minutes	
Worked at Home	67	

Source: 2000 U.S. Census.

f. Tourism

Domestic tourism in Tyrrell County generated an economic impact of \$3.16 million in 2004. This was a 5.2% increase over 2003. In 2004, Tyrrell County ranked 98th in travel impact among North Carolina's 100 Counties. More than 20 jobs in Tyrrell were directly attributable to travel and tourism. Travel generated a \$0.36 million payroll in 2004. State and local tax revenues from travel to Tyrrell County amounted to \$0.48 million. This represents a \$115 tax saving to each county resident. Tyrrell County's proximity to some of the state's most popular destinations on Roanoke Island and the Outer Banks has contributed to the overall growth in tourism revenues.

g. Employment and Economic Summary

- Tyrrell County ranks 99<sup>th</sup> in terms of median household income statewide.
- The Town of Columbia’s median household income of \$20,588 is only 53% of the state’s average income of \$39,184.
- The largest employment sector in Columbia is Arts, Entertainment, Recreation, and Accommodations while the county’s biggest sector is Agriculture, Forestry, Fishing, and Hunting.
- The top employers in the county are the Tyrrell County Board of Education and the State of North Carolina.
- The highest average weekly wage in the county is \$688 which is produced in Finance and Insurance sector.
- The 2000 mean travel time to work for Tyrrell County residents was 32 minutes. Approximately 60-70% of county residents rely on work outside of the county.

4. Population Projections

The population projections through 2030 for the entire County and the Town of Columbia are provided in Table 17. The reader is cautioned that because of potential municipal annexation actions, it is extremely difficult to forecast municipal population growth. The County has stationary geographic/political boundaries. Because of annexations, this is not true for the Town of Columbia. According to Table 45, the County is expected to have a 27.6% growth rate and Columbia is expected to have a 40.2% growth rate.

Table 17. Tyrrell County and Town of Columbia Population Projections, 2005-2030

	2005 (estimate)	2010	2015	2020	2025	2030	Overall % Change
Columbia	840	899	962	1,029	1,101	1,178	40.2%
Tyrrell County	4,203	4,413	4,634	4,865	5,109	5,364	27.6%

Source: NC Office of State Planning and Holland Consulting Planners, Inc.

## B. NATURAL SYSTEMS ANALYSIS

### 1. Natural Features - Analysis and Mapping

#### a. Topography and Geology

Tyrrell County is located in northeastern North Carolina. The Town of Columbia is located in the northwestern portion of Tyrrell County. The topography in the county is flat, generally sloping from the south and west towards the north and east. The county drains into the Scuppernong River in the northwestern section, the Albemarle Sound in the north, and the Alligator River on the east side of the county. The county has elevations that range from about 15 feet above mean sea level in the southwest to 2 feet along the sound and the Alligator River. The highest elevation is in the New Lands section at 17 feet.

There are three geologic regions in North Carolina: mountains, piedmont, and coastal plains. Tyrrell County is positioned in the lower coastal plains. The area is considered to be in the Cenozoic Era and the Quarternary Period. The geology is classified as Qp which consists of surficial deposits - sand clay, gravel, and peat deposited in marine, fluvial, eolian, and lacustrine environments.

#### b. Climate

Tyrrell County is hot and humid in the summer with an average temperature of 77° and an average daily maximum temperature of 88°. Winters are cool with occasional cold spells. The average temperature in the winter is 44° with an average daily minimum of 32°. The average relative humidity at dawn is 85% and around 60% in the midafternoon.

The county has rain throughout the year, which can be fairly heavy. The annual precipitation is adequate for crops that grow in the area. Sixty percent (60%) of the annual precipitation falls during the growing season, April through September, for most crops. Two out of ten years the rainfall during the growing season will be less than 25 inches. Most thunderstorms occur in the summer.

#### c. Flood Zones

Special Flood Hazard Areas (SFHAs) are defined as land area with a greater than 1% chance per year of flooding. These areas are also known as floodplains. The National Flood Insurance Program uses flood hazard zone designations to indicate the magnitude of flood hazards in specific areas. Tyrrell County has two flood zones: AE and Shaded X. Following are descriptions of each.

Zone AE: Special Flood Hazard Areas inundated by the 100-year flood; base flood elevations are determined.

Shaded X: Areas of 500-year flood.

These flood hazard areas are indicated on Flood Insurance Rate Maps (FIRMS), which are considered the most reliable and consistent source for delineating SFHAs and are the source used to determine whether or not the purchase of flood insurance is mandatory for developed properties with mortgages. According to the Federal Emergency Management Agency, a home located within an SFHA has a 26% chance of suffering flood damage during the term of a 30-year mortgage. Eighty-six (86%) of the county's unincorporated land area is located within a 100- or 500-year floodplain and 100% of the Town of Columbia's land area is located within an SFHA.

The table below describes the extent of flood hazard areas within Tyrrell County and the Town of Columbia. Maps 2A and 2B (see Appendix II) delineate those areas.

Table 18. Tyrrell County and Town of Columbia Acreage in Flood Hazard Areas

	Unincorporated County		Columbia Planning Jurisdiction		Total County	
	Acres	% from Total	Acres	% from Total	Acres	% from Total
AE	193,632.8	78.1%	3,054.3	100.0%	196,687.1	78.3%
Shaded X	19,611.3	7.8%	0.0	0.0%	19,611.3	7.8%
TOTAL	213,244.1	85.0%	3,054.3	100.0%	216,298.4	86.2%

Source: Holland Consulting Planners, Inc.

In 1986, the US Army Corps of Engineers prepared maps of coastal North Carolina which delineated the flooding that may be expected to occur as a result of hurricanes. The maps were prepared utilizing a computer based model named SLOSH (Sea, Lake, Overland, Surges from Hurricanes). The model plots hurricane-related flooding which may result from a number of characteristics including wind speed, wind direction, time, tide, etc. According to the National Hurricane Center, the SLOSH model is generally accurate within plus or minus 20 percent. For example, if the model calculates a peak 10 foot storm surge for the event, you can expect the observed peak to range from 8 to 12 feet. The point of hurricane's landfall is crucial to determining which areas will be inundated by the storm surge. Where the hurricane forecast track is inaccurate, SLOSH model results will be inaccurate. The SLOSH model, therefore, is best used for defining the potential maximum surge for a location.

Maps 3A and 3B (see Appendix II) indicate the areas of Tyrrell County and the Town of Columbia which are most susceptible to hurricane generated storm surge from fast and slow moving hurricanes. Fast moving hurricanes have a forward velocity of greater than or equal to fifteen (15) miles per hour. Slow moving hurricanes have a forward velocity of less than fifteen (15) miles per hour. The following tables summarize the land areas inundated by varying categories of fast and slow moving hurricanes. Please note that the acreage for Category 3 storms will also include the acreage for a Category 1 or 2 storm. Category 4 and 5 storms include the acreage from Category 1,2, and 3 storms.

Table 19. Tyrrell County and Town of Columbia  
Slow Moving Hurricane Inundation (Acreage)

	Unincorporated County		Columbia Planning Jurisdiction*		Total County	
	Acres	% from Total	Acres	% from Total	Total	% from Total
Category 1 & 2	199,150.5	80.3%	3,054.3	100.0%	202,204.8	80.5%
Category 3	233,780.5	94.3%	3,054.3	100.0%	236,834.8	94.3%
Category 4 & 5	247,824.9	99.9%	3,054.3	100.0%	250,879.2	99.9%

\*The entire Town of Columbia is inundated during Categories 1 and 2 hurricanes.  
Source: Holland Consulting Planners, Inc.

Table 20. Tyrrell County and Town of Columbia  
Fast Moving Hurricane Inundation (Acreage)

	Unincorporated County		Columbia Planning Jurisdiction*		Total County	
	Acres	% from Total	Acres	% from Total	Acres	% from Total
Category 1 & 2	152,035.6	61.3%	3,048.0	99.8%	155,083.6	61.8%
Category 3	166,447.9	67.1%	3,054.3	100.0%	169,502.2	67.5%
Category 4 & 5	208,577.8	84.1%	3,054.3	100.0%	211,632.1	84.3%

\*The entire Town of Columbia is inundated during a Category 3 hurricane.  
Source: Holland Consulting Planners, Inc.

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 4 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 roofing 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 damaged 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.

d. Manmade Hazards

There are no significant manmade hazards within the Town of Columbia or the unincorporated areas of Tyrrell County. 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 1<sup>st</sup> of each year to the North Carolina Emergency Response Commission, the Local Emergency Management Department, and the local fire department with jurisdiction over the facility. At the time of this writing there were three facilities that were included on the Tyrrell County Tier II report.

There are 79 underground storage tanks (USTs) in Tyrrell County. Seventy-two of the USTs are located in the Town of Columbia, while the remaining seven are within the Scuppernon Township. As a result of federal regulations (Chapter 40 of the Code of Federal Regulations, Parts 280 and 281) concerning underground storage tanks, the threat of explosion or groundwater contamination from existing underground storage tanks should decrease.

e. Soils

The Soil Survey of Tyrrell County, North Carolina, the latest detailed soil survey for the county, was issued in July 1988 by the Soil Conservation Service. That survey identifies 22 soil series within the county. These associations are delineated on Map 4 (see Appendix II) and their conditions for site development are summarized in Table 21.

There are 17 soils that are hydric soils. Those soils are noted in the table below. A hydric soil is a soil which is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (anaerobic is defined as a situation in which molecular oxygen is absent from the environment). These soils may meet the definition of 404 wetland areas if found in combination with certain 404 vegetation and require permitting by the US Army Corps of Engineers' Wilmington office prior to any disturbance.

Table 21. Tyrrell County Soil Characteristics

Map Symbol	Description	Acres	% of Total	Depth to Seasonal High Water Table (ft)	Flooding Frequency (Surface)	Dwellings without Basements	Local Roads and Streets
AaA	Altavista loamy fine sand, 0 to 2%	2,858.3	1.1%	1.5 to 2.5 feet	None	Moderate: wetness	Moderate: wetness
Ap*	Arapahoe fine sandy loam, rarely flooded	1,584.4	0.6%	0 to 1.0 foot	Rare	Severe: flooding, wetness	Severe: wetness
Ar*	Argent silt loam, rarely flooded	3,778.9	1.5%	0 to 1.0 foot	Rare	Severe: flooding, wetness	Severe: low strength, wetness
At	Augusta fine sandy loam	4,485.6	1.8%	1.0 to 2.0 feet	None	Severe: wetness	Moderate: low strength, wetness
Ba*	Belhaven muck, rarely flooded	23,592.6	9.4%	0 to 1.0 foot	Rare	Severe: flooding, wetness, low strength	Severe: wetness, low strength
Cf*	Cape Fear loam, rarely flooded	7,965.7	3.2%	0 to 1.5 foot	Rare	Severe: flooding, wetness	Severe: low strength, wetness
Ch*	Chowan silt loam, frequently flooded	1,603.7	0.6%	0 to 1.5 foot	Frequent	Severe: flooding, wetness	Severe: low strength, wetness, flooding

Table 21 (continued)

Map Symbol	Description	Acres	% of Total	Depth to Seasonal High Water Table (ft)	Flooding Frequency (Surface)	Dwellings without Basements	Local Roads and Streets
CtA	Conetoe loamy fine sand, 0 to 3 percent slopes	772.5	0.3%	> 6.0 feet	None	Slight	Slight
Do*	Dorovan muck, frequently flooded	23,213.9	9.3%	+1 to 0.5 foot	Frequent	Severe: flooding, ponding, low strength	Severe: ponding, flooding
Hy*	Hyde loam, rarely flooded	20,015.6	8.0%	0 to 1.5 feet	Rare	Severe: flooding, wetness	Severe: low strength, wetness
Pe*	Perquimans loam, rarely flooded	8,185.1	3.3%	0 to 1.0 foot	Rare	Severe: flooding, wetness	Severe: wetness, low strength
Po*	Ponzer muck, rarely flooded	7,709.5	3.1%	0 to 1.0 foot	Rare	Severe: flooding, wetness, low strength	Severe: wetness, low strength
Pt*	Portsmouth loam, rarely flooded	15,623.7	6.2%	0 to 1.0 foot	Rare	Severe: flooding, wetness	Severe: wetness
Pu*	Pungo muck, rarely flooded	80,203.4	32.0%	0 to 1.0 feet	Rare	Severe: flooding, low strength, wetness	Severe: wetness, low strength
Ro*	Roanoke loam, rarely flooded	1,847.9	0.7%	0 to 1.0 foot	Rare	Severe: flooding, wetness	Severe: low strength, wetness
Rp*	Roper muck, rarely flooded	15,076.4	6.0%	0 to 1.5 feet	Rare	Severe: flooding, wetness	Severe: wetness, low strength
StB	State loamy fine sand, 0 to 4 percent slopes	650.1	0.3%	4.0 to 6.0 feet	None	Slight	Moderate: low strength
To*	Tomotley fine sandy loam, rarely flooded	15,022.6	6.0%	0 to 1.0 foot	Rare	Severe: wetness, flooding	Severe: wetness
Ud*	Udorthents, loamy	113.4	0.05%	**	**	**	**
WaA	Wahee loam, 0 to 3 percent slopes	785.3	0.3%	0.5 to 1.5 feet	None	Severe: wetness	Severe: low strength, wetness
Wd*	Wasda muck, rarely flooded	4,108.4	1.6%	0 to 1.0 foot	Rare	Severe: flooding, wetness	Severe: wetness
Wk*	Weeksville silt loam, rarely flooded	10,348.1	4.1%	0 to 1.0 foot	Rare	Severe: flooding, wetness	Severe: wetness

\*Hydric soils.

\*\*This soil was not evaluated during the soil survey.

Source: Soil Survey of Tyrrell County, North Carolina.

f. Water Supply

Tyrrell County is underlain by thousands of sedimentary rocks, but fresh water is only within the upper part, to a depth of a few hundred feet. The depth to salty water varies from more than 400 feet in the southwestern part of the county to less than 100 feet in the vicinity of the sound. In the southwestern part of the county, the limestone aquifer may be capable of yielding over 1,000 gallons per minute. Elsewhere in the county, the limestone aquifer contains only salty water. Overlying this aquifer is a sequence of sands and shales belonging to the upper sandy aquifer, which is capable of yielding hundreds of gallons per minute to individual wells in the southwestern part of the county, but less than 100 gallons per minute in the vicinity of the sound. The well water tends to be very hard, alkaline, and may contain excessive iron.

g. Fragile Areas and Areas of Environmental Concern

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

The Coastal Resources Commission designates areas as AECs to protect them from uncontrolled development, which 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 three percent of the land in the 20 coastal counties (source: NC Division of Coastal Management, CAMA Handbook for Development in Coastal Areas, Section 2, 2002).

Fragile areas are those areas that are not explicitly defined as AECs but that could cause significant environmental damage or other degradation 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.

In this section, the County will evaluate the following AECs and fragile areas within Tyrrell County and the Town of Columbia: estuarine waters and shorelines, public trust areas, coastal wetlands, areas of excessive erosion, natural resource fragile areas, and outstanding resource waters.

## (1) Estuarine Waters and Estuarine Shorelines

At times, you have heard them called bays, sounds, lagoons, marshes, and swamps. In simplest terms, estuaries are transition zones between fresh and salt water, usually where a river or stream flows into the ocean. Estuaries are protected from the full force of ocean waves and wind by barrier islands, mudflats, or sand. The sheltered waters support an abundance and diversity of plant and animal life, including marine mammals, shore birds, fish, crabs, clams and other shellfish, and reptiles, just to name a few. A number of marine organisms, including many of the commercially valuable fish species, depend on the estuaries for spawning, nursing, or feeding. Due to these facts, protection of estuaries within Tyrrell County is vital in the effort to preserve commercial fishing in waters surrounding and adjacent to county boundaries.

Besides serving as an important habitat for wildlife, estuaries also serve as a water filtration system, by removing sediments, nutrients, and pollutants before they reach the ocean. The filtration process creates cleaner water, which is of benefit to both marine life and people who inhabit the surrounding areas. Estuaries also are important sources of flood control, with porous salt marsh soils and grasses absorbing flood waters and dissipating storm surges. Like barrier islands, they provide natural barriers between the land and the ocean.

### Why are Estuaries Important?

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

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

The stems, roots, and seeds of many coastal wetland plants provide food and nesting materials for waterfowl and other wildlife.

Marsh plants guard against erosion and flood damage. Their leaves and stems dissipate wave energy, and their root systems bind soil. The nutrients and decayed plant material the marsh plants produce also contribute to the productivity of the estuarine system.

Estuarine plants trap debris and excess nutrients and help regulate the flow of fresh water into the estuary, maintaining the system's balance.

Estuarine shorelines act as natural barriers to erosion and flooding. Certain soil formations and plant communities along estuarine shorelines also help slow erosion.

Natural buffers along the shoreline protect the water from excess sediment and pollutants, and they protect nearby developments from flooding and erosion.

Estuarine waters and public trust areas are important for tourism, because they support commercial and recreational fishing, boating, swimming, and other recreational activities. (Source: NC Division of Coastal Management, "CAMA Handbook for Development in Coastal North Carolina, Section 2, 2002).

All of the waterbodies that surround the eastern, western, and northern portions of Tyrrell County are recognized as estuarine waters. These waterbodies include, but are not limited to the following: Scuppernong River, Albemarle Sound, Bull Bay, Alligator Creek, Alligator River, Second Creek, The Frying Pan, Grapevine Bay, and Rattlesnake Bay. These waterbodies serve as a vital component of the local economy within Tyrrell County due to the fisheries and eco-tourism opportunities that these areas offer. Protection of these waters is a substantial concern for the county, and will be addressed throughout the context of this plan.

Estuarine shorelines are land areas leeward of mean high tide that are immediately adjacent to or bordering estuarine waters. These areas support the ecological function of estuaries and are highly vulnerable to erosion caused by wind or water and to damage caused by development. All shorelines adjacent to the waterbodies discussed above are considered estuarine shorelines, and therefore fall under the jurisdiction of CAMA Coastal Policy as outlined below.

Under CAMA rules, all lands 75 feet leeward from the mean high tide are classified as estuarine shorelines and are subject to CAMA development regulations at 15A NCAC 7H.0205-0208, as follows:

- The location, design and construction of your project must give highest priority to conserving the biological, economic, and social values of coastal wetlands, estuarine waters and public trust areas, and protect public rights of navigation and recreation in public trust areas.
- Your project should be designed and located to cause the least possible damage to the productivity and integrity of:
  - coastal wetlands;
  - shellfish beds;
  - submerged grass beds;
  - spawning and nursery areas;
  - important nesting and wintering areas for waterfowl and other wildlife; and
  - important natural barriers to erosion, such as marshes, cypress fringes, and clay soils.
- Your project must follow the air and water quality standards set by the NC Environmental Management Commission. Generally, development will not be permitted if it lowers water quality for any existing uses of the water (such as shellfishing, swimming, or drinking). For more information, contact the NC Division of Air Quality or the Division of Water Quality.

- Your project must not significantly increase siltation or erosion, which can smother important habitats, block sunlight from aquatic plants, and choke fish and shellfish.
- Your project must not create a stagnant body of water, which can affect oxygen levels and accumulate sediments and pollutants that threaten fish and shellfish habitats and public health.
- You must time the construction of your project to have the least impact on the life cycles and migration patterns of fish, shellfish, waterfowl, and other wildlife. The life cycles of animals that depend on the estuarine system are especially sensitive during certain times of the year. For more information, contact the Coastal Management office nearest you.
- Your project must not cause major or irreversible damage to valuable archaeological or historic resources. Archaeological resources, such as the remains of Native and Early American settlements, shipwrecks, and Civil or Revolutionary War artifacts, provide valuable information about the history of the coastal region and its people. Information on the location of these sites is available from the NC Division of Archives and History in the Department of Cultural Resources.
- Your project must not reduce or prevent the use of, and public access to, estuarine waters and public trust lands and waters.
- Your project must comply with the local land use plan. A land use plan is a "blueprint" developed by local leaders to help guide decisions that affect the growth of the community. CAMA requires each of the 20 coastal counties to prepare a local land use plan and update it according to CRC guidelines. More than 70 cities and counties have adopted their own plans.

## (2) Public Trust Waters

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 creeks and streams that are navigable. Tyrrell County has started focusing on these public trust waters as an economic resource, outside of commercial fishing. The county has recently initiated efforts to utilize these areas for eco-tourism companies. These efforts focus on waterborne tours and recreational boat and kayak trips. This type of

economic development is appealing to the county because of its minimal impact on environmental quality. The following lands and waters are considered public trust areas:

- all waters of the Atlantic Ocean and the lands underneath, from the normal high water mark on shore to the state's official boundary three miles offshore;
- all navigable natural water bodies and the lands underneath, to the normal high watermark on shore (a body of water is considered navigable if you can float a canoe in it). This does not include privately-owned lakes where the public does not have access rights;
- all 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.

Although public trust areas must be delineated by on-site analysis, all submerged lands within and adjacent to Tyrrell County, including Columbia, should be considered public trust areas. Under CAMA regulations, all lands 30 feet leeward of public trust areas are subject to the restrictions specified above for estuarine shoreline areas.

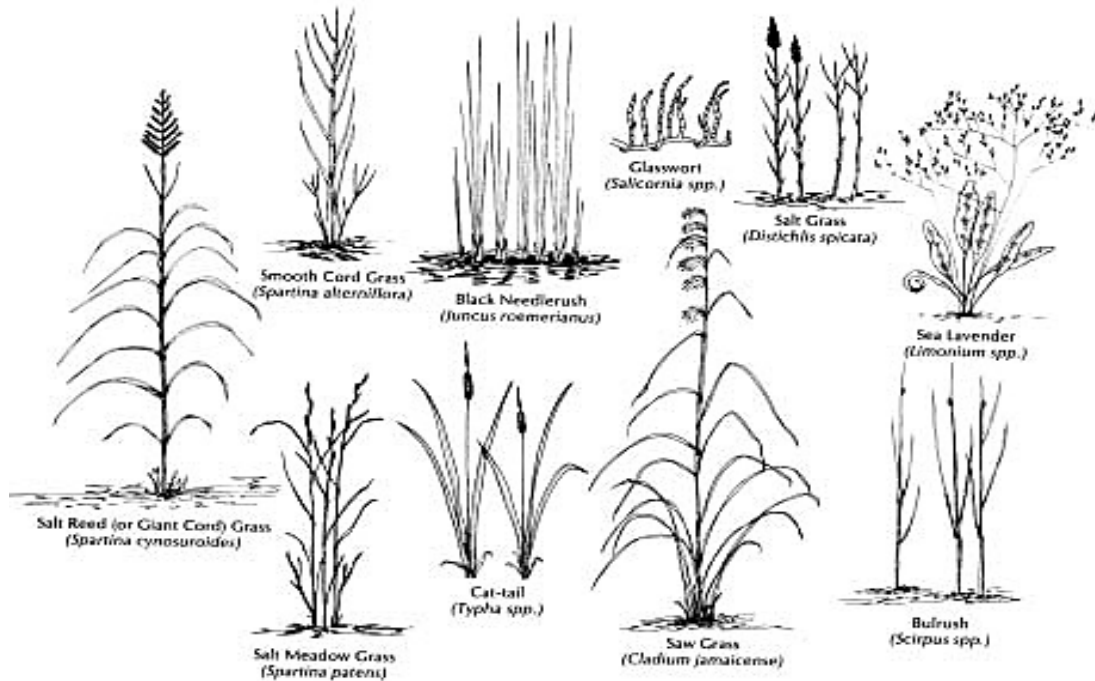
### (3) Coastal Wetlands

Coastal Resources Commission's rules define "Coastal Wetlands" as any marsh in the 20 coastal counties (including Tyrrell County and Columbia) that regularly or occasionally floods by lunar or wind tides, and that includes one or more of the following 10 plant species:

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



## COASTAL WETLAND PLANT SPECIES



Coastal Wetland Plant Species in North Carolina (Source: NCDWM, "CAMA Handbook for Development in Coastal North Carolina", 2002)

Coastal wetlands provide significant environmental and economic benefits to Tyrrell County and the Town of Columbia. They protect against flooding, help maintain water quality, provide habitat to wildlife, and serve as part of the estuarine system described earlier in this plan.

In 2003, NCDWM classified and mapped coastal wetlands based on an analysis of several existing data sets, including aerial photographs and satellite images of coastal areas in North Carolina, including all portions of Tyrrell County. Even though the presence of wetlands must be established by an onsite delineation and investigation of plants, NCDWM produced an excellent representation of wetlands in the County, and throughout coastal North Carolina (see Appendix II, Map 5).

According to NCDWM's 2003 Coastal Wetlands Inventory, approximately 66% of the County's unincorporated land area, or 163,953 acres, were determined to be coastal wetlands. Within the Columbia planning jurisdiction (corporate limits and ETJ), the inventory identified 1,282.9 acres of wetlands, comprising 42.0% of the total area. Refer to Table 22.

Table 22. Tyrrell County and Town of Columbia Wetland Areas By Type

	Tyrrell County		Unincorporated County		Columbia Town Limits		Columbia ETJ	
	Acres	% from Total	Acres	% from Total	Acres	% from Total	Acres	% from Total
Bottomland Hardwood	1,397.7	0.6%	1,397.5	0.6%	0.0	0.0%	0.2	0.0%
Cleared Depressional Swamp Forest	647.4	0.3%	647.4	0.3%	0.0	0.0%	0.0	0.0%
Cleared Hardwood Flat	189.8	0.1%	189.8	0.1%	0.0	0.0%	0.0	0.0%
Cleared Pine Flat	208.0	0.1%	208.0	0.1%	0.0	0.0%	0.0	0.0%
Cleared Pocosin	216.8	0.1%	216.8	0.1%	0.0	0.0%	0.0	0.0%
Cleared Riverine Swamp Forest	3.5	0.0%	3.5	0.0%	0.0	0.0%	0.0	0.0%
Cutover Depressional Swamp Forest	300.2	0.1%	299.8	0.1%	0.0	0.0%	0.4	0.0%
Cutover Hardwood Flat	319.2	0.1%	318.3	0.1%	0.0	0.0%	0.9	0.0%
Cutover Headwater Swamp	0.6	0.0%	0.6	0.0%	0.0	0.0%	0.0	0.0%
Cutover Pine Flat	104.1	0.0%	104.1	0.0%	0.0	0.0%	0.0	0.0%
Cutover Pocosin	161.7	0.1%	161.7	0.1%	0.0	0.0%	0.0	0.0%
Cutover Riverine Swamp Forest	4.3	0.0%	4.3	0.0%	0.0	0.0%	0.0	0.0%
Depressional Swamp Forest	49,879.2	19.9%	49,863.8	20.1%	0.0	0.0%	15.4	0.6%
Drained Depressional Swamp Forest	4,332.3	1.7%	4,330.7	1.8%	0.0	0.0%	1.6	0.1%
Drained Hardwood Flat	690.4	0.3%	690.4	0.3%	0.0	0.0%	0.0	0.0%
Drained Pine Flat	782.6	0.3%	782.6	0.3%	0.0	0.0%	0.0	0.0%
Drained Pocosin	2,528.9	1.0%	2,528.9	1.0%	0.0	0.0%	0.0	0.0%
Drained Riverine Swamp Forest	381.1	0.2%	381.1	0.2%	0.0	0.0%	0.0	0.0%
Estuarine Forest	2.8	0.0%	2.8	0.0%	0.0	0.0%	0.0	0.0%
Estuarine Shrub/Scrub	196.1	0.1%	196.1	0.1%	0.0	0.0%	0.0	0.0%
Freshwater Marsh	216.7	0.1%	216.7	0.1%	0.0	0.0%	0.0	0.0%
Hardwood Flat	7,163.0	2.9%	7,153.0	2.9%	0.03	0.0%	10.0	0.4%
Headwater Swamp	43.6	0.0%	43.6	0.0%	0.0	0.0%	0.0	0.0%
Human Impacted	326.0	0.1%	320.1	0.1%	5.8	0.9%	0.1	0.0%
Managed Pineland	22,651.3	9.0%	22,297.8	9.0%	9.3	1.5%	344.2	14.2%
Pine Flat	6,935.6	2.8%	6,927.3	2.8%	0.0	0.0%	8.2	0.3%
Pocosin	39,019.4	15.6%	39,019.4	15.7%	0.0	0.0%	0.0	0.0%
Riverine Swamp Forest	25,918.3	10.3%	25,031.4	10.1%	69.3	11.0%	817.5	33.7%
Salt/Brackish Marsh	615.4	0.2%	615.4	0.3%	0.0	0.0%	0.0	0.0%
TOTAL	165,235.9	65.9%	163,953.0	66.1%	84.5	13.4%	1,198.4	49.5%

Source: NC Division of Coastal Management, NC Center for Geographic Information Analysis, Holland Consulting Planners.

The following provides the NCDWM descriptions of the various wetland areas found within Tyrrell County and the Town of Columbia (source: NCDWM Wetlands Inventory, 2003):

- Salt/Brackish Marsh. Any salt marsh or other marsh subject to regular or occasional flooding by tides, including wind tides (whether or not the tide waters reach the marshland areas through natural or artificial watercourses), as long as this flooding does not include hurricane or tropical storm waters. Coastal wetland plant species include: smooth cordgrass; black needlerush; glasswort; salt grass; sea lavender; salt marsh bullrush; saw grass; cattail; salt meadow cordgrass; and big cordgrass.
- Estuarine Shrub/Scrub. Any shrub/scrub dominated community subject to occasional flooding by tides, including wind tides (whether or not the tide waters reach these areas through natural or artificial watercourses). Typical species include wax myrtle and eastern red cedar.
- Estuarine Forested. A forested wetland community subject to occasional flooding by tides, including wind tides (whether or not the tide waters reach the marshland areas through natural or artificial watercourses). Examples include pine-dominated communities with rushes in the understory or fringe swamp communities such as those that occur along the Albemarle and Pamlico sounds.
- Maritime Swamp Forest. A forested community characterized by its stunted growth due to the stresses imposed by its proximity to salt spray from the ocean. Typical vegetation includes live oak, red maple, and swamp tupelo.
- Freshwater Marsh. Herbaceous areas that are flooded for extended periods during the growing season. Included are marshes within lacustrine systems, managed impoundments, some Carolina Bays, and other non-tidal marshes (i.e., marshes which do not fall into the Salt/Brackish Marsh category). Typical communities include species of sedges, millets, rushes, and grasses that are not specified in the coastal wetland regulations. Also included are giant cane, arrowhead, pickeralweed, arrow arum, smartweed, and cattail.
- Bottomland Hardwood. Riverine forested or occasionally shrub/scrub communities, usually occurring in floodplains, that are seasonally flooded. Typical species include oaks (overcup, water, laurel, swamp chestnut), sweet gum, green ash, cottonwoods, willows, river birch, and occasionally pines.
- Swamp Forest. Very poorly drained riverine or non-riverine forested or occasionally shrub/scrub communities which are semi-permanently flooded,

including temporarily flooded depressional systems. Typical species include cypress, black gum, water tupelo, green ash, and red maple.

- Headwater Swamp. Wooded, riverine systems along first order streams. These include hardwood dominated communities with soil that is moist most of the year. Channels receive their water from overland flow and rarely overflow their own banks.
- Hardwood Flat. Poorly drained interstream flats not associated with rivers or estuaries. Seasonally saturated by high water table or poor drainage. Species vary greatly but often include sweet gum and red maple.
- Pine Flat. Freshwater, seasonally saturated pine communities on hydric soils that may become quite dry for part of the year. Generally occur in flat or nearly flat areas that are not associated with a river or stream system. Usually dominated by loblolly pine. This category does not include managed pine systems.
- Managed Pineland. Seasonally saturated, managed pine forests (usually loblolly pine) occurring on hydric soils. Since this category is based primarily on soils data and 30 meter resolution satellite imagery, it is less accurate than the other wetland categories.
- Human Impacted (w-type 40). Areas of human impact have physically disturbed the wetland, but the area is still a wetland. Impoundments and some cutovers are included in this category, as well as other disturbed areas, such as power lines.
- Partially Drained Wetland. Any wetland system described above that is, or has been, effectively drained (according to the National Wetlands Inventory).
- Cutover Wetland. Areas for which satellite imagery indicates a lack of vegetation in 1994. These areas are likely to still be wetlands; however, they have been recently cut over. Vegetation in these areas may be regenerating naturally, or the area may be in use for silvicultural activities. Note that marshes cannot be considered cutover.
- Cleared Wetland. Areas of hydric soils for which satellite imagery indicates a lack of vegetation in both 1988 and 1994. These areas are likely to no longer be wetlands.

Areas identified as coastal wetlands are subject to CAMA regulations as specified above for estuarine shoreline areas.

Freshwater swamps and inland, non-tidal wetlands are not in the CAMA permit jurisdiction, unless the CRC specifically designates them as AECs. However, these wetlands are protected by Section 404 of the Federal Clean Water Act. An Army Corps of Engineers "Section 404" permit (USACE 404) may be required for projects taking place in these wetlands. Site-specific delineation of potential wetlands is required, under USACE wetland delineation guidelines, in order to determine whether a specific proposed development project requires a USACE 404 permit. There are several different types of USACE 404 permits. In general, however, the basic premise of the USACE 404 program is that no discharge of dredge 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.

#### (4) Protected Lands and Significant Natural Heritage Areas

Natural resource fragile areas, or "Protected Lands," are areas that are protected from the threat of development by regulation due to ownership by a governmental entity or non-profit organization. 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. NCDRCM has identified and mapped these areas in conjunction with the North Carolina Center for Geographic Analysis (NCCGIA). The designated "Protected Lands" throughout Tyrrell County, including the Town of Columbia are summarized in Table 23 below, and shown on Maps 6A and 6B (see Appendix II).

Table 23. Tyrrell County and Town of Columbia Protected Lands

	Unincorporated County		Columbia Planning Jurisdiction		Total County	
	Acres	% from Total	Acres	% from Total	Total	% from Total
1. Agric Tidewater Research Station	228.06	0.1%	0.00	0.0%	228.06	0.1%
2. Buckridge Coastal Reserve	18,043.09	7.3%	0.00	0.0%	18,043.09	7.2%
3. EHNR - Kitty Hawk Woods	0.00	0.0%	25.76	0.8%	25.76	0.0%
4. NCSU - 4H Center	225.17	0.1%	0.00	0.0%	225.17	0.1%
5. PRKS Pettigrew State Park	74.88	0.0%	0.00	0.0%	74.88	0.0%
6. WRC Columbia Access Area	1.98	0.0%	0.00	0.0%	1.98	0.0%
7. WRC Creswell Wetlands	2,632.88	1.1%	0.00	0.0%	2,632.88	1.1%
8. WRC Gum Neck Access Area	8.43	0.0%	0.00	0.0%	8.43	0.0%
9. Pocosin Lakes NWR*	58,008.61	23.4%	230.07	7.5%	58,238.68	23.2%
Total	79,223.10	31.9%	255.83	8.4%	79,478.93	31.7%

\*A portion of the Pocosin Lakes National Wildlife Refuge falls within the corporate limits of the Town of Columbia.

\*\*Numbers correspond to location on Maps 6A and 6B.

Source: NC Center for Geographic Information Analysis, Holland Consulting Planners.

“Significant Natural Heritage Areas” (SNHA) are areas containing ecologically significant natural communities or rare species. The North Carolina Natural Heritage Program of the NC Division of Parks and Recreation (NCDPR) identifies and helps facilitate the protection of these areas. NCDPM has identified these areas through the assistance of NCGIA.

Approximately 57% of the county's total acreage is located in a Significant Natural Heritage Area. All of these sites are located within unincorporated portions of the county, with the exception of the Scuppernong River Swamp Forest, of which a portion falls within the corporate limits of the Town of Columbia. The abundance of unspoiled natural areas within Tyrrell County serves as a significant asset that may be used for economic development efforts. Through the implementation of this plan, the county will aim to further ensure the protection of these environmentally sensitive areas. The following table summarizes the SNHA sites throughout Tyrrell County. Refer to Map 7 (see Appendix II) for the location of these sites.

Table 24. Tyrrell County and Town of Columbia Significant Natural Heritage Areas

	Unincorporated County		Columbia Planning Jurisdiction		Total County	
	Acres	% from Total	Acres	% from Total	Total	% from Total
1. Alligator Creek/Second Creek Swamp Forest	16,828.5	6.8%	0.0	0.0%	16,828.5	6.7%
2. Buck Ridge Swamps	16,510.8	6.7%	0.0	0.0%	16,510.8	6.6%
3. Bunton Creek Swamp	138.0	0.1%	0.0	0.0%	138.0	0.1%
4. Frying Pan Swamps	7,537.9	3.0%	0.0	0.0%	7,537.9	3.0%
5. Harvester Road Tall Pocosin	8,085.3	3.3%	0.0	0.0%	8,085.3	3.2%
6. Lake Phelps Aquatic Habitat	227.9	0.1%	0.0	0.0%	227.9	0.1%
7. New Lake Fork Pocosin and New Lake	12.1	0.0%	0.0	0.0%	12.1	0.0%
8. Palmetto-Peartree Swamp Forest	12,109.9	4.9%	0.0	0.0%	12,109.9	4.8%
9. Pettigrew State Park	141.8	0.1%	0.0	0.0%	141.8	0.1%
10. River Neck Swamp	229.5	0.1%	0.0	0.0%	229.5	7.5%
11. Roper Island	6.7	0.0%	0.0	0.0%	6.7	0.0%
12. Scuppernong River Swamp Forest	11,230.2	4.5%	575.4	18.8%	11,805.6	4.7%
13. Upper Alligator River Marshes and Forests	51,334.7	20.7%	0.0	0.0%	51,334.7	20.5%
Total	124,393.3	50.2%	575.4	18.8%	124,968.7	57.2%

\*Number corresponds to location on Map 7.

Source: NC Center for Geographic Information Analysis, Holland Consulting Planners.

(5) Outstanding Resource Waters

All surface waters in North Carolina are assigned a primary classification by the NC Division of Water Quality (DWQ). "Outstanding Resource Waters" (ORW) is a supplemental classification intended to protect unique and special waters having excellent water quality and being of exceptional state or national ecological or recreational significance. To qualify, waters must be rated "Excellent" by DWQ and have one of the following outstanding resource values:

- Outstanding fish habitat or fisheries,
- Unusually high level of waterbased recreation,
- Some special designation such as NC or National Wild/Scenic/Natural/Recreational River, National Wildlife Refuge, etc.,
- Important component of state or national park or forest, or
- Special ecological or scientific significance (rare or endangered species habitat, research or educational areas).

No new or expanded wastewater discharges are allowed, although there are no restrictions on the types of discharges to these waters. There are also associated stormwater runoff, building density, best agricultural practices, and landfill siting controls enforced by DWQ. There are several waterbodies bordering and located within interior portions of the county, which have been designated as Outstanding Resource Waters by NCDWQ. These waterbodies are summarized below, and are all located within the Pasquotank River Basin:

Phelps Lake	Alligator River
Juniper Creek	Gum Neck Creek
Grapevine Bay	Rattlesnake Bay
The Straits	The Frying Pan
Coopers Creek	Babbit Bay
Goose Creek	Second Creek

(6) Ocean Beaches and Shorelines & Inlet Hazard Areas (Areas of Excessive Erosion)

Ocean beaches and shorelines are lands adjacent to open ocean waters consisting of unconsolidated soil materials that extend from the mean low water line landward to a point where either (1) the growth of vegetation occurs, or (2) a distinct change in slope or elevation alters the configuration of the land form, whichever is farther landward. There are no ocean beaches or shorelines located within the jurisdiction of Tyrrell County or the Town of Columbia.

Inlet hazard areas, are portions of land that lie adjacent to turbulent waters associated with inlet navigation channels. Land adjacent to the inlet hazard area is extremely vulnerable to inlet migration, rapid and severe changes in watercourse, flooding and strong tides.

Inlets are associated with water bodies leading from estuarine waters to the open ocean, and therefore will have no impact on properties within Tyrrell County.

h. Areas of Resource Potential

(1) Regionally Significant Parks

There are a number of facilities within Tyrrell County and the Town of Columbia that have regional significance, including the Pocosin Lakes National Wildlife Refuge, Pettigrew State Park, Scuppernong River Interpretive Boardwalk, Walter B. Jones Center for the Sounds, and Palmetto-Peartree Preserve.

The Pocosin Lakes National Wildlife Refuge consists of 110,106 acres located within Tyrrell, Hyde, and Washington Counties. Approximately 34,000 visit the refuge annually. Outdoor recreational opportunities include hunting, fishing, hiking, biking, wildlife observation, kayaking, and canoeing. The Pettigrew State Park is located in Tyrrell and Washington Counties and contains 1,200 acres of land and 16,600 acres of water. The park has camping facilities and other outdoor recreational opportunities. Additionally, the park is currently acquiring land to expand upon existing camping and water access facilities along the Scuppernong River. The Scuppernong River Interpretive Boardwalk is located in the Town of Columbia behind the Visitor's Center. The Boardwalk is one of the County's biggest attractions. The Walter B. Jones Center for the Sounds is also located in the Town of Columbia and is a big attraction in the area. The Palmetto-Peartree Preserve is northeast of Columbia on the Albemarle Sound. The preserve has 10,000 acres and is home to many endangered and threatened wildlife species.

Tyrrell County is also home to the Emily and Richardson Preyer Buckridge Coastal Reserve, which is comprised of more than 18,000 acres of natural topography. Located approximately 15 miles south of Columbia, the site is situated between the Alligator River and Pocosin Lakes National Wildlife Refuges. The reserve is part of the East Dismal Swamp, a wetlands complex that encompasses more than 320,000 acres in Dare, Tyrrell, and Washington counties. The majority of the site contains non-riverine swamp forest with patches of peatland, Atlantic white cedar forests and pond pine woodlands.

(2) 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.



Tyrrell County considers boating activities to be extremely important to its tourism industry and its overall economy. Tyrrell County and the Town of Columbia allow for the construction of marinas. The following provides a listing of all marina facilities located within Tyrrell County: Alligator River Marina, Columbia Marina, Columbia Town Harbor, Cypress Cove Marina, Inter Yacht, Inc., Town of Columbia Dock, and Woodard's.

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. Tyrrell County and the Town of Columbia oppose the development of additional mooring fields within their jurisdictions. One mooring field currently exists within the Scuppernong River to serve transient boaters.

### (3) 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. There are no floating homes within Tyrrell County or the Town of Columbia.

### (4) 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. Crab shedding is the most prevalent form of aquaculture in the county. Currently, there are nine (9) permitted blue crab shedding operations in the county. There are currently no shellfish leases.

### (5) Channel Maintenance

The Albemarle Sound and the Alligator River provide fishing and recreational boat traffic routes. Proper maintenance of these channels is very important to the County and the Town. If silt or other deposits fill in the channels, safe and efficient movement of vessels could be impeded. The County and the Town support federal policy and funding for the dredging of all intracoastal waterways.

(6) Marine Resources (Water Quality)

The North Carolina Division of Water Quality 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 25.

Table 25. NC Division of Water Quality  
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. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner.
B and SB	Primary recreation and Class C uses. Primary recreational activities include swimming, skin diving, water skiing, and similar uses involving human body contact with water where such activities take place in an organized manner or on a frequent basis.
SA	Waters classified for commercial shellfish harvesting.
WS	Water Supply watershed. 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	Swamp Waters: Recognizes waters that will naturally be more acidic (have lower pH values) and have lower levels of dissolved oxygen.
Tr	Trout Waters: Provides protection to freshwaters for natural trout propagation and survival of stocked trout.
HQW	High Quality Waters: 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	Outstanding Resource Waters: Unique and special surface waters that are unimpacted by pollution and have some outstanding resource values.
NSW	Nutrient Sensitive Waters: 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 Environment and Natural Resources.

Water quality classifications vary slightly within Tyrrell County. The following table provides a listing of all water bodies within the County that are classified by the NC Division of Water Quality along with their assigned classification. Fifteen of the water bodies are currently listed as Outstanding Resource Waters (ORW). Map 8 (see Appendix II) provides the locations of these water bodies.

Table 26. Tyrrell County and Town of Columbia  
Water Bodies and Classifications

Name of Stream	Description	Current Class
Albemarle Sound	All waters south and east of a line running in a southerly direction from Horniblow Point (North end of Norfolk-Southern Railroad Bridge) to a point of land on the east side of Roanoke River (a line running along the railroad to the Chowan-Washington County Line, thence west along the Chowan-Washington County Line to the Bertie-Washington County Line, thence along the Bertie-Washington County Line to a point 0.1 mile above the mouth of Roanoke River, thence southeast 0.1 mile to the east side of Roanoke River	SB
Bull Bay	Entire Bay	SB
Bunton Creek	From source to Bull Bay	C; Sw
Scuppernong River	From source to mouth of Riders Creek (First Creek)	C; Sw
Old Canal	From source to Scuppernong River	C; Sw
Phelps Lake	Entire lake	B; Sw; ORW
Bonarva Canal	From source to Old Canal	C; Sw
Bee Tree Canal and connecting canals	From sources to Scuppernong River	C; Sw
Second Creek and connecting canals	From sources to Scuppernong River	C; Sw
Scuppernong River	From mouth of Riders Creek (First Creek) to Bull Bay	SC
Riders Creek (First Creek) and connecting canals	From sources to Scuppernong River	C; Sw
Bush Harrell Canal and connecting canals	From sources to Scuppernong River	C; Sw
Greys Canal and connecting canals	From sources to Albemarle Sound	C; Sw
Alligator River	From source to mouth of Northwest Fork	C; Sw; ORW
Alligator River	From mouth of Northwest Fork to US Highway 64	SC; Sw; ORW
Northwest Fork Alligator River	From source to Alligator River	C; Sw; ORW
Juniper Creek	From source to Northwest Fork Alligator River	C; Sw; ORW
Southwest Fork Alligator River	From source to Northwest Fork Alligator River	C; Sw; ORW
Dunbar Canal	From source to Southwest Fork Alligator River	C; Sw
Gum Neck Creek	From source to Alligator River	SC; Sw; ORW
Intracoastal Waterway (Pungo River-Alligator River Canal)	From Currituck-Fairfield Township line to Alligator River	SC; Sw
Grapevine Bay	Entire Bay	SC; Sw; ORW
Rattlesnake Bay	Entire Bay	SC; Sw; ORW
The Straits	From source to Alligator River	SC; Sw; ORW
The Frying Pan	From source to The Straits	SC; Sw; ORW
Coopers Creek	From source to The Frying Pan	SC; Sw; ORW

Table 26 (continued)

Name of Stream	Description	Current Class
Basnight Canal	From source to The Frying Pan	C; Sw
Babbit Bay	Entire Bay	SC; Sw; ORW
Goose Creek	From source to Alligator River	C; Sw; ORW
Second Creek	From source to Alligator River	SC; Sw; ORW
Alligator River	From US Highway 64 to Albemarle Sound	SC; Sw
Little Alligator River	From source to Alligator River	SC; Sw
Goose Pond	Entire Pond	SC; Sw

Source: NC Division of Water Quality.

## 2. Environmental Composite Map

The environmental composite map (Map 9A and 9B, see Appendix II) is a requirement under the new CAMA Land Use Planning guidelines [15A NCAC 7B.0702 (c)(2)]. Environmental data layers were assigned to a class based on CAMA regulations. Three classes are identified and all land masses, developed and undeveloped, are considered. The ultimate intent of the map is to rank the suitability of all land based on the environmental criteria. The layers used, and their assigned classes, are outlined in the following table. The categories used are as follows:

Class I: Land that contains only minimal hazards and limitations that can be addressed by commonly accepted land planning and development practices. Class I land will generally support the more intensive types of land uses and development.

Class II: Land that has hazards and limitations for development that can be addressed by restrictions on land uses, special site planning, or the provision of public services such as water and sewer. Land in this class will generally support only the less intensive uses, such as low density residential, without significant investment in services.

Class III: Land that has serious hazards and limitations. Land in this class will generally support very low intensity uses, such as conservation and open space.

Table 27. Tyrrell County/Town of Columbia  
Environmental Composite Map Layers

Layer	Class I	Class II	Class III
Coastal Wetlands			X
Exceptional or Substantial Non-Coastal Wetlands			X
Beneficial Non-Coastal Wetlands		X	
Estuarine Waters			X
Flood Zones		X	
Storm Surge Areas		X	
HQW/ORW Watersheds		X	
Water Supply Watersheds		X	
Significant Natural Heritage Areas		X	
Protected Lands			X

Data layers are site specific. As such, the value of the site will be determined by the highest class theme that is represented on that site. For example, if the site is in a coastal wetland (Class III) and in a storm surge area (Class II), the value for the site will be Class III. In other words, if an area does not meet the criteria for Class III, but qualifies as Class II, it has Class II for a value. If an area does not qualify for either Class III or Class II, then it is Class I by default.

Table 28 provides a summary of the land use acreages by class for Tyrrell County and the Town of Columbia.

Table 28. Tyrrell County/Town of Columbia  
Land Use Acreage by Class

	Unincorporated County		Columbia Planning Jurisdiction		Total County	
	Acres	% from Total	Acres	% from Total	Total	% from Total
Class I	23,596.8	9.5%	0.0	0.0%	23,596.8	9.4%
Class II	58,410.9	23.6%	1,619.4	55.5%	60,030.3	23.9%
Class III	165,979.7	66.9%	1,296.5	44.5%	167,276.2	66.7%
TOTAL	247,987.4	100.0%	2,915.9	100.0%	250,903.3	100.0%

Source: Holland Consulting Planners, Inc.

### 3. Environmental Conditions (Water Quality, Natural Hazards, and Natural Resources)

The Pasquotank River Basinwide Water Quality Plan was adopted by the Division of Water Quality in July, 2002, and updated in September, 2007. The following are the goals of DWQ's basinwide program and should be kept in mind when considering future land uses:

- 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;
- Develop appropriate management strategies to protect and restore water quality;
- Assure equitable distribution of waste assimilative capacity for dischargers; and
- Improve public awareness and involvement in the management of the state's surface waters.

Following are several benefits of basinwide planning and management to water quality:

- Improved efficiency. The state's efforts and resources are focused on one river basin at a time.
- Increased effectiveness. The basinwide approach is in agreement with basic ecological principles.
- Better consistency and equitability. By clearly defining the program's long-term goals and objectives, basinwide plans encourage consistent decision-making on permits and water quality improvement strategies.
- Increased public participation in the state's water quality protection programs. The basinwide plans are an educational tool for increasing public involvement and awareness about water quality issues.
- Increased integration of point and nonpoint source pollution assessment and controls. Once waste loadings from both point and nonpoint sources are established, management strategies can be developed to ensure compliance with water quality standards.

Tyrrell County is located within the Pasquotank River Basin's subbasins 03-01-51 and 03-01-53. The boundaries for the Pasquotank River Basin and subbasins 03-01-51 and 03-01-53 are delineated on Map 10 (see Appendix II). There are fifteen water bodies classified as Outstanding Resource Waters in Tyrrell County. The following provides a summary of existing conditions in the Pasquotank River Basin and subbasins 03-01-51 and 03-01-53. Also included are DWQ recommendations from the 2002 Basinwide Plan.

a. Pasquotank River Basin

The Pasquotank River Basin extends for approximately 145 miles and encompasses 3,635 square miles of low-lying lands and vast open waters, including the Albemarle Sound in the northeast section of the state. The basin is rural in nature. In the center of the basin is the Albemarle Sound with the Pasquotank, Roanoke, North, Little, and Perquimans Rivers draining from the north and the Scuppernong and Alligator Rivers draining from the south.

The Pasquotank River Basin encompasses all or portions of 10 counties and 11 municipalities. Table 29 provides a listing of these municipalities.

Pasquotank River Basin Statistics	
Total Area:	3,635 sq. miles
Stream Miles:	474.1
Freshwater Acres:	22,770.2
Estuarine Acres:	918,223.6
Coast Miles:	110.6
No. of Counties:	10
No. of Municipalities:	11
No. of Subbasins:	7
Population (2000):	118,913*
Pop. Density (2000):	32.7 persons/sq. mi.*
*Based on percentage of county land area estimated to be within the basin.	

Table 29. Local Governments and Planning Units within the Pasquotank River Basin

County	Municipalities
Camden	Elizabeth City*
Chowan	None
Currituck	None
Dare	Kill Devil Hills, Kitty Hawk, Manteo, Nags Head, and Southern Shores
Gates	None
Hyde	None
Pasquotank	Elizabeth City*
Perquimans	Hertford, Winfall
Tyrrell	Columbia
Washington	Creswell, Roper

\*Located in more than one county.

NOTE: Counties are not included as part of a river basin if only a trace amount of the county (<2%) is located in that basin unless there is a municipality.

Source: Pasquotank River Basinwide Water Quality Plan.

b. Gum Neck Watershed District

The Gum Neck farming community, an active drainage district, bounds the Preyer Buckridge Coastal Reserve to the west. A dike surrounds the community, which is drained by an extensive ditch network and continuously pumped to lower the water table. Several large canals pass through the Reserve, carrying water from the drainage district and surrounding properties. The watershed district boundary is outlined on Map 8.

b. Subbasin 03-01-51

Subbasin 03-01-51 is located partially in Tyrrell, Dare, and Hyde Counties. The population growth is concentrated around Roanoke Island which is the most developed section of the subbasin. There are several public lands and significant natural heritage areas. There are six permitted dischargers in the subbasin. The largest discharger is the Manteo wastewater treatment plant (WWTP) which discharges into Shallowbag Bay.

Waters are classified according to their best intended uses. Determining how well a water body supports its designated uses is an important method of interpreting water quality data and assessing water quality. Water bodies are fully supporting (FS), partially supporting (PS), or not supporting (NS). Streams that are classified PS or NS are considered impaired waters. In subbasin 03-01-51, use support ratings were assigned for aquatic life/secondary recreation, primary recreation, and shellfish harvest categories. Almost 53% of waters were evaluated for aquatic life/secondary recreation. One hundred percent (100%) of the monitored waters were supporting for aquatic life/secondary recreation. Ninety-two percent (92%) of waters were evaluated for primary recreation. One hundred percent (100%) were supporting for primary recreation. One hundred percent (100%) of waters were evaluated for shellfish harvest. Ninety-six percent (96%) were supporting for shellfish harvest. All waters in the subbasin are considered impaired for fish consumption. In April 2002, the NC Department of Health and Human Services developed new guidelines to advise people as to what fish are safe to eat. DWQ considers uses of waters with a consumption advice or advisory for one or more species of fish to be impaired. Elevated methylmercury levels have been found in shark, swordfish, king mackerel, tilefish, largemouth bass, bowfin (or blackfish) and chain pickerel (or jack), and these fish species fall under the guidelines.

Table 30 Subbasin 03-01-51 Description	
<u>Land and Water</u>	
Total area:	978 mi <sup>2</sup>
Land area:	568 mi <sup>2</sup>
Water area:	410 mi <sup>2</sup>
<u>Population Statistics</u>	
1990 Est. pop.:	9,240 people
<u>Land Cover</u>	
Forest/Wetland:	53.0%
Surface Water:	39.0%
Urban:	<1.0%

The following provides the 2002 Pasquotank River Basinwide Management Plan recommendations for subbasin 03-01-51:

- West Shore of Roanoke Sound. Some areas are prohibited for commercial shellfish harvesting. Contamination is a result of nonpoint source pollution from adjacent land uses. The NC Division of Water Quality recommends reviewing the discharge permits for the Wanchese Harbor Project to include fecal coliform monitoring requirements. DWQ also recommends that an Environmental Impact Statement be completed for the project.
- Shallowbag Bay. The Town of Manteo will discuss the reclassification of Shallowbag Bay from SC waters to SB waters. As a result of a dredge spill in a tidal creek, DWQ



recommends that dredge spoil analysis consider the full range of particle sizes within potential spoils rather than focusing on the average particle size within the spoil.

- Callaghan Creek. A follow up study will be completed to determine whether or not fire response effects at the Dare County Landfill were contained and diminished. A fire response plan and water disposal options will be discussed.

c. Subbasin 03-01-53

The largest river system in this subbasin is the Scuppernon River. This river drains into the Albemarle Sound. There are three municipalities located within the subbasin: Columbia, Creswell, and Roper. There are seven permitted dischargers in subbasin 03-01-53. All of these dischargers are minor NPDES permits. The total permitted flow is 0.02 MGD. There are eight general stormwater permits in the basin.

Waters are classified according to their best intended uses. Determining how well a water body supports its designated uses is an important method of interpreting water quality data and assessing water quality. Water bodies are fully supporting (FS), partially supporting (PS), or not supporting (NS). Streams that are classified PS or NS are considered impaired waters. In subbasin 03-01-53, use support ratings were assigned for aquatic life/secondary recreation and primary recreation categories. Ninety-five percent (95%) of estuarine waters (acres) were evaluated for aquatic life/secondary recreation. One hundred percent (100%) of the monitored waters were supporting for aquatic life/secondary recreation. Ninety-five percent (95%) of waters were evaluated for primary recreation. One hundred percent (100%) were supporting for primary recreation. All waters in the subbasin are considered impaired for fish consumption. In April 2002, the NC Department of Health and Human Services developed new guidelines to advise people as to what fish are safe to eat. DWQ considers uses of waters with a consumption advice or advisory for one or more species of fish to be Impaired. Elevated methylmercury levels have been found in shark, swordfish, king mackerel, tilefish, largemouth bass, bowfin (or blackfish) and chain pickerel (or jack), and these fish species fall under the guidelines.

Table 31 Subbasin 03-01-53 Description	
<u>Land and Water</u>	
Total area:	475 mi <sup>2</sup>
Land area:	336 mi <sup>2</sup>
Water area:	139 mi <sup>2</sup>
<u>Population Statistics</u>	
1990 Est. pop.:	8,836 people
<u>Land Cover</u>	
Forest/Wetland:	41.0%
Surface Water:	28.0%
Urban:	<1.0%
Cultivated Crop:	30.0%
Pasture/Managed Herbaceous:	4.0%

The following are the 2002 Pasquotank River Basinside Management Plan recommendations for subbasin 03-01-53:

- Scuppernong River. The NC Division of Water Quality will determine whether or not ambient conditions in the river are due to natural conditions. DWQ should encourage funding and research for the watershed and will monitor the Tyrrell County Water Treatment Plant and research the relocation of its discharge.
  - Kendrick Creek and Main Canal. DWQ will research whether or not the ambient conditions are due to natural conditions and encourage additional funding and research for the watershed because they consider it to be a concern.
- d. Registered Animal Operations within Pasquotank River Basin

The following table provides a summary of registered animal operations within the Pasquotank River subbasins 03-01-51 and 03-01-53. The numbers only reflect those operations required by law to be registered. There are no registered poultry operations in the subbasins. Five of the swine facilities are located in Tyrrell County.

Table 32. Pasquotank River Basin  
Registered Animal Operations

Subbasin	Swine			Cattle		
	No. of Facilities	No. of Animals	Total Steady State Live Weight*	No. of Facilities	No. of Animals	Total Steady State Live Weight*
03-01-51	2	25,350	3,583,050	0	0	0
03-01-53	8	15,241	2,196,085	1	120	96,000

NOTE: There are no registered poultry operations located within these subbasins.

\*Steady State Live Weight (SSLW) is the result, in pounds, after a conversion factor has been applied to the number (head count) of swine, cattle, or poultry on a farm. The conversion factors, which come from the Natural Resource Conservation Service (NRCS) guidelines, vary depending on the type of animals on the farm and the type of operation (for example, there are five types of hog farms). Since the amount of waste produced varies by the size of the animal, SSLW is the best way to compare the sizes of the farms.

Source: NC Division of Water Quality Pasquotank River Basinwide Water Quality Plan.

e. Growth Trends

Between 1980 and 1990, the population within the Pasquotank River Basin increased 16.4%. The Pasquotank River Basinwide Water Quality Plan projects percent growth between 1990 and 2020 for counties within the basin. Since river basin boundaries do not coincide with county boundaries, these numbers are not directly applicable to the Pasquotank River Basin. They are estimates of county-wide population changes.

Population growth trends for the basin between 1990 and 2020 indicate two counties with growth rates in excess of 98% and one county with a growth rate of almost 50%, with a total population increase in the basin of 44.0%. According to the Water Quality Plan, Tyrrell County is expected to experience a 17.6% population increase between 1990 and 2020.

## C. ANALYSIS OF EXISTING COMMUNITY FACILITIES/SERVICES

### 1. Transportation

US Highway 64 and NC Highway 94 are the major transportation routes in Tyrrell County. US Highway 64 is an east-west route that traverses the northern portion of the county. NC Highway 94 runs north-south and is located in the center of the county. US Highway 64 has four lanes in most areas to facilitate large volumes of traffic.

The North Carolina Department of Transportation (NCDOT) reported that, in 2004, the highest annual average daily traffic counts (AADT) occurred along US Highway 64. The AADT increased significantly between 2000 and 2004 in some areas of the County and Columbia. A location on US Highway 64 about midway between Columbia and the Alligator River experienced a 54% increase and a location on US Highway 64 just west of the Alligator River saw a 58% increase. In Columbia, there was a 69% increase in the AADT at a location on US Highway 64 just east of its intersection with Kohloss Street and an 84% increase at a point on Kohloss Street just south of its intersection with US Highway 64.

Tyrrell County is located in NCDOT's Division 1. According to the NCDOT Division 1 2007-2013 Transportation Improvement Program (TIP), there are two road projects that are scheduled for development. The TIP also lists two bridge replacements in the County. These improvements will be discussed in detail in the Future Demands section of this plan. Map 11 (see Appendix II) depicts the NCDOT road projects and bridge replacements that have been identified on the TIP map.

### 2. Health Care

Chowan Hospital, located in Edenton, was incorporated in 1947 and offers a wide range of services and healthcare specialties to residents of Chowan and surrounding counties. The hospital has 71 acute-care and 40 skilled-care beds. The hospital provides intensive care service, a surgical center, an emergency department, a specialty care clinic, and a dedicated outpatient surgery area with endoscopy capabilities. Chowan Hospital is affiliated with the University Health Systems of Eastern North Carolina. This partnership provides access to state-of-the-art services offered by a top-notch academic medical center. Following are some of the services provided at the facility.

- Maternity Care
- Home Care
- Radiology, including CT nuclear screening, ultrasound, mammography, mobile MRI, and bone density screening
- Telemedicine, providing consultation with specialists at other locations
- Rehabilitation, inpatient and outpatient
- Cardiopulmonary rehabilitation

- Wellness screenings and education
- Skilled nursing unit

Source: Chowan Hospital

Washington County Hospital, located in Plymouth, is a 49-bed JCAHO-accredited critical access facility. The hospital offers a full range of inpatient and outpatient services, a 24-hour emergency department, hospital based and operated ambulance department, family practice, laboratory, radiology department, pharmacy, cardiopulmonary services, complete surgery facilities, telemedicine, and physical therapy. Emergency medical services are also provided to Tyrrell County residents at both the Dare County Hospital and the Pitt County Memorial Hospital, located in Greenville.

The Martin-Tyrrell-Washington (MTW) District Health Department provides health and wellness services to Tyrrell County residents, as well as the region overall. The MTW District Health Department operates three state-funded rural health centers, including the Columbia Medical Center located at 208 South Broad Street in Columbia. The MTW Health Department provides the following services: Adult Health, Breast and Cervical Cancer Screen (BCCCP), Children's Clinical Services, Family Planning, Immunizations, Maternity Care, Primary Care, STD Clinic, and Women-Infants-Children (WIC). The department also maintains a dental clinic and a Home Care and Hospice Center in Plymouth.

### 3. Law Enforcement

Law enforcement is provided to the County and the Town of Columbia by the Tyrrell County Sheriff's Office. The department is located on Main Street in Columbia adjacent to the County Courthouse. The department consists of a Sheriff, eight deputies, a school resource officer, and utilizes ten patrol cars. There is also one active auxiliary deputy. The department has mutual aid agreements with Dare, Hyde, and Washington Counties.

### 4. Fire Services

There are six fire stations in Tyrrell County – one on North Road Street Ext in Columbia, and the Gum Neck, Kilkenny, Frying Pan, Alligator, and Albemarle Church Road substations. The station in Columbia is jointly operated and funded by the Town of Columbia and Tyrrell County. The other stations are county stations, but all six stations rely heavily upon contributions from the community for financial support. There are approximately 65 active firefighters in the county.

The main station in Columbia is a new 10,000-square foot facility. The station houses one 1,250-gallon per minute pumper truck, one 1,000-gallon per minute pumper truck, one equipment truck, one brush truck, one crash truck, one 1,500-gallon tanker truck, and one 300-gallon tanker truck that also serves to carry some rescue equipment. The Town of Columbia has approximately 75 fire hydrants located about 300 feet apart. The Tyrrell County Rescue Squad also occupies this building.

## 5. Emergency Medical Services

Tyrrell County has two rescue squad stations, both of which are housed with a fire station. One rescue squad is located at the new Fire/EMS station in Columbia. This unit consists of two ambulances and a tanker truck that it shares with the fire department. This truck carries rescue equipment, but is not a crash rescue truck. The second rescue squad unit consists of a single ambulance that is housed at the Gum Neck fire station. The nearest hospitals are located approximately 30 miles west of Columbia in Plymouth and Edenton.

The rescue squad has approximately 32 volunteer emergency medical technicians (EMTs), and two paid EMTs who work during the daytime Monday through Friday. The rescue squad has an intermediate level certification. The rescue squad normally responds to 300 to 350 calls per year county-wide.

## 6. Administration

Tyrrell County is governed by a Board of Commissioners-Manager form of government. The Tyrrell County Administrative office is located at 108 South Water Street in Columbia. There are 13 departments which include: Office of the County Manager, Finance, Board of Elections, Tax, Register of Deeds, Sheriff, Emergency Management, Veterans Service, GIS Mapping, Cooperative Extension, Social Services, Juvenile Justice & Delinquency Program, and Soil Conservation. The county employs 55 full-time and 6 part-time positions.

The Town of Columbia was incorporated in 1793 and is governed by a Board of Aldermen-Manager form of government. There are two departments: Administration and Public Works. The Town employs six full-time positions. Tyrrell County does not currently provide mental health or library services. Mental health services are provided by Albemarle Mental Health and the Martin, Tyrrell, Washington District Health Department. Regional library facilities are provided by the Pettigrew Regional Library. Tyrrell County makes a substantial financial contribution to both the mental health and library facilities.

## 7. Water System

At the time of this writing, the 2002 Tyrrell County Water Supply Plan was under review by the state. The draft plan reported that there were 1,485 residential, 12 commercial, and one institutional metered water service connections. The County brought a new Reverse Osmosis plant online in August 2002 and operates one other water treatment plant and three wells.

According to the 2002 Town of Columbia Water Supply Plan, there were 462 residential, commercial, industrial, and institutional metered water service connections. The Town also supplies water to the County. The Town operates two wells and one water treatment plant.

North Carolina General Statute [GS 143-355(L)] requires all units of local government that provide or plan to provide public water supply service to prepare a Local Water Supply Plan and to update that plan at least every five years. 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. The following tables provide summaries of the water use information from the Tyrrell County (under review) and the Town of Columbia 2002 Water Supply Plans.

Table 33. Tyrrell County  
Water System Average Daily Water Use by Month (MGD)

Month	Average Daily Usage	Month	Average Daily Usage	Month	Average Daily Usage
January	0.310	May	0.330	September	0.341
February	0.310	June	0.330	October	0.349
March	0.320	July	0.310	November	0.337
April	0.320	August	0.392	December	0.348

Source: DRAFT Tyrrell County 2002 Water Supply Plan.

Table 34. Tyrrell County  
Water System Average Annual Daily Water Use by Type

Type of Use	Average Use (MGD)
Residential	0.169
Commercial	0.015
Industrial	0.000
Institutional	0.032
Sales to Other Systems	0.000
System Process Water	0.028
Subtotal	0.244
Average Annual Daily Water Use	0.333
Unaccounted for Water	0.089

Source: DRAFT Tyrrell County 2002 Water Supply Plan.

Table 35. Town of Columbia  
Water System Average Daily Water Use by Month (MGD)

Month	Average Daily Usage	Month	Average Daily Usage	Month	Average Daily Usage
January	0.207	May	0.142	September	0.194
February	0.164	June	0.214	October	0.180
March	0.140	July	0.248	November	0.148
April	0.146	August	0.223	December	0.133

Source: Town of Columbia 2002 Water Supply Plan.

Table 36. Town of Columbia  
Water System Average Annual Daily Water Use by Type

Type of Use	Average Use (MGD)
Residential	0.090
Commercial	0.005
Industrial	0.057
Institutional	0.005
Sales to Other Systems	0.004
System Process Water	0.002
Subtotal	0.163
Average Annual Daily Water Use	0.178
Unaccounted for Water	0.015

Source: Town of Columbia 2002 Water Supply Plan.

There are an estimated 140 miles of distribution lines within the County and six miles of distribution lines within the Town of Columbia. Ninety-nine percent (99%) of the County's distribution lines are 2-10 inch PVC and 1% of the lines are 6-8 inch Ductile Iron. Ninety-eight percent (98%) of the Town's lines are 3-12 inch Asbestos Cement lines, 1.5% of the lines are 6-8 inch PVC, and 0.5% of the lines are 6-8 inch Ductile Iron. None of the County's distribution lines were replaced in 2002; however, 1,500 linear feet of distribution lines were replaced in Columbia. The County replaced 100 meters and the Town replaced 20 meters in 2002.

## 8. Sewer System

Tyrrell County does not provide sewer service at the present time. The DRAFT 2002 Tyrrell County Water Supply Plan reports that there are two NPDES permits with the receiving waters being an unnamed tributary of Riders Creek and Bull Bay. The following table provides the average daily wastewater discharge by month for the County.

Table 37. Tyrrell County  
Wastewater System Average Daily Discharge by Month (MGD)

Month	Average Daily Usage	Month	Average Daily Usage	Month	Average Daily Usage
January	0.021	May	0.021	September	0.800
February	0.021	June	0.021	October	0.833
March	0.021	July	0.021	November	0.744
April	0.021	August	0.624	December	0.738

Source: DRAFT Tyrrell County 2002 Water Supply Plan.

The 2002 Town of Columbia Water Supply Plan reports that there were 465 sewer service connections. There were two NPDES permits held by the system with Scuppernon River receiving the discharge from both. The following table provides the average daily wastewater discharge by month for the Town.

Table 38. Town of Columbia  
Wastewater System Average Daily Discharge by Month (MGD)

Month	Average Daily Usage	Month	Average Daily Usage	Month	Average Daily Usage
January	0.228	May	0.156	September	0.321
February	0.258	June	0.228	October	0.254
March	0.214	July	0.273	November	0.255
April	0.211	August	0.298	December	0.239

Source: Town of Columbia 2002 Water Supply Plan.

## 9. Schools

There are three schools in the Tyrrell County public school system: Tyrrell Elementary School, Columbia Middle School, and Columbia High School. As of the date of this writing, the total enrollment for the 2004-2005 school year was 647. According to information provided by the Assistant Superintendent of the Tyrrell County Schools, the school system has seen a gradual decline in the Average Daily Membership (ADM) since 1966. The ADM in 1966 was 1,156 and currently the ADM is 663. The 447 student decrease is believed to primarily be a result of the lack of employment opportunities for families with children. The following table provides a summary of the schools that serve the county's school age children.

Table 39. Tyrrell County  
Public Schools

School	Enrollment	Staff-Certified	Staff-Classified	Capacity	Recreational Facilities
Tyrrell Elementary	290	27	21	402	softball field, track, gymnasium, outside basketball goals, 2 playgrounds with equipment
Columbia Middle	159	16	5	244	baseball field, outside basketball goals, 4-square court, football field, gymnasium, softball field, weight room, practice field
Columbia High	198	32	22	405	Above facilities are shared between the middle and high school

Source: Tyrrell County Schools.



## 10. Recreation

Tyrrell County has a recreation committee that oversees a summer baseball and softball league. The league is open to youth ages 4 to 18 and uses the Columbia High School ballfields when they are not being used by the school. The Town of Columbia has two parks: Children's Park and Kiddie Park. Children's Park, located on the corner of Fonsoe and Scuppernong, has a tennis court, a picnic shelter, a play unit for preschoolers, a play unit for youth ages 6-12, and a 1/2-basketball court. The Kiddie Park is located on Luddington Drive and provides swings and slides. The Scuppernong River Boardwalk is an additional recreational facility.

## 11. Stormwater Management

### a. Introduction

Precipitation that occurs as a result of a rainfall or snow melt event that does not permeate into the soil, is not consumed by plants, or is evaporated into the air becomes stormwater. Pollutants such as oil and grease, sediment, bacteria, and other toxic substances are added to this water as it runs across impervious surfaces and thereby polluting our surface waters. In addition, as the volume of stormwater increases, more flooding and erosion may occur.

### b. Existing Drainage Problems

Tyrrell County is drained by the Alligator and Scuppernong Rivers and their tributaries. The elevations within the County are fairly low and, as a result, the County is prone to flooding where elevations are low. As mentioned in the Natural Systems Analysis section, 86% of the County is within a flood hazard area and 100% of the Town of Columbia is within a flood hazard area. As development continues, so will the construction of impervious and semi-permeable surfaces and the potential for surficial water contamination.

### c. Water Quality

There are two subbasins in Tyrrell County, both of which are located in the Pasquotank River Basin. Those subbasins are 03-01-51 and 03-01-53. One hundred percent (100%) of waters evaluated for aquatic life and secondary recreation, in both subbasins, were supporting. Waters evaluated for primary recreation, in both subbasins, were also found to be supporting. Ninety-six percent (96%) of waters in subbasin 03-01-51 were supporting for shellfish harvesting. All waters are impaired for fish consumption.

d. EPA Regulations

The Environmental Protection Agency (EPA) has begun implementation of Phase II of the Stormwater Management Plan. These policies apply to municipalities with populations greater than 10,000 and with densities of 1,000 per square mile. For municipalities that meet these parameters, submittal of a stormwater management plan is required. Phase II regulations also apply to entities designated under the 1990 census as a Small MS4 (Small Municipal Separate Storm Sewer System). MS4s are defined as a publicly-owned conveyance or system of conveyances designed or used for collecting and conveying stormwater. MS4s can include counties, towns, airports, federal properties, hospitals, schools, etc. Small community MS4s are regulated if they discharge into impaired or sensitive US waters. At this time, Tyrrell County is not required to meet the EPA Phase II Stormwater Management Program regulations.

Tyrrell County may be required to submit a stormwater management permit application under Phase III of the NPDES program. At this time, it is unclear when this will be implemented. When the Pasquotank River Basinwide Management Plan is updated, it may be possible that the update will involve stormwater management requirements for Tyrrell County.

e. Coastal Stormwater Rules

Until recently NCDENR required that projects with land disturbance in excess of one acre secure a stormwater management permit. These permits require retainage and treatment of runoff generated by the proposed project. This permit must be in hand prior to the issuance of local building permits.

In 2008, the NC Legislature adopted revised 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 Tyrrell County/Town of Columbia's 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 NCDENR 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 county 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 county is currently requiring this through the project review process, and will continue to do so.

f. North Carolina Shoreline Buffering

In August of 2000, the State of North Carolina developed a thirty (30) foot buffering rule for all new development in the twenty 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:

- (i) 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.
- (ii) Groundwater Recharge – buffers are also beneficial to recharging the ground water supply and promoting ground water flow.
- (iii) Soil Erosion Prevention – vegetated buffers stabilize the soil and reduce sedimentation.
- (iv) Conservation of Coastal Riparian Wildlife Habitats – these natural areas provide breeding, nesting, and habitat, and protect wildlife from predication. Vegetated buffers help increase the diversity of wildlife while providing site for foraging and corridors for dispersal.

#### D. CURRENT LAND USE PLANS AND POLICIES

Tyrrell County operates under the authority of a Board of Commissioners-Manager form of government. There are five county commissioners. The Town of Columbia operates under a Board of Aldermen-Manager form of government. The Town has a mayor and five aldermen. The following provides a summary of the land use-related instruments for the County and the Town.

##### 1. Zoning

Tyrrell County does not have a Zoning Ordinance; however, the Town of Columbia enforces a Zoning Ordinance. The purpose of the Town of Columbia Zoning Ordinance is to “promote the health, safety, morals, and general welfare” of the Town and its extraterritorial jurisdiction. The intent of the ordinance is to accomplish the following:

- Secure safety from fire, flooding, panic, and other dangers;
- Provide adequate light, air, sanitation, and drainage;
- Further appropriate use of land, and conservation of natural resources;
- Obtain the wise use, conservation, development, and protection of the Town’s water, soil, woodland, and wildlife resources and attain a balance between land uses and the ability of the natural resource base to support and sustain such uses;
- Prevent overcrowding and avoid undue population concentration and urban sprawl;
- Stabilize and protect the natural beauty and property values;
- Lessen congestion in and promote the safety and efficiency of the streets and highways;
- Facilitate the adequate provision of public facilities and utilities; and
- Preserve natural growth and cover and promote the natural beauty of the community.

To accomplish this, the ordinance provides information on the procedures and/or regulations for amendments, variances, interpretations, zoning and special use permits, enforcement, signs, group developments, and parking. The ordinance also establishes the official Zoning Map of the Town of Columbia with zoning districts for the Town. Specific requirements are set forth for permitted uses in each district as well as the minimum lot sizes, yard setbacks, and building heights.

Map 12 (see Appendix II) delineates zoning within the Town. The largest zoning district within Columbia is the A-1 district. This district accounts for almost 80% of the Town’s jurisdiction. Almost 18% of the Town’s land is zoned for residential purposes and almost 2% is zoned for commercial purposes. The following table provides the acreage figures of all zoning districts within Columbia.

Table 40. Columbia Planning Jurisdiction Zoning

Districts	Acres	% of Total
A-1	2,495.19	81.7%
R-7	236.65	7.7%
R-7 (PUD)	92.44	3.0%
MF	60.14	2.0%
MFM	0.00	0.0%
B-1	10.36	0.3%
B-2	142.15	4.7%
I-1	0.00	0.0%
OS	17.64	0.6%
Total	3,054.57	100.0%

Source: Holland Consulting Planners, Inc. and the Town of Columbia.

## 2. Subdivision Ordinance

Tyrrell County and the Town of Columbia both enforce Subdivision Ordinances. The Ordinances provide guidance for the submittal and review of major and minor subdivision development proposals and outlines procedures for variance and amendment requests. Subdivision design standards are established for lots, access, easements, streets, and utilities.

### 3. Flood Damage Prevention Ordinance

Tyrrell County and the Town of Columbia participate in the National Flood Insurance Program (NFIP) and comply with all related regulatory requirements. Both the County and the Town have Flood Damage Prevention Ordinances and they are enforced through the building permit issuance processes. The purpose of the ordinances is to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas. This is accomplished by utilizing specific standards for flood hazard reductions and the following provisions:

- Restrict or prohibit uses that are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;
- Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- Control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of flood waters;
- Control filling, grading, dredging, and other development which may increase erosion or flood damage; and
- Prevent or regulate the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands.

### 4. Hazard Mitigation Plan

The Tyrrell County Multi-Jurisdictional Hazard Mitigation Plan was adopted by the Tyrrell County Board of Commissioners on November 2, 2004, and by the Town of Columbia Board of Aldermen on November 1, 2004. It was approved by the Federal Emergency Management Agency (FEMA) on February 18, 2005. The plan was developed in response to federal and state legislation. The Disaster Mitigation Act of 2000 (DMA2K), the federal legislation, and Senate Bill 300, the state legislation, requires 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 county and the Town are most susceptible, analyzes the vulnerability of the county and the Town to those hazards, and analyzes their 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 natural hazards.

### 5. Review of the 1996 Tyrrell County CAMA Land Use Plan

The Tyrrell County and Town of Columbia 1996 Land Use Plan Update was adopted by the Tyrrell County Board of Commissioners and the Town of Columbia Board of Aldermen on January 12, 1998, and certified by the Coastal Resources Commission on January 23, 1998. The plan included

79 policies/implementing actions and a detailed summary of storm hazard mitigation procedures, post-disaster recovery operations, and evacuation plans. Of the 79 policies/implementing actions, 67 have either been accomplished, are in progress, or are ongoing. There are 12 policies/implementing actions for the 1996 plan which have not been carried out. All policies/implementing actions from the 1996 plan are listed below according to their status of completion. This list is a verbatim reproduction of the text from the 1996 plan; there may be duplications. Some statements may be inconsistent with current circumstances and requirements. However, they were not changed in order to accurately reflect the contents of the 1996 plan. Actions that have not been completed will be revised, if needed, and addressed in the policy action sections of this plan.

### ACCOMPLISHED

1. Tyrrell County will enforce, during the development process, all current regulations of the N.C. State Building Code and North Carolina Division of Health Services relating to building construction and septic tank installation/replacement in areas with soils restrictions.
2. Tyrrell County will coordinate all development activity with appropriate county and state regulatory personnel, and in particular with the Tyrrell County Building Inspector and Sanitarian.
3. Tyrrell County will cooperate with the U.S. Army Corps of Engineers in the regulation/enforcement of the 404 wetlands permit process.
4. Tyrrell County opposes any 404 wetlands mitigation projects within Tyrrell County undertaken to replace 404 wetland areas outside Tyrrell County. However, the county shall support the acquisition of property within the Great Dismal Swamp in order to meet wetland mitigation goals of areas inside or outside Tyrrell County.
5. Tyrrell County will continue to coordinate all development within the special flood hazard area with the Tyrrell County Inspections Officer, North Carolina Division of Coastal Management, FEMA, and the U.S. Corps of Engineers.
6. It is the policy of Tyrrell County to conserve its surficial groundwater resources by supporting CAMA and N.C. Division of Water Quality stormwater run-off regulations, and by coordinating local development activities involving chemical storage or underground storage tank installation/abandonment with Tyrrell County Emergency Management personnel and the Groundwater Section of the North Carolina Division of Water Quality.
7. Tyrrell County will encourage and support water conservation efforts.

8. Tyrrell County 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.
9. Expansions of Aviation Military Restricted Areas or Military Operations Areas in eastern North Carolina must be consistent with civil aviation regulations, must comply with other applicable state and federal regulations, and must be supported by environmental impact statements addressing the cumulative impact of such airspace uses.
10. Tyrrell County supports the following aircraft operations standards which were adopted by the Coastal Resources Commission on December 1, 1989, and were effective March 1, 1990:
  - a. Minimum Altitudes: No development involving airspace activity shall be allowed in any AEC which would result in violation of minimum altitude standards adopted by the Federal Aviation Administration and codified at 14 CFR Part 91.79. Future amendments by the Federal Aviation Administration shall be deemed to be incorporated into this rule pursuant to G.S. 150B-14(c) unless the Commission objects within ninety (90) days of publication of the action in the Federal Register. Upon objection by the Commission to a change, the Commission shall initiate rule-making proceedings on incorporation of the amendment into this rule. The amendment will not be incorporated into this rule pending a rule-making hearing and final action by the Commission on the proposed amendment.
  - b. Noise Pollution: Except as required for safe aircraft takeoff and landing operations, airspace activity associated with coastal development shall not impose an increase in average noise exceeding 10 dBA above background levels. Noise measurements shall be normalized DNL as set forth by the Environmental Protection Agency in its report 550/9-74-004 entitled Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety. The maximum noise level associated with any single event shall not exceed 85 dBA. These limits shall not apply where noise impacts are confined to surface areas owned or controlled by the project's proponent. Any noise monitoring required to ensure compliance with this rule shall be the responsibility of the proponent.
  - c. Policies on Use of Coastal Airspace:
    - Declaration of General Policy: It is hereby declared with the use of aircraft by state, federal, and local government agencies for purposes of managing and protecting coastal resources, detecting violations of environmental laws and regulations, and performing other functions related to the public health, safety and



welfare serves a vital public interest. The Commission further finds that future economic development in the coastal area and orderly management of such development requires air access to and among coastal communities.

-- Policy Statements

(1) It is the policy of the State of North Carolina that access corridors free of special use airspace designations shall be preserved along the length of the barrier islands and laterally at intervals not to exceed 25 miles to provide unobstructed access both along the coastline and from inland areas to the coast. Such access corridors shall extend from the surface to an altitude of 6,000 feet above sea level except where communication and radar services allow positive aircraft control at lower altitudes.

(2) Development of aviation-related projects and associated airspace management practices shall, to the maximum extent practicable, facilitate use of aircraft by local, state, and federal government agencies for purposes of resource management, law enforcement, and other activities related to the public health, safety, and welfare. In any case, access to restricted areas shall be provided on a periodic basis for routine enforcement flights, and access shall be provided on an emergency basis when required to respond to an immediate threat to public health and safety.

d. Policies on Water and Wetland Based Target Areas for Military Training Activities

-- Declaration of General Policy: The use of water and wetland based target areas for military training purposes may result in adverse impacts on coastal resources and on the exercise of public trust rights. The public interest requires that, to the maximum extent practicable, use of such targets not infringe on public trust rights, cause damage to public trust resources, violate existing water quality standards, or result in public safety hazards.

-- Policy Statements

(1) It is the policy of the State of North Carolina that all public trust waters subject to surface water restrictions pursuant to 33 USCS 3 for use in military training shall be opened to commercial fishing at established times appropriate for harvest of the fisheries resources within those areas.

(2) Where laser weaponry is used, the area of restricted surface waters shall be at least as large as the recommended laser safety zone.

- (3) Water quality shall be tested periodically in the surface water restricted areas surrounding such targets and results of such testing shall be reported to the department.
11. Tyrrell County opposes the disposal of any toxic wastes, as defined by the U.S. Environmental Protection Agency's Listing of Hazardous Substances and Priority Pollutants (developed pursuant to the Clean Water Act of 1977) within its planning jurisdiction.
  12. Tyrrell County supports control of forestry runoff through implementation of "Forestry Best Management Practices" as provided by the North Carolina Division of Forest Resources.
  13. Tyrrell County will continue to utilize the current system of the existing Subdivision Ordinance along with federal and state permit and review processes; i.e., 404 and CAMA.
  14. Tyrrell County shall coordinate all housing code enforcement/redevelopment projects with the N.C. Division of Archives and History, to attempt to ensure that any significant architectural details or buildings are identified and preserved.
  15. Tyrrell County will coordinate all county public works projects with the N.C. Division of Archives and History, to ensure the identification and preservation of significant archaeological sites.
  16. Industrial development which can comply with the use standards specified by 15A NCAC 7H and applicable ORW management plans may be located within conservation classified areas. Tyrrell County aggressively encourages the development of industry. The development of a diversified economic base and jobs are crucial to a stable future for Tyrrell County. The county does not want any policies contained within this plan to prohibit industrial development which meets all applicable state and federal regulations. Tyrrell County objects to enforcement of the 404 wetlands permitting process by the U.S. Army Corps of Engineers preventing any industrial development. However, the county recognizes that this position may have no effect on Corps' action because local policies/legislation cannot supersede more restrictive federal legislation.
  17. The county will not oppose the construction of state-approved package treatment plants in areas not provided with central sewer service. The county supports effective monitoring by the state of the operation of package treatment plants. This policy shall not prohibit the discharge of treated waste into wetlands.
  18. If any package plants are approved by the state, Tyrrell County supports the requirement of a specific contingency plan specifying how ongoing private operation and maintenance of the plant will be provided, and detailing provisions for assumption of the plant into a

public system should the private operation fail. Operational plans should also address elimination of package treatment plants when the system owner elects to connect to a central sewer system.

19. Tyrrell County considers boating activities an extremely important part of its tourist industry and overall economy. Subject to the policies stated herein, the county does not oppose the construction of marinas, including upland marinas, which comply with 15A NCAC 7H.
20. Tyrrell County opposes the location of floating structures in all marinas, primary nursery areas, outstanding resource waters, public trust areas, and estuarine waters. Floating structures are defined as any structure or vessel used, designed, and occupied as a permanent dwelling unit, business, office, or source of any occupation or any private or social club, which floating structure or vessel is primarily immobile and out of navigation or which functions substantially as a land structure while moored or docked on waters within county jurisdiction. Floating structures shall not be used commercially or inhabited in one place for more than a period of time specified by local ordinance.
21. Tyrrell County's policy for marina construction in ORW waters or ORW estuarine shoreline shall be consistent with the state's management strategies of ORW designated regulations.
22. Tyrrell County will allow construction of drystack storage facilities for boats associated either with or independent of marinas.
23. Tyrrell County does not oppose development of sound and estuarine islands if the development satisfies the 15A NCAC 7H use standards and applicable ORW management plans.
24. Tyrrell County does not oppose bulkhead construction in any areas of the county as long as they fulfill the use standards set forth in 15A NCAC 7H.
25. Tyrrell County supports addressing the following issues in the development of the Pasquotank Basinwide Management Plan:

Long-term Growth Management

- Wastewater management (non-discharge and regionalization).
- Urban stormwater runoff/water quality.
- Role of local land use planning.

Animal Operation Waste Management

- Between 1990-1991, swine population has more than doubled.

Nutrients/Toxic Dinoflagellate

-- Reduction in nitrogen and phosphorous levels.

26. Tyrrell County supports the designation of the Alligator River south of the U.S. 64 bridge as an ORW area.
27. Subject to available funds, Tyrrell County supports the development of recreational facilities including shoreline access sites.
28. Tyrrell County supports and encourages use of the U.S. Natural Resources Conservation Service "Best Management Practices" program. This includes agricultural practices which limit the runoff of sediment.
29. Because of the soil types and topography, the county recognizes that proper drainage is essential and must be allowed to continue as needed if it does not result in irreversible damage to environmentally sensitive areas.
30. Tyrrell County encourages all aquaculture activities which meet applicable federal, state and local policies (see Aquaculture policies (34) and (35) and permit requirements. However, Tyrrell County reserves the right to comment on all aquaculture activities which require Division of Water Quality permitting.
31. Tyrrell County objects to any discharge of water from aquaculture activities that will degrade in any way the receiving waters. Tyrrell County objects to withdrawing water from aquifers or surface sources if such withdrawal will endanger water quality or water supply from the aquifers or surface sources.
32. Tyrrell County will support only aquaculture activities which do not alter significantly and negatively the natural environment of coastal wetlands, estuarine waters, public trust areas, and 404 wetlands as shown on the Land Classification Map.
33. Tyrrell County encourages and supports forestry best management practices as defined in the Forest Best Management Practices Manual, 1989, North Carolina Division of Forest Resources.
34. Tyrrell County supports the use standards for estuarine waters and public trust areas as specified in 15A NCAC 7H.0207.
35. Tyrrell County reserves the right to comment on the individual policies and requirements of the North Carolina Division of Marine Fisheries including nursery and habitat areas, ORW waters, and trawling activities in estuarine waters.

36. The county does not believe that it is necessary to limit either land clearing or unnecessarily restrict agricultural drainage. The 404 permit process is viewed as being sufficient in limiting the amount of land cleared.
37. The county will support enforcement of septic tank placement regulations by the Health Department and the Natural Resources Conservation Service to minimize the likelihood of effluent from septic systems in unsuitable soils contaminating fishing waters.
38. Continue to enforce the county's subdivision regulations which require larger lot sizes for residences in areas where soils are not well suited for septic tank placement.
39. The county will consider applying for funds through the N.C. Division of Marine Fisheries' Reef Development Program to develop artificial reefs in selected locations along the Albemarle Sound. The reefs should attract fish and enhance commercial and sports fishing in Tyrrell County.
40. There are no recreational beaches in Tyrrell County; therefore, the conventional threat of off-road vehicles is not relevant to Tyrrell County. Off-road vehicles are important in some sections of the county because of the necessity for landowners to travel in bog or swamp areas. As this property is private and not available to the public as public beaches are, the use of these vehicles is acceptable in these cases.
41. The county supports the eventual mining of peat resources in Tyrrell County and believes that enforcement of state and federal environmental regulations is sufficient to mitigate possible adverse impacts upon environmentally sensitive areas.
42. The county will continue an active recruitment program, seeking low pollution, light manufacturing industries. The county finance officer will coordinate this activity.
43. Tyrrell County will seek technical assistance and financial help to develop at least one industrial park, to be located near Columbia.
44. The county believes that all industrial prospects should be given a fair, case-by-case assessment in order to carefully compare possible economic benefits with possible negative environmental effects.
45. The county and the Town of Columbia will provide, as much as is locationally and economically feasible, basic support services such as water and sewer to newly locating industries.

46. Tyrrell County recognizes that rural classified areas of the county may not be provided central water service within the planning period. However, the county supports development of a county-wide plan for the provision of central water service.
47. Water systems must be constructed with lines designed and sized for adequate fire protection and sufficient water pressure. Tyrrell County should revise its Subdivision Ordinance to ensure adequate water system design standards.
48. The county is aware that inappropriate land uses near well fields increase the possibility of well contamination. Land uses near groundwater sources are regulated by the N.C. Division of Water Quality through NCAC Subchapters 2L and 2C. Tyrrell County recognizes the importance of protecting potable water supplies, and therefore supports the enforcement of these regulations.
49. Tyrrell County supports all efforts to secure available state and federal funding for the construction and/or expansion of public and private water systems.
50. Tyrrell County recognizes that most areas of the county will not be provided central sewer service within the planning period. However, the county supports development of a county-wide plan for the provision of efficient and cost effective waste water disposal.
51. Tyrrell County supports the extension of the Town of Columbia's sewer system into areas of the county when service is requested by the citizens in those areas.
52. Tyrrell County supports the discharge of effluent into 404 wetland areas. Wetlands "created" to aid in treating waste effluent shall be allowed.
53. Tyrrell County supports all efforts to secure available state and federal funding for the construction and/or expansion of public and private sewer systems.
54. Tyrrell County supports a regional multi-county approach to solid waste management. The county will support and dispose of its solid waste in the Bertie County Regional Landfill.
55. The county will cooperate with any efforts to educate people and businesses on waste reduction and recycling. The county vigorously supports recycling by the county and other users of the landfill and supports setting up practical collection methods and education efforts to achieve a high degree of county-wide recycling.
56. Tyrrell County favors the siting of recycling centers within all land classifications except those within the conservation category.

57. Tyrrell County will cooperate with the NCDOT, the North Carolina Division of Water Quality, and other state agencies in mitigating the impact of stormwater runoff on all conservation classified areas. The county will actively support the Division of Water Quality stormwater runoff retention permitting process through its subdivision approval process.
58. Tyrrell County supports the policy that all North Carolina Department of Transportation projects should be designed to limit to the extent possible stormwater runoff into estuarine waters.
59. Tyrrell County does not oppose offshore exploratory drilling for oil or gas. In the event that oil or gas is discovered, Tyrrell County will not oppose drilling operations and onshore support facilities for which an Environmental Impact Statement has been prepared with a finding of no significant impact on the environment. Tyrrell County supports and requests full disclosure of development plans, with mitigative measures that will be undertaken to prevent adverse impacts on the environment, the infrastructure, and the social systems of the county. The county also requests full disclosure of any adopted plans. Offshore drilling and the development of onshore support facilities may have severe costs for the county as well as advantages. The costs should be borne by the company(ies) with revenues from offshore drilling and onshore support facilities.
60. The most significant redevelopment issues facing Tyrrell County through 2005 are substandard housing and deteriorating commercial structures. During the planning period, the county will attempt to correct its worst substandard housing conditions by:
  - a. supporting the development and enforcement of a Minimum Housing Code;
  - b. applying for Community Development Block Grant Community Revitalization funds;
  - c. coordinating redevelopment efforts with the Tyrrell County Building Inspection Officer;
  - d. preparing a county-wide housing strategy to increase the quantity and quality of affordable housing.
  - e. Reconstruction following a hurricane or other natural disaster is a concern. The Storm Hazard Mitigation, Post-Disaster Recovery, and Evacuation Plan provides policies for responding to hurricanes and other natural disasters. Those policies address reconstruction needs. The county will allow the reconstruction of any structures demolished by natural disaster when the reconstruction complies with all applicable local, state, and federal regulations.
  - f. The county will work with the Town of Columbia to encourage redevelopment of the waterfront area by the private sector.

61. Tyrrell County will review and update its Subdivision Ordinance. This will be done to make the ordinance more responsive to current county needs and conditions. Funding assistance for revision of the ordinance will be requested from the North Carolina Division of Community Assistance.
62. Tyrrell County supports the state's shoreline access policies as set forth in NCAC Chapter 15, Subchapter 7M. The county will conform to CAMA and other state and federal environmental regulations affecting the development of estuarine access areas.
63. Industrial development is extremely important to the continued economic growth and stability of Tyrrell County. The county's heavy reliance on employment in the service and retail trade sector should be balanced by the development of a stronger base of industrial/manufacturing employment. However, the county desires to achieve responsible industrial development which will not adversely affect the natural environment or the quality of established residential areas. The following industrial development policies will be applied:
  - a. Tyrrell County encourages the development of industrial sites which are accessible to municipal/central water and sewer services.
  - b. Industrial development should occur in areas classified as developed or urban transition. Industries generating only domestic sewage are acceptable in areas classified as rural. Tyrrell County does not oppose industries locating within rural classified areas if they have approved applicable state permits for water supply and sewage disposal systems. Industrial uses that are water dependent or related to fishing or aquaculture activities will be allowed in estuarine shoreline and ORW estuarine shoreline areas.
  - c. Industries which are noxious by reason of the emission of smoke, dust, glare, noise, and vibrations, and those which deal primarily in hazardous products such as explosives, should not be located in Tyrrell County.
64. Proper maintenance of channels is very important in Tyrrell County because of the substantial economic impact of commercial fisheries, boating, and sport fishing. If silt or other deposits fill in the channels, this could impede efficient docking of the commercial fishing and transport vessels. Tyrrell County will provide assistance to the U.S. Corps of Engineers and state officials by either helping to obtain or providing spoil sites.
65. Tyrrell County considers the interstate waterway to be a valuable economic asset. The county will provide assistance in maintaining the waterway by helping to obtain or providing dredge spoil sites and, when possible, providing easements across county-owned property for work.



66. Tourism is extremely important to Tyrrell County and will be supported by the county. Tyrrell County will implement the following policies to further the development of tourism:
- a. Tyrrell County will support North Carolina Department of Transportation projects to improve access to and within Tyrrell County.
  - b. Tyrrell County will support projects that will increase public access to shoreline areas.
  - c. Tyrrell County will continue to support the activities of the North Carolina Division of Travel and Tourism; specifically, the monitoring of tourism-related industry, efforts to promote tourism-related commercial activity, and efforts to enhance and provide shoreline resources.
  - d. Tyrrell County and the Town of Columbia should continue to implement the waterfront redevelopment plan.
  - e. Tyrrell County and the Town of Columbia should update its brochure promoting elements of the waterfront redevelopment plan and the creation of the Pocosin Lakes National Wildlife Refuge when they are realized. These brochures could be placed in travel information centers in neighboring counties as well as in the state's welcome centers.

67. Tyrrell County supports the following priorities for transportation improvements:

<u>Route</u>	<u>Location and Description</u>
U.S. 64	N.C. 45 near Plymouth to a point west of Columbia. Widen roadway to a multi-lane facility, some new location.
U.S. 64	From a point west of Columbia to a point east of the Alligator River.
S.R. 1122	Bee Tree Canal -- replace bridge number 88 with a bridge high enough to allow boat passage.
County wide	Regional bicycle map/brochure and route signing on state roads.

68. Tyrrell County does not oppose the installation of package treatment plants and septic tanks or discharge of waste in any areas classified as coastal wetlands, or 404 wetlands.
69. Tyrrell County will continue to enforce its flood damage prevention ordinance and follow the storm hazard mitigation plan contained herein.
70. The Tyrrell County/Town of Columbia water systems are independently owned and operated. However, the town supplies water to the county water system. Land uses near groundwater sources are regulated by the North Carolina Division of Water Quality through N.C.A.C. Subchapters 2L and 2C. Tyrrell County recognizes the importance of protecting potable water supplies and therefore supports the enforcement of these regulations.

71. Tyrrell County opposes the expansion of any restricted airspace in Tyrrell County. Tyrrell County does not favor the continued existence or expansion of the existing airspace restriction imposed by the presence of U.S.A.F. bombing ranges in the Albemarle Sound area near the county.
72. Tyrrell County recognizes the value of water quality maintenance to the protection of fragile areas and to the provision of clean water for recreational purposes. The county will support existing state regulations relating to stormwater runoff resulting from development (Stormwater Disposal Policy 15A NCAC 2H.001-.1003).
73. Tyrrell County supports control of agricultural runoff through implementation of U.S. Natural Resources Conservation Service "Best Management Practices" program, and/or North Carolina State "Best Management Practices."
74. Tyrrell County is concerned with the potential for the development of mooring fields. The county opposes the development of mooring fields and will pursue the development of an ordinance to regulate the establishment of mooring fields.
75. Residential, commercial, and industrial development which meets 15A NCAC 7H use standards and applicable ORW management plans, will be allowed in estuarine shoreline, estuarine water, and public trust areas. In all other areas, development will be allowed that is consistent with applicable local, state, and federal regulations.
76. There are no electric generating plants located in or proposed for Tyrrell County. However, the county will review proposals for development of electric generating plants on a case-by-case basis, judging the need for the facility by the county against all identified possible adverse impacts.
77. Tyrrell County will apply for CAMA funding to assist in the construction of shoreline access sites.
78. Tyrrell County is generally receptive to state and federal programs, particularly those which provide improvements to the county. The county will continue to fully support such programs, especially the North Carolina Department of Transportation road and bridge improvement programs, which are very important to Tyrrell County. Examples of other state and federal programs that are important to and supported by Tyrrell County include: drainage planning and erosion control activities carried out by the U.S.D.A. Natural Resources Conservation Service, which is valuable to farmers; dredging and channel maintenance by the U.S. Army Corps of Engineers; federal and state projects which provide efficient and safe boat access for sport fishing; and community development block grants, low-to-moderate income housing, housing rehabilitation, housing for the elderly, and North

Carolina Housing Finance Agency housing improvement programs. However, Tyrrell County does not support expansion of military restricted airspace in eastern North Carolina, or the expansion of state and federal lands within the county for activities which do not generate jobs or revenues for the county.

#### NOT ACCOMPLISHED

1. During the planning period, Tyrrell County will consider developing a community services/facilities plan (as a stand-alone document, not as an expansion of this plan), which will define existing deficiencies in police protection, fire protection, local administrative buildings, public recreational facilities, public shoreline access, and public parks. This plan will not address school system needs. The plan will prioritize needs and make specific recommendations concerning financing and budgeting the high priority needs. The county will coordinate facility planning with the school system and the municipalities.

#### E. LAND SUITABILITY ANALYSIS

A thorough analysis of all impediments to development, as well as existing community facilities, has been completed in the preceding sections. All of these variables factor into suitability for development for a specific piece of property. In order to assess what effect the various man-made and environmental constraints will have on development throughout Tyrrell County, an overlay analysis was performed. This overlay analysis is a GIS-based process geared toward evaluating the suitability of land for development. The procedure is very similar to the practice developed by Ian McHarg, in which geospatial data layers are referenced to each other in an effort to determine what portions of a land mass appear to be the most favorable sites for a specific land use.

The overall process utilized Arcview GIS software with the Spatial Analyst extension along with data layers provided by the North Carolina Center for Geographic Information and Analysis (NCGIA). The analysis takes into consideration a number of factors, including natural systems constraints, compatibility with existing land uses and development patterns, existing land use policies, and the availability of community facilities. The end product of this analysis is a land suitability map that shows underutilized land that is suited or not suited for development (see Appendix II, Maps 13A and 13B). This map can be used as a foundation for the discussion and formation of county-wide land use policy and should be compared to the future land use map.

Land suitability analysis involves the application of criteria to the landscape to assess where land is most and least suitable for development of structures and infrastructure. A computer application is not essential for this analysis, but greatly simplifies the process. There are eight key steps to completing the overlay analysis:

- (1) Define criteria for the analysis

- (2) Define data needed
- (3) Determine what GIS analysis operations should be performed
- (4) Prepare the data
- (5) Create a model
- (6) Run the model
- (7) Analyze results
- (8) Refine model as needed

All of these steps have been completed and, as noted above, the end product is displayed on Maps 13A and 13B (see Appendix II). There were no additions or adjustments to the default layer sets and weighting factors provided by the Division of Coastal Management to the County for the existing land suitability analysis map.

Prior to producing the map, data was compiled and each data layer in conjunction with criteria was assigned a weight. The County was then divided into one-acre squares. Each of these one-acre squares of land was given a score based on how that respective piece of property related to each data layer. The score for each data layer was multiplied against that given layer's weight. The scores for each layer were added together to determine a suitability rating for that one-acre square of property. The suitability rating falls into four primary categories: least suitable, low suitability, medium suitability, and high suitability.

The following table summarizes all data layers used, including the criteria and weight assigned to each layer.

Table 41. Tyrrell County/Town of Columbia  
Land Suitability Analysis Criteria

Layer Name		Criteria and Rating				Assigned Weight
		Least Suitable	Low Suitability	Medium Suitability	High Suitability	
		0	-2	1	+2	
Coastal Wetlands	Exclusion*	Inside	--	Outside	--	
Exceptional & Substantial Non-Coastal Wetlands	Exclusion*	Inside	--	Outside	--	
Estuarine Waters	Exclusion*	Inside	--	Outside	--	
Protected Lands	Exclusion*	Inside	--	Outside	--	
Storm Surge Areas	Weighted	--	Inside	--	Outside	2
Soils (Septic Limitations)	Weighted	--	Severe	Moderate	Slight	2
Flood Zones	Weighted	--	Inside	--	Outside	2
HQW/ORW Watersheds	Weighted	--	Inside	--	Outside	1
Natural Heritage Areas	Weighted	--	<500'	--	>500'	1
Hazardous Substance Disposal Sites	Weighted	--	<500'	--	>500'	1

Table 41 (continued)

Layer Name		Criteria and Rating				Assigned Weight
		Least Suitable	Low Suitability	Medium Suitability	High Suitability	
		0	-2	1	+2	
NPDES Sites	Weighted	--	<500'	--	>500'	1
Wastewater Treatment Plants	Weighted	--	<500'	--	>500'	1
Discharge Points	Weighted	--	<500'	--	>500'	1
Land Application Sites	Weighted	--	<500'	--	>500'	1
Developed Land	Weighted	--	>1 mi	.5 - 1 mi	<.5 mi	1
Roads	Weighted	--	>1 mi	.5 - 1 mi	<.5 mi	2
Water Pipes	Weighted	--	>.5 mi	.25 - .5 mi	<.25 mi	3
Sewer Pipes	Weighted	--	>.5 mi	.25 - .5 mi	<.25 mi	3

\*Data layers that are slated as exclusion have a suitability of 0 or 1, meaning that if a specific one-acre piece of property falls within one of these areas, it is automatically considered least suitable for development.

Source: NCGIA and CAMA.

Overall, land in Tyrrell County is predominantly unsuitable for development. Table 42 provides a summary of land suitability acreage based on the results of the overlay analysis. The majority of the land within the County determined to have a high suitability rating is located along the US Highway 64 and NC Highway 94 corridors. A large percentage of the land cover within Tyrrell County is comprised of wetlands and low-lying flood prone land masses. Thus, large portions of the County are automatically considered unsuitable for development regardless of how these areas relate to the rest of the factors in consideration. Existing developed areas have not been excluded.

Table 42. Tyrrell County/Town of Columbia  
LSA Acreage

	Unincorporated County		Columbia Planning Jurisdiction		Total County	
	Acres	% from Total	Acres	% from Total	Acres	% from Total
Least Suitable	166,412	67%	1,304	45%	167,716	67%
Low Suitability	34,989	14%	222	8%	35,211	14%
Medium Suitability	37,138	15%	1,375	47%	38,513	15%
High Suitability	8,798	4%	3	0%	8,801	4%
TOTAL	247,337*	100%	2,904*	100%	250,241*	100%

\*Does not include water areas.

Source: CAMA and Holland Consulting Planners, Inc.

## F. ANALYSIS OF LAND USE AND DEVELOPMENT

### 1. Introduction

The Division of Coastal Management Land Use Plan Guidelines (15A NCAC 7B.0207) require that existing land uses and water uses be mapped. These maps should be used as working documents and serve as a basis for the development of the future land use map(s). Maps 14A and 14B, Existing Land Use (see Appendix II), aids in showing the relationship of land use to water quality. The Coastal Management Land Use Plan Guidelines require that this section of the plan address the following:

- Table that shows estimates of the land area allocated to each land use;
- Description of any land use conflicts;
- Description of any land use – water quality conflicts;
- Description of development trends using indicators. These development trends may include, but are not limited to the following: building permits and platted but un-built lots; and
- Location of areas expected to experience development during the five years following plan certification by the CRC and a description of any potential conflicts with Class II or Class III land identified in the natural systems analysis.

### 2. Land Use in Relation to Water Quality

Protection of water quality is very important in Tyrrell County. The degradation of water quality can be linked to the location of land uses within an area. Water bodies are polluted, generally, by either point or nonpoint sources. Point source pollutants usually come from regulated, piped discharges such as municipal wastewater treatment plants. Nonpoint source pollutants are carried to water bodies through some type of runoff. The waters can be polluted by sediment, nutrients, fecal coliform bacteria, pesticides, and automobile fluids. Therefore, the location of certain land uses has a large impact on the quality of water.

The Pasquotank River Basinwide Water Quality Plan, completed in 2002 by the North Carolina Division of Water Quality (DWQ), is a non-regulatory, watershed-based approach to restoring and protecting the quality of surface waters. Development of the plan involved several monitoring efforts. These efforts are not intended to provide precise conclusions about pollutant budgets for specific watersheds. Typical monitoring efforts that the DWQ uses in the basin are Benthic Macroinvertebrate testing, Fish Assessments, Aquatic Toxicity Monitoring, Lake Assessments, and Ambient Monitoring Systems.

One primary method of water quality testing was performed in Tyrrell County. The details of this methodology are described below so that the information on the results of this testing can be

better understood. The method used was the Ambient Monitoring System. DWO also observes water bodies for the existence of algal blooms, which are an indication of poor water quality.

The Ambient Monitoring System (AMS) is a network of stream, lake, and estuarine (saltwater) water quality monitoring stations strategically located for the collection of physical and chemical water quality data (or parameters). Water quality parameters are arranged by freshwater or saltwater water body classification and corresponding water quality standards. Under this arrangement, waters are assigned minimum monthly parameters with additional parameters assigned to waters with classifications such as trout waters and water supplies. During the last assessment, there were six (6) AMS stations within Tyrrell County.

Map 15, Land Use in Relation to Water Quality (see Appendix II), delineates the existing land use by subbasins and includes water quality sampling stations. The water quality issues are discussed in Section V.B.3, pages 50 to 54. Table 43 provides a summary of the existing land uses by subbasin.

Table 43. Tyrrell County  
Existing Land Use by Subbasin\*

(Pasquotank) Subbasin 03-01-53	Acres	% from Total	(Pasquotank) Subbasin 03-01-51	Acres	% from Total
SFR	2,060.23	3.0%	SFR	308.08	0.2%
Residential Agriculture	16,674.41	21.0%	Residential Agriculture	9,276.67	5.6%
Office & Institutional	286.48	0.0%	Office & Institutional	34.06	0.0%
Commercial	638.26	1.0%	Commercial	86.94	0.1%
Industrial	760.90	1.0%	Industrial	503.64	0.3%
Multi-Family	14.62	0.0%	Farmland	39,982.94	24.0%
Farmland	31,296.99	39.0%	Forest Lands	116,179.34	69.8%
Forest Lands	26,266.66	33.0%	Vacant	73.72	0.0%
National Wildlife Refuge	3.18	0.0%	Total	166,445.40	100.0%
Recreation	259.82	0.0%			
Vacant	2,306.03	3.0%			
Total	80,567.57	100.0%			

(Tar River) Subbasin 03-03-07	Acres	% from Total
Forest Lands	983.75	100.0%
Total	983.75	100.0%

\*NOTE: Acreages include the Town of Columbia.  
Source: Holland Consulting Planners, Inc.

### 3. Existing Land Use

Map 14A (see Appendix II) delineates the existing land use within Tyrrell County's jurisdiction. Map 14B (see Appendix II) depicts the existing land use for the Town of Columbia. These maps were prepared by Holland Consulting Planners, Inc. and based on post-Isabel aerial photographs. Tables 44 and 45 provide a summary of these existing land use acreages.

Table 44. Tyrrell County  
2006 Existing Land Use Acreages\*

Land Use	Acreage	Percentage
<u>Residential</u>		
Single-Family Residential	1,924.6	0.9%
Residential Agricultural	25,794.2	11.4%
Manufactured Home Park	11.7	0.0%
Subtotal	<u>27,730.5</u>	<u>12.3%</u>
<u>O&amp;I</u>	240.3	0.1%
<u>Recreation</u>	259.8	0.1%
<u>Commercial</u>	639.5	0.3%
<u>Industrial</u>	1,200.0	0.5%
<u>Forest Land</u>	125,031.0	55.4%
<u>Farmland</u>	68,586.6	30.4%
<u>Vacant</u>	2,115.3	0.9%
Total	<u>225,803.0</u>	<u>100.0%</u>

\*NOTE: Acreages do not include the Town of Columbia.  
Source: Holland Consulting Planners, Inc.

Table 45. Town of Columbia  
2006 Existing Land Use Acreages

Land Use	Town Limit Acreage	ETJ Acreage	Total	%
<u>Residential</u>				
Single-Family Residential	150.78	245.94	396.72	15.5%
Residential Agricultural	82.47	304.56	387.03	15.1%
Manufactured Home Park	3.76	0.00	3.76	0.2%
PUD	93.01	0.00	93.01	3.6%
Multi-Family	14.62	0.00	14.62	0.6%
Subtotal	<u>344.64</u>	<u>550.50</u>	<u>895.14</u>	<u>35.0%</u>
<u>O&amp;I</u>	28.55	51.67	80.22	3.1%
<u>Commercial</u>	61.36	46.93	108.30	4.2%
<u>Forest Land</u>	26.95	571.74	598.68	23.3%
<u>Farmland</u>	64.50	535.39	599.89	23.4%
<u>National Wildlife Refuge</u>	3.18	0.00	3.18	0.1%
<u>Vacant</u>	37.56	241.60	279.16	10.9%
Total	<u>566.74</u>	<u>1,997.84</u>	<u>2,564.58</u>	<u>100.0%</u>

Source: Holland Consulting Planners, Inc.



The following provides the general land use patterns within Tyrrell County and the Town of Columbia.

a. Residential

Forest land continues to be the dominant land use in the County, making up 55% of the county's total land area. Another sizeable portion of the county is used for agriculture. Urban uses occupy the smallest percentage of the county's land area, with the Town of Columbia being the county's only urban/built-up area.

In the Town of Columbia, US 64/Scuppernong Drive provides a dividing line between areas of high and low density residential development. The majority of residential uses on the north side of the bypass are single-family homes on relatively large lots. Although there are several mobile homes in this section of town, the majority are located in an organized mobile home park on sizeable lots. The residential lots located south of the bypass are much smaller than those found to the north. It is not uncommon to find as many as four housing units on a single lot that is barely sufficient for one unit. Most of the lots are 50 feet or less in width and 5,000 square feet or less in size. This has created an overcrowding problem with potential for health and fire risks.

Tyrrell County is very sparsely populated and was ranked 99<sup>th</sup> out of North Carolina's 100 counties in population density in 2000 with only 10.64 persons per square mile. Hyde County had the lowest density at 9.5 persons per square mile. With the exception of the Town of Columbia, residential uses in Tyrrell County are scattered along paved secondary roads. Rural communities with concentrations of residential uses include Gum Neck, Kilkenny, Goat Neck, Travis, Alligator, Sound Side, and River Neck.

b. Commercial

The majority of commercial land uses in Tyrrell County are concentrated in the Town of Columbia. There are small country stores located in some of the rural communities. Various types of services (small engine repair, hair salons, etc.) are located in some of the larger communities and along US 64 and NC 94.

The commercial land use category includes approximately 88 acres of land in the Town of Columbia. Since Columbia is the only municipality in Tyrrell County, the vast majority of the county's commercial establishments are located there. The commercial uses in the town are located primarily along the US 64 Bypass and US 64 Business. The types of commercial use range from grocery stores, banks, hardware stores and restaurants to attorney offices, barber shops, and various service facilities.

c. Industrial

The industrial land use makes up less than one percent of the county. There is only one major industrial facility in Tyrrell County: White Cap Linen, located on US 64 East beside the Food Lion. The plant provides laundry service for large companies. There are also several seafood processing sites and farm supply wholesale/warehouse operations located throughout the county. Because of the lack of industrial development, there are limited industrial impacts.

The lack of high paying industrial jobs is an issue that will continue to face Tyrrell County throughout the planning period. According to the NC Department of Commerce, in 2005 Tyrrell County ranked 97<sup>th</sup> out of 100 North Carolina counties in terms of average wage per employee and 99<sup>th</sup> for median household income.

4. Historic, Cultural, and Scenic Areas

According to the National Register of Historic Places Official Website, the National Register of Historic Places is the official list of the Nation's historic places worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

Tyrrell County has three listings on the National Register of Historic Places, which are all located within the Town of Columbia planning jurisdiction: the Columbia Historic District (listed 3/17/1994), the Scuppernong River Bridge (listed 3/5/1992), and the Tyrrell County Courthouse (listed 5/10/1979).

SECTION VI. PLAN FOR THE FUTURE

A. FUTURE DEMANDS

1. Introduction

The NCAC 7B administrative guidelines specify requirements for future land needs. These include the following:

- To establish the need for land for residential structures, commercial uses and related services. Population predictions shall be examined in relation to present and future types of land development. Policies shall consider both past development densities and patterns and the desired future density and type of development.
- Consideration shall be given to new and expanded facilities which will be required by the estimated population growth and the densities at which the land is to be developed. Features such as landfills, road widenings, bridges, water and sewer, police and fire protection, solid waste, and schools should be considered in order to meet the intent of this item.

2. Transportation

The following lists the North Carolina Department of Transportation future projects that are identified in the 2007-2013 Transportation Improvement Program.

Bridge Projects

ID No.	(Location) Description	Schedule (Fiscal Year)
B-4647	(NC 94) Northwest Fork. Replace Bridge No. 6	Right-of-way FY10 Mitigation FY10 Construction FY11

Road Projects

ID No.	(Location) Description	Schedule (Fiscal Year)
R-2545	(US 64) East of Columbia to east of the Alligator River. Widen to multi-lanes. 15.6 miles	Planning/Design-In Progress Mitigation FY12
	AA - East of Columbia to SR 1229 (Old US 64) at Alligator River.	Right-of-way FY12 Construction Unfunded
	AB - SR 1229 (Old US 64) at Alligator River to west of Alligator River.	Right-of-way FY12 Construction Unfunded
	B - West of Alligator River to east of Alligator River	Right-of-way FY12 Construction FY12

NOTE: Projects #B-4648 and R-4452 (also listed on the 2007-2013 TIP) have been completed.  
Source: NCDOT.

### 3. Education

As discussed earlier in this plan, the Tyrrell County School System oversees three schools: Tyrrell Elementary School, Columbia Middle School, and Columbia High School. The County school system had a combined 2004/2005 enrollment of 647.

According to recent forecasts by the North Carolina State Data Center, Tyrrell County's population is expected to increase by approximately 174, to 4,377 persons, by 2030. Historically, approximately 19.5% of the County's population has been school-aged persons. Therefore, Tyrrell County schools may need to accommodate approximately 34 additional students by 2030. None of the schools are in danger of exceeding capacity. The expected population increase should not have a significant impact on the school system as a whole. However, it should be noted that if all proposed subdivisions in Columbia were built out, there would be an additional 577 home-sites and approximately 1,500 people.

### 4. Recreation

The Recreation, Parks, and Open Space Standards and Guidelines, 2001 were published by the National Recreation and Parks Association to provide national guidelines which could serve as an expression of reasonableness and adequacy with respect to quality service delivery. Table 46 provides a summary of the national standards for selected recreational facilities and the County's existing and future demand for new facilities.

Table 46. National Recreation Standards and Demand for Facilities in Tyrrell County

Districts	Standard	Existing Facilities	Existing Facility Demand*	Year 2030 Additional Facility Demand**
Baseball	1 per 10,000 persons	1	0	0
League Softball	1 per 4,000 persons	2	0	0
Practice Fields	1 per 3,000 persons	1	1	1
Youth Baseball Fields	1 per 3,000 persons	0	2	2
Tennis Courts	1 per 1,000 persons	1	3	3
Basketball Goals	1 per 500 persons	9	0	0
Football/Soccer	1 per 6,000 persons	1	0	0
Swimming	900 SF per 1,000 persons	1***	3,783 SF	3,939 SF

\*This column represents the number of additional facilities the County currently needs to serve its existing population.

\*\*This column represents the number of additional facilities the County will need to serve a population of approximately 4,377 in 2030.

\*\*\*This pool is not a county-owned facility.

Source: National Recreation and Parks Association, 2001.

As indicated in the preceding table, according to National Recreation Standards, the County's future demands include an increase in practice fields, youth baseball fields, tennis courts, and swimming facilities. However, it should be noted that these guidelines reflect professional judgement rather than an assessment of community needs, and no two communities are the same. Furthermore, many communities have found the national guidelines difficult to meet. Therefore, the pursuit of achieving national recreation standards should not take the place of common sense and recognizing the needs of the community. Tyrrell County is located in an area that is rich in natural outdoor recreational opportunities; therefore, the National Recreation Guidelines may not be considered the absolute standard.

#### 5. Water System

As discussed in the Analysis of Existing Community Facilities section of this plan, Tyrrell County provides potable water service to 1,485 residential, 12 commercial, and 1 institutionally metered customers. The county sells emergency use water to the Town of Columbia. According to the Tyrrell County water supply plan, the County does not expect peak day demands to exceed water treatment plant capacity by 2010.

The Town of Columbia has 456 residential, 2 commercial, 2 industrial, and 2 institutionally metered customers. The Town provides a very small amount of regular use water to the County. There is no contract because the average amount is so small. According to the Town's Water Supply Plan, the Town does not expect to exceed water treatment plant capacity in the next 10 years. However, the Town does plan to develop a third well site during the next decade.

Tyrrell County's water system has a capacity of 800,000 gpd with a flow of 295,000 gpd. The County plans to expand the system by adding another reverse osmosis plant. The new plant is expected to cost \$3.7 million and increase capacity to 864,000 gpd. The Town of Columbia's water system has a capacity of 500,000 gpd and a current flow of approximately 200,000 gpd. There are no plans for expansion during the planning period.

#### 6. Sewer System

As mentioned in the Analysis of Existing Community Facilities, Tyrrell County does not currently provide sewer service. Through development of the Scuppernong Township Master Sewer Plan, Tyrrell County has created two sewer districts and is preparing to install sewer lines for these areas. District 1 will serve properties along and adjacent to US Highway 64 from the Washington County Line east to the Scuppernong River. District 2 will serve properties along SR 1200 and Albemarle Church Road up to the Albemarle Sound and Bull Bay. The sewer will be treated by the Town of Creswell. Construction is scheduled to begin in the Winter of 2010, with closeout expected in Summer 2011. Map 16 (see Appendix II) delineates the district boundaries and sewer line locations. In addition to the installation of central sewer service throughout a portion of

unincorporated Tyrrell County, Columbia is working towards improvements to their town-wide sewer system. The town has been approved to expand the existing central sewer system from an operating capacity of 300,000 gallons per day (GPD) to 600,000 GPD. These improvements should be in place over the next two to three years. This expansion will help address the increased demand anticipated as subdivision development continues within the Town's corporate limits and ETJ.

7. Administration

There are no plans to expand administration facilities or increase personnel during the planning period for Tyrrell County or the Town of Columbia.

8. Law Enforcement

The Tyrrell County Sheriff's Office is responsible for serving the unincorporated portions of the County as well as the Town of Columbia. There are mutual aid agreements between the County and Dare, Hyde, and Washington counties. Tyrrell County currently employs six deputies. The Town of Columbia recently approved funding for two additional deputies for a total of eight deputies. As a result of increases in calls and service, the Sheriff believes more deputies are needed to serve the County. During the extended planning period, the Sheriff believes the department will need an additional 12 deputies and equipment associated with the additional personnel, such as vehicles, guns, and uniforms. This estimate is based on input from the Sheriff's Office, taking into account projected population growth. The cost of one additional deputy, including salary with benefits and related equipment is approximately \$65,000 per deputy for a total of \$780,000. If these deputies are funded, additional office space will be needed. The county/town will encourage organization of community watch and safe neighborhood groups to assist local law enforcement.

Tyrrell Prison Work Farm is a minimum-security prison for adult males located on 200 acres of land near Columbia in Tyrrell County. The \$9 million facility was the second prison work farm constructed in North Carolina. The first was the Dan River Prison Work Farm in Yanceyville. Both facilities, built by prison work crews, are designed to emphasize inmate work. The work farm houses approximately 568 inmates who will be put to work in the community work program, in agricultural production at the prison's 103-acre farming operation or in other institutional jobs.

The prison operates with a staff of about 200 employees representing custody, food service, medical, maintenance, programs, fiscal, and administrative and has an annual operating budget of approximately \$8 million. In the Community Work Program, a correctional officer supervises a squad of up to ten inmates in short term, manual labor projects for public agencies. The prison's farming operation provides produce grown in fields and greenhouses by the prison. Broccoli,

cabbage, tomatoes, and peppers are grown in the fields. Greenhouses provide a year round supply of lettuce, tomatoes, and cucumbers.

The modern and unique architecture of this new facility differs markedly from traditional prison structures and was designed to be built and maintained at less cost. The physical plant consists of an administration building, central complex buildings comprised of food service, staff offices, visiting area, clothes house and central control office, segregation building and produce warehouse. The impressive dormitory building is 60,000 square feet under one roof which contains 10 inmate housing areas, 10 day rooms, two canteens, 10 shower and lavatory areas, medical and programs departments, barber shop, library, classrooms, chaplain's office, and two control rooms.

## 9. Fire/EMS

As noted earlier in the plan, there are six fire stations in Tyrrell County. These departments have been listed on page 56 of the plan. There are currently no expected changes in administration or facilities. The Fire Chief noted that the department is in need of a ladder truck and rescue truck.

## B. LAND USE/DEVELOPMENT GOALS AND IMPLEMENTING ACTIONS

This section of the plan is intended to guide the development and use of land in Tyrrell County and the Town of Columbia. The future land use maps and policies are intended to support Tyrrell County, as well as the Town of Columbia's and CAMA's goals through the establishment of specific implementing actions. Specifically, this section includes the County's goals, land use development policies, and the future land use maps for the County and the Town of Columbia. The future land use maps and the specified development goals are based in part on the Tyrrell County/Town of Columbia community concerns (identified on pages 9 and 10 of this plan) and the future needs/demands (identified in Section VI.A of this plan).

## C. POLICIES/IMPLEMENTING ACTIONS

### 1. Introduction

It is intended that the policies included in this plan are consistent with the goals of CAMA. This plan will address the CRC management topics for land use plans and comply with all state and federal rules and regulations. The following will serve as a guideline to assist in assuring that this land use plan will guide the development and use of land in a manner that is consistent with the management goal(s), planning objective(s), and land use plan requirements of this document. These policies and implementing actions will apply to both incorporated and unincorporated portions of the County. All policies and implementing actions shall be used for consistency review by appropriate state and federal agencies.

Resource conservation and impact analysis issues are addressed throughout the policies and implementing actions included in this plan. However, the following conservation related policies and implementing actions are emphasized:

- Public Access, page 946.
- Conservation, page 103.
- Stormwater Control, page 106.
- Natural Hazard Areas, page 114.
- Water Quality, page 116.
- Cultural, Historical, and Scenic Areas, page 120.

Currently Tyrrell County does not have a zoning ordinance that governs development within unincorporated portions of the county. The policies, implementing actions, and future land use map outlined in this section will be used as a tool for the establishment of County-wide zoning, if and when the County decides to undertake this task. The Town of Columbia, however, through implementation of this plan, will continually do the following:

- Consult the Land Use Plan during the deliberation of all re-zoning requests.
- Consider the following in deliberation of all zoning petitions:
  - Consider the policies and implementing actions of this plan and all applicable CAMA regulations in their decisions regarding land use and development (including 15A NCAC 7H).
  - 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.
  - Zoning decisions will not be based on aesthetic considerations.
  - Requests for zoning changes will 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 re-zoning change rather than, as is commonly believed, on the size of the area being re-zoned.



- 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.
  
- Zoning regulations should be created (in the case of Tyrrell County) and maintained in accordance with the Tyrrell County/Town of Columbia CAMA Land Use 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 Tyrrell County/Town of Columbia's planning jurisdiction.
  
- Specifically, the Town of Columbia Planning Board and Town Board should ask the following questions when hearing rezoning petitions:
  - Does the Town of Columbia need more land in the zone class requested?
  
  - Is there other property in the town that might be more appropriate for this use?
  
  - Is the request in accordance with the Town of Columbia land use plan?
  
  - Will the request have a serious impact on traffic circulation, parking space, sewer and water services, and other utilities?
  
  - Will the request have an impact on other town/county services, including police protection, fire protection, or the school system?
  
  - 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 serious legal questions such as spot zoning, hardship, violation of precedents, or need for this type of use?
- Does the request adversely impact any CAMA AEC's or other environmentally sensitive areas including water quality?

It is intended that this plan will serve as the basic tool to guide development/growth in Tyrrell County and the Town of Columbia subject to the following:

- The Tyrrell County and Town of Columbia Land Development Ordinances should be revised from time to time to be consistent, as reasonably possible, with the recommendations of this plan and the evolving nature of the county's growth and development policy.
- Land development regulations should be 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. Additionally, development throughout rural Tyrrell County should be coordinated to minimize impacts on prime farmland.
- Tyrrell County and the Town of Columbia will coordinate all development proposals with appropriate State and/or Federal agencies.

## 2. Policies Regarding Land Use and Development in AEC's

Tyrrell County and the Town of Columbia accepts state and federal law regarding land uses and development in AEC's. By reference, all applicable state and federal regulations are incorporated into this document.

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.

## D. LAND USE PLAN MANAGEMENT TOPICS

### 1. Introduction

The purpose of the Coastal Resources Commission (CRC) management topics are to ensure that CAMA Land Use Plans support the goals of CAMA, to define the CRC's expectations for the land use planning process, and to give the CRC a substantive basis for review and certification of CAMA Land Use Plans. Each of the following management topics (Public Access, Land Use Compatibility, Infrastructure Carrying Capacity, Natural Hazard Areas, Water Quality, and Local Areas of Concern) include three components: a management goal, a statement of the CRC's planning objective, and requirements for the CAMA Land Use Plan. These policies apply to the entire county including the Town of Columbia. The local concerns which should be addressed in this plan are identified on pages 9 and 10. These concerns and issues were utilized to develop the goals and objectives which are included in this plan. Most of the policies and implementing actions are continuing activities. In most situations, specific timelines are not applicable. Refer to page 146 for a list of those policies/implementing actions which have a specific schedule. 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 III. Please note: Policies and Implementing Actions are number consecutively throughout this document with the letter "P" denoting a policy and the letter "I" denoting an implementing action.

NOTE: References to low density residential development throughout the policy section reflect either the low density standards outlined for the Town of Columbia on page 139 or the residential/agricultural and rural residential districts outlined for Tyrrell County on pages 134-137.

### 2. Impact of CAMA Land Use Plan Policies on Management Topics

The development of this land use plan has relied heavily on the CAMA-prescribed land suitability analysis which is included in Section V.E of this document. It is intended that this document is supportive of the CAMA regulations for protection of AEC's (15A NCAC 7H).

No negative impacts are anticipated by the implementation of the goals, objectives, and policies which are included in this plan. Also refer to Tools for Managing Development, page 145.

Note: It is intended that all policies are consistent with (do not exceed) applicable State and Federal requirements when State and Federal requirements apply.

3. Public Access

a. Management Goal

Tyrrell County and the Town of Columbia will maximize public access to the beaches and the public trust waters of the coastal region.

b. Planning Objective

Tyrrell County and the Town of Columbia will develop comprehensive policies that provide beach and public trust water access opportunities for the public along the shoreline within the planning jurisdiction.

c. Land Use Plan Requirements

The following are Tyrrell County and the Town of Columbia's policies/implementing actions for waterfront access. All policies are continuing activities.

Policies:

- P.1 Tyrrell County and the Town of Columbia support the Tyrrell County visitors center, eco-tourism, and recreational related developments that protect and preserve the natural environment while promoting the County as a tourist destination. It supports the private and public development of waterfront access through private funds and grant monies. It also supports the work of the Partnership for the Sounds and the Albemarle Commission.
- P.2 Tyrrell County and the Town of Columbia support providing shoreline access for persons with disabilities.
- P.3 Tyrrell County/Town of Columbia supports the frequency of shoreline access as defined by 15A NCAC 7M, Section .0300, Shorefront Access Policies. However, emphasis will be placed on providing access to the Scuppernong River, as well as portions of downtown Columbia.
- P.4 Tyrrell County/Town of Columbia supports state/federal funding of piers for crabbing and fishing.
- P.5 Tyrrell County/Town of Columbia supports the development of estuarine access areas to ensure adequate shoreline access within all areas of the County. Areas that have traditionally been used by the public will be given special attention.

- P.6 Tyrrell County/Town of Columbia will seek funding for increased access for canoe and kayaking activities.

Implementing Actions:

- I.1 Tyrrell County/Town of Columbia will work with Pettigrew State Park to increase waterfront access opportunities along the Scuppernong River. Schedule: Fiscal Year 2008-2010.
- I.2 Tyrrell County/Town of Columbia will consider revising its subdivision ordinance to include the provisions of NCGS 153A-331 which allow for requiring the developer of a subdivision to be charged recreation fees as follows: "The subdivision ordinance may provide that a developer may provide funds to the County whereby the County may acquire recreational land or areas to serve the development or subdivision, including the purchase of land which may be used to serve more than one subdivision or development within the immediate area."
- The funds may be used to provide increased shoreline access. Schedule: Fiscal Year 2009-2010.
- I.3 Tyrrell County, in conjunction with the Town of Columbia, will prepare a shoreline access plan and request Division of Coastal Management funding for the preparation of the plan. Schedule: Fiscal Year 2009-2010.
- I.4 Tyrrell County and the Town of Columbia will pursue funding under the North Carolina CAMA Shoreline Access funding program (15A NCAC 7M, Section .0300, Shorefront Access Policies). Schedule: Continuing Activity.
- I.5 Tyrrell County and the Town of Columbia will pursue private sources of funding for the development of shoreline access facilities, including donation of land. Schedule: Continuing Activity.
- I.6 The County will cooperate with state and federal agencies to secure estuarine access areas to ensure adequate shoreline access within all areas of the County. Schedule: Continuing Activity.

NOTE: There are no shoreline areas in Tyrrell County/Town of Columbia targeted for shoreline/beach nourishment.

4. Land Use Compatibility

a. Management Goal

Tyrrell County and the Town of Columbia will ensure that development and use of resources or preservation of land minimize direct and secondary environmental impacts, avoid risks to public health, safety, and welfare, and are consistent with the capability of the land based on considerations of interactions of natural and manmade features.

b. Planning Objectives

- i. Tyrrell County and the Town of Columbia will adopt and apply local development policies that balance protection of natural resources and fragile areas with economic development.
- ii. Tyrrell County and the Town of Columbia's policies will provide clear direction to assist local decision making and consistency findings for zoning, divisions of land, and public and private projects.

c. Land Use Plan Requirements

The following are Tyrrell County and the Town of Columbia's policies/implementing actions for land use compatibility:

Policies - Residential:

- P.7 Tyrrell County and the Town of Columbia support revisions to the North Carolina State Statutes which would allow the local imposition of impact fees, or special legislation to allow them in Tyrrell County and the Town of Columbia. Impact fees would be levied against land developers to establish a revenue source to support the additional demand for services generated by the people occupying the proposed developments such as roads, schools, water and sewer infrastructure, and recreational facilities.
- P.8 The county and the town support repair and reconstruction of privately-owned dwelling units through private funds and/or grants. They support the enforcement of existing regulations of the District Health Department regarding sanitary conditions, including the installation of private septic tanks and package treatment plants.

- P.9 The Town of Columbia supports discouraging the re-zoning of existing residentially-developed or zoned areas to a non-residential classification as reasonably possible. Such re-zoning and amendments in classifications to the future land use map should be carefully balanced with a demonstrated need for such proposed development that will be the best overall land development policy for the town's future land use and protecting established residentially-developed areas.
- P.10 Tyrrell County will consider development of a county-wide zoning ordinance that will assist the county staff and administrators in promoting coordinated development patterns that will protect the rural nature of the County. Additionally, this effort will focus on protecting portions of the county that have been historically utilized for farming practices.
- P.11 Tyrrell County and the Town of Columbia support greater residential densities in areas that are accessible to water and/or sewer service(s). Agricultural and low density residential land uses should be located in areas that do not have county or town water/sewer service. Office/Institutional/Multi-family land uses should be developed along transportation thoroughfares to provide transition between commercial nodes and to preserve vehicle carrying capacity.
- P.12 Tyrrell County and the Town of Columbia support quality development reflecting the spectrum of housing needs, from low-end (affordable) residences to high-end (luxury) residences.
- P.13 Tyrrell County and the Town of Columbia support regulating growth to coincide with the provision of public facilities and services. Within portions of the County where central services are not available (all unincorporated portions of the county outside of the residential future land use district), Tyrrell County supports the use of private wells and package wastewater treatment systems.
- P.14 Tyrrell County supports wooded buffers along thoroughfares, where feasible.
- P.15 Tyrrell County and the Town of Columbia support using Office/Institutional/Multi-family development as a buffer between light industrial and commercial development and adjacent residential land uses.
- P.16 Tyrrell County supports providing adequate conservation/open space buffers between areas designated for residential development and any adjacent non-residential land use, including agricultural areas. This policy should focus on coordinating residential development that falls either adjacent to or within close proximity to farmland.

- P.17 Tyrrell County and the Town of Columbia will support the expansion of both seasonal and year-round residential development as a top priority to stabilize the county's tax base.

Implementing Actions - Residential:

- I.7 Until a County-wide zoning ordinance may be drafted and adopted, the County will continue to rely on the Tyrrell County subdivision ordinance for land use regulation. The Town of Columbia will continue to enforce its current zoning and subdivision regulations. The town will extend its ETJ to the one-mile limit allowed, reflecting recent annexations that have moved the town limits outward. Schedule: Continuing Activity (contingent upon the County developing a zoning ordinance – Fiscal Years 2009-2011).
- I.8 All re-zoning within the Town of Columbia and subdivision approvals will consider the existing and future land use suitability maps and analyses which are included in this plan. As noted, Tyrrell County will consider the development of a zoning ordinance subsequent to the certification of this land use plan by the CRC. Schedule: Continuing Activity.
- I.9 Tyrrell County and the Town of Columbia will permit residential development to occur in response to market needs provided that the following criteria are met:
- (1) Due respect is offered to all aspects of the environment.
  - (2) If deficient community facilities and services are identified, the county should attempt to improve such to the point of adequately meeting demands (see infrastructure carrying capacity policies).
  - (3) Additional residential development should concurrently involve planning for improvements to community facilities and services if excess capacity does not exist within those facilities and services.
  - (4) Residential development is consistent with other Tyrrell County and Town of Columbia policies and the land use map as contained in this plan update.

This implementing action will be enforced through the Tyrrell County subdivision ordinance and the Town of Columbia zoning and subdivision ordinances. Schedule: Continuing Activity.

- I.10 The county will consider revisions to its subdivision regulations for non-residential sites to ensure adequate buffering and landscaping to separate residential and incompatible non-residential uses, and adequate regulation of off-site lighting, hours of operation, and vehicular driveway locations. This includes buffering between residential development and agricultural operations. The county will also strongly



consider establishing strong language relating to this requirement within the context of a potential zoning ordinance. Schedule: Fiscal Year 2009-2010.

- I.11 The county will require through subdivision regulation an interior road system that provides vehicular access to lots abutting major thoroughfares. The County will consider reviewing existing design standards to ensure effective limitation of driveway entrances. Schedule: Continuing Activity.
- I.12 The Town of Columbia will regulate through its zoning and subdivision ordinance the development of conflicting land uses within the town's planning jurisdiction. Schedule: Continuing Activity.
- I.13 The county will consider the merits of establishing a minimum housing code to ensure that all occupied structures are fit for human habitation. Schedule: Fiscal Year 2009-2010.
- I.14 Tyrrell County and the Town of Columbia will pursue Community Development, North Carolina Housing Finance Agency, and United States Department of Agriculture funds from state and federal sources for rehabilitation or redevelopment of substandard housing. Schedule: Review Annually.

Policies - Commercial/Industrial:

- P.18 Tyrrell County supports commercial development within areas defined as rural mixed use nodes on the future land use map (i.e., in a nodal fashion).
- P.19 The county supports properly permitted mining activities within its borders. The county will continue to rely on state resources to permit and oversee these operations.
- P.20 Tyrrell County and the Town of Columbia deem industrial development within fragile areas and areas with low land suitability acceptable only if the following conditions are met:
  - (1) CAMA minor or major permits can be obtained.
  - (2) Applicable town and/or county land development regulations are met.
  - (3) Within coastal wetlands, estuarine waters, and public trust waters, no industrial use will be permitted unless such use is water related.

This policy applies to both new industrial development and to expansion of existing industrial facilities.

- P.21 Tyrrell County opposes the establishment of private solid waste/landfill sites in the county.
- P.22 Tyrrell County and the Town of Columbia support the recruitment and siting of environmentally compatible light industrial and commercial establishments within its borders in areas that are already similarly developed or are zoned to concentrate such activity into commercial/industrial zones. The county also supports the Northeastern North Carolina Economic Development Commission in its efforts to promote economic development in the county and region. The county does not encourage the conversion of prime farmland to residential use.
- P.23 The Town of Columbia supports the repair, reconstruction, and reuse of privately-owned business/commercial buildings through private funds and/or grants.
- P.24 Tyrrell County and the Town of Columbia support industrial development which is located adjacent to and/or with direct access to major thoroughfares.
- P.25 Tyrrell County and the Town of Columbia support the development of industrial sites that are accessible to the town or county water and sewer services.
- P.26 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, should not be located in Tyrrell County or the Town of Columbia.
- P.27 Industry should be located in conformance with the county's land use plan. This includes placing emphasis on light industrial development.
- P.28 Tyrrell County supports the establishment and operation of eco-tourism operations within Areas of Environmental Concern. All proposed operations should comply with CAMA regulations outlined under 15A NCAC 7H.
- P.29 Tyrrell County and the Town of Columbia support an increase in the number of restaurants, lodging, and commercial establishments in an effort to support the population increase throughout the planning period. Additionally, increased commercial and industrial operations will create jobs for existing and future county residents.
- P.30 Tyrrell County supports the establishment of aquaculture operations within the county.

- P.31 The Town of Columbia supports state and local incentives to encourage desirable business development within the town and its ETJ.
- P.32 The Town of Columbia supports the use of state grants that encourage entrepreneurial development, or expansion of existing successful businesses.

Implementing Actions - Commercial/Industrial:

- I.15 Tyrrell County will pursue all grant funding opportunities available to assist in enhancing the eco-tourism industry within the county. Schedule: Review Annually.
- I.16 The county will enforce its subdivision regulations and rely on state permitting agencies to regulate mining activities. The county will take a more active stance regarding the State permitting authorities and their oversight of mining/heavy industrial activities by communicating grievances to the appropriate State agencies and officials. Schedule: Continuing Activity.
- I.17 The Town of Columbia will rely on its zoning ordinance in zoned areas and the CAMA permitting program with regard to new industrial development and expansion of existing industrial facilities. Schedule: Continuing Activity.
- I.18 Tyrrell County and the Town of Columbia will review their respective zoning and subdivision ordinances to ensure compliance with policies P.18 and P.20 through P.27. Schedule: Fiscal Year 2010-2011.
- I.19 Tyrrell County will work in conjunction with the Town of Columbia to discuss the option of developing an industrial park. Establishment of this facility will require resources from both the town and county. Schedule: Fiscal Years 2009-2015.

Policies - Conservation:

- P.33 Except as otherwise permitted in this plan, residential, commercial, and industrial development should not be supported in natural heritage areas or coastal wetlands. Residential, commercial, and industrial development which meets 15A NCAC 7H use standards will be allowed in estuarine shoreline, estuarine water, and public trust areas. In all other areas, development will be allowed that is consistent with applicable local, state, and federal regulations.
- P.34 Tyrrell County will support larger lots in conservation classified areas through enforcement of the County's subdivision ordinance.

- P.35 Tyrrell County supports the maintenance of its rural atmosphere through enforcement of the county subdivision regulations.
- P.36 The county recognizes that maintaining the environmentally sensitive nature of the county is vital to the future of the county's economy. The county will establish development regulations aimed at protecting environmentally sensitive portions of the county through the development of a county-wide zoning ordinance.
- P.37 Tyrrell County and the Town of Columbia reserves the right to object to amendments and/or changes to the guidelines of the Coastal Area Management Act (CAMA) and the efforts and programs of the North Carolina Department of Environment and Natural Resources, Division of Coastal Management and the Coastal Resources Commission to protect the ocean, coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of Tyrrell County.
- P.38 All development should be designed to protect Protected Lands and Significant Natural Heritage Areas (see Sections V.B of this plan).
- P.39 Tyrrell County generally supports the efforts and programs of state and federal agencies with jurisdiction to regulate the upland excavation of land for marina basins but reserves the right to object to amendments and/or changes to regulations and/or programs.
- P.40 Tyrrell County generally supports the efforts of state and federal agencies with regulatory authority to monitor and regulate development in areas susceptible to sea level rise and wetland loss, but reserves the right to object to amendments and/or changes to regulations and/or programs.

Implementing Actions - Conservation:

- I.20 Tyrrell County will consider the development of a county-wide zoning ordinance to ensure compliance with policies P.33 and P.36. The Town of Columbia will review its existing zoning ordinance for compliance with these policies. Schedule: Fiscal Year 2009-2011.
- I.21 Tyrrell County will coordinate all housing code enforcement/redevelopment project/public works projects with the NC Division of Archives and History to ensure the preservation and identification of significant historic structures and archaeological sites. Schedule: Continuing Activity.

- I.22 In order to protect property and ensure public safety, Tyrrell County will implement the following:
- Continue to enforce its Flood Damage Prevention Ordinance.
  - Implement its Storm Hazard Mitigation Plan, as necessary.
  - Continue to coordinate development within special flood hazard areas with the County's Building Inspections Department, North Carolina Division of Coastal Management, Federal Emergency Management Agency, and the US Army Corps of Engineers.
  - Participate in the Federal Flood Insurance Program.  
Schedule: Continuing Activities.
- I.23 Tyrrell County and the Town of Columbia will rely on the NC Department of Environment and Natural Resources, Division of Coastal Management to regulate development through the CAMA permitting process. Also, it will rely on the regulations of other state and federal agencies with regulatory authority, as well as existing local development regulations, to mitigate threats to AECs. Schedule: Continuing Activity.
- I.24 Tyrrell County will rely on the US Army Corps of Engineers to monitor development proposals for compliance with Section 404 of the Clean Water Act and will continue to enforce local land use ordinances. Schedule: Continuing Activity.
- I.25 In order to monitor possible sea level rise, Tyrrell County will implement the following:
- Rely on the NC Department of Environment and Natural Resources, Division of Coastal Management to monitor and regulate development in areas susceptible to sea level rise and wetlands loss.
  - Rely on state and federal agencies to monitor the effects of sea level rise and cooperate with local, state, and federal efforts to inform the public of the anticipated effects of sea level rise.
  - Consider updates or amendments to its land use plan policies as necessary to protect the county's public and private properties from rising water levels.
  - Support bulkheading to protect its shoreline areas from intruding water resulting from rising sea levels.

- Consider establishing setback standards, density controls, bulkhead restrictions, buffer vegetation protection requirements, and building designs through the Building Code, County Subdivision Regulations, and Town of Columbia Zoning Regulations, which will facilitate the movement of structures, if necessary.

Schedule: Continuing Activities.

- I.26 Any adopted Tyrrell County zoning ordinances will regulate construction of marinas.  
Schedule: Fiscal Years 2009-2011.

Policies - Stormwater Control:

- P.41 Tyrrell County and the Town of Columbia supports reducing soil erosion, runoff, and sedimentation to minimize the adverse effects on surface and subsurface water quality.
- P.42 Tyrrell County recognizes the value of water quality maintenance and supports the protection of fragile areas and the provision of clean water for recreational purposes.
- P.43 The county 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, deemed necessary by the Board of Commissioners to mitigate the risks of lives and property caused by severe storms and hurricanes.
- P.44 Tyrrell County supports implementation of the Pasquotank River Basinwide Water Quality Plans (see Section V.B.3, page 50).
- P.45 Tyrrell County and the Town of Columbia support requiring developers to address stormwater management to comply with NC Department of Environment and Natural Resources Coastal Stormwater Regulations.
- P.46 Tyrrell County supports the development of a comprehensive long range plan to address the issue of cleaning out the arterial canals located throughout the county in an effort to improve stormwater drainage throughout the County.

### Implementing Actions - Stormwater Control:

- I.27 Tyrrell County will consider adopting and enforcing a soil erosion and sediment control ordinance for development sites less than one acre. The County will continue to rely on NCDENR for enforcement of sedimentation and erosion control measures on developments greater than one acre. The Town of Columbia will consider adopting more stringent standards relating to this issue into the Town's existing subdivision ordinance. Schedule: Fiscal Year 2010-2011.
- I.28 Tyrrell County will seek funding and technical assistance to study the effect of mosquito and other man-made ditches on the estuarine system. Effective mosquito control is essential to the health and welfare of Tyrrell County. Schedule: Review Annually.
- I.29 Tyrrell County will support control of agricultural runoff through implementation of Natural Resources Conservation Service Agricultural Best Management Practices program (see Appendix IV). Schedule: Continuing Activity.
- I.30 Tyrrell County, in conjunction with the Town of Columbia, will seek funding and technical assistance to prepare a county-wide master drainage plan and develop a stormwater management plan and ordinance to aid in eliminating standing water, and to require that all development address stormwater management. This should include a water quality component. Additionally, this plan should address a comprehensive strategy for the clean out of the county's arterial canal system. Schedule: Fiscal Year 2010-2012.
- I.31 Tyrrell County and the Town of Columbia will support control of forestry runoff through implementation of Forestry Best Management Practices as provided by the North Carolina Division of Forest Resources (see Appendix IV). Schedule: Continuing Activity.
- I.32 The Town of Columbia will consider adopting a landscaping ordinance to require that a buffer of trees/vegetation be left between rights-of-way and any clear cut areas be consistent with applicable state and federal regulations. Additionally, this ordinance will aim to increase the aesthetic quality of entry corridors and the town's main thoroughfares as redevelopment occurs. Schedule: Fiscal Year 2010-2011.
- I.33 Tyrrell County and the Town of Columbia will consider adopting and enforcing a stormwater control ordinance which should include regulations for water detention and/or retention facilities in new developments and provide regulations to control

the amount of impervious surface in a development. Schedule: Fiscal Year 2009-2011.

- I.34 Tyrrell County and the Town of Columbia will implement a public education campaign regarding the impacts of stormwater runoff and methods of reducing stormwater runoff pollution, particularly among the County's farmers and animal operation managers. Schedule: Fiscal Year 2010-2012.

5. Infrastructure Carrying Capacity

a. Management Goal

Tyrrell County and the Town of Columbia will ensure that public infrastructure systems are appropriately sized, located, and managed so the quality and productivity of AECs and other fragile areas are protected or restored. It is acknowledged that to achieve the infrastructure carrying capacity goals, policies, and implementing actions, some utility lines may have to extend through some environmentally sensitive areas.

b. Planning Objective

Tyrrell County and the Town of Columbia will establish level of service policies and criteria for infrastructure consistent with the projections of future land needs.

c. Land Use Plan Requirements

The following are Tyrrell County and the Town of Columbia's policies for infrastructure carrying capacity. All policies are continuing activities.

Policies - Water/Sewer Infrastructure:

- P.47 Tyrrell County and the Town of Columbia support providing adequate community services and facilities which meet the needs of Tyrrell County and Columbia's citizens, businesses, and industries.

- P.48 Tyrrell County and the Town of Columbia support providing sufficient water and sewer service to promote economic development and to alleviate public health problems created by the absence of public water and sewer services including degradation of water quality.

- P.49 The county supports directing more intensive land uses to areas that have existing or planned infrastructure, as indicated on the future land use map.



- P.50 The county supports the extension of water services from existing systems and encourages the use of central services for new developments whether residential, commercial, or industrial in nature. It also supports the continued public provision of solid waste disposal, law enforcement, and educational services to all citizens of the county, as well as the Town of Columbia.
- P.51 The county supports the installation and use of properly permitted septic tank systems and the enforcement of District Health Department regulations and local development regulations regarding lot sizes and waste disposal system placement. The county will also encourage the North Carolina Department of Environment and Natural Resources to investigate the feasibility of using alternative waste processing systems such as flushless toilets, incineration, and artificial wetlands in areas with severe soil limitations.
- P.52 The county supports the use of properly permitted and maintained package sewage treatment plants within its borders but outside of proposed sewer service areas. Package sewer treatment plants will only be allowed in developments which have been approved by the county. If any package treatment plants are approved, the county supports requirement of a specific contingency plan specifying how ongoing private operation and maintenance of the plant will be provided, and detailing provisions for assumption of the plant into a public system should the private operation fail.
- P.53 The county will support investigations by the District Health Department and North Carolina State University concerning the use of package treatment plants as a method of solving some of the severe sewage disposal problems in portions of the county.
- P.54 Tyrrell County and the Town of Columbia support providing water and sewer services to industrial areas, as required, when county resources are sufficient, in order to encourage industrial development. It should be noted that this policy applies to future industrial growth.
- P.55 Tyrrell County supports all efforts to secure available state and federal funding for the construction and/or expansion of public and private sewer systems.
- P.56 In concert with this Land Use Plan, Tyrrell County and the Town of Columbia support the master sewer plan in an effort to accommodate growth within the Scuppernon Township.

- P.57 The County supports the provision of public recreational facilities and areas and will pursue grant funds for county-owned and operated recreation facilities.
- P.58 Tyrrell County supports the ongoing agreement between the Town of Creswell and the County with regards to providing wastewater treatment plant capacity required to accommodate demand for the ongoing Phase I and Phase II central sewer system installation.
- P.59 It is the policy of Tyrrell County and the Town of Columbia that all infrastructure improvements be designed and installed to have a minimal impact on Areas of Environmental Concern.

Implementing Actions - Water/Sewer Infrastructure:

- I.35 Tyrrell County will continue to implement the current central sewer master plan, which involves county sewer lines being extending to a majority of buildable property located within the Scuppernong Township. Schedule: Fiscal Year 2007-2010.
- I.36 Malfunctioning septic tanks will be inspected by the Martin-Tyrrell-Washington District Health Department and corrective action recommended for implementation by the owner. Schedule: Continuing Activity.
- I.37 Tyrrell County and the Town of Columbia will amend the future land use map, when needed, to reflect the county's water and sewer extension projects as they are planned. Schedule: Continuing Activity.
- I.38 Tyrrell County will identify and contact state and federal agencies that provide typical and non-typical funding sources for assistance in providing central sewer. Schedule: Review Annually.
- I.39 Tyrrell County and the Town of Columbia will consult the future land use map when considering new public facilities and private development. Schedule: Continuing Activity.
- I.40 Tyrrell County and the Town of Columbia 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. Schedule: Fiscal Year 2009-2010.

- I.41 The county will rely on the Division of Environmental Management in conjunction with the Martin-Tyrrell-Washington District Health Department to oversee the operation and management of all package treatment plants in the county. Schedule: Continuing Activity.
- I.42 The county will consider adopting an operating and capital financing plan for the development of water and sewer systems outside of existing proposed water and sewer service areas. Schedule: Fiscal Year 2009-2011.
- I.43 The County will provide sufficient emergency management personnel and facilities to adequately serve the projected population growth. Schedule: Continuing Activity.
- I.44 The county will coordinate the development of recreational facilities with the school system. Schedule: Continuing Activity.
- I.45 Tyrrell County will encourage cable television service provider(s) to provide facilities and service to ensure affordable, adequate, and dependable cable television and high speed internet services to the citizens of the County. Schedule: Continuing Activity.
- I.46 Tyrrell County will encourage electrical service provider(s) to provide facilities and services to ensure adequate supplies of uninterruptible electric power to the citizens of the County. Schedule: Continuing Activity.

Policies – Transportation:

- P.60 Tyrrell County and the Town of Columbia support interconnected street systems for residential and non-residential development.
- P.61 The county and the Town of Columbia support limited access from development along all roads and highways to provide safe ingress and egress. This policy is aimed at reducing curb cuts and promoting cross-access between properties.
- P.62 Tyrrell County and the Town of Columbia support subdivision development which utilizes 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 and a mixed use core. Compared with conventional suburban developments, TNDs have a higher potential to increase modal split by encouraging and accommodating alternate transportation modes. TNDs also have a higher

potential for capturing internal trips, thus reducing vehicle miles traveled. (see Appendix V).

- P.63 Tyrrell County and the Town of Columbia specifically supports the following future transportation improvement projects:

Bridge Projects

ID No.	(Location) Description	Schedule (Fiscal Year)
B-4647	(NC 94) Northwest Fork. Replace Bridge No. 6	Right-of-way FY10 Mitigation FY10 Construction FY11

Road Projects

ID No.	(Location) Description	Schedule (Fiscal Year)
R-2545	(US 64) East of Columbia to east of the Alligator River. Widen to multi-lanes. 15.6 miles	Planning/Design-In Progress Mitigation FY12
	AA - East of Columbia to SR 1229 (Old US 64) at Alligator River.	Right-of-way FY12 Construction Unfunded
	AB - SR 1229 (Old US 64) at Alligator River to west of Alligator River.	Right-of-way FY12 Construction Unfunded
	B - West of Alligator River to east of Alligator River	Right-of-way FY12 Construction FY12

- P.64 The town and county support the expansion of US Highway 64 to four lanes.
- P.65 The county supports maintaining an effective signage and addressing system for all streets, roads, and highways.
- P.66 The county supports state and federal funding for maintenance/dredging of major watercourses adjacent to the counties borders.

Implementing Actions - Transportation:

- I.47 Tyrrell County and the Town of Columbia will require, where reasonably possible, the use of frontage roads in non-residential development along federal and state major highways. The County and Town will consider revising their respective subdivision regulations in order to comply with this policy. Schedule: Fiscal Year 2009-2010.

- I.48 Tyrrell County and the Town of Columbia will establish a requirement for reverse frontage lots within subdivisions to orient lots towards internal subdivision streets, not secondary roads and highways. Schedule: Fiscal Year 2009-2010.
- I.49 Tyrrell County and the Town of Columbia will require the construction of acceleration/deceleration lanes for the entrances to major commercial and residential developments. This should be accomplished through revisions to the town and county's subdivision ordinances. Schedule: Fiscal Year 2009-2010.
- I.50 Tyrrell County and the Town of Columbia will consider establishing traffic impact studies for large scale residential and mixed use developments. This requirement will be based on recommendation by each jurisdiction's Planning Board. Schedule: Fiscal Year 2010-2011.
- I.51 Tyrrell County and the Town of Columbia will solicit local civic organizations to commit to the beautification of selected areas which will require initial labor for construction/planting and long-term regular maintenance. Schedule: Continuing Activity.
- I.52 Tyrrell County will request that the NCDOT Division of Highways implement its wildflower research project and the Adopt-a-Highway program along US 64. Schedule: Continuing Activity.

6. Natural Hazard Areas

a. Management Goal

Tyrrell County and the Town of Columbia will conserve and maintain shorelines, floodplains, and other coastal features for their natural storm protection functions and their natural resources giving recognition to public health, safety, and welfare issues.

b. Planning Objective

Tyrrell County and the Town of Columbia will develop policies that minimize threats to life, property, and natural resources resulting from development located in or adjacent to hazard areas, such as those subject to erosion, high winds, storm surge, flooding, or sea level rise.

c. Land Use Plan Requirements

The following are Tyrrell County and the Town of Columbia's policies/implementing actions for natural hazard areas. All policies are continuing activities.

Policies:

- P.67 Tyrrell County and the Town of Columbia support efforts to control estuarine shoreline erosion. Where possible, land owners are encouraged to use structures that will preserve wetlands and fisheries habitat and protect water quality. Such structures include living shorelines and plantings using native wetland species. Bulkheads are allowed; the use of innovative techniques is encouraged.
- P.68 Tyrrell County and the Town of Columbia support the US Army Corps of Engineers' regulations and the applicable 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.
- P.69 Tyrrell County and the Town of Columbia recognize the uncertainties associated with sea level rise. The rate of rise is difficult to predict. Thus, it is difficult to establish policies to deal with the effects of sea level rise. Tyrrell County and the Town of Columbia support cooperation with local, state, and federal efforts to inform the public of the anticipated effects of sea level rise.
- P.70 Tyrrell County and the Town of Columbia support hazard mitigation planning. The mitigation strategies and policies contained in the Tyrrell County Multi-Jurisdictional Hazard Mitigation, adopted in February 2005, are included as Appendix VI to this plan, and are incorporated herein by reference.
- P.71 Tyrrell County and the Town of Columbia support the land use densities that are specified on the future land use map of this plan. These densities will minimize damage from natural hazards and support the hazard mitigation plan.

Implementing Actions:

- I.53 Tyrrell County and the Town of Columbia will continue to enforce its Floodplain Ordinance and participate in the National Flood Insurance Program. It will rely on the North Carolina Department of Environment and Natural Resources, Division of Coastal Management to monitor and regulate development in areas up to five feet above mean high water susceptible to sea level rise and wetland loss. Subdivision regulations will be enforced requiring elevation monuments to be set so that floodplain elevations can be more easily determined. Schedule: Continuing Activity.
- I.54 The county will monitor development proposals for compliance with Section 404 of the Clean Water Act and will continue to enforce local land use ordinances to

regulate development of freshwater swamps, marshes, and 404 wetlands. Schedule: Continuing Activity.

- I.55 Tyrrell County and the Town of Columbia permit redevelopment of previously developed areas, provided all applicable policies, regulations, and ordinances are complied with. The county and town will encourage redevelopment as a means for correcting housing problems, upgrading commercial structures, and historic preservation (through rehabilitation and adaptive reuse). Redevelopment, including infrastructure, should be designed to withstand natural hazards. Schedule: Continuing Activity.
- I.56 In response to possible sea level rise, Tyrrell County and the Town of Columbia will review all local building and land use related ordinances and consider establishing setback standards, density controls, bulkhead restrictions, buffer vegetation protection requirements, and building designs which will facilitate the movement of structures. Schedule: Continuing Activity.
- I.57 Tyrrell County and the Town of Columbia will use the future land use maps to control development. These maps are coordinated with the land suitability map and proposed infrastructure maps. Schedule: Continuing Activity.

## 7. Water Quality

### a. Management Goal

Tyrrell County and the Town of Columbia will maintain, protect, and where possible enhance water quality in all coastal wetlands, rivers, streams, and estuaries. This should include a means of addressing the complex problems of planning for increased development and economic growth while protecting and/or restoring the quality and intended uses of the basin's surface waters.

### b. Planning Objective

Tyrrell County and the Town of Columbia will adopt policies for coastal waters within Tyrrell County to help ensure that water quality is maintained (if not impaired) and improved (if impaired).

### c. Land Use Plan Requirements

The following provides Tyrrell County and the Town of Columbia's policies/implementing actions on water quality.

Policies:

- P.72 Tyrrell County and the Town of Columbia support the guidelines of the Coastal Area Management Act and the efforts and programs of the North Carolina Department of Environment and Natural Resources, Division of Coastal Management and the Coastal Resources Commission to protect the coastal wetlands, estuarine waters, estuarine shorelines, and public trust waters of Tyrrell County and the Town of Columbia. It also supports the use of best management practices recommendations of the United States Soil Conservation Service for both agricultural and forestry areas.
- P.73 Tyrrell County and the Town of Columbia support conserving its surface groundwater resources.
- P.74 The county and the town support commercial and recreational fishing in its waters and will cooperate with other local governments and state and federal agencies to control pollution of these waters to improve conditions so that commercial and recreational fishing will increase.
- P.75 The county supports the reforestation of clear cut timber lands and the use of forestry best management practices.
- P.76 Tyrrell County and the Town of Columbia oppose 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.77 Tyrrell County and the Town of Columbia recognize the value of water quality maintenance to the protection of fragile areas and to the provision of clean water for recreational purposes and supports the control of stormwater runoff to aid in the preservation of water quality.
- P.78 Tyrrell County and the Town of Columbia support regulation of underground storage tanks in order to protect its groundwater resources.
- P.79 Tyrrell County and the Town of Columbia support the policy that all State of North Carolina projects should be designed to limit to the extent possible stormwater runoff into coastal waters.
- P.80 Tyrrell County and the Town of Columbia support implementation of the Pasquotank River Basin Water Quality Management Plan.



- P.81 The county supports protection of those waters known to be of the highest quality or supporting biological communities of special importance.
- P.82 Tyrrell County and the Town of Columbia oppose the installation of package treatment plants and septic tanks or discharge of waste in any areas classified as coastal wetlands, freshwater wetlands (404), or natural heritage areas. This policy does not apply to constructed wetlands.
- P.83 Tyrrell County and the Town of Columbia support all aquaculture activities which meet applicable federal, state, and local policies and permit requirements. However, Tyrrell County and the Town of Columbia reserve the right to comment on all aquaculture activities which require Division of Water Quality permitting.
- P.84 Tyrrell County and the Town of Columbia object to any discharge of water from aquaculture activities that will degrade in any way the receiving waters. The county objects to withdrawing water from aquifers or surface sources if such withdrawal will endanger water quality or water supply from the aquifers or surface sources.
- P.85 Tyrrell County and the Town of Columbia support only aquaculture activities which do not alter significantly and negatively the natural environment or coastal wetlands, estuarine waters, and public trust areas.
- P.86 Tyrrell County and the Town of Columbia do not support the location of floating homes within its jurisdiction.
- P.87 Tyrrell County and the Town of Columbia support and will continue to enforce the policies of the NC Department of Environment and Natural Resources Coastal Stormwater Rules.
- P.88 It is the policy of Tyrrell County and the Town of Columbia to protect and/or repair closed and conditionally closed shellfishing beds, where feasible. The county and the town will rely on outside resources to achieve this effort.

Implementing Actions:

- I.58 The county will comply with CAMA and NC Division of Environmental Management stormwater runoff regulations, and by coordinating local development activities involving chemical storage or underground storage tank installation/abandonment with Tyrrell County Emergency Management personnel and the Groundwater Section of the North Carolina Division of Environmental Management. The county will plan for an adequate long-range water supply. In the planning process, Tyrrell

County and the Town of Columbia will cooperate with adjacent counties to protect water resources. Schedule: Continuing Activity.

- I.59 The County will enforce its subdivision regulations to aid in protecting sensitive shoreline areas. It will rely on state and federal agencies to promote and protect the Palmetto-Pear Tree Preserve, the Pocosin Lakes National Wildlife Refuge, and the Pettigrew State Park, as well as other nursery areas, habitat areas, and coastal reserves. Schedule: Continuing Activity.
- I.60 Tyrrell County and the Town of Columbia 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.61 Tyrrell County and the Town of Columbia will continuously enforce, through the development permitting process, all current regulations of the NC State Building Code and North Carolina Division of Health Services relating to building construction and septic tank installation/replacement in areas with soils restrictions. Schedule: Continuing Activity.
- I.62 Tyrrell County and the Town of Columbia will implement the following actions through local ordinances to improve water quality.
- Use watershed-based land use planning
  - Protect sensitive natural areas, including coastal wetlands
  - Establish buffer network
  - Minimize impervious cover in site design
  - Limit erosion during construction
  - Maintain coastal growth measures
  - Restoration of impaired waters
  - Management of the cause and sources of pollution to ensure the protection of those waters currently supporting their uses allowing for reasonable economic growth.
  - Reduction of nutrients in Tyrrell County waters.  
Schedule: Review local ordinances annually.
- I.63 Preservation of wetlands is important to the protection/improvement of water quality in Tyrrell County. The following will be implemented:
- Consider preservation of large wetland areas (> one acre) in a natural state to protect their environmental value. Schedule: Continuing Activity.

- Coordinate all development review with the appropriate office of the US Army Corps of Engineers and the Soil Conservation Service. Schedule: Continuing Activity.
- Require that wetland areas be surveyed and delineated on all preliminary and final subdivision plats. Schedule: Fiscal Year 2009-2011.
- Encourage cluster development in order to protect sensitive natural areas. Schedule: Fiscal Year 2009-2011, revision to subdivision ordinances.
- Make wetlands acquisition a priority in future expansions of Tyrrell County and Town of Columbia parks and recreation areas. Schedule: Continuing Activity.

I.64 Tyrrell County will regulate the location of aquaculture activities through the potential development of a county-wide zoning ordinance. Schedule: Fiscal Year 2009-2011.

I.65 The Town of Columbia will develop a local ordinance and a waterfront development plan to regulate the development of mooring fields. Schedule: Fiscal Year 2010-2011.

## 8. Local Areas of Concern

### a. Management Goal

Tyrrell County and the Town of Columbia will integrate local concerns with the overall goals of CAMA in the context of land use planning.

### b. Planning Objective

Tyrrell County and the Town of Columbia will identify and address local concerns and issues, such as cultural and historic areas, scenic areas, economic development, or general health and human services needs.

### c. Land Use Plan Requirements

The following provides Tyrrell County and the Town of Columbia's policies/implementing actions on local areas of concern. All policies are continuing activities.

Policies - Cultural, Historic, and Scenic Areas:

- P.89 The county supports local, state, and federal efforts to protect historic properties within its borders and to perpetuate its cultural heritage.
- P.90 Tyrrell County and the Town of Columbia supports protection and preservation of all protected natural areas which have both historic and environmental significance.

Implementing Actions - Cultural, Historic, and Scenic Areas:

- I.66 Tyrrell County and the Town of Columbia will guide development so as to protect historic and potentially historic properties in the county and to perpetuate the county's cultural heritage. Schedule: Continuing Activity.
- I.67 Tyrrell County and the Town of Columbia shall coordinate all housing code enforcement/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.68 Tyrrell County and the Town of Columbia will coordinate all county 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.91 Tourism is important to Tyrrell County and the Town of Columbia and will be supported by the county and town.
- P.92 The county will encourage development in Tyrrell County and the Town of Columbia to protect the county's resources, preserve its rural atmosphere, and simultaneously promote industrial and retail growth.
- P.93 The county will encourage industrial and commercial development in areas with existing infrastructure that does not infringe on existing medium density residential areas.
- P.94 Tyrrell County and the Town of Columbia support the extension of water services from existing systems and encourages the use of central services for new developments whether residential, commercial, or industrial in nature.

- P.95 The county supports the location of staging areas and support facilities for energy related activities, particularly exploration.

Implementing Actions - Economic Development:

- I.69 Tyrrell County and the Town of Columbia will continue to support the activities of the North Carolina Division of Travel and Tourism; specifically, the monitoring of tourism-related industry, efforts to promote tourism-related commercial activity, and efforts to enhance and provide shoreline resources. Schedule: Continuing Activity.
- I.70 Tyrrell County and the Town of Columbia will continue to support the activities of the Partnership For The Sounds in their efforts to promote tourism and protect the sensitive eco-system within the county. Schedule: Continuing Activity.
- I.71 Tyrrell County and the Town of Columbia will support projects that will increase public access to shoreline areas. Schedule: Continuing Activity.
- I.72 Tyrrell County and the Town of Columbia will support North Carolina Department of Transportation projects to improve access to and within the county. Schedule: Continuing Activity.
- I.73 Tyrrell County and the Town of Columbia will support the following in the pursuit of industrial development:
- Encourage placement of new industrial development to have minimum adverse effect on the county's ecosystem and by encouraging areas of concentrations of such uses be considered first when suitable infrastructure is available consistent with the growth policy of the future land development map. Schedule: Continuing Activity.
  - The Town of Columbia will re-zone additional parcels for industrial and commercial use along existing growth corridors with adequate infrastructure existing or planned and, when the need is demonstrated, provide a consistent growth policy with amendments to the future land development map when revision is needed. Schedule: Continuing Activity.

Policies - General Health and Human Services Needs:

- P.96 Tyrrell County and the Town of Columbia support the continued public provision of solid waste disposal, law enforcement, and educational services to all citizens of the county.

- P.97 Tyrrell County and the Town of Columbia oppose the establishment of military outlying landing fields (OLFs) within the coastal plain of eastern North Carolina. The county acknowledges that this policy is not enforceable; however, it is necessary to outline a position within the context of the land use plan.
- P.98 The county supports local, state, and federal efforts to minimize the adverse impact of man-made hazards within its borders. Tyrrell County and the Town of Columbia will use its development controls and will rely on state and federal agencies with jurisdiction to minimize the impact of man-made hazards.
- P.99 In an effort to improve health conditions, Tyrrell County and the Town of Columbia support the following water and sewer policies:
- Tyrrell County and the Town of Columbia support the extension of central water service into all areas of the county shown on the land suitability analysis map as suitable for development, including the construction of lines to and through conservation areas to serve development which meets all applicable state and federal regulations. Construction of utility lines through conservation areas should only be permitted if no alternative exists. The location of utilities within defined conservation areas should not result in increased development potential.
  - The county is aware that inappropriate land uses near well fields increase the possibility of well contamination. Land uses near groundwater sources are regulated by the North Carolina Division of Environmental Management through NCAC Subchapter 2L and Subchapter 2C. Tyrrell County and the Town of Columbia recognize the importance of protecting potable water supplies, and therefore support the enforcement of these regulations.
  - Tyrrell County and the Town of Columbia support all efforts to secure available state and federal funding for the construction and/or expansion of public and private water/sewer systems.
  - Tyrrell County and the Town of Columbia support the construction of water systems with adequate line sizes to ensure adequate water pressure and fire protection.
  - Tyrrell County will continue to provide water services to county residents and will continue the process of studying the role of county government in providing sewage treatment facilities for rapidly growing areas of the county, including the construction of lines to and through conservation areas to serve development which meets all applicable state and federal regulations. The county will secure federal and state grants, when feasible, to help carry out this policy.

P.100 Tyrrell County opposes the location of US Army Corps of Engineers 404 wetland mitigation sites resulting from development outside of Tyrrell County. This policy is intended to protect the tax base of the County.

Implementing Actions - General Health and Human Services Needs:

I.74 The county will investigate, with the Institute of Government, the use of impact fees as a way of making new development pay for the services demanded. Schedule: Fiscal Year 2009-2011.

I.75 The county will seek educational grants to subsidize continuing education at nearby colleges and universities and support community education programs. Schedule: Review Annually.

I.76 Floodplain regulation is a concern in Tyrrell County and the Town of Columbia. To accomplish protection of public health and service needs, Tyrrell County and the Town of Columbia will:

- Continue to enforce the flood hazard reduction provisions of the Tyrrell County and Town of Columbia Land Development Ordinances.
- Prohibit the installation of underground storage tanks in the 100-year floodplain.
- Prohibit the development of any industry within the 100-year floodplain that may pose a risk to public health and safety. Such industries may include but not be limited to: chemical refining and processing, petroleum refining and processing, hazardous material processing, or storage facilities. Schedule: Continuing Activities.

I.77 To effectively manage Tyrrell County and the Town of Columbia's investment in existing and proposed community facilities and services, the county will:

- Develop a specific capital improvements plan (CIP) with emphasis placed on services and facilities which affect growth and development. Schedule: Fiscal Year 2010-2012.
- Provide the Tyrrell County Board of Education with locational information on all residential development. Schedule: Continuing Activity.
- In concert with the Tyrrell County Board of Education, develop a plan for the protection of future school sites. Schedule: Fiscal Year 2010-2011.

- I.78 Tyrrell County and the Town of Columbia will provide sufficient emergency services to all residents. The county will implement the following:
- Require that all necessary infrastructure firefighting capability/capacity be provided in new subdivisions and developments. Schedule: Continuing Activity.
  - Continue to maintain an effective signage and addressing system for all streets, roads, and highways. Schedule: Continuing Activity.
- I.79 Tyrrell County will work with NC State Legislators to formulate local legislation to address the use of property located within Tyrrell County for 404 wetland mitigation sites for development occurring outside of the County, as long as there is a direct benefit to the taxpayers of Tyrrell County (jobs, spin off businesses, etc). Current regulatory conditions continue to result in large tracts of land within the County being acquired for 404 mitigation. This action results in a direct reduction to County property tax revenues.

Implementing Actions - Funding Options:

- I.80 Tyrrell County and the Town of Columbia will continue to support state and federal programs that are deemed necessary, cost-effective, and within the administrative and fiscal capabilities of Tyrrell County and the Town of Columbia. Schedule: Continuing Activity. These include:
- Community Development Block Grant Program
  - Area Agency on Aging
  - Emergency Medical Services
  - JTPA Work Program
  - Farmer's Home House Preservation Program
  - Coastal Area Management Act, including shoreline access funds
  - Small Business Association
  - Economic Development Administration Funds
  - Farmer's Home Administration Federal Grant Program
  - Federal Emergency Management Program
  - Aid to Families with Dependent Children
  - MEDICAID
  - Day Care
  - Crisis Intervention
  - Parks and Recreation Trust Fund (PARTF)
- I.81 Tyrrell County and the Town of Columbia will selectively support state and federal programs related to Tyrrell County and the Town of Columbia. The town and



county, through its boards, commissions, 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.82 Tyrrell County and the Town of Columbia 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 channels and rivers as needed to keep these facilities open to navigation. These efforts shall comply with applicable state and federal regulations. Providing borrow or spoil areas and provision of easements for work will be determined on case-by-case basis. The county would encourage spoil material being placed on those areas where easements for such use already exist. Channel maintenance has major economic significance and is worthy of state and federal funding. Schedule: Continuing Activity.

## E. FUTURE LAND USE

### 1. Introduction

The growth pressure in Tyrrell County is expected to primarily occur either within the planning jurisdiction of the Town of Columbia, or within unincorporated portions of the county where central services are planned or currently exist. Currently, central water and sewer service is available within a majority of Columbia's planning jurisdiction, while central services within the county are fairly limited. As noted earlier within the plan, the county is working on extending services to a majority of the Scuppernong Township. This expansion will result in some increased development; however, growth in a majority of the County will continue to rely on either on-site septic systems or package treatment plant facilities.

Currently, Tyrrell County does not have any adopted zoning regulations. The county's current land development code consists primarily of subdivision regulations, floodplain regulations, and enforcement of NC DCM Coastal Area Management Act development regulations. Subsequent to adoption and certification of this plan, the county will consider adoption of a comprehensive zoning code that will focus on maintaining the rural nature of the county.

Through development of a zoning code, Tyrrell County should incorporate the concept of "smart growth". In reality, this concept is not a new idea. It is simply the blending of many existing ideas. The policies and implementing actions contained in this plan are intended to be supportive of smart growth. Additionally, the Town of Columbia should consider reviewing current zoning and subdivision regulations in an effort to implement some of the smart growth principles outlined below.

Smart growth adheres to six basic principles which are described below, and should be reviewed and acknowledged throughout the implementation of this plan:

Principle 1 - Efficient Use of Land Resources: Smart growth supports the preservation of land and natural resources. These benefits result from compact building forms, in-fill development, and moderation in street and parking standards. Compact building patterns preserve land for town and neighborhood parks as well as local woods and wetlands. Furthermore, compact development shortens trips, lessening dependence on the automobile, and therefore reducing levels of energy consumption and air pollution. Finally, a compact development pattern supports more cost-effective infrastructure than does low-density fringe development.

Principle 2 - Full Use of Urban Services: The same frugality of land development supports efficient use of public and private infrastructure. Smart growth means creating neighborhoods where more people will use existing services like water lines and sewers, roads, emergency services, and schools. Inefficient land use, whether within or outside urban areas, places a financial strain on communities trying to provide for the construction and maintenance of infrastructure needs.

Building compactly does not mean that all areas must be densely developed. Rather, the goal is an average density for the area, at a level that makes full use of urban services. Averaging allows for areas to have a mix of low-, medium-, and high-density development. Mixing densities to encourage efficient use of services also means requiring a high level of building and siting compatibility, encouraging neighborhoods to have both character and privacy.

Careful street sizing and the accommodation of some parking on streets reduces impervious surfaces and efficiently uses urban services by saving on land acquisition, construction, and maintenance costs. In short, streets should be sized for their use: lower density areas that have little through traffic are best served by slower, narrower streets, while transportation corridors that move district-wide traffic need wider travelways.

Principle 3 - Mix of Uses: Locating stores, offices, residences, schools, and recreation spaces within walking distance of each other in compact neighborhoods with pedestrian-oriented streets promotes:

- independence of movement, especially for the young and the elderly who can conveniently walk, cycle, or ride transit;
- safety in commercial areas, through around-the-clock presence of people;
- reduction in auto use, especially for shorter trips;
- support for those who work at home, through nearby services and parks; and
- a variety of housing choices, so that the young and old, singles and families, and those of varying economic ability may find places to live.

Mixed-use examples include a corner store in a residential area, an apartment near or over a shop, and a lunch counter in an industrial zone. Most codes prohibit the co-location of any residential and commercial buildings. This prohibition is based on the functional and architectural

incompatibility of the buildings. Using design standards, in tandem with mixed-use zoning, overcomes incompatibility. Additionally, limitations on commercial functions, such as hours of operation and delivery truck access, may be necessary. More fundamentally, to gain the full benefits of a mix of uses, buildings must be conveniently connected by streets and paths. Otherwise, people will still be inclined or required to use cars, even for the shortest trips.

Principle 4 - Transportation Options: Transportation must be safe, convenient, and interesting. These performance factors affect sidewalk and street design, placement of parking, and location of building fronts, doors, and windows. Well-designed bike lanes and sidewalks protect people from vehicle accidents. Orienting windows and doorways to the sidewalk increases awareness of street activity and the safety of the streetscape.

Convenience begins with a connected network of streets that provides alternative routes with reasonable walking distances between destinations. A properly designed network also promotes neighborhood safety by routing the heaviest traffic around neighborhoods, without sacrificing street connectivity.

Providing compact, mixed-use development connected by safe, convenient, and interesting networks of streets and paths promotes:

- walking, cycling, and transit as viable, attractive alternatives to driving;
- less traffic congestion and air pollution;
- the convenience, density, and variety of uses necessary to support transit;
- a variety of alternative routes, thereby dispersing traffic congestion; and
- lower traffic speeds, making neighborhoods safer.

Principle 5 - Detailed, Human-Scale Design: Community acceptance of compact, mixed-use development requires compatibility between buildings to ensure privacy, safety, and visual coherency. Similar massing of buildings, orientation of buildings to the street, the presence of windows, doors, porches, and other architectural elements, and effective use of landscaping all contribute to successful compatibility between diverse building types.

Human-scale design is also critical to the success of streets and paths as preferred routes for pedestrians, cyclists, and motorists alike. In general, smart street design considers the role of pedestrians along with that of vehicular traffic, emphasizing the quality of the walking environment. For instance, parallel parking may be considered a hindrance to vehicle flow, but, for pedestrians and shop owners, on-street parking is a benefit because it reduces speeding traffic and protects the sidewalks.

Designing streets that are balanced for pedestrians, cyclists, and motorists promotes the development of community through the informal meeting of neighbors. Neighborhood safety is improved, since neighbors can more easily come to know one another and watch over each other's homes.

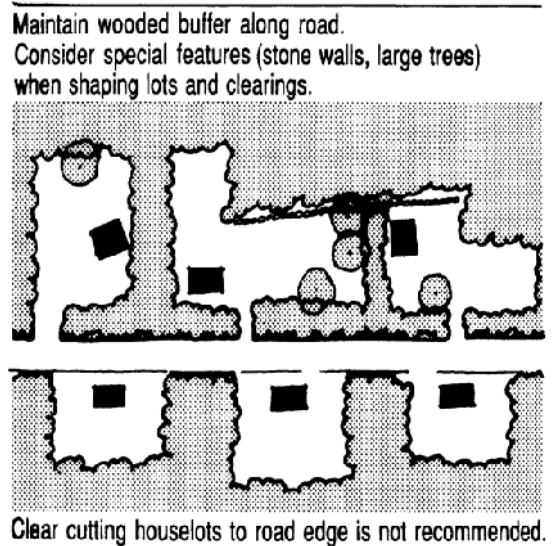
Principle 6 - Development Review: Tyrrell County and the Town of Columbia's ability to adopt smart growth principles will, of necessity, require an examination of its development review process. Primarily, the review should focus on ways that the review process can be streamlined so that developers are encouraged to apply the principles. Frustrating, costly, and time-consuming delays due, in part, to inflexible standards, regulations, and processes will discourage innovative approaches to development and design. Providing for flexibility and certainty in the application of standards, including provision for performance standards and administrative approval of "minor" variances, can help promote creative development that complies with the principles. Effective use of Planned Unit Developments (PUDs) can also relieve some of the regulatory barriers for developers and lighten the administrative load for planners, as can adopting a flexible process for applying design review standards.

While the smart growth concept may not be suited to every community, it will support Tyrrell County's objective of preserving its natural resources by encouraging the development of neighborhoods and communities that may be "self sustaining."

The following provides examples of some of the development concepts associated with smart growth:

- Preserve Tyrrell County and the Town of Columbia's open space and agricultural areas, historically significant structures, landmarks, and other features which reflect its heritage.

Figure 1: Simple site planning techniques for protecting the scenic character of rural roads include maintaining (or establishing) a wooded no-cut buffer along the front lot line and angling driveways so that lawns, houses, and garages are not directly visible from the road. Combined with deep front setbacks for construction, such approaches could become design requirements in a scenic roads overlay zone. Where such principles remain guidelines rather than enforceable standards, conventional clearing and siting patterns can be expected to continue, as illustrated in the bottom half of this sketch.



- Discourage strip commercial development on major collector roads that allow each lot to have direct vehicular access to the highway.

Figure 2: Connecting rear parking lots allows customers to drive to many other shops in the corridor without re-entering the highway and interrupting traffic flow. Such arrangements can be required for new development, expansion of existing buildings, and redevelopment.

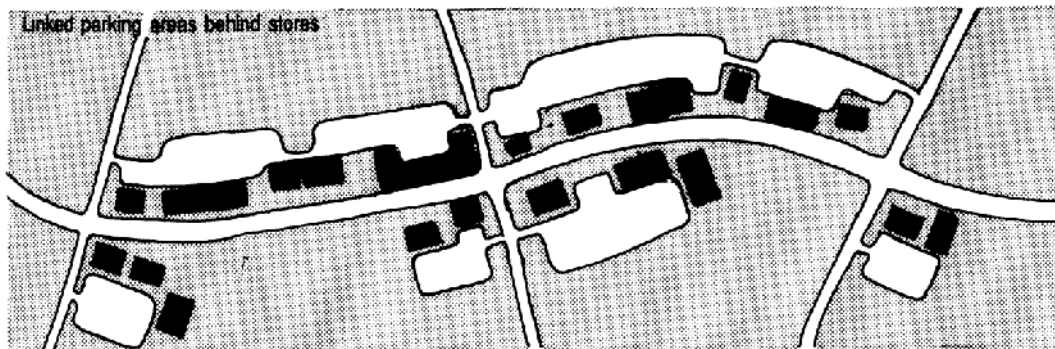
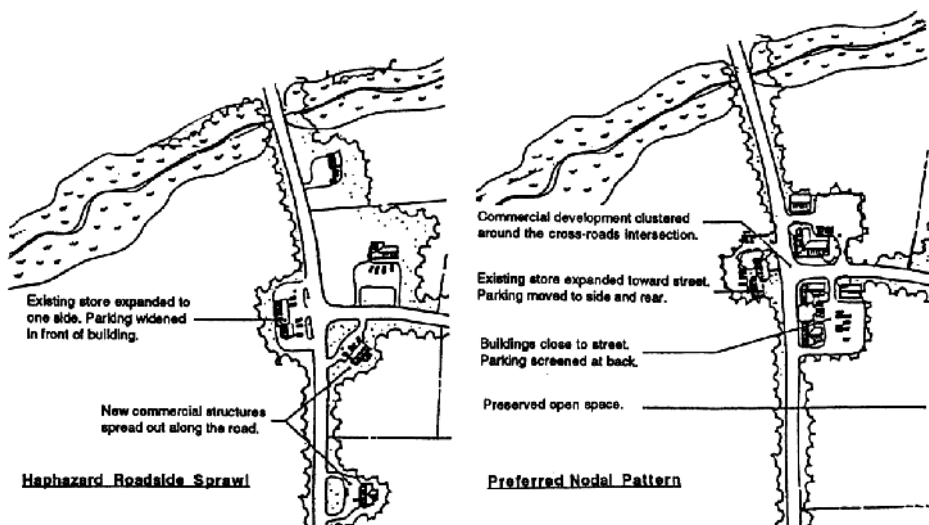


Figure 3: Two alternatives for arranging commercial development along a rural highway: strip versus nodes. Within the node, stores are located toward the front of their lots, with interconnected rear parking provision.



- Encourage and preserve agricultural and forestland to protect the future of farming in Tyrrell County and the Town of Columbia.

Figure 4: Two of the nation's first county-wide zoning regulations requiring developers to employ "open space design" techniques were adopted by Isle of Wight County, Virginia. These sketches illustrate two options under the new ordinance, where development density is limited to one dwelling per ten acres: preserving 50 percent of a 100-acre farm with 10 five-acre lots, or preserving 70 percent open space with 20 lots of 1.5 acres each. Source: Redman-Johnston Associates, Easton, Maryland.

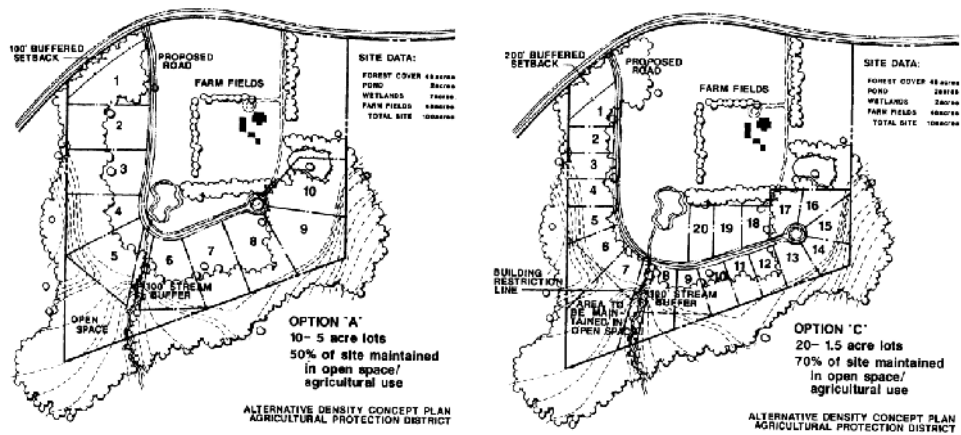
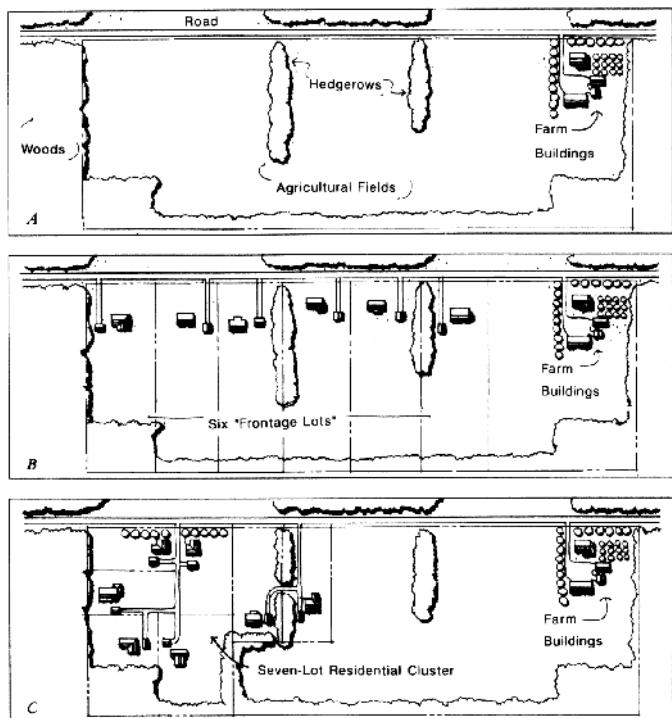
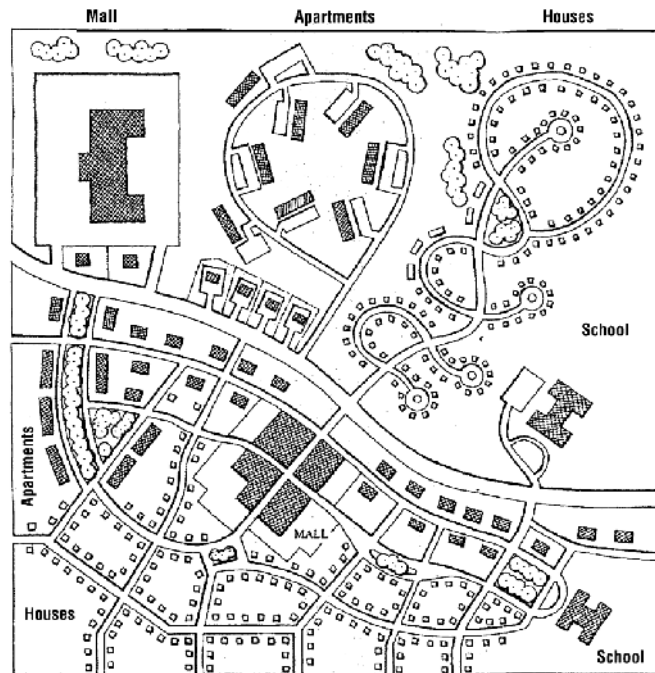


Figure 5: On unwooded sites, such as open fields or pastures, it is even more important to encourage (or require) clustering of new development. Even on relatively shallow sites, where there is little opportunity to locate homes far from the road, such as against a distant treeline, clustering principles can help reduce roadside clutter and preserve some open vistas. These three sketches, from *Managing Change: A Pilot Study in Rural Design and Planning* (Doble, et al., 1992) show techniques being advocated by the Tug Hill Commission in upstate New York, where the cost of constructing paved subdivision streets operates as a strong disincentive for rural landowners to subdivide their property in any way other than through "strip lots" along existing public roads. This example shows several gravel-surfaced shared driveways, built to standards appropriate for the amount of traffic they must accommodate.



- Reduce traffic congestion and safety problems.

Figure 6: Conventional development with poor connectivity: travel requires use of the collector streets, causing congestion and discouraging pedestrians and cyclist (top). Smart growth with interconnected street system, allowing a variety of transportation options and shorter trips (bottom).



## 2. Future Land Use Maps

Table 47 summarizes the acreages for the future land uses depicted on Maps 17A and 17B (see Appendix II) through 2025. These acreages summarize the total area of the depicted future land uses throughout Tyrrell County; however, these maps are not intended to indicate total “build-out”. All future land use acreages are based on the suitability of land for development and not forecast market demand for future acreages. The land use categories and estimated average densities/parcels are indicated by the definitions outlined in Section VI.E.3. The identified uses are those which are to be encouraged by any future adopted zoning. The future land use map must include the following:

- Areas and locations planned for conservation or open space and a description of compatible land uses and activities.
- Areas and locations planned for future growth and 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.

- Land use which reflects existing and planned infrastructure.
- Reflect the information depicted on the Land Suitability Analysis (Map 13A & 13B).

It should be understood that the forecast of future land use and associated density/acreages is extremely difficult due to the following:

- There is no zoning within the county.
- Existing water and sewer systems are not expected to undergo any significant expansions during the planning period.
- Septic tanks and package treatment plants will continue to provide sewer treatment throughout most of the county, resulting in low-density development in all areas except the Town of Columbia.
- Outside of the Town of Columbia and the Scuppernon Township, growth and development is expected to be widely scattered.

The future land use maps are intended to depict where the various types of land uses will be acceptable. NOTE: 15A NCAC 7B guidelines require that the future land use map not exceed the projected need plus 50%. Tyrrell County qualifies for an exception because it is a slow-growth Tier I county, which allows for greater flexibility to provide for growth and economic development. The following table provides the future land use acreages depicted on Maps 17A and 17B.

Table 47. Tyrrell County and Town of Columbia Future Land Use Acreages

Tyrrell County	Acres	% of Total		
US 64 Mixed Use	3,911.06	1.6%		
Conservation	83,939.31	33.7%		
Residential-Agricultural	128,010.18	51.4%		
Residential	25,012.39	10.0%		
Residential with Services	8,214.25	3.3%		
<b>Total</b>	<b>249,087.18</b>	<b>100.0%</b>		
			Corporate Limits	
			Extraterritorial Jurisdiction	
Town of Columbia	Acres	% of Total	Acres	% of Total
Mixed Use	48.13	7.6%	1.31	0.1%
Low Density Residential	411.15	65.1%	2,411.74	99.5%
Medium Density Residential	157.46	24.9%	0.01	0.0%
High Density Residential	14.62	2.3%	9.88	0.4%
<b>Total</b>	<b>631.36</b>	<b>100.0%</b>	<b>2,422.92</b>	<b>100.0%</b>

Source: Holland Consulting Planners, Inc.



### 3. Locational Aspects of Land Use

The following section will categorize/define allowable uses and net density for each future land use district outlined on Maps 17A and 17B. Due to the fact that Tyrrell County does not currently enforce zoning regulations, these criteria have been developed to agree with standards outlined within the County's current subdivision regulations.

#### Tyrrell County Future Land Use Categories

##### a. Conservation

The Conservation land use category includes land and water areas which are environmentally sensitive and important to the future of Tyrrell County. Such areas include fragile areas, areas of environmental concern, open space, heritage areas, protected lands, and protected recreational areas. Intensive use of these areas for residential, commercial, or industrial purposes will not be permitted. Development of commercial, industrial, and multi-unit residential uses adjacent to land designated as conservation will require the establishment of a 100-foot riparian along the project boundary. This buffer will serve to reduce stormwater runoff and pollutants from impacting environmentally sensitive areas.

Appropriate uses: Parks, playgrounds, open space, campsites, greenways, hunting clubs, and certain agricultural uses, eco-tourism operations, single-family residential development, and development of federal, state, and local community facilities.

Inappropriate uses: Any intensive development (to be determined by the Tyrrell County Planning Board).

Allowable densities: Recommended at one unit per acre; however, this standard may be modified based on the relative impact of a proposed development.

Maximum height: 35 feet.

Minimum lot size: 1 acre.

Buffering Requirements: Development of all commercial, industrial, and multi-unit residential development will require the establishment of a 100-foot riparian buffer along project boundaries.

b. Residential

Residential land uses have been divided into three separate land use categories based on associated residential densities, proximity to large scale farming operations, and the availability of central services. These categories include residential/agricultural, rural residential, and medium-density. The following provides a detailed overview of the development criteria associated with each district:

(1) Residential/Agricultural

The purpose of the Residential/Agricultural district is to preserve large areas in which most lands are, or have a high potential to be actively farmed in an economically sustainable manner. Residential development shall be permitted within this district; however, residential communities will be required to provide a vegetative buffer between existing agricultural property and proposed subdivision developments. This requirement is intended to mitigate the impact of existing farming operations on residential growth. Agriculture is an integral part of the County's economy, and therefore must be protected as a resource in light of increased development. In areas classified as Residential/Agricultural, the County will:

- Promote the retention, expansion, and new development of agricultural uses, as appropriate to the land's potential;
- Accommodate the development of land uses that directly support existing agricultural uses and need to be, or are customarily, located on the same site as the agricultural use they support (such as housing for the farmer and extended family, housing for farm laborers, barns, silos, access roads, storage of farm or forestry equipment, preparation of crops and livestock products for market);
- Generally limit development of land uses unrelated to agricultural uses to other predominantly open space land uses, and prohibit development of other land uses - particularly those uses that might preclude the future use or productivity of the land for agricultural use - or strictly limit any such development at such very low intensities as will ensure retention of sufficient contiguous open space to allow continued or future agricultural use;
- Ensure that any allowed development unrelated to agricultural uses is clustered, or otherwise sited and designed, so as to maximize the continued availability of productive farmland or forestland and minimize conflicts with existing or potential agricultural uses;

- Ensure that development unrelated to agricultural or forestry uses retains and incorporates existing features that define the area's rural character (such as barns, silos, tree lines, farm roads, stream crossings, significant vegetation).
- Promote the use of Best Management farming practices that help conserve the land's physical capacity for future agricultural and forestry production.

Appropriate uses: Agricultural and forestry preservation/production activities; uses supportive of agricultural/forestry production; low density residential; scattered, clustered, limited commercial convenience and service establishments intended to serve the immediate surrounding area.

Inappropriate Uses: Medium to high intensity residential development, industrial development unrelated to farming activities, commercial development serving more than the immediate surrounding area, uses detrimental to agricultural/forestry production.

Allowable Densities: Without sewer - 3 dwelling units per acre; with sewer - 4 dwelling units per acre.

Maximum height: 35 feet.

Minimum lot size: Without sewer – 15,000 square feet; with sewer - 12,000 square feet. It should be noted that sites served by an onsite package treatment plan will be treated as if central sewer service is available.

Buffering Requirements: Development of all multi-unit residential developments will require the establishment of a minimum 20 foot buffer focused on mitigating the impacts of large scale farming operations.

## (2) Rural Residential

The purpose of the rural residential district is to preserve undeveloped or sparsely developed lands not classified as Residential/Agricultural that significantly contribute to the recognition or impression of rural character (being "in the country"). Within areas of the county classified as Rural Residential, farming operations are more sparse and generally smaller in size and scope than within the residential/agricultural district. The county has experienced a greater level of development activity within this district. It is anticipated that land will experience a more rapid development pattern, especially along waterfront portions of the county. In areas classified as rural residential, the County will:

- Promote the retention or development of agriculture, parks, outdoor recreational, and other predominantly open space land uses;
- Strictly limit new development unrelated to predominantly open space land uses to scattered residential development at low to medium intensities (conforming to those typical of rural areas), and in which open space is the dominant feature;
- Encourage such development to be clustered, or otherwise sited and designed, so as to maximize the amount of open space on the site and maintain the impression of the site as predominantly open space;
- Support/encourage development which will preserve the district's rural character to passers-by – that is, ensure that roads, utilities, and new structures are sited and designed so as to avoid substantial modification to topography, significant vegetation, and other natural features; and
- Ensure that development unrelated to predominantly open space land uses retains and incorporates existing features that define the area's rural character (such as barns, silos, tree lines, farm roads, stream crossings, significant vegetation).

It should be noted that this category includes extensive wetlands which may impact local development decisions. This land use category primarily includes areas which do not have central sewer service. However, some low-density residential areas may have access to central sewer service subsequent to the installation of services within the scuppernong township. Such areas will be considered traditional and may be reclassified to residential as infrastructure development continues to occur.

Appropriate uses: Agricultural and forestry preservation/production activities, uses supportive of agricultural/forestry production, low density residential, scattered clustered local commercial activity centers including convenience and service establishments intended to serve the immediate surrounding area.

Inappropriate Uses: Medium to high intensity residential development, uses detrimental to rural residential development, industrial development, large commercial development's serving more than the immediate surrounding area, uses detrimental to agricultural/forestry production.

Allowable densities: Without sewer - 3 dwelling units per acre; with sewer - 4 dwelling units per acre.

Maximum height: 35 feet.

Minimum lot size: Without sewer - 15,000 square feet; with sewer - 12,000 square feet.

Buffering Requirements: None required unless adjacent to property designated as conservation.

### (3) Residential

The purpose of the residential land use category is to provide for stable predominantly single-family residential areas which may also accommodate planned multi-family developments and some limited commercial service uses. Residential areas should have access to central water and sewer services. The county will aim to implement the development goals outlined under the rural residential district within these portions of the county; however, development within this district is expected to occur at higher densities due to the provision of central services. The following outlines development criteria for the residential land use district.

Appropriate uses: Medium density residential, multi-family residential, local commercial activity centers including convenience and service establishments, and public facilities/activities, light industrial uses, institutional uses, recreational uses, and community service facilities.

Inappropriate uses: Heavy industrial development, large commercial development serving more than the immediate surrounding area, and uses detrimental to medium density residential and multi-family development.

Allowable densities: 4 dwelling units per acre with sewer; 3 dwelling units per acre without sewer.

Maximum height: 35 feet.

Minimum lot size: Without sewer - 15,000 square feet; with sewer - 12,000 square feet.

Buffering Requirements: None required unless adjacent to property designated as conservation.

#### c. US 64 Mixed Use Growth Corridor

The US 64 Mixed Use Growth Corridor is intended to provide a land use district that allows for a wide range of uses aimed at addressing development demands related to economic development and residential growth. Existing development along this corridor is comprised of a mix of uses including: single family residential development, industrial uses, institutional uses, regional commercial use, and service based establishments. As the county continues to experience

growth it is imperative that this corridor allow for development in response to market demands. It is anticipated that over the next twenty years, Tyrrell County will experience growth stemming from the County's close proximity to the beach communities of the Outer Banks. As this scenario unfolds, development along the US 64 corridor is expected to increase substantially. Development along this corridor should be open for all proposed uses; however, future development proposals should include a minimum thirty foot buffer from the property line falling adjacent to US 64. This buffer will help maintain the rural character of the county, while requiring proposed to development to acknowledge a setback factor in the absence of zoning regulations.

Appropriate uses: Medium density residential and multi-family residential only with submittal of a PUD development plan, local commercial activity centers including convenience and service establishments, public facilities/activities, light industrial uses, Heavy industrial uses, institutional uses, recreational uses, and community service facilities.

Inappropriate uses: All uses determined to be detrimental to the future development of adjacent properties, as well as the county overall.

Allowable densities: 4 dwelling units per acre for residential development; 1 unit per acre for non-residential development.

Maximum height: 35 feet.

Minimum lot size: Without sewer - 15,000 square feet; with sewer - 12,000 square feet. Development of non-residential uses requires a minimum of one acre.

Buffering Requirements: A 30-foot vegetative buffer is required of all new development with road frontage on US Highway 64. The required buffer should be noted on all development plans, and all required bufferyards shall be planted prior to the issuance of a certificate of occupancy for all projects subject to this requirement.

d. Rural Mixed Use Nodes

Rural mixed use nodes have been located at key intersections throughout the County. These nodes are intended to allow for relaxed development land use standards that will promote the establishment of service based and retail uses aimed at serving surrounding rural portions of the County. The following outlines the detailed development criteria for the Rural Mixed Use Nodes:

Appropriate uses: single-family housing, retail uses, office and institutional uses, community service facilities, recreational facilities.

Inappropriate uses: Multi-family housing, industrial uses.

Allowable densities: 4 dwelling units per acre for residential development; 1 unit per acre for non-residential development.

Maximum height: 35 feet.

Minimum lot size: Without sewer - 15,000 square feet; with sewer - 12,000 square feet. Development of non-residential uses requires a minimum of one acre.

Buffering Requirements: None required.

### Town of Columbia Future Land Use Categories

a. Residential

This land use category comprises all moderate to high density housing developments within the Town of Columbia. The density and respective minimum lot size for these properties has been defined within this plan; however, all development taking place within the Town of Columbia must comply with the town's zoning ordinance and subdivision regulations. Residential uses have been broken down by allowable density. There are three separate districts outlined on the future land use map: low, medium, and high density. The following outlines the development criteria for each defined residential district:

Allowable Density:

Low Density - 3 units per acre (minimum lot size 15,000 square feet)

Medium Density - 6 units per acre (minimum lot size 7,000 square feet)

High Density - 12 units per acre (minimum lot size 3,500 square feet)

Maximum Building Height: 56 feet.

Permitted Uses:

Low Density – Single-family residential development (this includes multi-family in the form of townhouses and condominiums); light commercial development as permitted by the Town of Columbia Zoning Ordinance).

Medium Density – Single-family detached dwellings (central sewer service required).

High Density – Single family detached dwelling (on-site wastewater treatment permitted).

Uses Not Permitted: Non-residential development (mixed use/commercial).

Buffering Requirements: None.

b. Mixed Use District

The mixed use future land use district is intended to promote a range of uses along the US 64 corridor within the Town of Columbia. This four lane thoroughfare is heavily traveled, and serves as the last opportunity for goods and services prior to reaching Manteo and the Outer Banks Beach communities. It is anticipated that there will be an increase in retail development within Columbia to support not only the permanent population base, but year round visitors to the Outer Banks who enjoy the convenience of stopping through for goods and services.

As development along this corridor takes place, Columbia would like to improve the aesthetic quality of US Highway 64 through requiring landscaping and bufferyards adjacent to the highway. The town will consider amending the town's zoning ordinance to require that development and redevelopment within the mixed use future land use district be required to install at least a ten to twenty foot vegetated bufferyard. This requirement will be especially useful for developments that involve industrial/commercial activities.

Appropriate uses: This district is intended to support a range of uses in an effort to establish mixed use nodes aimed at providing a pedestrian friendly commercial center that does not conflict with adjacent residential areas. This development shall include: retail/commercial structures, mixed use development (i.e. residential above commercial/office space), government support services, recreation facilities, open space areas, transportation systems, parking areas.

Inappropriate uses: Heavy industrial uses.

Allowable densities: Without sewer - 3 units per acre; with sewer - 6 units per acre.

Maximum height: 56 feet.

Minimum lot size: Without sewer - 15,000 square feet; with sewer - 7,000 square feet.

Buffering Requirements: Establishment of buffering requirements will be considered by the Town's Planning Board and Board of Aldermen.



#### 4. Land Demand Forecast

The land demand forecast section is intended to provide a snapshot of future demand for each land use designation as outlined under the existing land use section of the plan. The existing land use survey outlined on page 84 of the plan serves as the basis for these forecasts. Existing land use acreages have been forecasted out through 2025 based on the population projections defined on page 25 of the plan. The result of this analysis provides an anticipated demand for buildable land; however, these are low growth forecast and should be updated on a periodic basis to account for changes in market demands.

Each use outlined within the table below is permitted throughout the county; however, development criteria do vary throughout the County. Details outlining development requirements are outlined within the future land use section outlined above. It should be assumed that the proposed development outlined within Table 48 will be scattered throughout the County. Currently the only unincorporated portion of the County with central sewer service is the residential future land use district. It is anticipated that residential growth within this district will be more rapid due to the availability of central services. Development trends within other portions of the County should be monitored to assess infrastructure needs, and aid the County in capital improvements planning.

Table 48. Tyrrell County Future Land Demand Forecast

	Existing Land Use (acres)	2010 (acres)	2015 (acres)	2020 (acres)	2025 (acres)	% Growth 05-25
Residential* (4% growth rate)	2,471	2,570	2,672	2,780	2,891	17.0%
Commercial/O&I (2% growth rate)	880	898	916	934	953	8.3%
Recreation (2% growth rate)	260	265	271	276	281	8.1%
Industrial (1% growth rate)	1,200	1,212	1,224	1,236	1,249	4.1%
Farmland**	93,576	93,576	93,576	93,576	93,576	0.0%
Vacant/Forestland	127,146	127,012	126,874	126,731	126,583	-0.4%
<b>Total</b>	<b>225,533</b>	<b>225,533</b>	<b>225,533</b>	<b>225,533</b>	<b>225,533</b>	

\*This district includes the single-family residential, residential agricultural (less than 10 acres), and manufactured home park existing land use districts.

\*\*Farmland has been shown to experience zero growth. The County will aim to protect existing farmland, and if feasible increase farming operations within the County. It should be noted that this district includes residential/agricultural parcels greater than 10 acres on the existing land use map.

Source: Holland Consulting Planners, Inc.

Table 49. Town of Columbia Future Land Demand Forecast

	Existing Land Use (acres)	2010 (acres)	2015 (acres)	2020 (acres)	2025 (acres)	% Growth 05-25
Residential* (4.5% growth rate)	989	1,034	1,080	1,129	1,179	19.2%
Commercial/O&I** (2% growth rate)	168	171	175	178	182	8.3%
Industrial (5% growth rate)	65	68	72	75	79	21.5%
Farmland***	535	535	535	535	535	0.0%
Vacant/Forestland/NWR	903	852	798	743	685	-24.1%
<b>Total</b>	<b>2,660</b>	<b>2,660</b>	<b>2,660</b>	<b>2,660</b>	<b>2,660</b>	

\*This district includes the single-family residential, residential agricultural, manufactured home park, and multi-family existing land use districts.

\*\*It is anticipated that the majority of commercial and O&I growth will take place in the form of redevelopment.

\*\*\*Farmland has been shown to experience zero growth. The County will aim to protect existing farmland, and if feasible increase farming operations within the County.

Source: Holland Consulting Planners, Inc.

## 5. Infrastructure Carrying Capacity

The previous section outlines anticipated land use acreages through the year 2025 for the unincorporated portions of Tyrrell County and the Town of Columbia. The acreages have been based on historical and anticipated land development trends and serve simply as estimates of what can be anticipated with respect to development under each defined land use category. This section expands on these estimates to make a determination of what impact this increased growth will have on the county's existing water and sewer infrastructure systems.

### a. Water System

As discussed earlier in the plan, Tyrrell County and the Town of Columbia provide potable water services to citizens throughout the County. The water system is discussed in detail on pages 57-59 and 89 of the plan. This section provides estimates of proposed water system demand over the next fifteen to twenty years. These estimates have been compiled for residential land use only within Tyrrell County and all land use districts within the Town of Columbia. Within unincorporated portions the County, non-residential development is expected to have minimal impact on water system demand.

The following summarizes the county's existing water system capacity vs. utilization and provides estimates of increased demand based on the future land demand forecast summarized on page 141. These forecast are based on average daily water usage rates established by the American Water Works Association (AWWA).

Average Daily Water Usage Rates (GPD):

Residential - 170

Commercial/Office & Institutional - 100

Industrial - 100

Tyrrell County. Table 50 estimates the impact that increased residential development may have on the Tyrrell County water system through the year 2025. These estimates assume an average residential site area of 1.4 acres. This estimate was determined based on existing residential development throughout the County. In order to establish a more realistic estimate, parcels over ten acres coded on the existing land use map as residential/agricultural (RA) were not factored into this calculation.

Current Water Capacity/Utilization:

Water System Capacity - 800,000 GPD

Capacity Currently Utilized - 295,000 GPD

% of System Utilized - 36.9%

Town of Columbia. Table 51 estimates the impact that increased residential and commercial development may have on the Town of Columbia water system through the year 2025. These estimates assume an average residential site area of 1.4 and a commercial site area of 1.3 acres. This estimate was determined based on existing residential development throughout the Town. In order to establish a more realistic estimate, parcels coded on the existing land use map as residential/agricultural (RA) were not factored into this calculation regardless of size.

Current Water Capacity/Utilization:

Water System Capacity - 500,000 GPD

Capacity Currently Utilized - 200,000 GPD

% of System Utilized - 40.0%

b. Sewer System

Forecast for sewer system demand have not been compiled. Details relating to central sewer service is discussed on pages 59-60 and 89-90 of the plan. Tyrrell County is in the initial stages of running sewer to portions of the County, but long term plans for further extension are unclear at this point in time. The Town of Columbia is working towards expanding their municipal system from 300,000 GPD to 600,000 GPD over the next few years. This increased capacity should be adequate to meet the increased demand outlined on page 141-142.

Table 50. Tyrrell County Infrastructure Demand Forecast Water System

	2010			2015			2020			2025		
	Additional Units	Increased GPD Capacity	Total GPD Capacity	Additional Units	Increased GPD Capacity	Total GPD Capacity	Additional Units	Increased GPD Capacity	Total GPD Capacity	Additional Units	Increased GPD Capacity	Total GPD Capacity
Residential	71	12,070	307,070	74	12,580	309,650	76	12,920	322,570	79	13,430	336,000

\*The impact of redevelopment efforts has not been factored into these forecast.  
 Source: Holland Consulting Planners, Inc.

Table 51. Town of Columbia Infrastructure Demand Forecast Water System

	2010			2015			2020			2025		
	Additional Units	Increased GPD Capacity	Total GPD Capacity	Additional Units	Increased GPD Capacity	Total GPD Capacity	Additional Units	Increased GPD Capacity	Total GPD Capacity	Additional Units	Increased GPD Capacity	Total GPD Capacity
Residential	32	5,440	N/A	33	5,610	N/A	35	5,950	N/A	36	6,120	N/A
Commercial/O&I	3	300	N/A	5	500	N/A	5	500	N/A	5	500	N/A
Total	35	5,740	205,470	38	6,110	211,580	40	6,450	218,300	41	6,620	224,920

\*The impact of redevelopment efforts has not been factored into these forecast.  
 Source: Holland Consulting Planners, Inc.

## SECTION VII. TOOLS FOR MANAGING DEVELOPMENT

### A. GUIDE FOR LAND USE DECISION MAKING

It is intended that this document be an integral part of the Tyrrell County/Town of Columbia decision making process concerning future land use. This statement is especially important concerning the possible development of a zoning ordinance for Tyrrell County. This document should be consulted prior to any decision being made by Tyrrell County or the Town of Columbia concerning land use and development, including the review and approval of subdivision plats.

### B. EXISTING DEVELOPMENT PROGRAM

The existing management program includes the following ordinances: Town of Columbia Zoning Ordinance, Tyrrell County Subdivision Ordinance, Town of Columbia Subdivision Ordinance, Tyrrell County Flood Damage Prevention Ordinance, Town of Columbia Flood Damage Prevention Ordinance, and Tyrrell County Multi-Jurisdictional Hazard Mitigation Plan, (see Section V.D., Current Land Use Plans and Policies, page 64).

### C. ADDITIONAL TOOLS

Tyrrell County/Town of Columbia will use the following additional tools to implement this plan:

- Rely on the policies and implementing actions included in this plan and summarized in Table 52.
- Revise this plan as water and wastewater treatment systems are expanded.
- Conduct annual training sessions for the Tyrrell County Planning Board and Board of Commissioners.
- At a minimum, update the Land Use Plan and implementation process every six to seven years.
- Revise the county's/town's subdivision ordinance to support the policies and implementing actions contained in this plan.
- Prepare a Tyrrell County zoning ordinance.
- Prepare a capital improvements plan/program to address the following community facilities/needs: water, sewer, stormwater, and transportation.

D. ACTION PLAN/SCHEDULE

1. Citizen Participation

For the preparation of this plan, the Tyrrell County Board of Commissioners adopted a citizen participation plan on August 16, 2005. A copy of that plan is included as Appendix I. In addition to the implementation of this plan, Tyrrell County/Town of Columbia will implement the following to ensure adequate citizen participation:

- Annually revise and update its land use citizen participation plan.
- Encourage public participation in land use decisions and encourage citizen input via its boards and commissions.
- Ensure that the membership of all planning related and ad hoc advisory committees has a cross section of Tyrrell County/Town of Columbia citizenry.

2. Action Plan/Schedule

The following describes the priority actions that will be taken by Tyrrell County/Town of Columbia to implement this CAMA Core Land Use Plan and the fiscal year(s) in which each action is anticipated to begin and end. This action plan will be used to prepare the implementation status report for the CAMA Land Use Plan.

Policy References	Implementing Actions	Schedule	
		Begin	End
P.1 - P.6 P.7 - P.17 P.18 - P.32 P.33 - P.40 P.60- P.66 P.72 - P.88	Tyrrell County/Town of Columbia will consider revising its respective zoning/subdivision ordinances to aid in implementation of the policies contained in this plan.	FY2009	FY2011
P.1 - P.6	Tyrrell County, in conjunction with the Town of Columbia, will prepare a shoreline access plan and request Division of Coastal Management funding for the preparation of the plan.	FY2009	FY2010
P.1 - P.6	Tyrrell County/Town of Columbia will work with Pettigrew State Park to increase waterfront access opportunities along the Scuppernon River	FY2008	FY2010
P.7 - P.17	The county will consider the merits of establishing a minimum housing code to ensure that all occupied structures are fit for human habitation.	FY2009	FY2010
P.7 - P.17 P.18 - P.32 P.33 - P.40 P.72 - P.88	Tyrrell County will consider development of a county-wide zoning ordinance to aid in implementation of the policies contained in this plan.	FY2009	FY2011

Policy References	Implementing Actions	Schedule	
		Begin	End
P.18 - P.32	Tyrrell County will work in conjunction with the Town of Columbia to discuss the option of developing an industrial park.	FY2009	FY2015
P.41 - P.46	Tyrrell County will consider adopting and enforcing a soil erosion and sediment control ordinance for development sites less than one acre.	FY2010	FY2011
P.41 - P.46	Tyrrell County will seek funding and technical assistance to prepare a county-wide master drainage plan and develop a stormwater management plan and ordinance.	FY2010	FY2012
P.41 - P.46	The Town of Columbia will consider adopting a landscaping ordinance.	FY2010	FY2011
P.41 - P.46	Tyrrell County will implement a public education campaign regarding the impacts of stormwater runoff.	FY2007	FY2008
P.47 - P.59	Tyrrell County will continue to implement the current central sewer master plan.	FY2007	FY2010
P.47 - P.59	Tyrrell County and the Town of Columbia will consider revising water and sewer extension policies.	FY2009	FY2010
P.47 - P.59	The County will consider adopting an operating and capital financing plan for the development of water and sewer systems outside of existing proposed water and sewer service areas.	FY2009	FY2011
P.60 - P.66	Tyrrell County and the Town of Columbia will establish a requirement for reverse frontage lots within subdivisions to orient lots towards internal subdivision streets, not secondary roads and highways.	FY2009	FY2010
P.72 - P.88	Tyrrell County will require that wetland areas be surveyed and delineated on all preliminary and final subdivision plats.	FY2009	FY2011
P.72 - P.88	The Town of Columbia will develop a local ordinance and a waterfront development plan to regulate the development of mooring fields.	FY2010	FY2011
P.96 - P.99	The County will investigate the use of impact fees as a way of making development pay for the services demanded.	FY2009	FY2011
P.96 - P.99	To effectively manage Tyrrell County and the Town of Columbia's investment in existing and proposed community facilities, the county will: (1) Develop a specific capital improvements plan; (2) Develop a plan for the protection of future school sites.	FY2010	FY2012

E. RESOURCE CONSERVATION MANAGEMENT ACTION PLAN/  
POSITIVE AND NEGATIVE IMPACTS OF LAND USE PLAN POLICIES

Tyrrell County/Town of Columbia believes that the policies, management goals, planning objectives, and land use plan requirements contained in this document will have positive impacts for the county/town. However, such classification is extremely difficult. Any manmade/created action is potentially negative or, at least, may have some adverse effects. It should be noted that some policies and implementing actions rely partially or solely on state and federal rules. The following could have some negative impacts:

- Some possible degradation of water quality within and adjacent to Tyrrell County's jurisdiction.
- Infrastructure improvements which may extend through sensitive environmental areas.
- Increased development in some floodplain areas.
- Increased stormwater runoff.

The management objectives, policies, and implementing actions address the issues associated with these possible negative impacts. Table 52 provides an analysis matrix which summarizes this plan's policies and identifies them as beneficial, neutral, or detrimental. The following provides a definition of these terms:

**Beneficial.** A policy or implementing action which is considered to improve the quality of life and minimize or eliminate adverse environmental impacts.

**Detrimental.** A policy or implementing action which may have adverse cultural or environmental impacts.

**Neutral.** No policies or implementing actions are considered neutral.



Table 52. Tyrrell County Policy Analysis Matrix - Land Use Plan Management Topics

Management Topics	Policy Benchmarks – Indicate whether the policy is <u>beneficial</u> (B), <u>neutral</u> (N), or <u>detrimental</u> (D)					
	Public Access	Land Use Compatibility	Infrastructure Carrying Capacity	Natural Hazards	Water Quality	Local Concerns
Land Use and Development Policies	<ul style="list-style-type: none"> <li>• more planned access locations</li> <li>• upgrades to existing access locations</li> <li>• increase pedestrian access</li> <li>• comply with state access standards to enhance opportunities for state funding</li> </ul>	<ul style="list-style-type: none"> <li>• reduction in habitat loss and fragmentation related to impacts of land use and development</li> <li>• reduction of water resource and water quality degradation</li> <li>• balance growth demands with protection of the environment</li> </ul>	<ul style="list-style-type: none"> <li>• water, sewer, and other key community facilities and services being available in required locations at adequate capacities to support planned community growth and development patterns</li> <li>• during construction of infrastructure systems, AECs and other fragile areas should be protected</li> <li>• transportation improvements should support the efficiency of traffic flow and pedestrian safety</li> </ul>	<ul style="list-style-type: none"> <li>• land uses and development patterns that reduce vulnerability to natural hazards</li> <li>• land uses and development patterns that take into account the existing and planned capacity of evacuation infrastructure</li> <li>• minimize development in floodplains, AECs, wetlands, and other fragile areas</li> </ul>	<ul style="list-style-type: none"> <li>• land use and development criteria and measures that abate impacts that degrade water quality</li> <li>• coordinate water quality efforts with Tyrrell County</li> </ul>	<ul style="list-style-type: none"> <li>• preservation of cultural, historic, and scenic areas</li> <li>• support of economic development</li> <li>• development of human resources</li> <li>• preservation of the County's rural character</li> <li>• decrease residential density within County</li> </ul>
Public Access:						
P.1	B	B	N	N	B	B
P.2	B	B	N	N	N	B
P.3	B	B	N	N	N	B
P.4	B	B	N	N	N	B
P.5	B	B	N	N	B	B
P.6	B	B	N	N	N	B
Land Use Compatibility:						
P.7	N	B	B	N	N	B
P.8	N	B	B	N	N	B
P.9	N	B	B	B	N	B
P.10	N	B	B	N	N	B
P.11	N	B	B	B	N	B
P.12	B	B	B	N	N	B
P.13	N	B	B	N	N	B
P.14	N	B	B	N	N	B

Table 52 (continued)

Management Topics	Policy Benchmarks – Indicate whether the policy is <u>beneficial</u> (B), <u>neutral</u> (N), or <u>detrimental</u> (D)					
	Public Access	Land Use Compatibility	Infrastructure Carrying Capacity	Natural Hazards	Water Quality	Local Concerns
Land Use and Development Policies	<ul style="list-style-type: none"> <li>• more planned access locations</li> <li>• upgrades to existing access locations</li> <li>• increase pedestrian access</li> <li>• comply with state access standards to enhance opportunities for state funding</li> </ul>	<ul style="list-style-type: none"> <li>• reduction in habitat loss and fragmentation related to impacts of land use and development</li> <li>• reduction of water resource and water quality degradation</li> <li>• balance growth demands with protection of the environment</li> </ul>	<ul style="list-style-type: none"> <li>• water, sewer, and other key community facilities and services being available in required locations at adequate capacities to support planned community growth and development patterns</li> <li>• during construction of infrastructure systems, AECs and other fragile areas should be protected</li> <li>• transportation improvements should support the efficiency of traffic flow and pedestrian safety</li> </ul>	<ul style="list-style-type: none"> <li>• land uses and development patterns that reduce vulnerability to natural hazards</li> <li>• land uses and development patterns that take into account the existing and planned capacity of evacuation infrastructure</li> <li>• minimize development in floodplains, AECs, wetlands, and other fragile areas</li> </ul>	<ul style="list-style-type: none"> <li>• land use and development criteria and measures that abate impacts that degrade water quality</li> <li>• coordinate water quality efforts with Tyrrell County</li> </ul>	<ul style="list-style-type: none"> <li>• preservation of cultural, historic, and scenic areas</li> <li>• support of economic development</li> <li>• development of human resources</li> <li>• preservation of the County's rural character</li> <li>• decrease residential density within County</li> </ul>
P.15	B	B	B	N	N	B
P.16	N	B	B	N	N	B
P.17	N	B	B	N	N	B
P.18	N	B	B	N	N	B
P.19	N	B	B	N	N	B
P.20	N	B	B	N	N	B
P.21	B	B	B	N	N	B
P.22	N	B	B	B	B	B
P.23	N	B	B	N	B	B
P.24	B	B	B	N	N	B
P.25	B	B	B	N	N	B
P.26	B	B	B	N	B	B
P.27	N	B	B	B	N	B
P.28	B	B	N	N	B	B
P.29	N	B	N	N	N	B

Table 52 (continued)

Management Topics	Policy Benchmarks – Indicate whether the policy is <u>beneficial</u> (B), <u>neutral</u> (N), or <u>detrimental</u> (D)					
	Public Access	Land Use Compatibility	Infrastructure Carrying Capacity	Natural Hazards	Water Quality	Local Concerns
Land Use and Development Policies	<ul style="list-style-type: none"> <li>• more planned access locations</li> <li>• upgrades to existing access locations</li> <li>• increase pedestrian access</li> <li>• comply with state access standards to enhance opportunities for state funding</li> </ul>	<ul style="list-style-type: none"> <li>• reduction in habitat loss and fragmentation related to impacts of land use and development</li> <li>• reduction of water resource and water quality degradation</li> <li>• balance growth demands with protection of the environment</li> </ul>	<ul style="list-style-type: none"> <li>• water, sewer, and other key community facilities and services being available in required locations at adequate capacities to support planned community growth and development patterns</li> <li>• during construction of infrastructure systems, AECs and other fragile areas should be protected</li> <li>• transportation improvements should support the efficiency of traffic flow and pedestrian safety</li> </ul>	<ul style="list-style-type: none"> <li>• land uses and development patterns that reduce vulnerability to natural hazards</li> <li>• land uses and development patterns that take into account the existing and planned capacity of evacuation infrastructure</li> <li>• minimize development in floodplains, AECs, wetlands, and other fragile areas</li> </ul>	<ul style="list-style-type: none"> <li>• land use and development criteria and measures that abate impacts that degrade water quality</li> <li>• coordinate water quality efforts with Tyrrell County</li> </ul>	<ul style="list-style-type: none"> <li>• preservation of cultural, historic, and scenic areas</li> <li>• support of economic development</li> <li>• development of human resources</li> <li>• preservation of the County's rural character</li> <li>• decrease residential density within County</li> </ul>
P.30	N	B	B	N	N	B
P.31	N	B	B	N	N	B
P.32	N	B	B	N	N	B
P.33	N	B	N	B	N	B
P.34	N	B	B	N	N	B
P.35	N	B	B	N	N	B
P.36	N	B	B	N	N	B
P.37	N	B	N	N	N	B
P.38	N	B	B	B	N	B
P.39	N	B	N	B	N	B
P.40	N	B	B	B	N	B
P.41	N	B	B	N	N	B
P.42	N	B	B	N	N	B
P.43	N	B	N	N	N	B
P.44	N	B	B	B	B	B

Table 52 (continued)

Management Topics	Policy Benchmarks – Indicate whether the policy is <u>beneficial</u> (B), <u>neutral</u> (N), or <u>detrimental</u> (D)					
	Public Access	Land Use Compatibility	Infrastructure Carrying Capacity	Natural Hazards	Water Quality	Local Concerns
Land Use and Development Policies	<ul style="list-style-type: none"> <li>• more planned access locations</li> <li>• upgrades to existing access locations</li> <li>• increase pedestrian access</li> <li>• comply with state access standards to enhance opportunities for state funding</li> </ul>	<ul style="list-style-type: none"> <li>• reduction in habitat loss and fragmentation related to impacts of land use and development</li> <li>• reduction of water resource and water quality degradation</li> <li>• balance growth demands with protection of the environment</li> </ul>	<ul style="list-style-type: none"> <li>• water, sewer, and other key community facilities and services being available in required locations at adequate capacities to support planned community growth and development patterns</li> <li>• during construction of infrastructure systems, AECs and other fragile areas should be protected</li> <li>• transportation improvements should support the efficiency of traffic flow and pedestrian safety</li> </ul>	<ul style="list-style-type: none"> <li>• land uses and development patterns that reduce vulnerability to natural hazards</li> <li>• land uses and development patterns that take into account the existing and planned capacity of evacuation infrastructure</li> <li>• minimize development in floodplains, AECs, wetlands, and other fragile areas</li> </ul>	<ul style="list-style-type: none"> <li>• land use and development criteria and measures that abate impacts that degrade water quality</li> <li>• coordinate water quality efforts with Tyrrell County</li> </ul>	<ul style="list-style-type: none"> <li>• preservation of cultural, historic, and scenic areas</li> <li>• support of economic development</li> <li>• development of human resources</li> <li>• preservation of the County's rural character</li> <li>• decrease residential density within County</li> </ul>
P.45	N	B	B	N	N	B
P.46	B	B	B	N	N	B
Infrastructure Carrying Capacity:						
P.47	B	N	B	N	B	B
P.48	B	N	B	B	B	B
P.49	B	B	B	N	B	B
P.50	B	B	B	N	B	B
P.51	B	N	B	B	B	B
P.52	B	B	B	N	B	B
P.53	B	N	B	N	B	B
P.54	B	N	B	N	B	B
P.55	B	N	B	N	N	B
P.56	B	N	B	B	N	B
P.57	B	B	B	B	B	B
P.58	B	B	B	N	B	B

Table 52 (continued)

Management Topics	Policy Benchmarks – Indicate whether the policy is <u>beneficial</u> (B), <u>neutral</u> (N), or <u>detrimental</u> (D)					
	Public Access	Land Use Compatibility	Infrastructure Carrying Capacity	Natural Hazards	Water Quality	Local Concerns
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P.59	B	B	B	B	B	B
P.60	B	N	B	N	N	B
P.61	B	B	B	N	B	B
P.62	B	N	B	N	B	B
P.63	B	B	B	N	N	B
P.64	B	N	B	N	B	B
P.65	B	N	B	N	N	B
P.66	B	B	B	N	N	B
Natural Hazard Areas:						
P.67	N	N	B	B	N	B
P.68	N	B	B	B	B	B
P.69	B	N	B	B	N	B
P.70	N	B	B	B	B	B
P.71	N	B	B	B	N	B
Water Quality:						
P.72	N	B	N	N	B	B

Table 52 (continued)

Management Topics	Policy Benchmarks – Indicate whether the policy is <u>beneficial</u> (B), <u>neutral</u> (N), or <u>detrimental</u> (D)					
	Public Access	Land Use Compatibility	Infrastructure Carrying Capacity	Natural Hazards	Water Quality	Local Concerns
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P.73	N	B	N	B	B	B
P.74	N	B	B	N	B	B
P.75	N	B	B	B	B	B
P.76	N	B	N	N	B	B
P.77	N	B	B	N	B	B
P.78	N	B	N	N	N	B
P.79	N	B	B	N	N	B
P.80	N	B	B	N	B	B
P.81	N	B	B	N	B	B
P.82	N	B	N	N	N	B
P.83	N	B	N	N	B	B
P.84	N	B	N	N	N	B
P.85	N	B	B	N	N	B
P.86	N	B	N	N	B	B
P.87	N	B	B	B	B	B

Table 52 (continued)

Management Topics	Policy Benchmarks – Indicate whether the policy is <u>beneficial</u> (B), <u>neutral</u> (N), or <u>detrimental</u> (D)					
	Public Access	Land Use Compatibility	Infrastructure Carrying Capacity	Natural Hazards	Water Quality	Local Concerns
Land Use and Development Policies	<ul style="list-style-type: none"> <li>• more planned access locations</li> <li>• upgrades to existing access locations</li> <li>• increase pedestrian access</li> <li>• comply with state access standards to enhance opportunities for state funding</li> </ul>	<ul style="list-style-type: none"> <li>• reduction in habitat loss and fragmentation related to impacts of land use and development</li> <li>• reduction of water resource and water quality degradation</li> <li>• balance growth demands with protection of the environment</li> </ul>	<ul style="list-style-type: none"> <li>• water, sewer, and other key community facilities and services being available in required locations at adequate capacities to support planned community growth and development patterns</li> <li>• during construction of infrastructure systems, AECs and other fragile areas should be protected</li> <li>• transportation improvements should support the efficiency of traffic flow and pedestrian safety</li> </ul>	<ul style="list-style-type: none"> <li>• land uses and development patterns that reduce vulnerability to natural hazards</li> <li>• land uses and development patterns that take into account the existing and planned capacity of evacuation infrastructure</li> <li>• minimize development in floodplains, AECs, wetlands, and other fragile areas</li> </ul>	<ul style="list-style-type: none"> <li>• land use and development criteria and measures that abate impacts that degrade water quality</li> <li>• coordinate water quality efforts with Tyrrell County</li> </ul>	<ul style="list-style-type: none"> <li>• preservation of cultural, historic, and scenic areas</li> <li>• support of economic development</li> <li>• development of human resources</li> <li>• preservation of the County's rural character</li> <li>• decrease residential density within County</li> </ul>
P.88	N	N	N	N	B	B
Local Areas of Concern: P.89	N	B	B	N	B	B
P.90	B	B	N	B	B	B
P.91	B	B	N	B	B	B
P.92	N	B	N	B	B	B
P.93	N	B	N	B	B	B
P.94	B	B	B	N	B	B
P.95	B	B	B	N	B	B
P.96	N	B	B	N	B	B
P.97	B	B	B	N	B	B
P.98	N	B	N	N	B	B
P.99	N	B	N	N	D	B

NOTE: P.99 is listed as detrimental to land use plan management topic Water Quality due to the fact that it may result in environmental degradation; however, the Town of Columbia and Tyrrell County will take all possible steps to mitigate these impacts during the design phase of utility projects.

## APPENDIX I

### TYRRELL COUNTY/TOWN OF COLUMBIA CITIZEN PARTICIPATION PLAN

#### PREPARATION OF A CORE LAND USE PLAN PHASE I

Tyrrell County/Town of Columbia has received a Coastal Area Management Act grant for preparation of a Core Land Use Plan, Phase I. Adequate citizen participation in the development of the plan is essential to the preparation of a document responsive to the needs of the citizens of Tyrrell County/Town of Columbia. To ensure such input, the following citizen participation program will be utilized by the County/Town.

The Tyrrell County Board of Commissioners will appoint a Land Use Plan Committee (LUPC) to work with the County/Town's planning consultant to ensure that the final product will be a plan suitable for adoption by the County/Town. The committee will be composed of the individuals listed in Attachment A.

Specifically, the planning consultant and the LUPC will be responsible for ensuring accomplishment of the following:

- Develop and adopt the Citizen Participation Plan; conduct public information meeting; and conduct a County-wide meeting to identify community concerns, key planning issues, and aspirations. In addition, prepare analysis of existing and emerging conditions.
- Complete analysis of existing and emerging conditions; prepare natural systems analysis and analysis of land use and development (including Existing Land Use Map).
- Prepare community facilities analysis; prepare/review land suitability analysis and map; review existing CAMA plan, ordinances, and policies.

The following schedule will be utilized for Phase I:

1. August, 2005
  - Board of Commissioners adopt the Citizen Participation Plan.
2. September, 2005
  - Conduct initial meeting with LUPC and review Citizen Participation Plan and process for preparing the land use plan.
  - Conduct public information meeting and County issues identification meeting.
3. August, 2005 to April, 2006 – Prepare preliminary draft land use plan which will include analysis of existing conditions, land suitability analysis, natural systems analysis, and community facilities analysis. Conduct meetings with the LUPC.
4. May, 2006 – Present draft of Phase I to the LUPC.



All meetings of the LUPC and Board of Commissioners at which the Plan will be discussed will be advertised in a local newspaper. The public information meeting, County meeting, and public hearing will also be advertised in a local newspaper. In addition, public service announcements will be posted at the County Administration Building, Columbia Town Hall, and other public buildings as directed by the LUPC and Board of Commissioners. All meetings will be open to the public. The County/Town will encourage and consider all economic, social, ethnic and cultural viewpoints. No major non-English speaking groups are known to exist in Tyrrell County.

8/11/05

TYRRELL COUNTY  
CITIZEN PARTICIPATION PLAN

PREPARATION OF A CORE LAND USE PLAN  
PHASE II

Tyrrell County/Town of Columbia has received a Coastal Area Management Act grant for preparation of a Core Land Use Plan, Phase II. Adequate citizen participation in the development of the plan is essential to the preparation of a document responsive to the needs of the citizens of Tyrrell County/Town of Columbia. To ensure such input, the following citizen participation program will be utilized by the County/Town.

The Tyrrell County Board of Commissioners has appointed a Land Use Plan Committee (LUPC) to work with the County/Town's planning consultant to ensure that the final product will be a plan suitable for adoption by the County/Town.

Specifically, the planning consultant and the LUPC will be responsible for ensuring accomplishment of the following:

- Adopt and implement Citizen Participation Plan for Phase II.
- Revise preliminary plan based on public review.
- Complete plan for the future (including future land use map and tools for managing development).
- Present the draft plan to the Board of Commissioners.
- Submit plan to state/DCM for review; provide plan to adjacent jurisdictions for review; conduct public information hearings.
- Review plan based on state and local review; conduct public hearing; Board of Commissioners adoption; submit for CRC certification.

The following schedule will be utilized for Phase II:

1. November, 2006
  - Update Citizen Participation Plan
  - Begin preparation of Phase II portion of LUP
2. November, 2006 - May, 2007
  - Hold monthly meetings with LUPAC
  - Revise preliminary plan based on public review
3. May, 2007
  - Submit draft plan to LUPC
  - Provide plan to adjacent jurisdictions to review
  - Submit draft plan to state for DCM review
4. August/September, 2007
  - Revise plan based on state and local review
  - Submit revised draft plan to LUPC
  - Conduct public hearing for Board of Commissioners to adopt plan
  - Submit to CRC for certification

All meetings of the LUPC and Board of Commissioners at which the Plan will be discussed will be advertised in a local newspaper. The public hearing will also be advertised in a local newspaper. In addition, public service announcements will be posted at the County Administration Building, Columbia Town Hall, and other public buildings as directed by the LUPC and Board of Commissioners. All meetings will be open to the public. The County/Town will encourage and consider all economic, social, ethnic and cultural viewpoints. No major non-English speaking groups are known to exist in Tyrrell County/Town of Columbia.

11/30/06

APPENDIX II  
Tyrrell County/Town of Columbia  
Land Use Plan Maps

## Appendix III 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. County/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 County/Town staff involved at all levels from planning to implementation.
3. Encourage: Foster the desired goal through County policies. Could involve County/Town financial assistance.
4. Enhance: Improve current goal to a desired state through the use of policies and County/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 County/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 County/Town policies and staff. Financial assistance should be provided if needed.
8. Prevent: Stop described event through the use of appropriate County/Town policies, staff actions, Planning Board actions, and County/Town finances, if needed.
9. Promote: Advance the desired state through the use of County/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 County/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 County/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 County/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 County/Town staff, actions, and policies to create the desired goal.

15. Rural Character: For the purposes of this plan, rural character is defined as a place characterized by development patterns that do not substantially alter that natural fabric that exists throughout a region. This natural fabric not only involves the landscape but also the culture and social fabric that has evolved over time. Rural character shall focus on the following factors: farmland, woodlands, clean air and water, undeveloped open space, natural stream banks, outdoor recreation opportunities, small village and communities.

# Appendix IV

## Agricultural and Forestry Best Management Practices

### AGRICULTURAL BEST MANAGEMENT PRACTICES

#### I. Crop and Pasture Lands

##### A. BMPs for Sediment Control

- Conservation Tillage System
- Critical Area Planting
- Diversion
- Field Border
- Filter Strip
- Grade Stabilization Structure
- Grassed Waterway
- Rock-Lined Waterways or Outlets
- Sediment Control Structure
- Sod-Based Rotation
- Stripcropping
- Terrace
- Water Control Structure
- Pastureland Conversion

##### B. BMPs for Nutrient Control

- Legumes in Rotation
- Soil Testing
- Liming
- Setting Realistic Crop Yield Goals (determines fertilization rates)
- Fertilizer Waste Application (method, rate, and timing)
- Sediment Control BMPs

##### C. BMPs for Pesticide Control

- Alternative Pesticides
- Optimize Pesticide Formulation, Amount, Placement, Timing, Frequency
- Crop Rotation
- Resistant Crop Varieties
- Other Cultural or Biological Controls
- Optimize Crop Planting Time
- Plant Pest Quarantines
- Proper Disposal of Obsolete Pesticides and Containers
- Certification of Applicators
- Sediment Control BMPs

II. Animal Production (esp. Confined Animal Operations)

BMPs for Bacteria and Nutrient Control

Grade Stabilization and Nutrient Control  
Heavy Use Area Protection  
Livestock Exclusion  
Spring Development  
Stock Trails and Walkways  
Trough and Tank  
Waste Management System  
Waste Storage Pond  
Waste Storage Structure  
Waste Treatment Lagoon  
Land Application of Waste  
Water Control Structure

Source: North Carolina Department of Agriculture and Consumer Services.

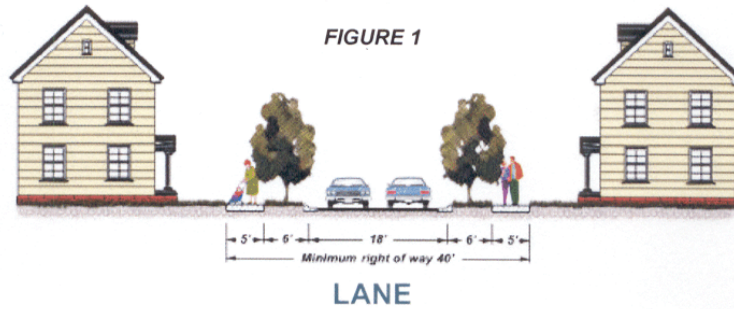


FORESTRY BEST MANAGEMENT PRACTICES

1. Properly design and place access roads, skid trails, and loading areas on forestland.
  - a. Avoid streambanks and channels except when crossing streams.
  - b. Install water management structures and techniques.
  - c. Stabilize bare soil areas.
  - d. Prevent steep slopes on roads and trails.
2. Designate streamside management zones (SMZ) which are undisturbed strips of vegetation parallel and adjacent to the stream channels.
3. Avoid placing debris in stream channels (Stream Obstruction Law).
4. Use practices which minimize soil exposure when reforesting.
5. Use environmentally safe procedures when applying chemicals in forested areas.
6. Train forestry related personnel in nonpoint source pollution control methods.

Source: NC Division of Forest Resources.

Appendix V  
TRADITIONAL NEIGHBORHOOD DEVELOPMENT  
STREET TYPES



**Purpose:** Provides access to single-family homes.

**Features**

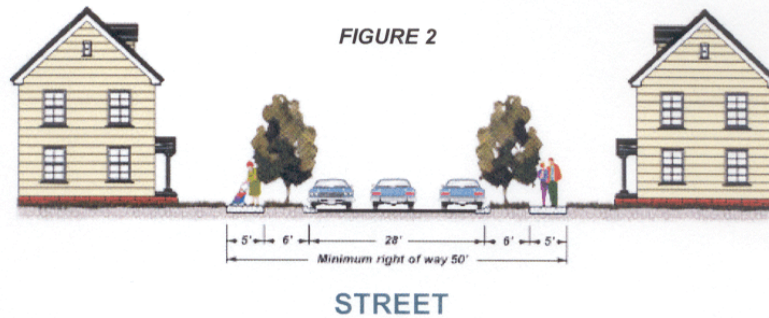
- Street width 18' with curb and gutter and informal parking designated on street
- Planting strips 6'
- Sidewalks 5' on each side
- Design speed 20 mph
- Posted speed 20 mph
- Requires a 40' right of way
- Drainage - curb and gutter

**Features**

- Generally two to six blocks long

**Building and Land Use**

- Residential - primarily single family homes



**Purpose:** Provides access to housing

**Features**

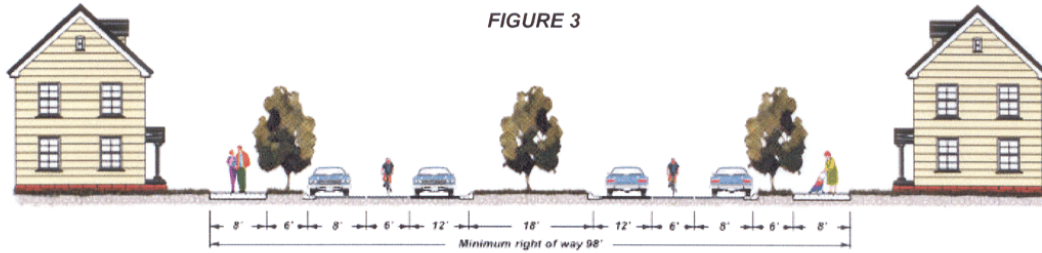
- Street width 28' with curb and gutter and informal parking
- Planting strips 6'
- Sidewalks 5' on each side
- Design speed 20 mph
- Posted speed 20 mph
- Requires a 50' right of way
- Drainage - curb and gutter

**Features**

- Generally two to six blocks long

**Building and Land Use**

- Residential - many residential types



### AVENUE WITH PARKING

**Purpose:** Avenues are short distance, medium speed connectors between neighborhoods and core areas. As such, they are used in both residential and commercial areas, often terminating at prominent buildings or plazas. Avenues may also circulate around squares or neighborhood parks.

**Features**

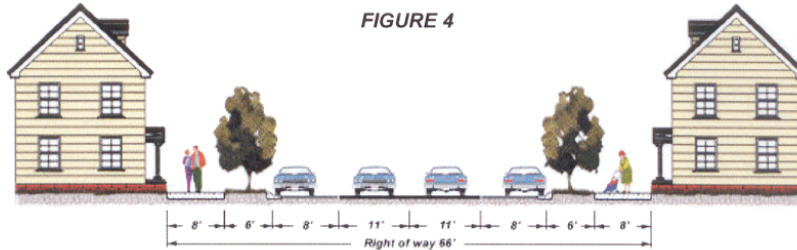
- Street width 26' on both sides of median with on-street parking, 18' if no parking or curb and gutter
- Median width 18' (minimum)
- Travel lanes 12'
- Maximum 2 travel lanes
- Bike lanes and planting strips 6'
- Sidewalks 8' on each side
- Design speed 30 mph (maximum)

**Features**

- Posted speed 25 - 30 mph
- Requires a 98' right of way
- Drainage - curb and gutter

**Building and Land Use**

- Mixed residential and commercial use



### MAIN STREET WITHOUT MEDIAN

**Purpose:** Main streets provide low-speed access to neighborhood, commercial, and high density residential areas

**Features**

- Travel lanes 11' with striped parking
- Maximum 2 travel lanes
- Planting wells 6'- landscaped median optional (minimum 18')
- Sidewalks minimum of 8' each side
- Design speed 25 mph (maximum)
- Posted speed 20 - 25 mph
- Requires a 66' right of way

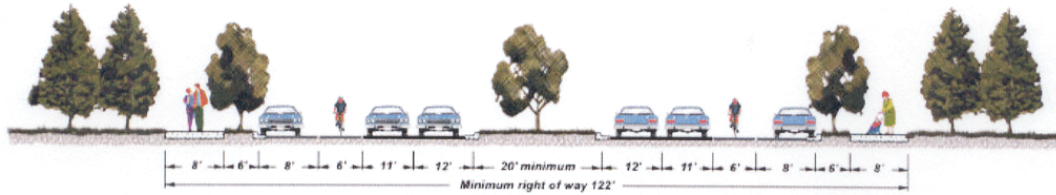
**Features**

- Drainage - curb and gutter
- Includes bulbouts at intersections and mid-block crossings
- Bike lanes optional but preferred (minimum 6')

**Building and Land Use**

- Commercial and mixed use
- High density residential

FIGURE 5



## BOULEVARD

**Purpose:** Provides multi-lane access to commercial and mixed-use buildings, and carries regional traffic.

### Features

- Lanes 11' with striped parking and bike lanes
- Maximum 4 travel lanes
- Planting wells 6 - 11'
- Sidewalks 8' on each side
- Design speed 40 mph (maximum)
- Posted speed 30 - 35 mph

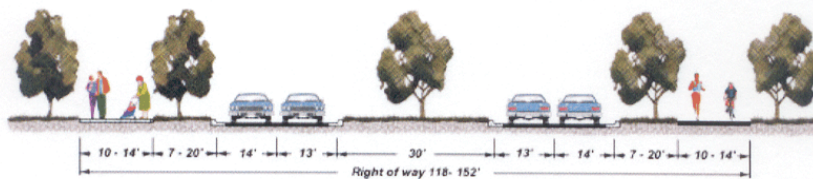
### Features

- Requires a 122' right of way
- Drainage - curb and gutter

### Building and Land Use

- Commercial and mixed use

FIGURE 6



## PARKWAY

**Purpose:** Parkways bring people into town, or pass traffic through natural areas. Parkways are not designed for development. When the parkway enters town, it becomes a boulevard.

### Features

- Travel lanes 11 - 12'
- Median width 30'
- Design speed 50 mph (maximum)
- Posted speed 45 mph (maximum)
- Requires a 118' right of way (minimum)
- Drainage - swales allowed, or curb and gutter
- Multi-use trails 10 - 14'
- Planting strips 7 - 20'
- Bike lane not adjacent to travel lane

### Features

- 6' minimum paved shoulder on high-speed parkway (greater than 45 mph: typical section has shoulder with ditches)

### Building and Land Use

- Parkways are designed to be on the edge of towns, nature preserves, or agricultural areas
- Multi-use trails may be on either or both sides

FIGURE 7



## TRAIL

**Purpose:** Provides non-motorized access throughout the neighborhood.  
[Note: Not to be accepted onto the state system]

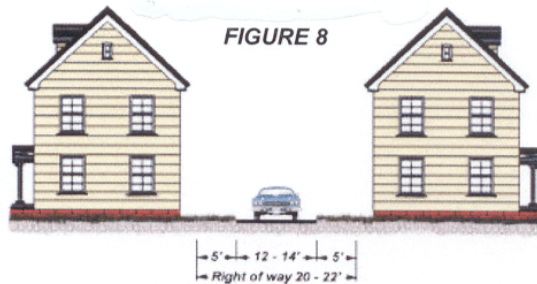
### Features

- Shade trees recommended
- Trail width 10—14'
- Stopping sight distance 125'
- Clear zone 3—6'

### Building and Land Use

- Link to make connections between homes, parks, schools, and shopping districts

FIGURE 8



## Alleys

**Purpose:** Although part of the interconnected street system, alleys provide access to property but are not intended to accommodate through traffic. Alleys are often used by garbage trucks. In some areas alleys must accommodate dumpsters.

[Note: Not to be accepted onto the state system]

### Features

- Requires 20' right of way (minimum)
- Utilities, either above or underground, may be located in alleyways to provide service connections to rear elevations
- Width 12' (minimum)
- Additional pavement at alleyway intersections is necessary to facilitate turns.

### Building and Land Use

- Residential - primarily single family
- Provides rear access to garages

## Appendix VI

### TYRRELL COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN MITIGATION STRATEGIES AND POLICIES

The Mitigation Strategies and Policies section of the plan identifies specific strategies and policies that will “put into action” the mitigation values and goals established above by completing the following steps:

- Formulating selection criteria
- Identifying policies to carry out the mitigation strategies
- Creating an action plan for the mitigation strategies
- Prioritizing the policies
- Identifying funding sources
- Assigning implementation responsibilities

#### A. DISCUSSION OF MITIGATION STRATEGIES AND SECTION FORMAT

Hazard mitigation objectives have been identified which can be defined as measurable, concrete steps towards achieving the goals presented in the preceding section. Goals are considered met when objectives have been completed.

Hazard mitigation policies have also been identified which are specific tasks and actions that achieve the above stated objectives. Objectives are considered met when all polices have been implemented.

When formulating objectives and policies, the county and the town were very mindful of the available types of activities, or strategies, that will result in natural hazard mitigation, as presented in “Keeping Natural Hazards from Becoming Disasters: A Mitigation Planning Guidebook for Local Governments” published in May of 2003 by the NCDDEM Hazard Mitigation Section and the Hazard Mitigation Planning Clinic at the Department of City and Regional Planning at the University of North Carolina at Chapel Hill. These are summarized below:

- Prevention - Actions designed to reduce the community’s future vulnerability, such as zoning or stormwater management regulations.
- Property Protection - Retrofitting or removal of existing structures subject to a elevated risk of natural hazard damage.
- Natural Resource Protection - Preserving or restoring natural features to ensure or enhance their mitigative functions.
- Structural Projects - Modification of the natural environment through built structures to protect property and life.
- Public Information - Educational and informational activities.

A variety of strategies, and combination of strategies, will be utilized to meet the stated goals and objectives through the policies provided below. Policies selected will meet the following criteria:

- The policy will solve the problem it is intended to solve, or begin to develop a solution; and



- The policy meets at least one community mitigation goal; and
- The policy complies with all laws and regulations; and
- The policy is cost-beneficial; and
- The community implementing the policy has (or will have) the capability to do so; and
- The policy is environmentally sound; and
- The policy is technically feasible.

## B. MITIGATION OBJECTIVES

As stated above, objectives are defined as measurable, concrete steps towards achieving the goals presented in this plan. When all objectives are complete, the goals will have been met.

Goal Number	Objective Number	Objective
1	1	Ensure that all shelter locations are well publicized.
1	2	Reduce the frequency of electrical outages and length of time such outages last.
1	3	Provide for effective evacuation prior to natural hazards.
2	1	Preserve open space in floodplain areas.
2	2	Reduce the risk of damage from wildfires to future development.
2	3	Improve wind resistance of structures within the county.
3	1	Maximize the use of available hazard mitigation grant programs to protect the most vulnerable structures and populations.
4	1	Develop specific, timely recommendations for hazard mitigation measures following a State or Federally declared natural disaster and ensure that hazard mitigation is considered when redevelopment occurs after a natural disaster.
5	1	Ensure that the public is aware of the risks of different types of natural hazards, and reduces their personal exposure to natural hazards.
5	2	Implement public education efforts designed to help inform the public of actions they can take to mitigate the damages to their health and property.
6	1	Mitigate damages due to stormwater.
6	2	Protect Areas of Environmental Concern.

C. MITIGATION POLICIES

1. Introduction

Specific actions, or “policies”, are needed to realize each objective provided above. For each policy, the following information will be provided in this subsection:

- A statement of the policy
- The type of strategy represented by the policy
- The hazard(s) it is developed to address
- The objective(s) it will achieve
- The priority the action has (high, medium or low)
- Possible funding sources, if any
- The agency or staff member assigned with responsibility for the policy
- Projected completion date
- Notes and/or background information on the policy

2. Prioritization and Cost Benefit Review

A process for prioritization of identified hazard mitigation strategies was performed. The hazard mitigation advisory committee used the following criteria for prioritization of hazard mitigation strategies:

- a) cost-benefit review
- b) results of Hazard Identification and Analysis
- c) results of Vulnerability Assessment
- d) results of Community Capability Assessment
- e) effectiveness in meeting hazard mitigation goals and comprehensive plan goals

Cost-benefit review was given special emphasis, in light of its possible use in environmental review for HMGP, FMA, and other federal hazard mitigation projects.

3. Mitigation Policies

The hazard mitigation policies are listed below:

Policy Number	1
Policy	CAMA Land Use Plan Update
Applicable Jurisdictions	Tyrrell County and Columbia
Strategy Type	Prevention



Hazard(s) Addressed	All
Objective(s) Addressed	1.3, 2.1 and 4.1
Priority	Medium
Possible Funding Sources	Technical assistance available through State Department of Commerce, Division of Community Assistance
Responsible Parties	Tyrrell County-County Manager; Columbia-Town Manager
Projected Completion Date	When CAMA funding is available

Policy Number	2
Policy	Review "Firewise" zoning and subdivision standards and report on their appropriateness for incorporation into the existing zoning and subdivision ordinances.
Applicable Jurisdictions	Tyrrell County and Columbia
Strategy Type	Prevention
Hazard(s) Addressed	Wildfire
Objective(s) Addressed	2.2
Priority	Low
Possible Funding Sources	Information on "Firewise" zoning and subdivision ordinance provisions is widely available in the public record. An excellent resource is <a href="http://www.firewise.org">http://www.firewise.org</a> .
Responsible Parties	Local Fire Chiefs, Tyrrell County-Manager, and Columbia-Town Manager
Projected Completion Date	June 1, 2005

Policy Number	3
Policy	Apply for funding from the Hazard Mitigation Grant Program (HMGP) following a natural disaster, if eligible, for equipment to assist with hazard mitigation initiatives or emergency operations (i.e., generators).
Applicable Jurisdictions	Tyrrell County and Columbia
Strategy Type	Property protection and/or structural projects
Hazard(s) Addressed	All
Objective(s) Addressed	3.1 and 4.1
Priority	High
Possible Funding Sources	Background information on the Hazard Mitigation Grant Program (HMGP) and similar hazard mitigation programs can be found at <a href="http://www.ncem.org">http://www.ncem.org</a> and at <a href="http://www.fema.gov">http://www.fema.gov</a> . Funding source is Federal (75%) and non-Federal (usually State) (25%)
Responsible Parties	Tyrrell County-Manager; Columbia-Town Manager
Projected Completion Date	After next major Presidentially declared disaster

Policy Number	4
Policy	Convene a working group with electric service providers within the county and produce a report, with specific recommendations and detailed implementation timelines, that addresses the issues of 1) disaster preparedness and 2) communication with officials during and immediately after a natural hazard event that results in loss of electrical power.
Applicable Jurisdictions	Tyrrell County and Columbia
Strategy Type	Prevention, and possibly property protection and/or structural projects
Hazard(s) Addressed	Primarily hazards associated with a lot of wind and severe winter storms
Objective(s) Addressed	1.2
Priority	Medium
Possible Funding Sources	Background information on utility ice storm preparation can be found at <a href="http://www.ncuc.commerce.state.nus.us/reports/part1ice.pdf">http://www.ncuc.commerce.state.nus.us/reports/part1ice.pdf</a> .
Responsible Party	Tyrrell County-Manager
Projected Completion Date	June 1, 2005

Policy Number	5
Policy	Ensure that local libraries maintain documents about flood insurance, flood protection, floodplain management, and natural and beneficial functions of floodplains. Many documents are available free of charge from the Federal Emergency Management Agency (FEMA).
Applicable Jurisdictions	Tyrrell County and Town of Columbia
Strategy Type	Public Information
Hazard(s) Addressed	Flooding
Objective(s) Addressed	5.1 and 5.2
Priority	High
Possible Funding Sources	FEMA, the American Red Cross and numerous other organizations have free public information materials than can be used to achieve this policy. <a href="http://www.fema.gov">http://www.fema.gov</a> and <a href="http://www.redcross.org">http://www.redcross.org</a>
Responsible Parties	Tyrrell County-Manager, Town of Columbia-Manager
Projected Completion Date	June 1, 2005, then ongoing.

Policy Number	6
Policy	Monitor trees and branches at risk of breaking or falling during hazard events. Prune or thin branches on government property when they pose a threat to property, utility lines, or other significant structures or critical facilities.
Applicable Jurisdictions	Tyrrell County and Town of Columbia
Strategy Type	Prevention and Property Protection
Hazard(s) Addressed	Hurricanes, Thunderstorms and Tornados, Severe Winter Storms, and Nor'easters
Objective(s) Addressed	1.2
Priority	High
Possible Funding Sources	N/A
Responsible Parties	Tyrrell County Emergency Management Director, and Columbia Public Works Director
Projected Completion Date	June 1, 2005

Policy Number	7
Policy	Apply for funding from the Hazard Mitigation Grant Program (HMGP) following a natural hazard, if eligible, for elevation/floodproofing of repetitive loss properties or other homes affected by flooding. Applications should also be submitted for funding for the windproofing of homes affected by hurricanes or tornados
Applicable Jurisdictions	Tyrrell County and Town of Columbia
Strategy Type	Property protection
Hazard(s) Addressed	Flooding
Objective(s) Addressed	3.1 and 4.1
Priority	High
Possible Funding Sources	Background information on the Hazard Mitigation Grant Program (HMGP) and similar hazard mitigation programs can be found at <a href="http://www.ncem.org">http://www.ncem.org</a> and at <a href="http://www.fema.gov">http://www.fema.gov</a> . Funding source is Federal (75%) and non-Federal (usually State) (25%)
Responsible Parties	Tyrrell County-Manager, Town of Columbia-Manager
Projected Completion Date	After next major Presidentially declared disaster

Policy Number	8
Policy	Provide local real estate agents with handouts that advise potential buyers about flood hazards.
Applicable Jurisdictions	Tyrrell County and Town of Columbia
Strategy Type	Public Information
Hazard(s) Addressed	Flooding
Objective(s) Addressed	5.1 and 5.2

Priority	Low
Possible Funding Sources	N/A
Responsible Parties	Tyrrell County Emergency Services Director
Projected Completion Date	June, 2005, then ongoing

Policy Number	9
Policy	Send a flood protection flyer to all properties in each local government through a community newsletter, utility bill, or other document that is distributed to all residences. The flyer should include the following information: flood safety, flood insurance, property protection, floodplain development requirements, and drainage system maintenance.
Applicable Jurisdictions	Tyrrell County and Town of Columbia
Strategy Type	Public Information
Hazard(s) Addressed	Flooding
Objective(s) Addressed	5.1 and 5.2
Priority	Medium
Possible Funding Sources	FEMA, the American Red Cross and numerous other organizations have free public information materials than can be used to achieve this policy. <a href="http://www.fema.gov">http://www.fema.gov</a> and <a href="http://www.redcross.org">http://www.redcross.org</a>
Responsible Parties	Tyrrell County Manager, Town of Columbia Manager
Projected Completion Date	June, 2005, then ongoing.

Policy Number	10
Policy	Advertise the availability of flood insurance on an annual basis. Advertise the importance of strapping down LP gas tanks to prevent gas leaks.
Applicable Jurisdictions	Tyrrell County and Town of Columbia
Strategy Type	Prevention, Property Protection, and Public Information
Hazard(s) Addressed	Flooding
Objective(s) Addressed	5.1 and 5.2
Priority	Medium
Possible Funding Sources	N/A
Responsible Parties	Tyrrell County Manager, Town of Columbia Manager
Projected Completion Date	June, 2005, then ongoing

Policy Number	11
Policy	Develop a county/town website that has a page devoted to hurricane preparedness. Post the Hazard Mitigation Plan and the evacuation route on the website.
Applicable Jurisdictions	Tyrrell County and Town of Columbia

Strategy Type	Public Information
Hazard(s) Addressed	All
Objective(s) Addressed	1.1, 1.3, 5.1, and 5.2
Priority	High
Possible Funding Sources	N/A
Responsible Party	Tyrrell County Manager
Projected Completion Date	June, 2005

Policy Number	12
Policy	Provide new home buyer and local contractors with information on windproofing including wood and light steel construction connectors and anchoring systems.
Applicable Jurisdictions	Tyrrell County and Town of Columbia
Strategy Type	Prevention
Hazard(s) Addressed	Hurricanes, Thunderstorms and Tornados, and Nor'easters
Objective(s) Addressed	2.3 and 5.2
Priority	Medium
Possible Funding Sources	N/A
Responsible Party	County and Town Building Inspectors
Projected Completion Date	June, 2005

Policy Number	13
Policy	Monitor drainage areas to ensure they are clear and adequate for drainage
Applicable Jurisdictions	Tyrrell County and Town of Columbia
Strategy Type	Prevention and Property Protection
Hazard(s) Addressed	Flooding
Objective(s) Addressed	4.1
Priority	Medium
Possible Funding Sources	N/A
Responsible Party	Tyrrell County Emergency Management Director and Town of Columbia Public Works Director
Projected Completion Date	June, 2005

Policy Number	14
Policy	Advertise the importance of keeping private roads free from debris and the general areas cleaned out to ensure the ability of emergency vehicles to pass through.
Applicable Jurisdictions	Tyrrell County and Town of Columbia

Strategy Type	Public Information
Hazard(s) Addressed	All
Objective(s) Addressed	1.2, 1.3, and 5.2
Priority	Medium
Possible Funding Sources	N/A
Responsible Party	Tyrrell County Emergency Management Director
Projected Completion Date	June, 2005