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CAMA LAND USE PLAN UPDATE

BERTIE COUNTY
NORTH CAROLINA

Adopted by Bertie County:

Certified by the Coastal Resources Commission:

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INTRODUCTION

The Bertie County Land Use Plan represents the unincorporated areas of Bertie County, as well as the municipalities of Roxobel, Kelford, Aulander, Powellsville, Colerain, Lewiston-Woodville, and Askewville. The planning area for the updated plan is portrayed on the Planning Area Map located at the end of Section 1.

The Bertie County Land Use Plan is prepared in accordance with the requirements contained in the North Carolina Coastal Area Management Act (CAMA), the North Carolina Coastal Resources Commission (CRC) Land Use Planning Requirements [15A NCAC 7B], and the relevant planning process requirements of Local Planning and Management Grants [15A NCAC 7L]. The Land Use Plan follows the organizational format prescribed in 15A NCAC 7B.

In November 2001, the CRC adopted revisions to the Land Use Planning Requirements. The current guidelines are designed to be less complicated than the past guidelines, better tailored to the needs of local governments, and more in line with the goals of CAMA. The revised guidelines–are the basis for this planning effort.

The CAMA legislation requires that each of the twenty coastal counties prepare and adopt a land use plan. Municipalities within these counties have the option of adopting individual plans, or the option of falling under the authority of their county plan. As previously noted, the Towns of Roxobel, Kelford, Aulander, Powellsville, Colerain, Lewiston-Woodville, and Askewville fall under the purview of the Bertie County Land Use Plan. The remaining incorporated municipality (Windsor) prepares an individual land use plan.

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

The Coastal Resources Commission places great emphasis on involving citizens and property owners in the development and implementation of the Land Use Plan. The goal is to involve as many citizens as possible in the development of the plan, and thereby enhance the likelihood that the plan will be implemented. Accordingly, the Bertie County Board of Commissioners adopted a Citizen Participation Plan (Appendix A), which designated the Bertie County Planning Board as the lead group responsible for preparation of the Land Use

Plan. The Planning Board is composed of citizens that represent a broad cross-section of the population of Bertie County. The purpose of the Citizen Participation Plan is to ensure that all interested citizens have an opportunity to participate in the development of the plan. The Citizen Participation Plan describes the public participation tools that are to be used to inform the public of planning progress and to solicit public participation. The Citizen Participation Plan also provides a general outline of the Planning Board's meeting schedule for discussion and development of the Land Use Plan.

In accordance with the Citizen Participation Plan, the Bertie County Planning Board held an initial public information meeting at the beginning of the planning process to receive public input from citizens on issues, concerns and opportunities available to Bertie County. A community "open house" informational meeting was also near the end of the planning process. The purpose of this meeting was to allow citizens an opportunity to review maps and draft policies developed in conjunction with the planning process and to interact informally with members of the Planning Board.

All Planning Board meetings that included discussion of the Land Use Plan Update provided time on the agenda for public comment. In addition, the County distributed a short brochure that summarized the CAMA land use planning process, the role of the Land Use Plan in addressing the community's land use issues, and the ways in which citizens can be involved in the process.

The Planning Board reviewed the technical information developed for the Land Use Plan Update and identified major land use assets and problems as a basis for the *Community Concerns and Aspirations* section of this plan. The assets, problems and key planning issues identified through this process were used by the Planning Board to develop the Community Vision. The Community Vision is a description of the general physical appearance and form that represents the citizens' plan for the future. It also serves as the foundation for the objectives and policies contained in the Land Use Plan.

One of several steps in the planning process included an analysis of existing and emerging conditions that affect Bertie County. Examples include current and projected population trends, housing characteristics, and economic conditions. Natural systems and environmental hazards were analyzed and compiled onto an environmental composite map. This map depicts environmentally sensitive areas where development may already be limited or limited in the future due to public safety issues or protection of the environment. Other factors that were analyzed and considered in the planning process included existing land use and development patterns, projected land use needs and community facilities and utilities.

A land suitability analysis was conducted to determine the relative suitability for development of land in the Bertie County planning jurisdiction.

Considerations included proximity to important natural features, existing and planned community services, existing developed areas and existing local, state and federal regulations affecting growth and development.

A plan for the future was developed and includes land use and development goals and policies for Bertie County. This section of the Land Use Plan addressed the CRC's management topics, which include the following: Public Access, Land Use Compatibility, Infrastructure Carrying Capacity, Natural Hazard Areas, Water Quality and Local Areas of Concern. Bertie County selected Economic Development as the local area of concern. A future land use map was developed to show areas that are expected to see future growth and development, as well as areas designated for conservation.

An implementation strategy was developed to describe Bertie County's implementation strategies for the updated Land Use Plan. This includes a description of existing ordinances, policies, codes and regulations and how they will be coordinated and employed to implement land use and development policies. This section also describes additional tools, such as new or amended ordinances or other specific projects selected by Bertie County to implement the updated Land Use Plan.

ORGANIZATION OF PLAN

The land use plan is organized into a series of sections, in accordance with the outline contained in the CRC's Land Use Planning Requirements (15A NCAC 7B).

- Section 1 addresses community concerns and aspirations. This section provides an overview of the community's perceptions of the dominant growth related conditions affecting land use, development, water quality and other environmental conditions, and economic conditions. This section also includes the Community Vision developed at the beginning of the process.
- Section 2 provides an analysis of population, housing, and economic trends that influence land use and impact natural resources.
- Section 3 provides an analysis of natural systems in Bertie County. This section describes Areas of Environmental Concern (AECs) present in the County, as well as other important natural features. An Environmental Composite Map is included which shows the overlap and extent of these features and the County's determination of the capabilities and limitations of these features and conditions for development.
- Section 4 provides an analysis and map of existing land use and development.
- Section 5 describes and analyzes water, wastewater, and transportation systems in Bertie County, and includes maps of water and sewer lines.

- Section 6 contains the land suitability analysis and map required by the Coastal Resources Commission.
- Section 7 summarizes the existing policies and describes implementation and an assessment of policy effectiveness.
- Section 8 contains the County's land use and development goals and policies and the future land use map.
- Section 9 describes the County's implementation strategies or "tools" for managing development. These include a description of the role and status of the land use plan, a description of the current development management program and additional tools that will be required to implement the plan, and an action plan and schedule for implementation.
- The citizen participation plan, required policy analysis, Bertie County Hazard Mitigation Action Plan, Hazard Mitigation Action Plan – Towns, a list of maps used in plan preparation, and a description of the process for amending the certified Land Use Plan are included as appendices at the end of the plan.

SECTION 1. COMMUNITY CONCERNS AND ASPIRATIONS

The Bertie County Land Use Plan represents the unincorporated areas of Bertie County, as well as the municipalities of Roxobel, Kelford, Aulander, Powellsville, Colerain, Lewiston-Woodville, and Askewville. The planning area for the updated plan is portrayed on the Planning Area Map located at the end of this section.

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

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

DOMINANT GROWTH-RELATED CONDITIONS

During the planning process, the Bertie County Planning Board, citizens, and staff of the Bertie County Planning Department identified the following growth-related conditions and themes that influence land use, development, water quality, and other environmental conditions:

- Although the population of Planning Region Q has grown in recent years, Bertie County's population has declined. Population projections indicate a continuing decline.
- Population trends indicate that the population of Bertie County is aging. The number of older and retirement age residents is increasing, while younger age groups are showing a decline. The lack of good paying jobs is thought to be a major reason for the decline in younger age groups. Young adults and families tend to move out of the area to seek employment.
- While Bertie County has splendid water resources, it is not close enough to the coastal beaches to benefit from the population growth and development at the coast. Strategies should be developed to capitalize upon the County's waterfront area. Steps should be taken to further improve the attractiveness of the County as a second home/retirement/resort area.
- Likewise, economic development strategies should be developed to create more and better paying jobs to attract and retain younger adults while

minimizing impacts to existing resource-based economic activities, such as farming. The abundance of natural resources and historic assets create opportunities for eco-tourism and heritage tourism endeavors.

- Mobile homes are a significant share of the County's total housing stock (32 percent).
- Bertie County lacks central sewer service, although some of the municipalities provide this service. Individual septic tanks serve many homes. Central water service is available throughout the County.
- Bertie County lacks zoning and most other land development controls. The Subdivision Ordinance, adopted in 2005, was the first countywide land development regulation.
- Agriculture and forestry are important components of Bertie County.
- Potential impacts to water quality associated with agricultural activities should be addressed.

PLANNING ISSUES

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

Public Water Access

- Not enough access available
- No public beach access
- Previous access has been lost
- Boating access is important

Land Use Compatibility

- County has a junkyard ordinance regulating location of junkyards
- Currently there are a lot of junkyards
- Lots of chicken houses- smell can be troublesome
- Pulp mill located in Plymouth (not Bertie)
- In general, development is done well
- County needs standards for manufactured housing
- Lot of swamp land in County
- Much of wetlands along Roanoke River owned by conservation organizations or federal government
- USACE does a good job of protecting wetlands

- Too many driveways with individual mobile homes along Hwy 13 and other thoroughfares – considering should be given to controlling access
- Lot of poverty in County – new and better development is driving up cost of land
- Challenge to help farmers profit from sale of land, but yet keep land affordable for local people
- Shared driveways are a good idea

Infrastructure Carrying Capacity

- PUDs in County are required to have sewer
- Natural gas service is available in areas along Highways 13 and 11
- There are some drainage issues in the County, but not a lot of complaints
- Citizens note that some development in other counties has resulted in stormwater problems for neighbors – Bertie should take note
- Countywide water service is available – plenty of available capacity
- Sewer in some Towns in County could be extended (Windsor, Colerain, Lewiston, Askewville, Aulander)
- DSL service is available countywide

Natural and Man-made Hazards

- Flooding issues concentrated mainly around Town of Windsor
- Flooding problems after Hurricane Floyd
- New Cashie River bridge may help
- Need to clean debris from waterways
- New FIRM maps (ongoing process) will update flood ordinance
- Should increase freeboard for living areas
- Do not want OLF

Water Quality

- Potential exists for building boom – need protections in place
- Tradeoff between increased runoff from agriculture, yet this is lifeblood of County economy
- County is very supportive of agriculture
- Natural resources are what the County has to develop – should take advantage of hunting, fishing, and golf
- Farm and woodland incentives should be developed
- Water quality is currently very good
- Currently PUDS require 75’ buffer from water

Local Areas of Concern

- Towns need help and guidance to rehabilitate old buildings, plan for redevelopment, etc.
- Interested in heritage tourism
- Historic Hope Plantation located in County

The Bertie County Planning Board held a community forum at the beginning of the planning process to solicit input for the planning process. Citizens in attendance were asked to comment on planning issues affecting the County relative to the CAMA Land Use Plan Management Topics. Attendees were asked to identify their likes/dislikes of Bertie County, areas where development should be directed, areas where development should be discouraged, other development issues/concerns and opportunities for improvement.

At the conclusion of the meeting, each attendee was asked to vote for the five (5) issues that they felt most important. The results of the meeting were considered in the development of the Community Vision.

Citizens offered the following comments. The number of votes each item received is indicated in parenthesis following the comment.

- No county support for growth (14)
- Lack of industrial development (13)
- Not enough infrastructure (11)
- Health and sanitation (10)
- Excellent retirement area (9)
- Restructuring environment (6)
- > 65% hydric soils (6)
- Low tax base (2)
- Not enough services (2)
- Not enough recreation (2)
- Equal tax assessment (1)
- Accessibility, affordability (1)
- Who pays (0)
- Low income county; poor school system (0)

COMMUNITY VISION

The Community Vision for Bertie County was developed at the beginning of the planning process to provide the foundation for setting priorities, defining goals and developing land use policies to achieve local government goals. The Community Vision is an important feature of the Land Use Plan because it provides a description of how the area will look in the future.

The Vision Statement is a direct result of the County's citizen participation process. It is a word picture that describes what the residents and property owners who participated in the planning process want Bertie County to be in the future. The Vision does not necessarily describe what exists. The Vision Statement provides a basis for setting priorities, defining goals, and developing policies to achieve them.

The following is Bertie County's Planning Vision:

> *Bertie County is recognized as one of the best places in coastal North Carolina to live, work, retire, and recreate. The County promotes an atmosphere and well-planned infrastructure that support economic growth and development, while protecting its natural beauty and resources. The County strives to improve the quality of life for residents and maintain economic stability by encouraging and promoting sustainable industries and job opportunities.*
>
> *The County contains a variety of community settings for its residents. These settings range from more urban-type residential areas, located near and in its incorporated areas, to second home and retirement communities and more rural development. Homes on working farms are an important component of the County. Water-oriented development plays an important role in the County's economy; high quality second-home and retirement communities are located so as to take advantage of the County's water resources.*
>
> *The County offers a variety of housing types to meet its citizens' ages and income ranges. Most housing consists of single-family residences that are located in low-density communities. Manufactured homes, considered an affordable housing option for many residents, are encouraged to locate in well-maintained parks. The County supports and welcomes second home and retirement communities.*
>
> *Bertie County strives to blend the benefits of new development with the County's heritage by implementing strategies to preserve community character. Preservation of natural and historical resources and protection of water quality are granted a high priority. Eco-tourism, heritage tourism, agriculture, and forestry are considered important economic activities.*
> *Business and industrial uses that provide jobs and services are encouraged to locate in the County, but in areas that do not conflict with established residential areas.*
>
> *Bertie County offers well-planned services to all residents and areas of the County, including educational, medical, recreational, and fire and emergency medical response. Water and sewer services, roads, and*

other infrastructure are located so as to create the type of development patterns that are desired by its citizens and property owners.

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INSERT PLANNING AREA MAP

SECTION 2. EXISTING AND EMERGING CONDITIONS IN THE BERTIE COUNTY PLANNING AREA

Population

Regional overview. Bertie County is located in the Region Q Workforce Development Region. This region provides a good context for assessing the county's population growth trends. Table 1 shows population changes in the region's five counties between 1990 and 2000. During the 1990s, the region grew by approximately 13% while Bertie County's population declined by approximately 600 people. All other counties in the region experienced slow growth except for Pitt County that grew 23% during the decade. Beaufort County, the next highest growth area after Pitt County, benefits from water-oriented development as well as the economic development ongoing in Pitt County.

Table 1
Region Q
Workforce Investment Act Region
Population

County	1990	2000	1990-2000 Population Change
Bertie	20,388	19,757	-631
Beaufort	42,283	44,958	2,675
Hertford	22,523	22,977	454
Martin	25,078	25,546	468
Pitt	108,480	133,719	25,239
Total	218,752	246,957	28,205

Source: NC State Data Center

Bertie has some of the same growth issues as other counties in the region. Employment is a factor in the county's population decline. After increases in the 1980's, the County's overall employment remained relatively stable during the 1990's. Total employment increased by only 160 jobs between 1990 and 2000[1]. Under these trends, working age adults and families tend to move out of the area to seek employment. While the county has splendid water resources,

[1] US Department of Commerce, Bureau of Economic Analysis.

it is not close enough to the coastal beaches to benefit from the population growth and development at the coast.

County and town population growth. Table 2 details the population growth trends for the county and its municipalities between 1980 and 2000. The table also shows the population of the planning area, which includes all unincorporated areas plus the municipalities except Windsor. As noted above, the county's population steadily declined in the 80s and 90s from 21,024 to 19,757, and this decline was evident also in the 2005 population estimate of 19,640. The population decline is evident in all incorporated areas except Windsor, which grew very slowly from 2,126 to 2,324 during the 80s and 90s. However, the 2005 population estimate of 2,285 is a decline for Windsor as well.

Table 2
Bertie County Permanent Population Growth Trends
and Current Estimate

	2005	2000	1990	1980
Bertie County	19,640	19,757	20,388	21,024
Municipalities				
Askewville	174	180	201	227
Aulander	877	922	1,209	1,214
Colerain	216	221	241	284
Kelford	250	245	204	254
Lewiston Woodville	586	613	788	671
Powellsville	255	259	279	320
Roxobel	265	263	244	278
Windsor (outside planning area)	2,285	2,324	2,209	2,126
Total incorporated area population	4,908	5,027	5,375	5,374
Total incorporated planning area population	2,623	2,703	3,166	3,248
Total Planning Area Population	17,355	17,433	18,179	18,898

Source: NC State Data Center

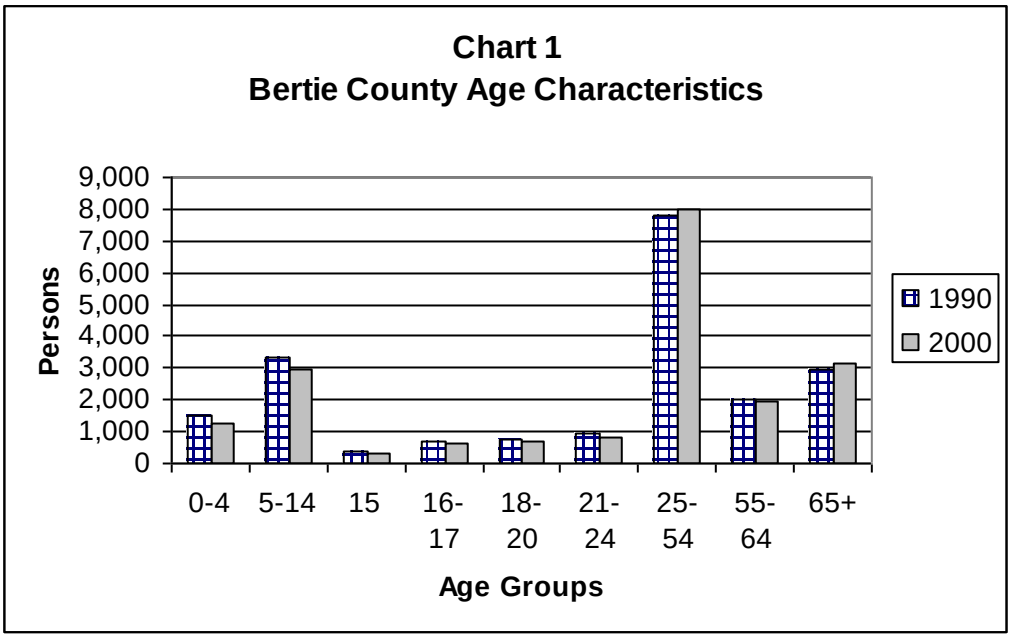


Table 2 also shows the estimated population of the CAMA land use planning area. The estimated 2005 population of the planning area is 17,355, which is 88% of the total county population.

Age. Bertie County's population is aging. Median age for the county increased from 33.5 years in 1990 to 38.6 years in 2000. As a reference, the state median age increased from 33.2 years to 35.3 during the same period[2].

Chart 1 illustrates the changes in the distribution of population among age groups between 1990 and 2000. All age groups from 0 to 24 years experienced population declines during the decade. Declines in the 18 to 24 years age groups may be the result of residents moving away from the county to find work. However, the 25 to 54 years age group increased slightly. The 65 years and over age group increased as indicated by the substantial increase in median age.

Seasonal population. Reliable information on seasonal population in Bertie County is not available. Therefore, the ratio of housing units classed as *seasonal* to *year round* units is used as an indicator of seasonal population.

In 2000, the ratio of seasonal housing units to permanent units was .04 to 1.0. Applied to the 2000 permanent population, this ratio indicates that the county

[2] Decennial census, 1990 and 2000.

as a whole has approximately 790 seasonal residents and the planning area has 690 seasonal residents (please see Table 2).

Population projection. Table 3 shows the State Data Center 20-year population projection for Bertie County. The projection is based on assumptions regarding migration, births, and deaths. The county projection shows that the population will stabilize at approximately through 2027. Likewise, the planning area population is projected to stabilize through 2027. This estimate of planning area population is based on its current share of total county population, which is 88%.

Table 3A shows the planning area's estimated seasonal peak population. Seasonal population is estimated using the seasonal to permanent ration described above.

Table 3
County and Planning Area
Population Projections
2007-2027

	Bertie County Permanent	Estimated Planning Area Population
2007	19,932	17,500
2012	20,202	18,000
2017	20,252	18,000
2022	20,262	18,000
2027	20,265	18,000

Source: NC State Data Center; Coastal Planning Services, Inc.

Table 3A
Planning Area Peak
Population Estimate
2007-2022

	Estimated Planning Area Population	Seasonal population	Peak Population
2007	17,500	700	18,200
2012	18,000	720	18,720
2017	18,000	720	18,720
2022	18,000	720	18,720
2027	18,000	720	18,720

Source: Coastal Planning Services, Inc.

Housing

Table 4 provides a profile of the county's housing stock between 1980 and 2000. The table also includes information on North Carolina for comparison. The Census counted 8,253 year round housing units in 2000. Even though population declined between 1980 and 2000, the number of housing units increased during the period. The ratio of seasonal to year round units increased from .02 in 1980 to .04 in 2000. The statewide ratio showed similar changes.

The ratio of renter to owner units was 0.34 in 2000 and was consistently lower than the state ratio during from 1980 to 2000. A lower ratio of renter to owner units is typical for more rural areas.

Mobile homes hold a significant share of the total housing stock. In 2000 mobile homes accounted for 32% of the total housing stock.

Table 4
Overall Housing Characteristics
Region Q, North Carolina, and Bertie County

	total housing units	seasonal units	year round units	ratio seasonal to year round units	renter units	owner units	ratio renter to owner units	mobile homes
1980								
region	75,625	1,748	73,877	0.02	23,782	43,680	0.5	8,747
state	2,274,737	50,541	2,224,196	0.02	645,865	1,397,426	0.5	221,827
Bertie	7,902	190	7,712	0.02	1,971	4,926	0.4	793
1990								
region	89,973	2,489	87,484	0.03	28,537	52,990	0.5	18,077
state	2,818,193	98,534	2,719,659	0.04	805,144	1,711,882	0.5	421,464
Bertie	8,331	269	8,062	0.03	1,909	5,503	0.3	2,175
2000								
region	110,251	2,659	102,595	0.03	34,026	63,548	0.5	24,317
state	3,523,944	134,870	3,310,798	0.04	959,658	2,172,355	0.4	577,323
Bertie	9,050	354	8,253	0.04	1,946	5,797	0.3	2,865

Source: NC State Data Center

Building permits. Table 4A tracks residential building permits from the last CAMA LUP update in 1998 to 2005. During the 8-year period, the county issued 340 residential permits, or an average of 42 per year. Average annual residential building permits are less than 0.5% of the housing stock.

All of the residential permits recorded are for single-family structures and include permits issued for mobile homes.

Table 4A
Bertie County Building Permits
1998 to 2005

	1-Family	2-Family	3&4 Family	5+ Family	All housing
Total	340	0	0	0	340
2005	36	0	0	0	36
2004	63	0	0	0	63
2003	43	0	0	0	43
2002	77	0	0	0	77
2001	36	0	0	0	36
2000	28	0	0	0	28
1999	24	0	0	0	24
1998	33	0	0	0	33

Source: NC State Data Center

County Economy

Employment. Table 5 details Bertie County employment between 1980 and 2000. There was an increase in total employment for the 20-year period. Between 1980 and 1990, manufacturing employment's share of total employment remained steady; however, between 1990 and 2000 there was a sharp drop in the percentage of manufacturing employment due to the closing of several plywood and denim clothing manufacturers in the County. While manufacturing employment declined, the number of persons employed in service industries increased by a significant number. These trends in manufacturing and service jobs are evident in many coastal counties.

Table 5
Bertie County
Employment 1980 to 2000

Employment by residence	2000	1990	1980
Total	6,870	6,710	5,520
Manufacturing	3,000	3,810	3160
% of total	44%	57%	57%
Non-manufacturing	3,870	2,900	2360
% of total	56%	43%	43%
Agricultural Service	408	360	277
Construction	376	261	211
Manufacturing industries	3,024	3,880	3088
Transportation and Utilities	249	178	77
Wholesale trade	238	357	295
Retail trade	696	781	690
Finance/Insurance/ Real estate	216	231	180
Service industries	1,761	921	639

Source: NC State Data Center

Incomes. Table 6 allows a comparison of median income and poverty rates in Bertie County with North Carolina as a whole. Median income in the county increased from $14,950 to $41,460 between 1980 and 2000, an increase of 177%. During the same period, the North Carolina median income increased

approximately 200%. Bertie County median income in 2000 was 70% of the statewide–median.

Poverty rates in the county improved in the 80s and 90s. However, the percentage of persons in poverty and the percentage of persons age 65+ in poverty are much higher than the statewide percentages.

Table 6
Bertie County, Region Q, and North Carolina
Median Family Income and Poverty
2000

	Med Fam. Income	Persons in Poverty	Pct. Per. Poverty
Beaufort County	$37,893	8,642	19.5
Bertie County	$30,186	4,597	23.5
Hertford County	$32,002	4,078	18.3
Martin County	$35,428	5,164	20.2
Pitt County	$43,971	26,001	20.3
North Carolina	$46,335	958,667	12.3

Source: NC State Data Center

SECTION 3: NATURAL SYSTEMS ANALYSIS

This section of the Land Use Plan provides a description of the natural features and environmental conditions within Bertie County and an analysis of the suitability or limitation of these features for development. In accordance with the requirements of the Coastal Resources Commission's Land Use Planning Guidelines [15A NCAC 7B], this section of the Land Use Plan addresses the following components:

- A summary of the inventory of the major natural features and an interpretation of the capabilities or limitations that these features have for development
- A composite map that shows the extent and overlap of environmental features in Bertie County and the compatibility of these features for development
- An assessment of environmental conditions and trends with an emphasis on water quality, natural hazards and natural resources

NATURAL FEATURES INVENTORY

The inventory of natural systems addresses the following features and conditions:

- Areas of Environmental Concern (AECs)
- Soil characteristics
- Water quality classifications
- Primary Nursery Areas
- Flood and other natural hazard areas
- Storm surge areas
- Non-coastal wetlands
- Environmentally fragile areas

Areas of Environmental Concern (AECs)

Areas of Environmental Concern (AECs) are the foundation of the Coastal Resources Commission's (CRC) permitting program for coastal development. AECs are areas of natural importance and are classified by the CRC. The purpose of the AEC classification is to protect these areas from uncontrolled development, which may cause irreversible damage to property, public health or the environment. CAMA regulations and minimum use standards limit development within the designated Areas of Environmental Concern. The CRC establishes use standards to regulate development in AECs. Local governments, through the CAMA Land Use Plan, can establish development standards for AECs that are more stringent than state standards.

The CRC has established four categories of AECs:

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

Estuarine and Ocean System AECs
Public Trust Areas are all waters of the Atlantic Ocean and the lands underneath, from the normal high water mark on shore to the state's official boundary three miles offshore; all navigable natural water bodies and the lands underneath, to the normal high watermark on shore (a body of water is considered navigable if you can float a canoe in it), not including privately owned lakes where the public doesn't have access rights; all water in artificially created water bodies that have significant public fishing resources and are accessible to the public from other waters; and all waters in artificially created water bodies where the public has acquired rights by prescription, custom, usage, dedication or any other means. Public trust areas often overlap with estuarine waters.

Estuarine Waters are the ocean, sounds, tidal rivers and their tributaries that stretch across coastal North Carolina and link to other parts of the estuarine system: public trust areas, coastal wetlands and coastal shorelines. For regulatory purposes, the inland/upstream boundary of estuarine waters is the same line used to separate the jurisdictions of the NC Division of Marine Fisheries and the NC Wildlife Resources Commission. Waters under the jurisdiction of the NC Division of Marine Fisheries (coastal waters) or under the joint jurisdiction of the Division of Marine Fisheries and the NC Wildlife Resources Commission (joint waters) are considered to be Estuarine Waters AECs. Waters under the jurisdiction of the NC Wildlife Commission are classified as Inland Waters and are classified as Public Trust Area AECs.

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

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

Spartina alterniflora: Salt Marsh (Smooth) Cord Grass
Juncus roemerianus: Black Needlerush
Salicornia spp: Glasswort

Distichlis spicata: Salt (or Spike) Grass
Limonium spp: Sea Lavender
Scirpus spp: Bulrush
Cladium jamaicense: Saw Grass
Typha spp: Cattail
Spartina patens: Salt Meadow Grass
Spartina cynosuroides: Salt Red or Giant Cord Grass

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

Ocean Hazard System AECs
The *Ocean Erodible* AEC includes beaches and other oceanfront lands that are subject to long-term erosion and significant shoreline changes. The seaward boundary of this AEC is the mean low water line. The landward limit of the AEC is measured from the first line of stable natural vegetation and is determined by adding a distance equal to 60 times the long-term, average annual erosion rate for the shoreline to the distance of erosion expected during a major storm. The width of this AEC varies from about 145 feet to more than 700 feet.

The *High Hazard Flood* AEC includes lands subject to flooding, high waves and heavy water currents during a major storm. These are the lands identified as coastal flooding with velocity hazard, or V Zones, on flood insurance rate maps prepared by the Federal Insurance Administration. V Zones are determined by an engineering analysis of expected flood levels during a storm, expected wave and current patterns and the existing topography of the land. The high hazard flood AEC often overlaps with the ocean erodible and inlet hazard AECs.

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

Public Water Supply AECs
The *Small Surface Water Supply Watershed* AEC protects coastal drainage basins that contain a public water supply classified as A-II by the NC Environmental Management Commission. Currently, only two such watersheds

in the state have been designated as AECs: the Fresh Pond at the Nags Head and Kill Devil Hills border and Toomer's Creek near Wilmington, neither of which are located in Bertie County.

Public Water Supply Wellfields are areas of rapidly draining sands extending from the earth's surface to a shallow groundwater table that supply public drinking water. Only one wellfield in NC, on Hatteras Island at Buxton, is designated as an AEC.

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

AECs in Bertie County
Estuarine System Areas of Environmental Concern are the only categories of AECs located in the Bertie County Land Use Plan jurisdiction. There are no Ocean System AECs in Bertie County, nor are there currently any Public Water Supply or Natural and Cultural Resources AECs within the County. Information on categories of AECs not present in Bertie County is provided for informational purposes only.

> In Bertie County, there are 11,814 acres of coastal waters. These include the Upper Albemarle Sound that lies between US 17 and NC 308. There are 13,175 acres of joint waters in Bertie County. These include the Chowan River from Hertford County south, the Cashie River, and the Roanoke River. The remainder of the waters in Bertie County are inland waters.
>
> Shorelines of estuarine, joint, and inland waters are considered to be Coastal Shoreline AECs. Please refer to the above discussion of Coastal Shorelines AECs for an explanation of differences between the size of this category of AEC along estuarine, joint, and inland waters.
>
> Trace coastal wetland AECs may be found in the southern portion of the County and are identified on-site by the permitting staff of the Division of Coastal Management.

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

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

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

Due to map scale and size, the exact locations of AECs are difficult to map, particularly coastal wetlands and coastal shorelines AECs. However, for general information purposes, a general depiction of the location of AECs in Bertie County may be found on the Areas of Environmental Concern Map, available for review at the Bertie County Planning Department. It is stressed that this map is for informational purposes only. The exact location of AECs must be identified on-site by the permitting staff of the NC Division of Coastal Management (DCM).

Soil Characteristics

The Soil Conservation Service, now known as the United States Department of Agriculture - Natural Resources Conservation Service (USDA-NRCS), has prepared a soil survey of Bertie County. The soil survey is used to determine which soils present developmental limitations due to wetness or high shrink-swell potential. According to the survey, there are 39 different soil types in Bertie County. Only seven of these soil types are considered to have slight or moderate limitations for septic systems.

> The soil survey is for planning purposes and is not completed at the detailed scale needed for permit decisions. Based on the soil survey, the Soils Septic Limits Map available in the Bertie County Planning Department provides a general soils map of the planning area. Because the map is for general planning purposes only, all determinations of septic suitability must be made by onsite investigation by a licensed soil scientist or county environmental systems health specialist. In general, the soils in the planning jurisdiction have limitations for many uses due

to poor drainage, seasonably high water tables, or permeability problems.

Countywide, approximately 99% of the soils in Bertie County have moderate to severe limitations for conventional onsite soil absorption waste treatment systems (septic systems). Based on the soils attribute table compiled by the NC Division of Soil and Water Conservation and provided to the County by the NC Division of Coastal Management for use in the planning process, 1.2% of soils have slight limits, 7.6% have moderate limits, and 91.2% have severe limits for septic systems. (In general, all soils are shown as having at least "slight" limits for septic systems.)

A Soil Suitability By Associations map was included in the 1998 Bertie County Land Use Plan. The 1998 map is not as detailed as the map prepared for the current Land Use Plan, which is based on the attributes table for Bertie County soils. It should be noted, however, that the 1998 plan included a list of soil characteristics. The list of characteristics in the 1998 plan is identical to those shown on the current attributes table used to develop the current soils map.

Soils with slight limitations for septic systems are primarily located in the southern portion of Bertie County. Soils with moderate limitations for septic systems are primarily scattered throughout the southern and western portions of the County, with some being located in the northeast section. The extent of soils suitable for development is important due to the continuing development of the County and the absence of centralized sewer systems in most areas. Planned development densities in areas without central sewer service must consider soil suitability for septic systems or alternative systems must be developed for use in these areas.

Water Quality Classifications

All surface waters in North Carolina are assigned a primary classification by the NC Division of Water Resources (DWR). The Areas of Environmental Concern (with DWR Water Quality Class) Map available for review at the Bertie County Planning Department, provides the use classifications for surface waters in Bertie County. Water classifications are described in Table 7 DWR Primary Classifications. Further discussion of surface waters is provided under the Environmental Assessment discussion found later in this section.

Table 7 DWR PRIMARY CLASSIFICATIONS	
Class C	Waters protected for secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, agriculture and other uses suitable for Class C. Secondary recreation includes wading, boating, and other uses involving body contact with water where such activities take place in an infrequent, unorganized or incidental manner. There are no restrictions on watershed development or types of discharges.
Class SC	All tidal salt waters protected for secondary recreation such as fishing, boating and other activities involving minimal skin contact; aquatic life propagation and survival; and wildlife. Stormwater controls are required under CAMA and there are no categorical restrictions on discharges.
Class SB	Surface waters that are used for primary recreation, including frequent or organized swimming and all SC uses. Stormwater controls are required under CAMA and there are no categorical restrictions on discharges.
Class SA	Surface waters that are used for commercial shellfishing or marketing purposes and all SC and SB uses. All SA waters are also HQW by definition. Stormwater controls are required under CAMA. No domestic discharges are permitted in these waters.
DWR SUPPLEMENTAL CLASSIFICATIONS	
High Quality Waters (HQW)	Supplemental classification intended to protect waters with quality higher than state water quality standards. In general, there are two means by which a water body may be classified as HQW. They may be HQW by definition or they may qualify for HQW and then be supplementally classified as HQW through the rule-making process. The following are HQW by definition: • SA (shellfishing) • ORW • Waters designated as Primary Nursery Areas or other functional nursery areas by the Marine Fisheries Commission
Nutrient Sensitive Waters (NSW)	Supplemental classification intended for waters needing additional nutrient management due to their being subject to excessive growth of microscopic or macroscopic vegetation. In general, management strategies for point and nonpoint source pollution control require control of nutrients (nitrogen and/or phosphorus usually) such that excessive growths of vegetation are reduced or prevented and there is no increase in nutrients over target levels. Management strategies are site-specific.
Outstanding Resource Waters (ORW)	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 DWR and have one of the following outstanding resource values:

	• Outstanding fish habitat or fisheries • Unusually high level of water based recreation • A 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 • 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 associated development controls enforced by DWR. ORW areas are HQW by definition.
ADDITIONAL CLASSIFICATIONS BY OTHER AGENCIES	
Primary Nursery Areas (PNA)	Primary Nursery Areas, as defined by the Marine Fisheries Commission, are those areas in the estuarine system where initial post-larval development takes place. These areas are usually located in the uppermost sections of a system where populations are uniformly very early juveniles. The Division of Marine Fisheries is responsible for preserving, protecting and developing Primary Nursery Areas for commercially important finfish and shellfish.

Primary Nursery Areas
The NC Division of Marine Fisheries and the Wildlife Resources Commission have not designated any coastal or inland primary nursery areas in Bertie County.

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

The North Carolina Marine Fisheries Commission (NCMFC) and the North Carolina Wildlife Resources Commission (NCWRC) have adopted in rule the Anadromous Fish Spawning Area (AFSA) designations in their respective jurisdictions. These designations are based on biological sampling and one or more of the following criteria being met: (1) observation of spawning, (2) capture of running ripe females, or (3) capture of eggs or larvae. These waters are also utilized by the various anadromous species as a nursery area. These areas are important to resident species for spawning and nursery areas.

Protection and enhancement of wetlands and water quality are integral components to AFSAs and their success.

Waters throughout the County have been designated as Anadromous Fish Spawning Areas. The NCDMF has designated portions of Batchelor Bay, Conine

Creek, and the Chowan, Meherrin, Cashie, Middle, Eastmost, and Roanoke Rivers. Specific areas designated by the NCMFC are found in 15A NCAC 03R .0115.

Areas designated by the NCWRC include waters within the Chowan River area, the Cashie River area, and the Roanoke River area. Specific waters and tributaries of these rivers so designated can be found in 15A NCAC 10C .0603 Descriptive Boundaries.

Flood Hazards and Storm Surge Areas

Flood hazard areas are usually defined by the 100-year floodplain (one percent chance of flooding in any year). In Bertie County, the flood hazard areas A zones and AE zones. Both of these zones indicate a one percent chance of flooding in any one year.

A general depiction of the 100-year floodplain is shown on the Flood Hazard Map available at the Bertie County Planning and Development Department. More detailed flood maps prepared by the Federal Emergency Management Agency (FEMA) are also available for review, both at the County Planning Department and at www.ncfloodmaps.com

An important factor to consider when determining the suitability of land for future development is the possibility of periodic flooding. Land adjacent to rivers and creeks is often subject to flooding during severe storms. To prevent as much damage as possible, Bertie County requires structures built within the 100-year flood plain to meet requirements set forth by the Federal Emergency Management Agency (FEMA).

Storm surge is the relatively rapid rise in sea level caused by water being pushed towards shore by the force of the winds associated with a hurricane or other intense storm. As the water comes ashore with the storm, it causes flooding that is often a hurricane's most dangerous and damaging characteristic. The Storm Surge Map, available for review at the Bertie County Planning Department, depicts areas within Bertie County that could be impacted by storm surge.

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

Non-coastal Wetlands

According to the US Army Corps of Engineers (USACE), wetlands are "areas that are periodically or permanently inundated by surface or groundwater and support vegetation adapted for life in saturated soil." Wetlands include swamps, marshes, bogs and similar areas. Wetlands serve important functions relating to fish and wildlife, food chain production, habitat, nesting, spawning, rearing and resting sites for aquatic and land species, protection of other areas from wave action and erosion, storage areas for storm and flood waters, natural recharge areas where ground and surface water are interconnected, and natural water filtration and purification functions (USACE Wilmington Regulatory Division).

While individual alterations of wetlands may constitute a minor change, the cumulative effect of numerous changes often results in major damage to wetland resources. The USACE regulates development in wetlands under Section 404 of the Clean Water Act, which determines which areas qualify for protection as wetlands. The NC Division of Water Resources regulates uses in wetlands under Section 401 of the Clean Water Act.

The North Carolina Coastal Region Evaluation of Wetland Significance (NC-CREWS) rates wetlands as having *exceptional, substantial, or beneficial* functional significance in the coastal and non-coastal counties.

The following brief explanation of NC-CREWS and the overall wetland functional significance rating definitions are based on information contained on the NC Division of Coastal Management website (http://www.nccoastalmanagement.net). Please refer to this website for additional information on NC-CREWS.

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

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

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

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

A Wetlands Map is available at the Bertie County Planning Department. This map shows areas that may be classified as non-coastal wetlands. While this map does not provide a lot-by-lot identification of wetlands, it does provide information as to the general areas that may contain non-coastal wetlands. These areas are extensive in Bertie County and must be determined by on-site investigation.

ENVIRONMENTAL COMPOSITE MAP

The Environmental Composite Map shows the extent and overlap of natural features described in this section. Based on the County's analysis of the features and the determination of the capabilities and limitations of these areas for development, this map also contains the general locations of three classes of land. The land classes shown on the Environmental Composite Map, the description of the classes and the natural features contained in each class are shown below:

Class I
Class I is land containing only minimal hazards and limitations that may be addressed by commonly accepted land planning and development practices. In Bertie County, this class contains the following natural features:

- Soils with slight limitations for septic tanks
- Soils with moderate limitations for septic tanks
- Soils with slight erosion hazards
- Non-wetland areas or non-coastal wetlands rated *beneficial significance* (NC-CREWS)
- Land located outside flood hazard areas

Class II
Class II is land containing development hazards and limitations that may be addressed by methods such as restrictions on types of land uses, special site planning, or the provision of public services. In Bertie County, this class contains the following natural features:

- Land located within flood hazard areas
- Significant natural areas

- Soils with severe septic tank limitations
- Non-coastal wetlands rated as *substantial significance* (NC-CREWS)

Class III

Class III is land containing serious hazards for development or lands where the impact of development may cause serious damage to the functions of natural systems. In Bertie County, this class contains the following natural features:

- Non-coastal wetlands rated as *exceptional significance* (NC-CREWS)
- Protected lands owned by public or quasi-public agency

The Environmental Composite Map is a "broad-brush" depiction of the location of the three land classes discussed above. Due to the size and scale of the map, it cannot be used for permit decision-making or for final development plans. The Geographic Information System (GIS) – based model that was used to create the map uses one-acre units. Therefore, one "cell" in the model represents one acre. When the different data sets overlay in the model, the highest class present will be assigned to the cell. For example, an area that is located inside an exceptional wetland (Class III) outside the flood hazard area (Class I) and in an area with soils with severe limitations for septic systems (Class II) will be assigned to Class III.

Estimated acreage for the composite map in Bertie County are shown below:

Class I	341,000 acres
Class II	88,300 acres
Class III	44,800 acres

PUBLIC ADOPTION HEARING COPY

INSERT ENVIRONMENTAL COMPOSITE MAP

Environmental Conditions

This section of the Land Use Plan provides an assessment of the following environmental conditions and features and discusses their limitations or opportunities for development: water quality, natural hazards and natural resources.

Water Quality

Surface Water and Impaired Streams

Parts of two river basins are found in Bertie County: the Chowan River Basin and the Roanoke River Basin.

The Chowan River begins in Virginia where the Nottoway, Blackwater, and Meherrin Rivers originate. The Blackwater and Nottoway Rivers merge at the Virginia/North Carolina border to form the Chowan River. The Meherrin River joins the Chowan soon thereafter. The Chowan River flows fifty miles through five North Carolina counties before emptying into the Albemarle Sound at Edenton.

The Roanoke River Basin begins in the foothills of the Blue Ridge Mountains in Virginia and flows through several Virginia and North Carolina counties before entering Bertie County. The Roanoke River empties into the Albemarle Sound at the junction of Bertie, Martin, and Washington counties.

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

Each river basin is divided into subbasins or smaller watersheds. (A watershed is a geographic area draining to a common water body.) The basinwide plans describe water quality and make recommendations for actions to improve or protect water quality on a subbasin basis. A Planning Area Subbasins Map, which portrays the boundaries of the subbasins, is available at the Bertie County Planning Department.

The Shellfish Sanitation and Recreational Water Quality Section of the NC Division of Environmental Health is responsible for protecting the consuming public from shellfish that could cause illness. The Section is responsible for testing and monitoring coastal waters to ensure that harvested shellfish is safe and for establishing shellfish growing area classifications. These classifications

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

There are limited shellfish resources in Bertie County. According to the Shellfish Sanitation Section, all shellfishing waters in Bertie County are classified as prohibited. For additional information, please contact the Shellfish Sanitation and Recreational Water Quality Section at 252-726-6827.

Information contained in the 2006 Roanoke and 2007 Chowan Basin-wide Plans was used to develop the following subbasin descriptions of impaired waters and potential sources of pollution:

Roanoke River Subbasin 03-02-08

This subbasin consists of 513 square miles, including 40 square miles of water area. The western portion of Bertie County, including portions of the Towns of Roxobel and Lewiston-Woodville are contained in this subbasin. A portion of the largest intact and least-disturbed bottomland hardwood forest floodplain in the mid-Atlantic region is found in this subbasin.

Several water quality improvement programs have been implemented in this subbasin, including the NC Agriculture Cost Share Program (NCACSP). The NCASP was established in 1984 to help reduce agricultural runoff into the state's waters. Through the NCASP the practice of conservation tillage has been implemented throughout the Roanoke River basin, with particular success in this subbasin. Conservation tillage practices produce environmental benefits that may include reduced soil erosion, sedimentation, and pollution from dissolved and sediment-attached substances. Farmers who implement eligible practices may receive cost share assistance through the NCACSP.

All waters within this subbasin are Impaired on an evaluated basis in the fish consumption category because of basinwide fish consumption advice. In the water supply category, all waters are Supporting on an evaluated basis based on reports from the NC Division of Environmental Health regional water treatment plant consultants. All monitored stream miles in the subbasin, consisting of 152.6 miles or 50 percent of total in subbasin, and 4,185 freshwater acres (100 percent) were Supporting in the aquatic life category. In the recreation category, all of the 76.6 monitored stream miles (25 percent) were Supporting.

Roanoke River Subbasin 03-02-09

This subbasin consists of 559 square miles, including 124 square miles of water area and includes the south and southwest portions of Bertie County. The area is mostly rural, consisting largely of forest and agricultural land. The NCACSP has also been implemented in this area to improve water quality by introducing sediment and nutrient reduction and animal waste management practices.

During the assessment period for development of the Roanoke River Basin Plan, 116.4 stream miles (37.5 percent) in this subbasin were monitored. Of these, 17.8 stream miles (5.7 percent) were Impaired and 80.3 stream miles (25.8 percent) were Supporting. In the recreation category, all 47.2 monitored stream miles (15.2 percent) were Supporting. There were 49.4 stream miles (15.9 percent) and 1,475.5 saltwater acres (100 percent) that were Impaired on a monitored basis in the fish consumption category for dioxin contamination. All surface waters within this subbasin are Impaired on an evaluated basis for mercury based on advice by NC Department of Health and Human Services.

The NC Ecosystem Enhancement Program (NCEEP) is facilitating the transfer of the Roquist Pocosin tract from the NC Department of Transportation to the Wildlife Resources Commission. The tract provides water quality protection to Indian Creek and Roquist Creek and contains 3,776 acres of wetlands. The NCEEP is also restoring 52 acres of nonriverine wet hardwood forest in the Roquist Pocosin. The restoration involves removal of roads to restore hydrology and replanting of native wetland species. These water quality initiatives are aimed at protecting and improving water quality in the basin.

Roanoke River Subbasin 03-02-10

This subbasin consists of 307 square miles, including 17 square miles of water area. Bertie County represents the majority of the area within this subbasin. The municipalities of Roxobel, Kelford, Askewville, and Windsor and portions of Northampton County are located within the subbasin. Most of the streams in the subbasin are slow moving and often stop flowing in the summer months. These streams include the Cashie River, Roquist Creek, and Hoggard Mill Creek.

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

All 79 stream miles (50.6 percent) monitored in the aquatic life category and 15.2 stream miles (9.7 percent) monitored in the recreation category are rated as Supporting. All other surface waters are Impaired on an evaluated basis for mercury based on advice of the NC Department of Health and Human Services.

To achieve the goal of restoring Impaired waters, the NC Division of Water Quality will need to work closely with other state agencies, local governments, and other stakeholders to identify and control pollutants in this and other subbasins. The costs of restoration can be high, but several programs exist to provide funding for restorative efforts. These programs include the NC Clean Water Management Trust Fund (CWMTF) and the Ecosystem Enhancement Program (NCEEP).

Several water quality improvement programs have been implemented in this subbasin, including the NC Agriculture Cost Share Program. This program helps reduce agricultural runoff by helping farmers implement best management practices.

Balancing economic development and water quality protection will be a tremendous challenge. Steps that can be taken at the local level include: development and enforcement of local erosion control ordinances; requirement of stormwater BMPs for existing and new development; development and enforcement of buffer ordinances; and land use planning that assesses impacts on natural resources.

Chowan River Subbasin 03-01-01

This subbasin consists of 579 square miles, including 10 square miles of water area. A majority of the subbasin is outside of Bertie County. The largest municipalities in this subbasin include Aulander (Bertie County), Ahoskie (Hertford County), and Winton (Hertford County). The basin also includes Powellsville in Bertie County.

All waters in this subbasin have received the supplemental classification of Nutrient Sensitive Waters (NSW) in addition to the primary classification of Class C or Class B. In this subbasin, use support was assigned for aquatic life, recreation, and fish consumption categories. Waters are Supporting, Impaired, Not Rated and No Data in the aquatic life and recreation categories on a monitored or evaluated basis. Waters are Impaired in the fish consumption category on an evaluated basis based on fish consumption advised issued by the ND Department of Health and Human Services (DHHS).

Potential sources of contamination include agriculture and intensive animal feeding operations. State and local government efforts should provide education on local water quality issues and voluntary actions to prevent additional problems and promote restoration efforts.

The Town of Powellsville received a Clean Water Management Trust Fund grant to construct a wastewater treatment facility to help reduce pollutant delivery to Ahoskie Creek. The goal of the project is to eliminate 168 failing septic

tanks in the Town by constructing a collection system and land application waste treatment facility.

Chowan River Subbasin 03-01-03
This subbasin contains the middle section of the Chowan River and a total area of 123 square miles, including 23 square miles of water area. The entire subbasin is designated as Nutrient Sensitive Waters (NSW). Land use is mainly forested wetlands and agricultural cropland. The largest municipality in the subbasin is Colerain.

Use support for aquatic life, recreation, and fish consumption has been the same as use support in subbasin 03-01-01.

Previous basinwide water quality plans had identified historic algal blooms and dioxin as water quality concerns in this area. Algal blooms were the result of excess nutrients and low pH levels. However, the implementation of best management practices (BMPs) and NPDES permitting strategies throughout the watershed has resulted in a decrease in nutrients and therefore a reduction in the frequency and intensity of algal blooms.

Chowan Subbasin 03-01-04
This subbasin contains the lower Chowan River and small tributaries, including Salmon Creek. It also contains a small northwest portion of the Albemarle Sound. The total land and water area for the subbasin is 177 square miles.

This region of the Chowan River is experiencing growth and development with proposed upscale housing communities, golf courses, and marinas. With this growth along the inland waterways, many channels to the Chowan River are losing their riparian buffers and consequently water quality is in jeopardy.

There are three minor National Pollutant Discharge Elimination System (NPDES) dischargers in this subbasin with a total permitted flow of 0.02MGD. Some permitted discharge violations have occurred due to facility mismanagement. Assuring managers have adequate training and understand the financial and environmental repercussions of facility violations are essential to prevent future degradation of the water quality. It should be noted that none of these dischargers are located in Bertie County; however, attention should be given to this issue by Bertie County decision makers when developing future growth strategies.

All waters in this subbasin also have the supplemental classification of Nutrient Sensitive Waters (NSW), in addition to the primary classification of Class C or Class B. Use support ratings for aquatic life, recreation, and fish consumption are the same as ratings for subbasins 03-01-01 and 03-01-03. Waters for fish consumption are impaired based on the dioxin advisory issued by the Department of Health and Human Services. Dioxins are the byproducts of

industrial processes and are formed during the chlorine bleaching process at pulp and paper mills.

Information and recommendations contained in the DWR Basinwide Plans were considered in the development of local land use policy contained in Section 8.

303(d) Listed Waters

Section 303(d) of the Clean Water Act requires states to develop a list of waters not meeting water quality standards or which have impaired uses. Listed waters must be prioritized, and a management strategy must subsequently be developed for all listed waters. There are 8 water body areas in Bertie County listed on the 2006 North Carolina §303(d) list. These include Albemarle Sound (Batchelor Bay), and portions of the Cashie and Chowan Rivers.

The NC Division of Water Resources prepares and maintains the list of impaired waters in North Carolina. Further information and the list of impaired waters are available at http://h2o.enr.state.nc.us/tmdl/General_303d.htm#Questions_About_the_List

Wastewater Treatment Systems

As previously noted, portions of two river basins are located in Bertie County - the Chowan and Roanoke river basins. There are portions of three Roanoke and three Chowan subbasins in the county.

Within Bertie County, three National Pollutant Discharge Elimination System (NPDES) discharge permits have been issued within the Roanoke River subbasin 03-02-00. These include the Town of Windsor, Town of Lewiston-Woodville, and Williford Logging, Inc. for a total permitted flow of 1.3 MGD. These systems all discharge into the Cashie River. The Windsor Wastewater Treatment Plant is required to conduct whole effluent toxicity testing per their NPDES permit and have been in compliance during their assessment period. Perdue Farms, Inc., located in subbasin 03-02-08, is permitted for 3.0 MGD and discharges into Chockoytte Creek.

In the Bertie County portion of the Chowan river basin, eight stormwater permits have been issued within subbasin 03-01-01. One minor NPDES permit has been issued in Bertie County in subbasin 03-01-03. Perry-Wynns Fish Company is permitted to discharge 0.02 MGD. It is classified as a minor industrial process and commercial NPDES facility and is currently in compliance.

There are no NPDES permits issued within the Bertie County portion of the Chowan River subbasin 03-01-04.

Public Health Hazards

Much of the County is dependent upon individual septic systems. As expected, some septic systems experience failures. Notable areas with high concentrations of septic failures include the Powellsville area. The Town of Powellsville is in the beginning stages of development of a central sewer system, to resolve these issues in the Town. However, areas on the outskirts of the Town will not be served by the system and will remain an area of concern due to septic failures.

About one-third of the Town of Kelford has failing systems, mostly due to small lot sizes that are substantially covered by structures, leaving no room for repair.

Several areas on the Indian Woods Road have failing systems. Concentrations of failing systems are also found in the area surrounding SR 1302 Lea Lumber Company Road and in an area on NC 45 between the intersections of SR 1361 Jeff White Road and SR 1301 Pine Ridge (typically called "Bloody Fork").

There are six swine animal operations in Bertie County permitted by the NC Division of Water Resources (DWR). Four of the operations are located in the western and northwestern sections of the county in the Roanoke River basin with two located in the Chowan River basin in the eastern section of the County.–This number reflects only operations required by law to be permitted, and does not represent the total number of animal operations in the region. According to DWR records, all of the registered farms are operating in general accordance with state requirements, with no major compliance issues. Risks associated with the farms include impacts to surface and ground water created by run-off or spills from the spray fields associated with the wastewater lagoons, or infiltration into ground water.

Natural Hazards

Repetitive Flood Losses

The Bertie County Multi-Jurisdictional Hazard Mitigation Plan, adopted in September 2004, provides information on participation in the National Flood Insurance Program (NFIP) and repetitive loss claims. As of December 2002 there were 93 NFIP insurance policies in Bertie County. Between 1978 and 2002, 14 NFIP claims were paid in Bertie County totaling $118,106.

One of the main objectives of the hazard mitigation planning process is to determine how best to reduce repetitive loss claims. NFIP statistics on repetitive loss claims indicate that Bertie County has two repetitive loss

claims. The two properties with repetitive losses are located in the Edgewood area just outside the Town of Windsor ETJ. The County is using the new (updated) flood plain maps.

Natural Resources (Environmentally Fragile Areas)
Fragile areas are sensitive areas that are easily destroyed by inappropriate or poorly planned development. Fragile areas include non-coastal wetlands, estuarine waters, public trust waters, estuarine and public trust shorelines, complex natural areas, prime wildlife habitats, areas that contain endangered species, maritime forests, natural heritage areas, and prime farmland. Much of Bertie County is located within or in close proximity to fragile areas. Incompatible development could result in a loss of these resources or impacts to the resource functions of these areas. Many of these areas have been previously discussed in the Natural Features Inventory of this section. The inventory contains information on unique and important natural resources in the planning area.

There are 13 active mining permits in Bertie County according to the NC Division of Land Resources records. All of the permits are for sand or gravel operations. The open pit mining operations are located throughout the County, with the majority scattered throughout the central section. Although mining activities can create erosion problems, the County relies upon the State's erosion and sedimentation control laws to regulate these potential impacts. Bertie County does not consider the mining operations to be incompatible with the rural character of the area.

SECTION 4: EXISTING LAND USE AND DEVELOPMENT

This section provides a "snap shot" of the current development situation in the county with respect to how the land is currently used and what development trends are emerging. It provides a base for projecting future development patterns and future land needs. The section includes maps of existing land use patterns, an assessment of growth areas in the county, and a forecast of future land needs. The County has been divided into two sections for mapping purposes – East General Land Use Patterns and Northwest General Land Use Patterns.

Existing Land Use Patterns

Bertie County and the Towns in the Planning Area have experienced little land development in recent years. With a few exceptions, development patterns remain unchanged from the previous plan. In general, limited residential and commercial development has occurred and while some commercial and industrial enterprises and institutional uses have expanded, others have diminished. For example, Perdue Farms, Inc. has expanded, and the new Bertie Correctional Center has been built, but Wrangler Inc. has closed its local facility. Bertie is also adjacent to Hertford County, site of the Nucor steel industry facility. Hopes of increased residential development in Bertie County to accommodate Nucor employees have not materialized.

Overall, the county remains rural in character. The growth and development that has occurred has taken place in both the municipalities and in the unincorporated areas.

The towns are important to the overall development of the county. They provide centralized services to the families and businesses in the county. They are centers for retail goods and services, personal and professional services, and health care. In addition, they provide a range of community services that are available to all residents of the planning area.

From a land development perspective, the towns provide sewer services that have become essential supports for appropriate development in the area. These services are discussed in more detail in the following section.

Existing Conditions

Planning area overview. Bertie County contains 474,381 acres of land. Table 8 provides a summary of existing land uses in Bertie County. Maps portraying general land use for the Northwest and East General sections of the County are

provided at the end of this chapter. The table and maps were prepared using data from Bertie County Land Records, NC Division of Forestry, and the NC Department of Agriculture.

Table 8 Bertie County
CAMA Land Use Plan Update
Existing Land Use

Land use category	Total Acres	Percent
Residential	7,096	1.5%
Business and manufacturing	5,302	1.1%
Public and quasi-public	83,475	17.6%
Farmland	142,000	29.9%
Timberland (forest land)		
Timber industry	55,300	11.7%
Private	181,208	38.2%
Total farm and timber	378,508	79.8%
Total county land area	474,381	100.0%

Sources: Bertie County Land Records; NC Division of Forestry; NC Department of Agriculture

As shown in Table 8, forestland is the most common type of land use in Bertie County. Loblolly-short leaf pine, oak-pine, and oak-hickory are the main forest types. Privately maintained timberland consists of 181,208 acres, plus an additional 55,300 acres is held by commercial forestry. As shown in these figures, approximately three-fourths of the timberland is privately owned and approximately one-fourth is owned by corporations that include Weyerhaeuser and its subsidiaries, International Paper, and Timberlands Unlimited. A total of 236,508 acres of timberland account for approximately 49.9 percent of the land area in the County, a decrease from the estimate of 70 percent contained in the previous land use plan (1998).

Farmland is the second largest land use with an estimated 142,000 acres, or 29.9 percent of the Bertie County land area. This total is an increase from an estimate of 22 percent of cropland in the previous land use plan (1998).

Public and quasi-public land ownership totals 83,475 acres, or 17.6 percent of the Bertie County land area. Included in this category are properties owned by the federal government, the State of North Carolina, and the Nature Conservancy. Federal land holdings are primarily located along the Roanoke River (18,707 acres), with an additional 2,254 federally owned acres elsewhere in the County. The State of North Carolina owns 1,809 acres on the Cashie River, 372 acres on the Chowan River, and 839 acres located elsewhere. The Nature Conservancy owns 1,058 acres on the Chowan River, 11 acres on Salmon Creek, 1,558 acres on the Roanoke River and 3,322 acres elsewhere in the County. Quasi-public lands include such uses as churches and schools.

Residential land uses total approximately 7,096 acres. This development is concentrated in the municipalities and along roads and highways on single lots, farmsteads, and small subdivisions in the unincorporated areas.

As in most other coastal counties, water is a strong development attraction and current development trends favor these locations. While modest residential growth is scattered throughout the County, a comparison from the existing land use plan (1998) to the present shows a notable increase in the eastern portion of the County, primarily in development along the Chowan River. Much of this development is geared to the second home/retirement market. There are some existing waterfront developments and others are currently being developed, including the Innsbrook (residential uses and marina) and Bal Gra (mixed use) developments. This area of the County is expected to continue to experience growth, as demand for access to the River will continue to increase.

According to the Bertie County Planning Department, subdivision activity from September 2005 through December 2007 resulted in the creation of 224 new lots within the County. (Records prior to September 2005 when the County's first planning director was hired are not readily available.) Many of these lots were created as a result of small subdivisions consisting of one to five lots each. However, 157 new lots were created with the approval of Innsbrook Phase 2.

Commercial development is located on approximately 5,302 acres in the planning jurisdiction, or 1.1 percent of the land area. Much of the development is located along major and minor roadways and consists of service related facilities to accommodate travelers, single-family residences and agriculture. Small residential concentrations in rural areas in crossroads areas support

development of convenience outlets, including gas stations and small stores and retail outlets. Manufacturing or industrial uses represent a smaller portion of the employment in the planning area. There are six major manufacturing uses that account for approximately 1,300 acres of the total business and manufacturing use category.

PUBLIC ADOPTION HEARING COPY

INSERT EXISTING LAND USE MAP

Historic Properties

Bertie County has an abundance of historic homes, including the Hope Plantation (c.1803). Hope Plantation was the home of David Stone, one of North Carolina's governors and outstanding political figures. Hope Plantation houses Stone's extensive library and a collection of 18th and 19th century furnishings. The Plantation is also home to a variety of early North Carolina structures that are representative of Bertie County.

Several documented historic areas (those that are located on the National Register) are located in Bertie County. The following Bertie properties are listed on the National Register:

Ashland (Ashland area)
Bertie County Courthouse (Windsor)
Bertie Memorial Hospital (Windsor)
Elmwood (Watson-Mardre House) (Windsor area)
Elmwood (Merry Hill area)
Freeman Hotel (Windsor)
Garrett-White House (Trap area)
The Hermitage (Merry Hill area)
Hope Plantation (Windsor area)
Jordan House (Windsor area)
King House (Windsor)
King-Freeman-Speight House (Republican area)
Liberty Hall (Grabtown area)
Oaklana (Roxobel area)
Pineview (Browne House) (Roxobel area)
Rhodes Site (Archaeological site near Hamilton)
Rosefield (Windsor)
Scotch Hall (Merry Hill area)
St. Francis Methodist Church (Lewiston)
William H. Lee House (Lewiston area)
Windsor Historic District (Windsor)
Woodbourne (Roxobel area)
Woodville Historic District (Lewiston-Woodville)

In general Bertie County is not experiencing rapid growth, thus limiting somewhat the potential for immediate major land use compatibility problems. However, there are some incompatibilities that the County may decide to address.

One such incompatibility includes junkyards or auto wrecking yards located adjacent to residential areas and public trust waters. These junkyards proliferate throughout the County. The junkyards impact the appearance of the areas and those located near streams may have an impact on water quality. The recently adopted Junkyard Ordinance aims to regulate the locations of new sites adjacent residential property, churches and public roads.

Another incompatibility identified during the planning process includes the proliferation of individual mobile homes and driveways along NC 13 and other thoroughfares, creating traffic hazards. The County may consider encouraging development of well-planned mobile home parks with limited access to major roads and shared driveways for other development.

Bertie County is currently developing an initial zoning ordinance. One goal of the project is to pro-actively plan for the location of new development before the County faces more serious land use incompatibility problems. The Future Land Use Map and Plan for the Future contained in the Land Use Plan Update should be a valuable tool to assist in development of the ordinance.

Future Development Trends/Conflicts with Classes II and III Lands

As noted in the above description, Bertie County has experienced limited growth in recent years. Some increase is occurring along the Chowan River as new waterfront developments are planned and built and other limited residential growth is scattered throughout the County. Areas near or adjacent the water are expected to continue to attract retirees and second home owners.

The Merry Hill area has experienced moderate growth, which is expected to continue. This area serves as a bedroom community to Plymouth, located in Washington County and the location of Domtar (formerly Weyerhaeuser), a major regional employer.

Areas along major highways in the County are expected to see limited growth. The area south of Windsor's extraterritorial jurisdiction on US 17 near the County Industrial Park has a variety of competing land uses, including residential, commercial, and agriculture, and is expected to continue to grow. To avoid compatibility problems, the County may wish to consider limiting new uses to those that complement the industrial park and highway users.

The NC 11 corridor in the western portion of the County was previously expected to experience additional growth due to industrial development. The expansion of the Perdue Farms, Inc. processing plant has not resulted in the anticipated need for additional residential development.

The CRC's planning guidelines require an analysis and description of any potential conflicts between the expected growth areas and lands designated as

Class II or Class III on the Environmental Composite Map. It is important to understand that the Environmental Composite Map is a "broad brush" depiction of the area's capabilities and limitations for development and that the development trends described above are also general descriptions.

No major conflicts between these areas have been identified. The areas expected to experience development during the five years following certification of this plan are primarily designated as Class I, although some development may occur in areas generally classified as Class II. In most cases, the Class II and Class III lands consist of protected lands (usually federal or state owned lands which are not available for development) or wetlands which are often precluded from development by state and federal requirements.

Bertie Alternative Growth and Development Scenarios – Impact on Land Use and Infrastructure Needs

This section includes three elements: (1) alternative population projections; (2) future land needs for each projection; and (3) a description of alternative growth scenarios.

Alternative Population Projections

Table 4.2 below contains a set of three population projections for the planning area. The "low" projection is based on the State Data Center's projections for the county. This projection assumes that historical natural increase and net migration trends will continue into the future and it is the **least optimistic** of the three. In this projection, there is significant out-migration from the county. The out-migration results in an aging population and related significant increase in the number of deaths over births, which is termed natural increase.

The "high" projection is the **optimistic forecast**. This forecast is based on natural increase rates and in-migration rates of Pitt County, which for eastern NC is a high growth community. The annual natural increase rate is slightly below 1%, and the annual in-migration rate is 1.4%.

The **moderate forecast** is based on natural increase rates and in-migration rates that are ½ of those incorporated into the **optimistic forecast**.

The optimistic forecast is used to estimate future land needs in Table 9 below.

Table 9
Planning Area Population Forecast
2005 to 2030

Forecast date	SDC Projection	Moderate Forecast	Optimistic Forecast	Optimistic Rounded
2005	17,405	17,405	17,405	17,000
2010	18,137	18,362	19,320	19,000
2015	18,214	19,372	21,445	21,000
2020	18,234	20,438	23,804	24,000
2025	18,238	21,562	26,422	26,000
2030	18,239	22,748	29,329	29,000

Sources: NC State Data Center; WBFI

Impact on Future Land Needs

The amount of land required to serve the planning area's current population is used to estimate the amount of land needed to serve the "optimistic forecast" from Table 9. Table 10 details these estimates. The actual population and the amount of land required to serve it may vary substantially from this projection and estimate. These estimates will provide the base for the analysis of the allocation of land to the various future land use classifications in Section 8 of the plan (Table 13).

Table 10
Future Land Needs Estimate

Population projection (optimistic)	17,000	19,000	21,000	24,000	29,000
	Estimated Land Needs (acres)[A]				
Residential uses	7,096	7,096	7,843	8,963	10,244
Business uses	5,302	5,302	5,860	6,697	7,654
Public and quasi-public uses	83,475	83,475	92,262	105,442	120,505
Total farm and timber	378,508	378,508	368,435	353,297	335,997

[A]- Estimates of future land needs are based on the percentage of population growth applied to the 2005 estimates of land use and population.

Planning Scenarios

A key step in formulating the land use policies and plan for the Bertie County planning area was to review alternative growth and development scenarios with the planning committee and to assess the land use and development impacts of each. The primary aim of scenario planning is to generate discussion about the future shape, pattern, and direction of development in the planning area.

Three scenarios were designed to explore development. The three scenarios included the following:

1- **Conventional development**
2- **Retirement community and heritage tourism driven development and job creation**
3- **Multiple activity centers stressing traditional economic development programs**

The review generated a development concept that included essential elements of each scenario. These elements are embodied in the land use and development policies and the future land use map.

SECTION 5: Community Facilities Analysis

Overview. Community facilities – roads, water, and sewer – can be the major growth generators and directors for the planning area and they are a major base for developing land use policies. This section provides information on existing facilities and any significant planned upgrades.

Roads

The Planning Area Map shows the major and minor road network in the planning area. As shown on the map, major highways include NC 11, NC 42, NC 45, NC 305, NC 308, US 13, and US 17. The County's transportation system is highly dependent upon automobile use. There is no comprehensive public transportation system. Bicycle and pedestrian networks are also limited.

Bertie County does not have any previous transportation or thoroughfare plans. However, a joint effort to develop a Comprehensive Transportation Plan (CTP) between the North Carolina Department of Transportation (NCDOT), Bertie County, Bertie County Municipalities, and the Peanut Belt Rural Planning Organization (RPO) has been completed.

The CTP is a multi-modal plan that identifies the entire existing and future transportation system, including highways, public transportation, rail, bicycle, and pedestrian facilities needed to serve the anticipated travel demand. Previously, thoroughfare plans identified the existing and proposed highway network needed to handle existing and future traffic. The CTP will replace thoroughfare plans where they exist.

According to NCDOT, the CTP typically includes a set of five maps for each mode of transportation and will be coordinated with local land development planning, although the Bertie County CTP will not include a public transportation and rail map. The CTP is a long-range plan and identifies existing and future transportation information and deficiency analyses. Alternative plans, project impacts, and cost-benefit analyses are included. The primary objective is to reduce traffic congestion and improve safety.

The CTP did not identify any major roads in the planning area as being near or over capacity in 2010. None are projected to be near or over capacity in 2035.

Bicycles and pedestrians are a growing part of the transportation system in North Carolina. The CTP identifies State Bicycle Route #3, which passes through

the southeastern part of the County from Washington County to Chowan County. Bicyclists share the road with vehicles as there are no bicycle lanes on this route, Due to the upgrade of US 17 this bicycle route may be rerouted. The CTP recommends development of a bicycle route along NC 308 from Washington County through Bertie County to the Northampton County Line.

Currently there are limited sidewalks within the town limits of the participating municipalities. The CTP notes that existing sidewalks are old or abandoned and do not comply with current design standards. Pedestrian sidewalks (new and improved) are recommended for the participating municipalities to provide safe alternative modes of transportation with each of the communities. All recommendations for bicycle and pedestrian facilities were coordinated with the local governments and the NCDOT Division of Bicycle and Pedestrian Transportation.

The CTP was locally adopted by Bertie County and the participating municipalities. It has been endorsed by the Peanut Belt RPO and adopted by the North Carolina Board of Transportation 2012.

Major recommendations for improvements contained in the Bertie County CTP are listed below:

- US 13 (R-2205): upgrade the existing facility to a 4-lane divided expressway from NC 42 to Hertford County Line.
- US 13 (R-2506): upgrade the existing facility to a 4-lane divided expressway north of Windsor to NC 42.
- NC 11/42 (R-2900): construct a new 4-lane divided freeway connecting Bertie County with Martin County and Hertford County.
- US 13/17 (BERT0001-H): upgrade existing 4-lane major thoroughfare to a 4-lane divided freeway with a median from the Martin County line to the town limits of Windsor. (Note: this project has been completed).
- US 17 (BERT0002-H): upgrade the existing 4-lane major thoroughfare to a 4-lane divided freeway with a median from US 17A east of Windsor to the Chowan River Bridge.
- NC 45 (BERT0003-H): widen this road to 24 feet with paved shoulders and turn lanes where necessary throughout Bertie County.
- Wakelon Road (SR 1001), (BERT0004-H): upgrade the existing facility to 24 feet with paved shoulders, including turn lanes at all major intersections.

- Hexlena Road (SR 1200), (BERT00005-H): upgrade the existing facility to 24 feet with paved shoulders, including turn lanes at all major ingersections.
- Connaritsa Road (SR 1200), (Bert0006-H): upgrade the existing facility to 24 feet with paved shoulders, including turn lanes at all major intersections.

The North Carolina Transportation Improvement Program (TIP) is a multi-year capital improvement program of major transportation projects funded with revenues from the State Highway Fund as well as other funding sources, including federal funds. The 5 Year Work Plan contained in the 2012 document includes the following projects in Bertie County.

Rural Projects

- US 13 Business north of Windsor to NC 42. Widen to multi-lanes.
- NC 42 at Powellsville in Bertie County to US 13 north of Ahoskie in Hertford County. Multi-lanes with bypass of Ahoskie.
- SR 1503 (Davis Road) to Chowan River. Pavement strengthening and resurfacing.
- SR 1108 (Indian Woods Road) to NC 305. Pavement strengthening and resurfacing.
- NC 11 to US 13/17. Pavement strengthening and resurfacing.

Federal Bridge Projects

- US 13 Quioccosin Swamp – replace Bridge No. 57.
- US 13 – replace Bridge No. 53 over White Oak Swamp
- US 13 – replace Bridge No. 51 over Cashie River

Water
There are a total of three public water systems operating in the planning area. These include the Bertie County Water System and municipal systems in Aulander and Powellsville.

The Bertie County Water System is the largest system, serving the unincorporated areas within the planning area and the Towns of Lewiston-Woodville, Kelford, Roxobel, Colerain, and Askewville. According to the most recent Water Supply Plan, the Bertie County system serves an estimated population of 10,750 through approximately 4,565 connections. The lion's share of use is residential, which accounts for 99% of usage.

The system's source of water supply is ground water. The system has an estimated capacity of 2.867 million gallons per day (mgd). The system currently pumps approximately 1.2 mgd, and its net available capacity is approximately 1.67 mgd, or nearly 42% of total capacity.

These systems appear to be adequate to serve the population increase projected for the planning period.

The following table provides an overview of the systems operating in the planning area.

Table 11A Water System Overview

System	Total customers	Average use (mgd)	Unaccounted (mgd)	Average supply (mgd)	Use % supply
Bertie County	4,565	0.940	0.210	2.867	42%
Aulander	638	0.124	0.008	0.504	25%
Powellsville	645	0.054	0.014	0.144	38%
Source: NC Division of Water Resources, County Local Water Supply Plans (www.ncwater.org/Water_Supply_Planning/Local_Water_Supply_Plan/search.php) Accessed 2015					

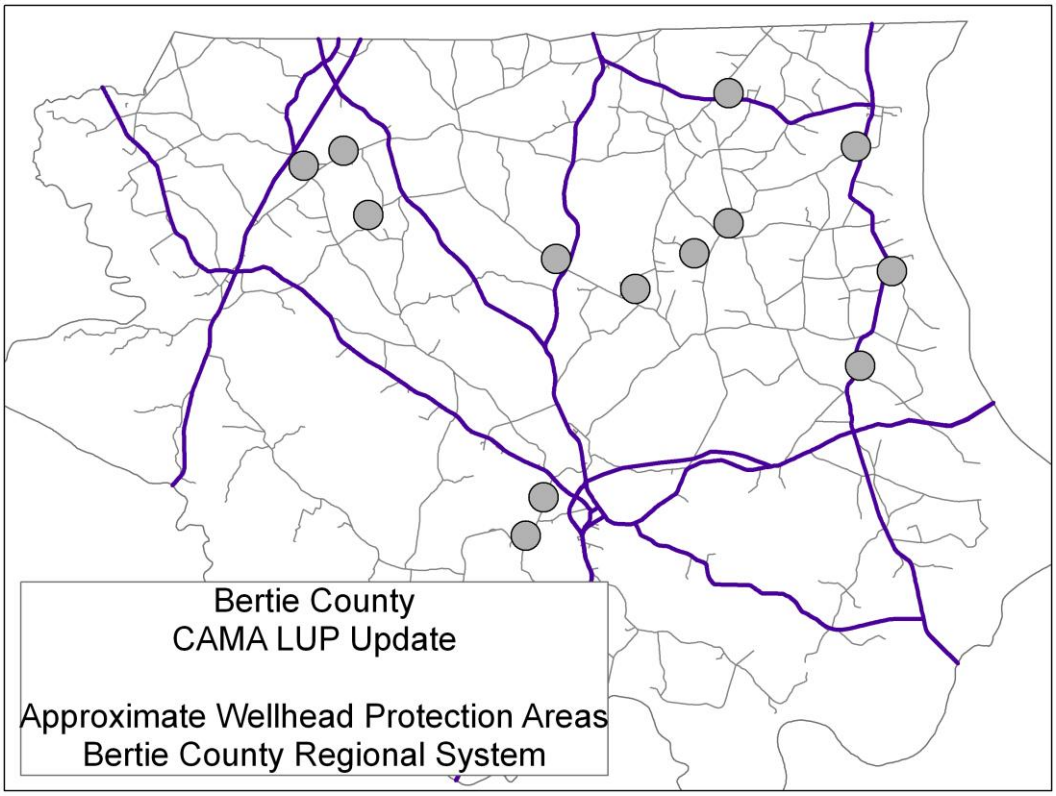
Bertie County recently accepted management of the South Windsor Water District, which serves the Town of Windsor extra-territorial jurisdiction located outside of the planning area.

Wellhead protection plans. The Bertie County system and the Aulander and Powellsville systems have implemented approved wellhead protection plans. According to the Division of Water Resources, "wellhead protection is protection of all or part of the area surrounding a well from which the well's ground water is drawn. This is called a Wellhead Protection Area. The Safe Drinking Water Act defines a Wellhead Protection Area as: the surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfields. The size of the protection area will vary

from site to site depending on a number of factors, including the goals of the local program and the geologic and hydrogeologic features of the area.

Land use policies that are consistent with the use-sensitive nature of the wellhead area should be incorporated into the land use plan.

A following map shows the general location of wellhead protection areas. This map is for illustration purposed and is not to scale.



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INSERT PLANNING AREA WATER LINES MAP

Sewer

According to mapping provided by DCM, four communities in the planning area operate wastewater collection systems: Aulander, Colerain, Lewiston-Woodville, and Powellsville. Details on these systems are provided in Table 11B below.

The Aulander system has an estimated 12,970 feet of collection lines. The system is old and utilizes spray irrigation. Nearly 75% of the lines were installed before 1960 and many are constructed of clay, which is a material that may suffer failures with age.

Due to inflow-infiltration problems that stem from the age of the system, it is at capacity,. The Town is making repairs to the existing system, as needed and anticipates that it will be adequate during the planning period. Due to the continuing pattern of population decline in the Town there are no plans to replace or extend the system during the planning period.

Colerain also utilizes a spray irrigation system. The system has an estimated 8,213 feet of collection lines and is relatively new, with most lines installed in 1995. These lines are made of PVC material. The Colerain system has a permitted capacity of 0.075 MGD and the current flow is at 44% of capacity.

Only Lewiston-Woodville has a permit for surface water discharge of treated wastewater. The collection system has approximately 8,402 feet of lines. This system is also relatively new and discharges into the Cashie River. The permitted flow is 0.150 MGD and the system is at 40% of capacity.

Askewville contracts with the Town of Windsor for sewer service. The Windsor system also discharges into the Cashie River.

The Town of Powellsville has recently installed a new sewer collection system, with the assistance of grant funds. This system collects wastewater and transmits it to Ahoskie for treatment. The Powellsville system has a maximum flow of 0.025 MGD and the system is currently at 48% of maximum flow.

The Towns of Roxobel and Kelford and the unincorporated areas of the County are served by individual septic systems.

Table 11B below shows the details of wastewater treatment systems.

Table 11B Waste Water System Overview

System	Total customers	Average daily flow (MGD)	Permitted flow (MGD)	Flow % of pemit
Aulander[a]	600	0.334	0.334	at capacity
Colerain	165	0.033	0.075	44%
Lewiston-Woodville	221	0.060	0.150	40%
Powellsville[b]	150	0.012	0.025	48%

[a] System has significant inflow-infiltration. Repairs and upgrades required during the planning period. Minimal population growth forecast for planning subarea.
[b] System pumps wastewater to Ahoskie for treatment.
Source: Interviews town representatives.

The locations of water and sewer lines in the planning area are portrayed on the Planning Area Water Lines Map and the Planning Area Sewer Lines Map. There are no known wastewater treatment system malfunctions. As previously noted, maintenance of the Aulander system is anticipated to be sufficient to maintain the operation of the system in satisfactory condition throughout the planning period.

Stormwater Systems

Bertie County does not operate a stormwater system. The only systems in the planning area are private drainage systems, side ditches along the road system, and ditches dug for mosquito control. No mapping of these facilities is available.

INSERT PLANNING AREA SEWER LINES MAP

Section 6: Land Suitability Analysis

Land suitability analysis is a process for identifying land in the planning area that is most suitable for development. The analysis is not intended to "rule out" any land or site from development. It is intended to provide information to local decision-makers on land that may have fewer environmental and regulatory restrictions, land where services can be provided at lower cost, or land that is most attractive given its proximity to existing development or to the waterfront areas.

The analysis includes three steps:

Step 1 Identify factors to be considered – natural constraints, such as wetlands, availability of water and sewer, proximity to existing developed areas.

Step 2 Estimate a rating for the suitability factors – how suitable is site with a particular factor for development. To aid in the analysis, ratings are assigned numerical scores.

Step 3 Determine the importance of each factor – 1 for important, 2 for very important, and 3 for essential.

Table 12 on the following page shows the factors that are included in the analysis, the rating assigned to each, and the relative importance of each factor.

Table 12
Land Suitability Analysis

Suitability factor	Least Suitable	Moderate Suitability	Highest Suitability	weight
	-2	1	2	
Proximity to water pipes	>.5 mile	.25 - .5 mile	<.25 mile	2
Soil/septic suitability	Severe		Slight/moderate	2
Proximity to sewer pipes	>.5 mile	.25 - .5 mile	<.25 mile	3
Proximity to water front		.5 mile +	<.5 mile	2
Proximity to existing municipality	>1 mile	.5 – 1 mile	<.5 mile	1
Proximity to secondary roads	>1 mile	.5 – 1 mile	< .5 mile	2
Proximity to primary roads	> 1 mile	.5 – 1 mile	<.5 mile	2
Flood hazard area	Inside		Outside	3
Presence of exceptional wetlands	-2		2	3

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The Land Suitability Map shows land suitability in the planning area according to these factors. It contains 3 classes of land – least suitable, moderate suitability, and highest suitability. The higher suitability areas are concentrated in corridors along primary roads, close to existing communities, and along the waterfront areas.

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INSERT LAND SUITABILITY MAP

SECTION 7: REVIEW OF EXISTING POLICIES

The purpose of this section of the Land Use Plan is to evaluate how the previous (1998) Bertie County Land Use Plan has been used to guide growth and development and the County's success in implementing policies contained in the plan.

The County's CAMA Land Use Plan is its major policy document that addresses land use and development management. The plan contains local policies required by the Coastal Resources Commission (CRC) in effect at the time of plan adoption and met the CRC's standards for land use planning and development in Areas of Environmental Concern (AECs) at that time.

The plan contains a comprehensive catalogue of policies on protection of coastal resources, economic and community development, hazard mitigation, and citizen participation. Generally, these policies rely on local agencies, such as building inspections and the health department, and state and federal agencies, such as the NC Division of Water Resources, the NC Division of Coastal Management, and the US Army Corps of Engineers to implement these policies through their continuing activities. However, the plan does set out several specific items to be accomplished.

Generally, all of the policies in the 1998 plan have merit. However, it is important to keep in mind that the County hired its first professional planner in 2005. Also, the County adopted the Subdivision Ordinance, the first county-level land development ordinance, in 2005. With these limited resources and tools, the County has focused on the most important land use and development needs and issues. It was not possible to focus on all of the policies in the 1998 plan and take steps to ensure that they were effectively implemented.

In addition, some of the policies require implementation tools that are not yet available in Bertie County. For example, many of the policies state that the County will encourage development in specific locations, which would require some tool similar to zoning.

However, the County has made good progress on several of the specific items targeted for accomplishment during the plan's implementation period. These items, along with their status, are listed below.

1. Encourage landowners to establish or maintain vegetative buffers around sensitive wetlands and water bodies – Conservation easements are in place in several areas of the County.

2. Plan for and promote preservation of historic and cultural resources – organized historic preservation groups in the County continue to keep these issues active. More work is needed to meet this goal.
3. Direct future growth to desired areas through the use of zoning, subdivision, and health department regulations and State and federal regulations – As noted above, the County adopted Subdivision regulations in 2005. Work has also begun on drafting the initial Bertie County Zoning Ordinance.
4. Install a Countywide water system - Done.
5. Pursue the expansion of natural gas service into the County - Done.
6. Consider the use of setback ordinances from highways for predominantly rural areas – Subdivision Ordinance includes setback requirements for new subdivision lots.

Section 8: Plan for the Future – Land Use and Development Goals, Policies, and Future Land Use Map

The "Plan for the Future" sets the course of action for Bertie County and the participating municipalities to achieve the planning vision. The plan includes three components: Land use and development goals, land use policies, and a future land use map. The policies and the future land use map are a direct result of the citizen participation process and extensive review by the Planning Board. As required, the policies and the future land use map address the six land use management topics established by the Coastal Resources Commission.

Land Use and Development Goals

The land use and development goals for the planning area are the desired ends toward which the policies and programs of the land use plan are directed. The goals also describe the values and general principles that guide the development of the area.

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

- Satisfactory access for residents and visitors to the planning area's public trust waters for a range of activities.
- Land use and development patterns that are consistent with the capabilities and limitations of the planning area's natural systems, preserve the area's heritage and life styles, and promote sustainable economic growth.
- Protection of natural areas that have high biologic, economic, and scenic values.
- Land use and development patterns that mitigate risks to people and property from storms and flooding.
- High quality water in the County's rivers, creeks, and bays, and the Albemarle Sound that meet water quality standards and that are approved for shellfishing.
- Infrastructure systems (such as water, wastewater, transportation, natural gas, and telecommunications) that encourage and promote sustainable industries and job opportunities as well as orderly residential growth.
- Sound economic base that generates jobs that allow individuals to live and work in the County.

- Quality of life that attracts and retains young adults, retiree population, and other groups who contribute to the County's economic diversity and well being.

Future Land Use and Development Policies

The future growth and development policies are the principles and decision guidelines or courses of action that the County and the municipalities in the planning area have selected to attain their land use and development goals.

The CRC's planning guidelines specify that local policies must address *six management topics*. The management topics are listed below:

1.0 Public Access
2.0 Land Use Compatibility (development and use of natural resources)
3.0 Infrastructure Carrying Capacity
4.0 Natural Hazards
5.0 Water Quality
6.0 Areas of Local Concern

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

The CRC's planning guidelines also provide planning objectives for each of the management topics. Objectives are intermediate, attainable steps towards goals. The management objective(s) for each management topic is shown at the beginning of each policy section.

Policies for Bertie County and participating municipalities in the planning area that address each of the six management topics follow.

1.0 Public Access

Planning Objective: Develop comprehensive policies that provide public trust water access opportunities for the public along the shoreline within the planning jurisdiction.

Bertie County and participating municipalities recognize that the quality and quantity of access to public waters in an essential component of the lifestyle enjoyed by its residents, property owners, and visitors and contributes to the area's economy. Public water access is a key for development of its retirement and second-home economy. The availability of adequate public water access sites is a major factor in the community's quality of life.

As the planning area continues to develop with communities for working age families, retirees, and second homeowners, pressure on existing access sites will increase. The participating local governments will need to ensure that existing sites are maintained, as well as develop strategies for development of additional sites.

The Plan supports continued operation of private and any public access sites and encourages development of additional opportunities for pedestrian, boating, and fishing access to ensure that all segments of the community are adequately served.

Policy 1.1
Bertie County will encourage and cooperate with municipalities and state and federal agencies to locate and develop public access sites where appropriate. Continued provision of access by the private sector will also be encouraged.

Policy 1.2
Bertie County will inventory and evaluate the appropriateness of potential sites for new public access facilities, with priority being given to access to major water bodies. Areas that have traditionally been used by the public will be given special attention. The inventory will serve as a guide to the location of improved access.

Policy 1.3
Bertie County and participating municipalities will encourage donations by property owners of sites that are suitable for public access. The local governments will explore mechanisms by which property owners may donate property or easements for public access and describe potential federal and state tax advantages associated with property donation.

Policy 1.4
Bertie County will explore sources of revenue to acquire and/or develop access sites and facilities, including matching grant funding from State agencies. A long-range financial plan that identifies sources of revenue to acquire or improve areas included on the inventory of potential public access sites will be developed.

Policy 1.5
Bertie County will ensure that public access is protected and encouraged through its review procedures for development proposals and plans. Developers of Planned Unit Developments (PUDs) in waterfront areas are required by the Subdivision Ordinance to provide neighborhood public access sites for the residents of the area. Developers of other residential projects are encouraged to provide access where opportunities exist. The Plan supports consideration of amendments to the subdivision regulations that require all new waterfront residential developments to provide neighborhood access for non-waterfront lots.

Policy 1.6
The Plan encourages design and operation of all access facilities in a manner that minimizes negative impacts on water quality and conflicts with other natural resources and surrounding land uses, and where feasible, provides for universal accessibility. In planning for marinas, owners are encouraged to consider protection or provisions for public access, provisions for restrooms and pump-out facilities, strict limitations on “live-aboard” situations, and other measures to protect water quality. Bertie County and participating municipalities encourage, but do not require, these measures.

Policy 1.7
Local governments in the planning area consider boating access to be an important component of the economy and water access system. However, they recognize the need for land use and development guidelines to prevent negative impacts on the area’s natural resources. Marinas and other docking facilities are allowed provided they comply with the North Carolina state minimum use standards for marinas, docks, and piers, NCAC 15A 07h .0208.

2.0 Land Use Compatibility

Planning objectives:
Adopt and apply local development policies that balance protection of natural resources and fragile areas with economic development.

Policies that provide clear direction to assist local decision making and consistency findings for zoning, divisions of land, and public and private projects.

The local governments that comprise the Bertie County Planning Area set planning goals that place high value guiding land development in a manner that is consistent with the capabilities and limitations of the area's natural systems and its heritage and life-styles. Promoting sustainable economic development is also a central element of these goals. Likewise, the goals give priority to protection of Bertie's many natural areas that have high biologic, economic, and scenic values.

The Areas of environmental concern (AECs) are major elements of the Bertie County natural system. These AECs include small areas of coastal wetlands, estuarine waters of the upper Albemarle Sound, public trust areas, and the shorelines of estuarine waters and public trust waters. These AECs have individual use standards that are set out in the CAMA regulations.

In addition, the planning area has extensive non-coastal wetlands that play a major role in preserving water quality, ameliorating flooding, and providing wildlife habitat.

Finally, the planning area has extensive protected lands that are maintained for their biologic and scenic values.

These areas and natural systems are discussed in detail in Section I of the plan.

The following policies provide guidelines for protecting these resources systems.

Policy 2.1
Uses in the estuarine waters or public trust waters of Bertie County interfere with their use or navigation by the public or that have clear-cut short term or long-term negative impacts on their biological, social, economic, and aesthetic values are not permitted. The county employs the North Carolina state use standard for estuarine and public trust waters, NCAC T15A: 07H.0208, to achieve this policy.

Policy 2.2
Uses in and nearby coastal wetlands that contribute to their conservation and that safeguard their biological, social, economic, and aesthetic values are permitted and encouraged. These permitted uses within coastal wetlands are limited to those that are water-dependent and that cannot be located in another area. The county employs the Subdivision Regulations and the North Carolina state use standard for estuarine and public trust waters, NCAC T15A: 07H.0208, to achieve this policy.

Policy 2.3
Land uses and development activity in the coastal shoreline zone must protect the public use and navigation rights in public trust waters and must mitigate clear-cut short term or long-term negative impacts on the values of public trust or estuarine waters. Permitted uses must protect natural barriers to erosion, limit impervious surfaces, provide adequate buffer zones, and not cause short-term or long-term erosion. The county employs the Subdivision Regulations and the North Carolina state use standard for estuarine and public trust waters, NCAC T15A: 07H.0209, to achieve this policy.

Policy 2.4
Marinas are permitted and supported in Bertie County. In planning for marinas, owners are encouraged to consider protection or provisions for public access, provisions for restrooms and pump-out facilities, strict limitations on "live-aboard" situations, and other measures to protect water quality. However, no local requirements beyond CAMA permitting standards are imposed. The County employs the North Carolina minimum use standards for marinas and piers, 15A NCAC 07H .0208 to achieve this policy.

Policy 2.5
Bertie County encourages only land uses and development activities that conserve the architectural and historic resources located within identified historic districts or individual properties. The county will continue to work with property owners to document historic resources in the county.

Policy 2.6
Bertie County encourages property owners and developers to minimize the impact of land uses and development activities on non-coastal wetlands through careful site planning to (1) avoid any activity that impacts wetlands, or (2) preserve the wetland area by flexible lot, infrastructure, and building layout. The county implements this policy through its review of soils maps required in preliminary subdivision plats for planned development.

Policy 2.7
Bertie County encourages low density and low intensity development that is consistent with its rural character. The following table details the development factors and maximum allowed density.

	Maximum Density allowed
Public water and sewer available	4.0 lots per acre
Public water available; soil suited for septic tank	2.0 lots per acre
Public water; soil classified as provisionally suited for septic tank due to drainage	1.7 lots per acre
Public water; soil classified as provisionally suited for septic tank due to consideration other than drainage	1.2 lots per acre
Private well; soil suited for septic tank	1.7 lots per acre
Private well; provisionally suited for septic tank	1.2 lots per acre

These lot densities are calculated on “net density” basis. The county employs the Subdivision Regulations to achieve this policy.

3.0 Infrastructure Carrying Capacity

Planning objective: Establish policies to ensure that the location and capacity of public infrastructure is consistent with the planning area's growth and development goals.

Public water and sewer systems and the state primary and secondary road system are the major elements of the planning area's infrastructure system. Local streets are located within the incorporated areas.

Water systems are interconnected in the planning area. The Bertie County system provides water for rural areas and the Towns of Lewiston-Woodville, Kelford, Roxobel, Colerain, and Askewville. The Bertie County system uses groundwater and has an estimated capacity of 2.867 million gallons per day (mgd). The system pumps about 1.2 mgd, with a net available capacity of approximately 1.67 mgd, or nearly 42% of its capacity. The major share of usage is residential, which accounts for 99% of usage.

The municipalities of Aulander and Powellsvillel also operate water systems. Information on these systems is found in Section 5: Community Facilities Analysis.

The municipalities of Aulander, Colerain, Lewiston-Woodville, and Powellsville operate sewer systems. Colerain utilizes a spray irrigation system. The Lewiston-Woodville collection system has approximately 8,402 feet of lines. This system is relatively new and discharges into the Cashie River. Askewville contracts with the Town of Windsor for sewer service. The Windsor system also discharges into the Cashie River. The Town of Powellsville recently received grant funding for construction of a sewer system, which is now operating. The Towns of Roxobel and Kelford and the unincorporated areas of the County are served by individual septic systems. Information on the municipal sewer systems is also found in Section 5: Community Facilities Analysis. The locations of water and sewer lines in the planning area are portrayed on the Planning Area Water Lines Map and the Planning Area Sewer Lines Map.

A joint effort between the North Carolina Department of Transportation (NCDOT), Bertie County, Bertie County Municipalities, and the Peanut Belt Rural Planning Organization (RPO) for development of a Comprehensive Transportation Plan (CTP) has been completed. The CTP is a multi-modal plan that identifies the entire existing and future transportation system, including highways, public transportation, rail, bicycle, and pedestrian facilities needed to serve the anticipated travel demand. Previously, thoroughfare plans identified the existing and proposed highway network needed to handle existing and future traffic. The primary objective of the CTP is to reduce traffic congestion and improve safety.

The recent completion of the project to four-lane US13/17 from Windsor to SR 1503 is a major transportation improvement for the planning area. Four-laning of US 13 north of Windsor to NC 42 is proposed in the TIP but is not funded.

One of the major goals of the Land Use Plan is to provide infrastructure systems that encourage and promote sustainable industries and job opportunities as well as orderly residential growth. The policies described below are designed to help the planning area achieve this goal.

Policy 3.1
Bertie County and the municipalities participating in the CAMA land use planning process will annually identify the planning area's priorities for upgrades and enhancements to the transportation system and seek to include these priorities in NCDOT Transportation Improvement Program. The county will continue participation in the RPO Technical Coordinating Committee to achieve this policy.

Policy 3.2
All streets, either public or private, constructed in the planning area to serve residential or non-residential developments must be designed and constructed to meet NCDOT's *Minimum Construction Standards for Subdivision Roads*. The county employs the Subdivision Regulations to achieve this policy.

Policy 3.3
Property owners or developers taking part in new development that would significantly impact traffic conditions or safety on the existing public road or highway system will be required to participate in facility upgrades. The county employs the NCDOT driveway permit policy to achieve this policy.

Policy 3.4
New developments located within the service area of the county or municipal water systems must connect to the system. The cost of connection to the system will be responsibility of the developer. Availability of public water service may permit development at a density of up to 2 lots per acre. Developments that are outside of water system service areas may use private wells that are approved by the Bertie County Health Department. The county employs the Subdivision Regulations to achieve this policy.

Policy 3.5
New developments located within the service area of a municipal wastewater collection and treatment system must connect to the system. The cost of connection to the system will be responsibility of the developer. Septic tanks are an acceptable wastewater treatment alternative for development where a public wastewater system is not available and where soils are suitable. Availability of public wastewater treatment service may permit development at a density of up to 4 lots per acre. The county employs the Subdivision Regulations to achieve this policy.

Policy 3.6
Bertie County allows land application-type package treatment plants to serve residential and non-residential development where public service is not available. A North Carolina licensed soil scientist must prepare documentation supporting the use of such a system. The county employs the Subdivision Regulations to achieve this policy.

Policy 3.7
Property owners and developers are responsible for implementing measures for ensuring that any stormwater generated by their development does not cause downstream flooding, erosion, or sedimentation. An approved stormwater permit from NC Division of Water Resources is required for any land-disturbing activity greater than one acre and is evidence that the development will not cause downstream flooding, erosion, or sedimentation. For new development that constitutes a subdivision, the county employs the Subdivision Regulations to achieve this policy.

4.0 Natural Hazard Areas

Planning Objective: Develop policies that minimize threats to life, property, and natural resources resulting from development located in or adjacent to natural and man-made hazard area, such as those subject to erosion, high winds, storm surge, and flooding.

Bertie County and the participating municipalities recognize the risks to life, health, public safety, and property that exist within or adjacent to hazard areas, including the estuarine system AECs, special flood hazard areas, and areas subject to storm surge associated with hurricanes. Natural hazards are related to the area's location as a coastal county subject to flooding, high winds, erosion, and other impacts of storm events.

Bertie County is a participant in the National Flood Insurance Program (NFIP) that requires the community to adopt a Flood Damage Prevention Ordinance and the Flood Insurance Rate Maps (FIRM). The Bertie County Flood Damage Prevention Ordinance currently requires all structures and other development located in flood hazard areas to be elevated to Base Flood Elevations (BFE) plus one foot of freeboard to account for uncertainties in the determination of flood elevation. This local requirement exceeds NFIP minimum standards. Flood insurance premiums in Bertie County are discounted to reflect the reduced flood risk resulting from the community actions.

The Bertie County Multi-Jurisdictional Hazard Mitigation Plan contains mitigation actions aimed at reducing vulnerability to all natural hazards that can be addressed in a practical manner at the local level. This plan was adopted on September 20, 2004.

Policy 4.1

Bertie County and the participating municipalities will minimize risks associated with natural hazards by continuing to implement mitigation measures and avoiding taking any action in hazard areas that substantially increases these risks to life and property. This policy will be implemented by the following actions.

4.1.1 The local governments will allow development and redevelopment within special flood hazard areas subject to the provisions and requirements of the National Flood Insurance Program (NFIP), CAMA minimum use standards, the North Carolina Building Code, and the local Flood Damage Prevention Ordinance(s). Special flood hazard areas are those areas delineated on Flood Insurance Rate Maps (FIRM) as having a 1% chance of flooding in any year.

4.1.2 To mitigate risks associated with flooding and other natural hazards, the local governments will continue to enforce the Flood Damage Prevention Ordinance(s) and will periodically update the Multi-Jurisdictional Hazard

Mitigation Plan that addresses a broad range of natural disasters, per the Disaster Mitigation Act of 2000 (DMA2K).

4.1.3 Local governments in the planning area who participate in the National Flood Insurance Program, a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed NFIP standards, will continue to do so.

4.1.4 Bertie County will review and update the Flood Damage Prevention Ordinance and consider implementing additional protective measures, including increasing the regulatory flood protection elevation to BFE plus two feet of freeboard.

4.1.5 The local governments will continue to require and maintain FEMA elevation certifications for all permits for new buildings or improvements to buildings on lots including any portion of the 100-year floodplain.

4.1.6 Bertie County will maintain its geographic information system (GIS) to map current and proposed land uses as an aid in assessing community vulnerability.

4.1.7 The local governments will consider participating in the Community Rating System (CRS) to reduce flood insurance premiums for citizens.

4.1.8 The local governments will consider adoption of a zoning ordinance (Bertie County, Roxobel, Powellsville, Colerain, Askewville) or amendments (Kelford, Lewiston, Aulander) as applicable to existing ordinances to set standards for future development, preserve flood hazard areas from development, and establish a flood hazard overlay zone to ensure that inappropriate development is adequately controlled.

4.1.9 The local governments will continue to enforce the subdivision regulations to implement minimum standards for property division.

4.1.10 The local government s will maintain a coordinated debris inspection and removal program following flood events.

4.1.11 The local governments will continue a public awareness campaign to educate citizens of the possible hazards associated with locating in floodplains and of measures that can be taken to lessen impacts of future floods, including retrofitting of homes and businesses.

Policy 4.2

Future location of public facilities and structures will take into consideration the existence and magnitude of natural hazards. Future construction of public facilities (i.e. utilities) will not be allowed in special flood hazard areas unless no other option is available. When location in special flood hazard areas is unavoidable, all facilities, utilities, and structures will be designed and located to comply with the requirements of the National Flood Insurance Program, Flood Damage Prevention Ordinance(s), CAMA minimum use standards, and the North Carolina Building Code. Special flood hazard areas are those delineated on Flood Insurance Rate Maps (NFIP) as having a 1% chance of flooding in any year.

Policy 4.3

Bertie County will coordinate existing and planned development and transportation infrastructure to ensure that adequate evacuation routes are available during emergencies. This policy will be implemented by the following actions

4.3.1 Bertie County and the participating municipalities will cooperate with and encourage the North Carolina Department of Transportation to provide adequate evacuation routes for all areas of the County. The local governments will take steps to ensure that traffic handling capacity in times of emergencies is a consideration in development of the Comprehensive Transportation Plan (CTP) and that needed improvements are included in the North Carolina Transportation Improvement Program (TIP).

4.3.2 New development proposals within the planning jurisdiction will be reviewed by the local governments for adequate access to major exit routes during hazardous emergency conditions.

5.0 Water Quality

Planning Objective: Develop policies for coastal waters within the planning jurisdiction to help ensure that water quality is maintained if not impaired and improved if impaired.

Bertie County and the participating municipalities in the planning jurisdiction support management of land uses and development to maintain and enhance water quality, conserve valuable coastal resources, and maintain the aesthetics of the waterfront. The local governments consider water quality to be a significant "quality of life" component of the area and an important factor in the area's economic development.

The local governments recognize the impact of paved areas, rooftops, and other hard surfaces associated with development, known as impervious surfaces, on water quality. Impervious surfaces create non-point source water pollution by preventing infiltration of water into soil and creating runoff that carries pollutants into surface waters. While the local governments are concerned with water quality, they also recognize existing development patterns, the rights of property owners, and the need to provide affordable housing as they attempt to balance resource protection and economic development.

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

State regulations implement buffer requirements along coastal shorelines. Bertie County implements a 75' shoreline buffer for Planned Unit Developments (see Policy 5.5 below). This requirement exceeds the State's minimum standards for development. Otherwise, local governments within the planning jurisdiction do not implement additional buffer requirements beyond those required by the State.

Policy 5.1

Bertie County and participating municipalities desire to reduce non-point source discharges in order to protect and restore water quality. The local governments encourage an "overall" low-density development and associated impervious surfaces that are consistent with maintaining and enhancing water quality. Emphasis is placed on the following implementation strategies.

5.1.1 Achieve low density development through cluster development and other land planning techniques (such as Low Impact Development) that reduce the impervious surfaces and increase open spaces associated with new development or significant redevelopment.

5.1.2 Encourage site planning that maintains site hydrology to the maximum extent possible by minimizing impervious surfaces and treating and managing stormwater onsite to the maximum extent when required.
5.1.3 Review and consider expansion of current shoreline buffer requirements to include local buffer requirements for traditional subdivisions and other developments.

Policy 5.2
Bertie County and the participating municipalities do not impose additional regulations on agriculture and forestry operations beyond state and federal requirements. The local governments strongly encourage farmers and timber operators to employ accepted Best Management Practices (BMPs) to minimize the impact of these operations on water quality. BMPs include vegetative, structural, and management systems that can improve the efficiency of farming operations. Additional information on BMPs can be obtained from the NC Division of Forest Resources and the NC Division of Soil and Water Conservation.

Policy 5.3
Local governments in the planning jurisdiction support location, design, and operation requirements for open water and upland marinas that minimize any negative impacts of these operations on water quality. Marinas are required to comply with the State's minimum use standards as found in 15A NCAC 07H .0208(b)(5). In addition, marinas are encouraged to establish pump-out stations and to participate in the "Clean Marina" program, a voluntary program administered by the NC Division of Coastal Management and the NC Marine Trades Association to recognize marina operators who use management and operations techniques that exceed regulatory requirements.

Policy 5.4
Bertie County and participating municipalities will continue to reinforce the State's soil erosion and sedimentation control program and stormwater management program by requiring proper permits prior to issuance of building permits or approval of final plans for subdivisions.

Policy 5.5
Bertie County requires a minimum 75' shoreline buffer or setback for all Planned Unit Developments (PUDs) that abut public trust or estuarine waters. The buffer is measured from the normal high water line. Only water dependent structures are allowed in this zone. The buffer is reduced to a minimum of 30' from man-made bodies of water, such as harbors, canals, or turn basins.

6.0 Local Concerns

Planning objective: Identify local concerns and issues and address them in the context of CAMA goals.

The section of the plan that outlines information about population, housing, and the local economy highlights the economic development needs of the Bertie County planning area. The county population declined between 1990 and 2000, and the 2005 state data center population estimate indicates that the population is still in decline. Examination of the age structure of the population indicates that some of the population decline may be attributed to younger individuals moving out of the county to find jobs.

Between 1990 and 2000, the share of employment in manufacturing activities declined sharply and the share of jobs in typically lower paying service industries increased. This trend is seen in other more rural coastal counties.

The planning board and citizens identified a wide range of planning issues and local concerns. However, many of these local concerns relate to job creation and economic development.

Three of the land use planning goals address components of economic development – jobs that allow individuals to live and work in the county; quality of life that attracts and retains young adults, retirees, and other groups; and infrastructure that supports sustainable industries and job opportunities.

The *local concern policies* in the land use plan address these needs and goals.

An economic development plan for Bertie County known as "Blueprint for Bertie" has been developed through a joint effort between the Frank Hawkins Kenan Institute of Private Enterprise at the University of North Carolina at Chapel Hill and local citizens. The economic development and land use plan goals complement each other by focusing on creating job opportunities, improving workforce training, better coordination between public and private institutions, and the use and marketing of underutilized resources.

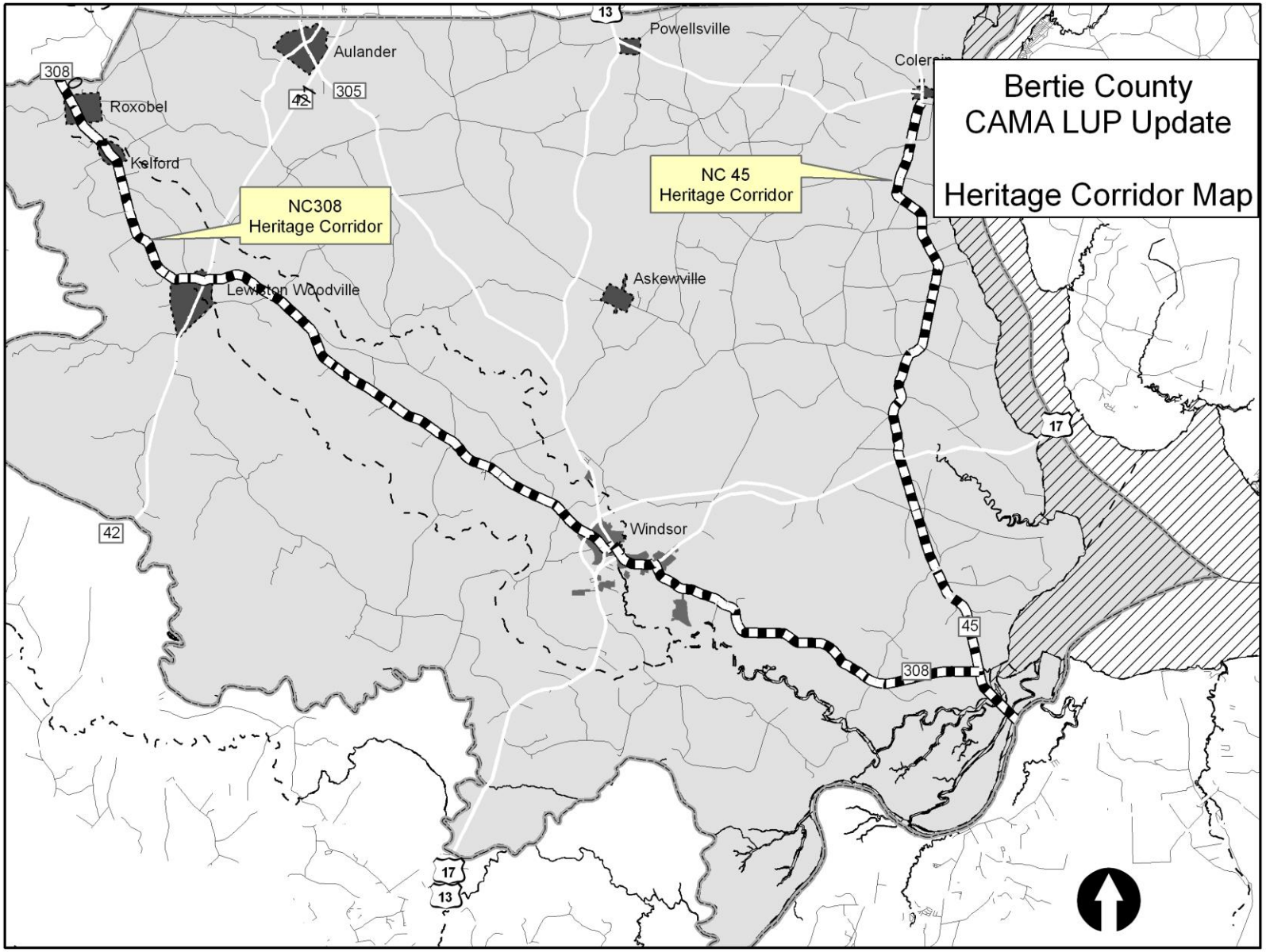
Policy 6.1

Bertie County and the municipalities in the planning area will use their natural and historic resources to create an integrated heritage tourism program that will generate jobs and improve overall livability.

6.1.1 The program will incorporate the planning area's public access locations and its significant natural heritage areas for paddling, birding, hiking, and other related activities to create an *eco-tourism* industry.

To create a foundation for the program, the county will work with the municipalities to create two heritage corridors. The Heritage Corridor Map is found on the following page.

NC308. This Heritage Corridor extends from Roxobel in the west to the Sans Souci area in the southeast where it intersects with NC45. This corridor contains numerous historic properties and districts, including the Woodville Historic District, Hope Plantation, and the Sans Souci Cable Ferry. In addition, the corridor contains designated Wildlife Refuge lands under the control of the Nature Conservancy, the NCWRC, the NCDOT, and the US Fish and Wildlife Service. Two areas near Lewiston-Woodville are part of the Upper Roanoke River Wetlands complex; there are two areas in the southeast


Bertie County
CAMA LUP Update
Heritage Corridor Map
NC308
Heritage Corridor
NC 45
Heritage Corridor
Aulander
Powellsville
Roxobel
Kelford
Lewiston Woodville
Askewville
Windsor
308
305
42
13
17
45

that are part of the Lower Roanoke Wetlands complex. The southeastern portion of the corridor contains the Sans Souci Cable Ferry and a NCWRC boat ramp for access. Focus in this area will be development of paddling access, preservation of historic properties, and design and installation of a safe bicycling trail. Developing linkages among resources is a paramount goal.

NC45. This Heritage Corridor extends from its intersection with the NC308 corridor north along the Chowan River to Colerain. This corridor is anchored on the south by the Sans Souci Ferry, the NCWRC boat ramp, and the wildlife refuge areas on the south and the Colerain community and the Colerain Museum that documents the herring fishery that has been a major part of the history of the planning area. The focus in this corridor is to create a safe bicycling trail, to identify historic resources, and to create access to natural resource areas.

6.1.2 To support the program, information and assistance will be provided for preservation and adaptive reuse of individual historic properties and historic districts in the planning area.

6.1.3 The county will seek assistance to prepare tourism resource guides to attract visitors and it will cooperate with other heritage tourism programs in the region. The county will work with the North Carolina Department of Commerce, the State Historic Preservation Office, the Roanoke-Chowan Heritage Center, the Foundation of Renewal for Eastern North Carolina, and local organizations to achieve the policy.

Policy 6.2

The county and municipalities will develop and implement a plan to remove and properly dispose of abandoned, dilapidated manufactured homes

Future Land Use Map

The future land use map (FLUM) is a central feature of the Bertie County CAMA Land Use Plan. The CAMA Land Use Planning Guidelines state that the future land use map "depicts application of the policies for growth and development and the desired future patterns of land use and land development with consideration given to natural system constraints and (local) infrastructure policies."[3] The FLUM is intended as a land use and development guide; it is not intended to be a zoning code or ordinance.

CAMA land use planning guidelines specify basic concepts that must be shown on the FLUM. They are:

- Areas and locations planned for conservation or open space and a description of compatible 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;
  - Infrastructure required to support planned development in each area.
- Areas in existing developed areas for infill, preservation, and redevelopment; and
- Existing and planned infrastructure – major roads, water, and sewer.

The Bertie County FLUM is an outgrowth of the planning area's growth and development goals and the policies detailed in Part III, Section B. The policies contained in the *Land Use Compatibility* management topic (Part III, Section B., 2.0) are the basis for the content and design of the FLUM.

The land classifications and the FLUM are not intended to be a development ordinance that prescribes location, type, density, and intensity of development. Rather, they are intended to be planning guidelines that may provide direction for local public and private decisions and for possible future adoption of a comprehensive development management program.

Each of the land classifications contains descriptions of compatible uses. Rather than attempting to provide a list of incompatible uses that may be incomplete, the following decision guide is provided to assist local decision-makers to determine uses that are incompatible.

[3] 15A NCAC 7B.0702(d)(4)

Things to Consider to Identify Inappropriate Land Uses

Will the land use materially reduce any environmental or community values associated with natural systems?
Will the use location or design produce unnecessary risks to life or property?
Will the use impact a civic use, such as a school, park, or religious building?
Does the use meet an essential community need?
Will the use result in the loss of or damage to a historic property or site?
Does the use have undesirable characteristics that cannot be buffered from existing or planned land uses? Noise, vibration, light, building characteristics, hours of operation?
Will the use generate traffic impacts that cannot be accommodated by the existing or planned transportation system, or will the use and its location significantly reduce the capacity of the existing highway network? Can traffic impacts be mitigated?
Will the use require a higher level of community services than currently available or planned for the near term?

The planning area Future Land Use Map (FLUM) is located at the end of this section.

1. *FLUM* Future Use Land Classifications

A. Conservation I (Areas to be preserved)

The Conservation I classification delineates land and water features where there are serious hazards to personal safety or to property, where new development would cause serious damage to the values of natural systems, or where new development is not permitted by local, state, or federal policy. The classification is designed to provide for the protection and long-term management of the planning area's most important natural systems. In general, these areas are not under local government planning authority and are not available for development. The following land and natural systems are included in this classification:

Coastal wetlands where present
Non-coastal wetlands, exceptional
Statutory stream buffers
Public open space, parks, and conservation areas
Floodways where established

The following are examples of compatible land uses and activities in the Conservation I Classification:

Public access facilities
Fishing piers and docks
Farming and forestry that meet "buffering" guidelines
Public uses, such as parks, greenways, nature preserves, and natural areas

Conservation I
General character of planned development and land uses:
Natural landscape and waterscape with civic uses, such as parks and public access, farms, forestry, and fishing.

Examples of incompatible uses are those requiring structures, such as residential or commercial uses, that reduce the natural resource values of land in the classification or that may be negatively impacted by the hazards that are present.

The Conservation I Classification includes approximately 129,439 acres, exclusive of water features, on the FLUM.

B. Conservation II Overlay Classification (Areas to be protected)

The Conservation II classification is as an overlay that applies policies to guide development in all of the non-conservation land classes. The classification helps local governments in the planning area to mitigate risks to life and property associated with storm and flood hazards. The overlay includes the following features and natural systems:

Significant/beneficial wetlands
Flood hazard areas
Soils with severe septic tank limitations

The Conservation II Classification is an overlay that typically represents the Class II environmental areas that contain "development hazards and limitations that may be addressed by methods such as restrictions on types of land uses, special site planning, or the provision of public services." The Conservation II Classification places additional limitations on the compatible uses and activities of the underlying land classifications. For example, an area classified as a New Growth Center that has soils with severe limitations for septic tanks will have a Conservation II overlay. Provision of community sewer or an alternative onsite treatment system could mitigate the Conservation II limitation.

The Conservation II Classification overlays approximately 108,737 acres in the Agriculture-Forestry-Rural Housing, Traditional Growth Centers, and New Growth Centers classifications. (Acreages in the underlying land classifications are estimated separately.)

C. **Traditional Growth Center** (Areas Planned for New Growth and Development, Infill and Redevelopment)

The Traditional Growth Center Classification is designed to delineate areas for the continued intensive development, redevelopment, and infill development in the municipalities and the nearby-unincorporated areas. These areas have the highest levels of community services in planning area and essential services, such as public water supply, wastewater treatment, transportation, and fire and rescue services, are readily available or close-at-hand. This classification includes all of the land within the current municipal limits plus an area of approximately 1.5 miles on the peripheries of towns where urban-type services are more likely to be available.

The following are examples of compatible land uses and activities in the Traditional Growth Center Classification:

Single-family houses
Townhouses
Small apartment buildings
Convenience, specialty, community-oriented, and regional-serving commercial activities (may be freestanding or developed in clusters)
Offices for a range of services
Industrial type buildings, either freestanding or in campus settings
Civic uses such as parks, greenways, schools, hospitals, governmental offices, and other civic and religious structures

Traditional Growth Centers
General character of planned development and land uses:
A wide range of building types with a mix of houses, townhouses and small apartment buildings, with supporting retail, office, industrial-type buildings, and civic buildings like government offices, schools, hospitals, and churches.

Examples of incompatible uses are commercial and industrial activities that produce emissions, noise, vibration, light, and other characteristics that impact the livability of surrounding areas; activities that cannot be accommodated by the transportation system or community services.

Approximately 65,038 acres are allocated to this land classification on the FLUM.

Plan guidelines for developed areas

Residential density:	**1.6 units / gross acre**
Target non-residential FAR:	**0.20 for freestanding buildings** **0.40 for cluster or unit development**
Typical building site:	**0.6-acre or smaller, depending on community services available**
Typical building height:	**1- to 2-story, with 3+ stories depending on services**
Land for streets, easements, etc:	**+25% building site**
Maximum impervious surface:	**Subject to Coastal Stormwater Rule Standards**

D. New Growth Areas

This land classification includes areas that are expected to undergo more urban-type development during the planning period and beyond. The general character of development in this classification includes lawns and landscaped yards surrounding detached single-family houses; cluster development with predominantly residential buildings; small-scale retail buildings; and some farms and timberlands.

This development may be located along the planning area's principal highways close to existing communities but outside of the Traditional Growth Areas. In addition, it may be associated with the economic development policy to encourage water-oriented development for second home and retirement communities.

These areas have reasonable access to the highway system; however, they will rely on septic tanks or they may be self-sufficient in terms of community infrastructure. However, public wastewater treatment will not be available during the planning period, and they may rely on other forms of onsite wastewater treatment.

The classification is subdivided into the following categories:

Retirement-Resort Development Area
Transition Areas

The **Retirement-Resort Development Area** encompasses the water-oriented areas along the Chowan River. The planning area is already undergoing resort-type development in this area and the plan encourages continuation of this trend as a sensitive land use and also as an economic development strategy.

Overall, the development in these areas will reflect the leisure-oriented development model with amenities such as marinas and golf courses, low density land use, and supporting commercial and mixed-use development.

The **Transition Areas** are located along the planning area's major thoroughfares, close to Traditional Growth Areas. They take advantage of highway access and the potential future availability of services. In addition to low intensity, residential-oriented land uses, these areas may include commercial and business-oriented uses.

Approximately 17,686 acres are allocated to this classification on the FLUM.

The following are examples of compatible land uses and activities in the New Growth Areas Classification:

Single-family houses
Cluster development with predominantly residential buildings
Small-scale retail and office buildings
Farm, forestry, fishing or related establishments
Employment uses, such as industrial or distribution establishments
Civic uses, such as parks and greenways, schools, governmental offices

New Growth Areas
General character of planned development and land uses:
Lawns and landscaped yards surrounding detached single-family houses; cluster development with predominantly residential buildings; small-scale retail and office buildings; some farm, forestry, fishing or related establishments.

Examples of incompatible uses are commercial and industrial activities that produce emissions, noise, vibration, light, and other characteristics that impact the livability of surrounding areas; activities that cannot be accommodated by the transportation system or community services.

Plan guidelines for developed areas

Target residential density:	1.33 units / gross acre
Non-residential FAR:	0.2
Typical building site:	0.5-acre or larger, depending on community services available
Typical building height:	1- to 2-story
Land for streets, easements, etc:	+25% building site
Maximum impervious surface:	Subject to Coastal Stormwater Rule Standards

E. Agriculture-Forestry-Rural Housing (A-F-RH)

The Agriculture-Forestry-Rural Housing classification provides for the preservation of the planning area's farming and forestry and its rural housing and hamlets, and it provides a reserve area for more intensive uses in the future. These areas are keys to preserving the planning area's farming and forestry that remain a major part of Bertie County's economic base and to preservation of its rural landscape that is essential to the lifestyle of the planning area.

Public sewer service will not be provided in this land classification during the planning period unless it addresses a public health problem or it supports a job-creating opportunity.

Approximately 261,339 acres are allocated to the A-F-RH classification on the FLUM.

A subcategory of the A-F-RH classification is the **A-F-RH Renewal Corridor** located along US 17 south of the Windsor Planning Area. This corridor contains a mixture of

residences and businesses in an agriculture area. Some of the structures are in need of repair and some of the vacant lots offer opportunities for low intensity infill development that is compatible with the overall objectives of the A-F-RH classification. The overall land use and development guidelines apply. Approximately 920 acres are allocated to the **Renewal Corridor** on the FLUM.

The following are examples of compatible land uses and activities in the Agriculture-Forestry-Rural Housing Classification:

> **Agriculture-Forestry-Rural Housing**
> General character of planned development and land uses:
> Primarily farm, forestry, fishing, and extractive establishments and open land with scattered houses and buildings and small crossroad communities or hamlets; rural/conservation residential cluster development.

- Farming, forestry, fishing and related activities
- Extractive uses
- Rural, either freestanding or in rural clusters
- Retail and wholesale nursery operations
- Manufacturing of food and related agricultural products
- Wineries
- Convenience stores and agricultural supply operations
- Home-based occupations
- Farm worker housing that meets NC Department of Labor standards
- Job-creating activities, such as industrial or distribution uses, that are determined to be compatible with farm and timber operations
- Civic uses such as parks, greenways, nature preserves, and religious structures

Examples of incompatible uses are any intensive commercial and residential uses that are inconsistent with the rural character of the classification or that require significant levels of community services.

<u>Plan guidelines for developed areas</u>

Target residential density:	1 unit / 10 acre gross
Non-residential FAR:	0.1
Typical building site:	1.0-acre or larger
Typical building height:	1- to 2-story
Land for streets, easements, etc:	+25% building site
Maximum impervious surface:	Subject to Coastal Stormwater Rule Standards

Preserving agriculture, forestry, and the rural character of the area, as well as promoting economic development, are priorities for Bertie County. These priorities are reflected in the Community Vision developed at the beginning of the planning process, as well as planning objectives listed in the policy discussion earlier in this chapter (Land Use Compatibility policies). Densities allowed in this classification, and policies contained in the plan, support these priorities, and aim to balance protection of natural resources with economic development. From time to time, landowners will

desire to develop rural property located in this classification more intensely than the guidelines shown above, particularly property located near water features. In this event, the County will take steps to ensure that agriculture, forestry, and other rural areas are protected, but will allow greater densities. Density for such projects located in the A-F-RH classification will not exceed 2 units/acre.

Allocation of Land to Various Land Classifications

As required by the land use planning guidelines, Table 13 provides a comparison of future land needs, based on existing land use trends and the population forecast, with the amount of land allocated to each future land use classification on the Future Land Use Map. The steps in the analysis to develop Table 13 are as follows:

1. An analysis of existing land use trends was developed using Bertie County cadastral maps and the analysis used as the starting point for estimating future needs. (Table 4.1)
2. A population forecast for the planning area was generated based on assumptions regarding trends in in-migration, births, and deaths. (Table 4.2)
3. Using land use and development scenarios, the share of future development allocated to future land use classifications was estimated.
4. The amount of land in each future land use class was estimated and compared to the need forecast.

Table 13
Allocation of Land to Future Land Use Classifications

	Conservation I	Conservation II[b]	Agriculture, forestry, and rural housing	New growth areas	Traditional growth areas
Planned development allocation	na	na	15%	65%	20%
Households (forecast 6,300 increase)	na	na	945	4,095	1,260
Typical lot size (acres)[a]	na	na	1	0.75	0.6
Residential acres needed (rounded)	na	na	945	3,071	756
Land allocated to streets and easements (.25 multiplier)(rounded)	na	na	236	768	189
Business uses 0.75 multiplier (acres)	na	na	709	2,303	567
Total acres needed	na	na	1,890	6,143	1,512
rounded			1,900	6,100	1,500
Acres allocated on FLUM	129,000	110,000	260,000	18,000	65,000
Estimated developed area	na	na	5,000	2,000	10,000
Net acres allocated on FLUM	129,000	110,000	255,000	16,000	55,000

(a) To improve the accuracy of the analysis, typical lot sizes identified in the existing land use analysis are used to estimate acres needed.
(b) The Conservation II Overlay may affect the development capability of the underlying classes.

Acreages of the land classifications that underlie the Conservation II overlay classification (Traditional Growth Areas, New Growth Areas, and Agriculture, Forestry, and Rural Housing) are calculated separately.

Table 13 shows that the number of acres allocated on the Future Land Use Map significantly exceed the number of acres of land in the traditional and new growth areas that are needed as a result of even the most optimistic population growth forecast. For planning areas like Bertie County, where population growth is negligible and physical development trends are not readily discernable, making future land use allocations that mirror need is challenging for the local planning process. If the county planning area experiences steeper growth trends in the future, it should be possible to make the future land use map more closely reflect population increase needs.

Cost of Required Community Facility Extensions

The land use planning guidelines also require the local government to project the cost of extending any community facilities necessary to implement anticipated development patterns. The development patterns shown on the Future Land Use Map are consistent with the land suitability analysis that was conducted as part of the planning process. None of the development patterns are dependent upon the

construction or extension of additional community facilities. As noted in the community facilities analysis, existing water and wastewater systems are adequate to serve the area through the planning period.

Insert Future Land Use Map

Section 9: Tools for Managing Development

This section of the land use plan provides Bertie County's strategy and action plan for implementing the policies contained in Section 8. The following components are included:

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

Role and Status of Plan (or How to Use the Plan)

The Bertie Joint Land Use Plan provides a framework to guide local government officials and citizens as they make day-to-day and long-term decisions affecting development. The land use plan serves as an overall "blueprint" for development of planning area that when implemented, should result in the most suitable and appropriate use of the land and protection of the area's natural systems. In addition to serving as a guide to the overall development of the planning area, the land use plan will be used by local, state, and federal officials in CAMA permitting decisions, project funding, and project consistency determinations.

State-CRC Use of the Plan

The State relies on CAMA, the Governor's executive order number 15, 15A NCAC Chapter 7 Coastal Rules – previously accepted by the federal Office of Coastal Resource Management, and local government zoning enabling legislation to support its role in implementation of the policies contained in the plan. The following provides an overview of the measures used by the State:

From the CAMA: No development permit may be issued which is inconsistent with the local LUP (NCGS 113A-111 Effect of land use plan)

(1) DCM will not issue permits for development in the Bertie County planning areas that is inconsistent with the approved CAMA land use plan.
(2) Local ordinances or other local regulation that apply to areas within an AEC that are inconsistent with the land use plan are not allowed. Any existing local ordinances and regulations within areas of environmental must be reviewed in light of the land use plan policies and modified as may be necessary to make them consistent with the plan.

(3) The Coastal Resources Commission reviews all local ordinances and other local regulations affecting planning area, but not affecting an AEC, for consistency with the land use plan policies. If the Commission review finds inconsistencies, recommendations for modification are transmitted to the county and the participating towns.
(4) State agencies undertaking projects and activities in AECs must obtain applicable CAMA permits before proceeding. Permit applications that do not meet development standards will be denied, and the project or activity will not be allowed to proceed. The CRC development standards and the local land use plan policies are applied to state projects throughout the planning area.
(5) State land policies governing the "acquisition, use, and disposition of land" by state agencies must be consistent with the CRC's rules throughout the planning area, which by reference includes the approved CAMA land use plan.

From zoning ordinance enabling legislation: Required statement of consistency (NCGS 160A-383/153A-341)

NCGS 160A-383 and 153A-341 require local governments to develop zoning regulations in accordance with a comprehensive plan. It also requires statements of consistency when adopting or rejecting zoning amendments that describe how the amendment is consistent or inconsistent with the comprehensive plan or other applicable plans. The planning board is also required to advise the governing body on whether the proposed amendment is consistent with any adopted comprehensive plan or other applicable plan.

Should the county decide to adopt a zoning ordinance to implement the CAMA LUP in the unincorporated areas, then the consistency requirements apply. Likewise, municipalities in the planning area must follow the consistency requirements when amending their zoning ordinances.

Federal Consistency – Use of the Land Use Plan

Because North Carolina's Coastal Management Program is federally approved, a number of activities are required to comply with the enforceable policies of the State's certified coastal management program – even if those activities do not require CAMA permits under State law.

This "Federal consistency" authority applies to any activity that is within the State's coastal zone that may reasonably affect any coastal resource or coastal use within the State's coastal zone (even if the activity occurs outside of the coastal zone). Federal consistency applies to any activity that 1) is a Federal activity; 2) requires a Federal license or permit; 3) receives Federal money; or 4) is a plan for exploration, development or production from any area leased under the Outer Continental Shelf

Lands Act. These projects must comply with the key elements of North Carolina's Coastal Management Program, which includes the following:

- The Coastal Area Management Act
- The State's Dredge and Fill Law
- Chapter 7 of the Title 15A of North Carolina's Administrative Code
- Regulations passed by the Coastal Resources Commission (CRC)
- *Local land use plans certified by the CRC*
- A network of other state agencies' laws and regulations.

Consistency review by the Division of Coastal Management (DCM) covers a wide range of projects. Examples of projects subject to this review include proposed wetland fill that requires an Individual Permit from the US Army Corps of Engineers, expansion of military operations and facilities, acquisition and expansion of Federal wildlife refuges, channel-maintenance dredging projects, and public project such as highways and water and sewer line.

Policies contained in the Bertie County Land Use Plan, including those portrayed on the Future Land Use Map, will be used by DCM in making federal consistency determinations.

Local Use of the Land Use Plan

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

Short-term or day-to-day functions relate primarily to use of the plan by local government staff, planning boards, and elected boards in the administration of land use and development policies, such as zoning and subdivision regulations, and the public's understanding and use of these policies in development decisions affecting their own property.

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

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

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

Planning boards will make individual determinations of the consistency of development proposals with the land use plan policies. Planning board members will consider staff recommendations, but may choose to give different weights to the land use plan policies. Planning boards will then make recommendations to the Board of Commissioners for final approval of development requests. The plan may be the basis for recommendations to approve, modify, or deny development proposals.

The elected boards will consider the policy interpretations of the petitioner, planning staff, planning board, and public comments by citizens in making its own policy interpretations and final decisions regarding proposals. Like the planning board, elected boards may use the plan as a basis for approving, modifying, and denying development proposals.

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

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

Existing Development Program

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

1. Plans and programs

a. Bertie County Land Use Plan

A Land Use Plan was adopted by Bertie County on August 17, 1999 and was certified by the Coastal Resources Commission (CRC) on September 8, 1999. The plan was an update to previous land use plans prepared in 1976, 1980, 1986, and 1990. The Bertie County Planning and Inspections Department is responsible for coordinating the implementation of the land use plan.

Once locally adopted and certified by the CRC, the current plan will take the place of the 1998 plan. The current plan covers the unincorporated areas of the County, and with the exception of the Town of Windsor, will cover all municipalities in Bertie County. Once certified, the current plan will replace all municipal plans in the County (with the exception of the Town of Windsor), such as the plans for the Towns of Colerain, Kelford, and Powellsville.

b. Comprehensive Transportation Plan

Bertie County does not have any previous transportation or thoroughfare plans. However, a joint effort is underway between the North Carolina Department of Transportation (NCDOT), Bertie County, Bertie County municipalities, and the Peanut Belt Rural Planning Organization (RPO) on development of a Comprehensive Transportation Plan (CTP). The CTP is a multi-modal plan that addresses the entire existing and future transportation system, including highways, public transportation, rail, bicycle, and pedestrian facilities.

The North Carolina Transportation Improvement Program (TIP) is a multi-year capital improvement program of major transportation projects funded with revenues from the State Highway Fund as well as other funding sources, including federal funds. The TIP provides a schedule for improvement projects and their anticipated cost for a period of seven years into the future.

c. Hazard Mitigation Plan

Bertie County adopted a Multi-Jurisdictional Hazard Mitigation Plan on September 20, 2004. The purpose of the document is to outline the County's vulnerability to each of the hazards it faces and outline steps it can take to lessen or eliminate the impact of each of them. The Hazard Mitigation Plan lists supporting agencies that can be counted on for technical or fiscal help. The plan also documents the legal, political, technological, fiscal, and institutional capability that Bertie County has to implement mitigation measures within its boundaries.

The plan covers the unincorporated areas of the County, as well as the Towns of Askewville, Colerain, Kelford, Lewiston-Woodville, Powellsville, Roxobel, and Windsor. The plan is scheduled to be updated in 2010.

A summary of hazard mitigation actions for Bertie County and the participating municipalities as contained in the Hazard Mitigation Plan is included as Appendix __ of the Land Use Plan.

d. Water Supply Plan

In accordance with North Carolina General Statute 143-355 (l), all local governments that supply, or plan to supply, water must prepare a local water supply plan. The plan is an assessment of a water system's current and future water needs and its ability to meet those needs. Bertie County's Water Supply Plan was last updated in 2002. Although all of the municipalities in the planning area obtain water from the Bertie County Water System, the municipalities of Aulander, Roxobel, Windsor, Powellsville, Lewiston-Woodville, and Kelford have also prepared water supply plans.

d. Recreation Program

The Bertie County Parks and Recreation Department coordinates recreation activities, including soccer, t-ball, baseball, summer camps, football, and cheerleading. Construction of a Recreation Complex is underway with additional features to be constructed contingent upon funding.

2. Regulations and Ordinances

a. Bertie County Subdivision Ordinance

The Bertie County Subdivision Ordinance became effective on September 1, 2005. The ordinance was subsequently amended in February 2006, March 2007, September 2007, and May 2008. The amendments addressed setback requirements, cluster and planned unit development, and family subdivision exemptions. (A family subdivision exemption applicable to Bertie County was enacted by the General Assembly of North Carolina on June 18, 2007.)

The Bertie County Planning and Inspections Department staff and the Bertie County Planning Board review subdivision plats to ensure consistency with the subdivision regulations. The plats are presented to the Planning Board for preliminary approval. Staff may administratively approve final plats.

b. National Flood Insurance Program/Flood Damage Prevention Ordinance

Bertie County began participation in the National Flood Insurance Program (NFIP) in 1985. A Flood Damage Prevention Ordinance was adopted that year. The program is administered locally by the Bertie County Planning and Inspections Department. In February 2009 Bertie County adopted an updated Flood Damage Prevention Ordinance to incorporate revised National Flood Insurance Program (NFIP) Maps. This action ensured compliance with the minimum NFIP criteria and North Carolina law.

The Town of Aulander adopted a Flood Damage Prevention Ordinance in June 2000, with the Town of Roxobel adopting an ordinance in November 2002. An interlocal agreement is being developed for Bertie County to implement these municipal ordinances.

c. Junkyards and Abandoned Motor Vehicles Ordinance

In June 2006, Bertie County adopted an ordinance to regulate junkyards and abandoned motor vehicles within the unincorporated areas of the County. Enforcement is the responsibility of the Bertie County Planning and Inspections Department and the Sheriff's Department.

d. Off-Premise Outdoor Advertising Regulations

Bertie County is currently considering adoption of an ordinance to regulate off-premises outdoor advertising within the County.

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

Bertie County has been enforcing the N.C. State Building Code since July 1, 1985. Planning and Inspections staff enforce all state building codes to ensure compliance with minimum construction standards.

f. Septic Tank Regulations

Bertie County enforces North Carolina regulations relating to septic tanks. These regulations are the standards established for the design, construction, installation, cleaning, and usage of sewage disposal systems. The Bertie County Health Department Environmental Health Division enforces the regulations.

g. CAMA Minor Permit Program

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

i. "404" Wetlands Regulations

Bertie County does not have any regulatory authority for enforcement of the "404" wetlands program authorized by the Clean Water Act. Regulation is provided by the Regulatory Branch of the U.S. Army Corps of Engineers through the Washington, North Carolina district office. Anyone who undertakes work in a wetland area is required to obtain a permit. The County coordinates its local planning, and in particular its subdivision review and approval process, with the "404" program. The

subdivision plat approval process requires that “404" wetland areas be delineated by the U.S. Army Corps of Engineers

j. Zoning Ordinances

Bertie County has not enacted zoning regulations. However, the Towns of Aulander, Powellsville, Colerain, Kelford, and Lewiston-Woodville within the planning area have enacted municipal zoning ordinances. The local ordinances are enforced by the municipalities.

Table 9.1 Existing Management Development Program shows how each of these ordinances and plans are used to implement the land use plan.

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

The Planning and Inspections Department works closely with other County departments, including Environmental Health and Emergency Management Services, to coordinate management of development throughout the County.

Table 14
Bertie County CAMA Land Use Plan
Existing Development Management Program

Ordinances And Policies	Public Access	Land Use Compatibility	Infrastructure Carrying Capacity	Natural and Manmade Hazard Areas	Water Quality	Economic Development
Subdivision Regulations	requires water access for waterfront cluster & PUD developments	all new lots must be suitable for septic	lot-by-lot septic evaluations; requires connection to public water supply where available; road construction standards	Flood boundaries and zones must be shown on plats	Stormwater permit required for projects disturbing >1 acre or requiring a major CAMA permit	
Flood Damage Prevention Ordinance (FDPO)		no solid/ hazardous waste/chemical storage facilities, or salvage yards allowed in Special Flood Hazard Areas	all new/ replacement water supply and sanitary sewage systems designed to minimize/ eliminate infiltration of flood waters	all new and substantially improved structures & new development must meet flood ordinance standards; provides for cluster development to help preserve flood hazard areas from development	septic systems located and constructed to avoid impairment/ contamination from flooding	allows floodproofing for commercial uses where elevation is impractical
Junkyards and Abandoned Motor Vehicles Ordinance		promotes development of compatible uses adjacent existing development and areas experiencing growth and development			Prohibits new junkyards and automobile graveyards in floodplains	promotes responsible economic growth in the County, protects rural aesthetics and character, thus enhancing heritage tourism
North Carolina State Building Code	addresses specifications for public park buildings/ amenities, walkways, decks, docks	no septic/ sewage required for certain uses (miniwarehouse, boat storage); fire walls between mixed uses; distance requirements between buildings	specifications for connection to public water supply	Addresses wind load and flood zone requirements for manufactured homes		

Hazard Mitigation Plan	promotes preservation of natural areas, such as floodplains and wetlands	Promotes land use planning and land use ordinances to reduce vulnerability to hazards	protect infrastructure from damage; building code enforcement	discourage development in flood plains/ special Flood Hazard Areas; promotes plans for adequate evacuation in emergencies	protection of open spaces/ wetlands/ marshlands; restoration of natural area to provide natural storage/flood peak attenuation; stormwater management	reduce public/ private damage costs, social/ emotional/ economic disruption; better access to funding for mitigation projects; improve ability to implement post-disaster recovery projects

New Tools

Implementation of the land use and development policies contained in the land use plan will require review and possible amendments to existing ordinances, as well as new plans and programs. These reviews and ordinance amendments are listed below.

Ordinances amendments

1. Consider amendments to Subdivision Ordinance to:
    - Require new waterfront residential developments to provide neighborhood access for non-waterfront lots.
    - Expand current shoreline buffer requirements to include local buffer requirements.
2. Review and update the Flood Hazard Damage Prevention Ordinance. Consider implementing additional protective measures, including increasing the regulatory flood protection elevation to BFE plus two feet of freeboard.

Projects and Plans

1. Prepare an inventory and evaluation of potential sites for new public access facilities. Explore mechanisms for property or easement donation for public access and potential tax advantages associated with property donation. Prepare a long-range financial plan to acquire or improve areas included on the inventory.
2. Update the Multi-Jurisdictional Hazard Mitigation Plan.
3. Create an integrated heritage tourism program for Bertie County, including development of information on preservation and adaptive reuse of historic properties and tourism resource guides to attract visitors to the area.
4. Develop a long-range plan for upgrading the County's infrastructure system.
5. Develop a plan to remove and properly dispose of abandoned, dilapidated manufactured homes

Action Plan and Schedule

Table 15 Action Plan and Schedule shows the implementation action plan for the Bertie County Land Use Plan. The action plan includes the priority actions that Bertie County will undertake to implement the land use plan. The accompanying schedule specifies the fiscal year in which the actions are to be initiated and the year they will be completed. The schedule covers a 6-year period.

The proposed action plan and schedule is an ambitious work plan for the County and other organizations. It will be necessary to annually evaluate the work plan in terms of funding availability and changing priorities, and if necessary adjust the schedule to add or delete projects and to change completion dates.

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

Table 15
Bertie County CAMA Land Use Plan
Action Plan and Schedule
2009-2018

Action	Responsibility	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Review Subdivision Regulations • **Waterfront access** • **Shoreline buffer requirements**	Planning Board/Board of Commissioners						X	X		
Review/Update Flood Damage Prevention Ordinance	Board of Commissioners/Planning Board	X								
Public Access inventory/long range plan	Planning Board/Parks & Recreation Dept.						X			
Update Multi - Jurisdictional (Regional) Hazard Mitigation Plan	Emergency Management Department						X	X		
Create heritage tourism program	Board of Commissioners/ Economic Development Board								X	X

Section 10: Amending the Certified Land Use Plan

The steps to amend an adopted and certified CAMA Land Use Plan are contained in the CAMA land use planning guidelines at 15A NCAC 07B .0901. The following is a summary of the steps that must be followed to amend the Bertie County Land Use Plan.

1. Major amendments that amend less than half of the policies in the certified plan.
   - 1.1 The Bertie County Board of Commissioners has authority to propose plan amendments to the Coastal Resources Commission (CRC). For amendments inside the planning jurisdictions of the Towns of Roxobel, Kelford, Aulander, Powellsville, Colerain, Lewiston-Woodville, and Askewville, the municipal elected boards have authority to request plan amendments to the Bertie County Board of Commissioners for submittal to the CRC. Even though the participating municipalities fall under the County plan, approval of plan amendments by participating municipalities is not required. However, all parties to the Bertie County Land Use Plan agree to inform other parties of any proposed amendment and to seek comments or approval from the other parties. Information on amendments will be provided to other participants at the same time and in the same manner that the Executive Secretary of the CRC is informed.
   - 1.2 A public hearing must be held by the Bertie County Board of Commissioners before approving a land use plan amendment. The public hearing must be advertised in the same manner as for initial plan adoption.
   - 1.3 At least 30 days before the public hearing on the amendment, Bertie County must notify the Executive Secretary of the CRC of the proposed amendment by providing a copy of the public hearing notice, a copy of the proposed amendment, and the reasons for the amendment.
   - 1.4 The resolution adopting the amendment must specify that the amendment has been evaluated for consistency with the other policies or the Future Land Use Map.
   - 1.5 The amendment must be submitted to t he CRC for certification. The general schedule for submission is provided at 15A NCAC 07B. .0901(a)(2). Specific guidance on submission is available from the Division of Coastal Management District Planner.
   - 1.6 Private individuals and organizations that either own property within the planning area or have a material interest in the plan may petition for amendments. Private petitions for amendment may be approved or denied by the Bertie County Board of Commissioners, in consultation with the appropriate participating

municipal government, if applicable.Before approving or denying a private amendment petition, the elected body will give notice as required herein. The elected body may charge a fee to review and process amendment petitions.

2. Major amendments that involve changes to more than half of the land use plan. A new locally adopted CAMA land use plan must be submitted to the CRC. The new plan must be approved by the Bertie County Board of Commissioners.
3. Minor changes that (1) provide clarification, (2) make statistical adjustments, or (3) provide more detailed mapping, but that do not affect plan policies may be submitted to the Executive Secretary of the CRC for approval. In this case, Bertie County will inform the participating municipalities of the changes.

PUBLIC ADOPTION HEARING COPY

Appendix A:

BERTIE COUNTY
CAMA LAND USE PLAN
UPDATE

Citizen Participation Plan

February 2007

Bertie County
CAMA Land Use Plan Update

Citizen Participation Plan

This Citizen Participation Plan provides the residents and property owners of the County with a range of opportunities to participate in the process of developing the CAMA Land Use Plan. The CP Plan addresses the following objectives:

- To share information about the CAMA planning process and its requirements;
- To increase the community's understanding of the impact that land use and development issues have on quality of life; and
- To provide opportunities for the residents and property owners to participate in the identification of land use and development policies and to assess the impact of the policies on the community.

The design of the plan also meets the requirements associated with the CAMA planning grant awarded to the County. Key elements are described in detail below.

1.0 Bertie County Planning Board – Lead Planning Organization

The Bertie County Planning Board is designated as the Lead Planning Organization for the purpose of updating the CAMA Land Use Plan. The Planning Board will take the lead role in overseeing preparation of the plan update.

As Lead Planning Organization, the Planning Board will have the following specific duties and responsibilities:

1. Serve as a public contact to make it easier for citizens to get information and to make comments on the plan;

2. Review technical planning materials to help ensure that they accurately represent the current situation and recent trends in the County and towns;

3. Assist the County's planning advisors with preparation of major plan elements, which includes identifying concerns and key plan issues, developing community vision, developing goals, preparing draft policies and future land use map;

4. Assist with organization, management, and facilitation of public participation events;

5. Help publicize public participation events in the community and recruit residents and property owners to attend; and

6. Recommend and present a land use plan to the Board of Commissioners.

Attachment 1 includes the names and addresses of the Planning Board Members and a phone number where messages may be left.

1.1 Planning Board Meetings

The Planning Board will incorporate LUP items for review and approval into the agenda for regularly scheduled Planning Board meetings. The Planning Board's regular meetings are usually held on the last Thursday of the month at 7:00 P.M. in the County Office Building/Courthouse Complex, 106 Dundee Street, Windsor. The Planning Board may schedule special meetings, if required, to address LUP items. The Planning Board will advertise these meetings in accordance with NCGS 143-318.9 to 143-318.18.

Attachment 2 includes a tentative schedule of Planning Board meetings where LUP items will be addressed. Bertie County will post this tentative schedule and any subsequent changes on its official bulletin board.

All meeting agendas allocate time to hear comments from the public. The County will keep a record of residents and property owners who speak at any of the Planning Board meetings and other plan events and will retain any written comments that it receives. The Executive Secretary will hold the names of speakers and written comments on file and will provide them to the DCM District Planner for draft plan review.

<u>Attachment 2, which covers Phase I of the plan, provides a general outline of the meeting schedule and the purposes of the meetings.</u>

1.2 Initial Public Information Meeting

The **Initial Public Information Meeting**, which is required by the CAMA grant agreement, is tentatively scheduled for March 29, 2007. The County must give two public notices of the initial public information meeting. The first must appear not

less than 30 days before the meeting (on or before February 27, 2007) and the second must appear not less than 10 days before the meeting (March 19, 2003). In addition to the public notices, the CAMA grant requires the County to notify the local Coastal Resources Advisory Committee member(s) and the DCM District Planner of the date, time, and place of the meeting.

In addition, the planning team will make efforts to include information on the land use planning program in local media.

1.3 Tools to Report Planning Progress

The County will use the following methods to provide regular information and progress reports to residents and property owners: (1) post Planning Board meeting summaries on the Planning Department's bulletin board; (2) provide summaries of any materials reviewed at the meetings to local news organizations, as requested; and (3) post meeting agendas and summaries on the County web page (www.co.bertie.nc.us).

2.0 Participation Process

2.1 Participation Methods

The County will use two methods to solicit public participation in preparation of the land use plan:

> (1) *Community workshop/Issues identification meeting that* will allow residents and property owners to express there concerns about land use and development and to set priorities for development of the land use plan; and
> (2) *Community open house* where the community can review draft policies and the initial land use map and make suggestions to the Planning Board for improvements.

The community workshop/ issues identification meeting will be held during phase I of the plan and the open house will be held in phase II. In addition, the County will distribute a short brochure that summarizes the CAMA land use planning process, the role of the land use plan in addressing the community's land use issues, and the ways in which citizens can be involved in the process.

Each of the participation methods and the expected results is described below.

2.2.1 Community Workshop/Issues Identification Meeting

The Planning Board will sponsor a community meeting to involve residents and property owners in the identification of a broad range of land use issues, concerns, and opportunities. Participants will also narrow this broad list into a single list of issues and opportunities about which there is a high level of agreement among those attending. The workshop will involve small group discussions of land use planning concerns, issues, and opportunities. After the small group discussions, the large group will generate a single list of most important issues and opportunities.

A member of the Planning Board will convene the workshop. Members of the technical planning team will provide background information and assist with overall group process. Planning Board members and/or members of the technical planning team will help facilitate the small group discussions.

The community workshop will be publicized and promoted through local media, information flyers, posting on the County's web page, and recruiting by members of the Planning Board and the planning area's core committee, as well as other interested citizens.

The intended audience for the workshop includes the residents and non-resident property owners of Bertie County, business owners and operators, real estate professionals, members of County and town committees and associations, and parties with a stake in the County's land use plan.

The tentative schedule for the Community Workshop is June 2007, which is early in the planning process.

2.2.2 Community Open House – Phase 2

A community open house is planned near the end of the planning process. The open house is planned tentatively for June 2008.

The open house will provide residents and property owners with easy opportunities to review draft policies and maps, to learn how they affect their interests, and to express support or recommend adjustments. People who attend the open house will be able to interact informally with lay and professional members of the planning team.

The intended audience for the open houses includes the residents and non-resident property owners of Bertie County and the 7 municipalities, business owners and operators, real estate professionals, members of public committees and associations, and parties with a stake in the County's land use plan. The County will make extra efforts to encourage non-resident property owners to attend.

3.0 Plan Evaluation

The Planning Board will conduct an on-going evaluation of the CP Plan and make course corrections as necessary. A major review will be conducted at the end of Phase I in preparation for Phase 2 of the CAMA planning program. Any needed changes resulting from this review will be recommended to the Board of Commissioners.

Attachment 1
Membership – Lead Planning Organization
Bertie County Planning Board
Telephone (252) 794-5336

Ms. Willie Bazemore
151 Bazemore Park Rd.
Windsor, NC 27983

Mr. Mike Freeman, Chairman
PO Box 127
Merry Hill, NC 27957

Mr. Norman Mebane
PO Box 510
Windsor, NC 27983

Mr. Milton Mizelle
709 Greens Cross Road
Windsor, NC 27983

Ms. Lori Morings
503 Arbor Road
Aulander, NC 27805

Mr. Garland Outlaw
2350 Indian Woods Road
Windsor, NC 27983

Mr. William Peele, Jr.
PO Box 61
Lewiston, NC 27849

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Colerain, NC 27924

Mr. Willie Riddick
105 South Cherry Lane
Windsor, NC 27983

Mrs. Dayle Vaughn
PO Box 235
Lewiston, NC 27849

Mr. Bobby Ware
PO Box 236
Merry Hill, NC 27957

Attachment 2

Tentative Public Participation Schedule

Date	Event	Outcomes Anticipated
February 22, 2007	Planning Board	Review and recommendation of approval of draft CP Plan
March 19, 2007	Board of Commissioners	Review CP Plan and Approval of CP Plan
March 29, 2007	Planning Board Orientation and Initial Public Information Meeting	• Introduce PB to CAMA requirements; review planning process and get members comments; • Familiarize members with LPO role and responsibilities; • Identify PB planning concerns and issues. • Increase community understanding of current land use and development policies, their effect, and way current plan used. • Familiarize community with process for reporting to public. • Acquaint public with process for soliciting community input.
April 26, 2007	Planning Board	Agreement on following: • Most important existing and emerging growth-related conditions. • Key planning issues.
May 31, 2007	Planning Board	—Review technical analysis of following: • Population, housing, and economy. • Natural systems. • Existing land use and stormwater. • Community facilities. • Land suitability. • Evaluation of current plans and policies.
June 2007	Community Issues Identification Meeting	• Receive input on issues, concerns, and opportunities and to generate single list of most important issues and opportunities.
July 19, 2007	Planning Board	• Review results of community workshops • Agree on Bertie County Vision Statement
August 30, 2007	Planning Board	• Final review of technical analysis
September 20, 2007	Planning Board	• Review and evaluate current CAMA LUP policies and land classification
October 25, 2007	Planning Board	• Review forecast of future land needs • Conduct Land Suitability Analysis • Wrap-up Phase I

The CP Plan for Phase II, which begins in January 2008, will include a schedule of meetings and events for the completion of the plan.

Bertie County LUP Phase II tentative schedule (revised January 24, 2008):

February 21, 2008 * Review Citizen Participation Plan for Phase II and identify any needed modifications, begin development of Land Use Plan Goals and draft policies.
March 20, 2008 * Continue policy development.
April 24, 2008 *Wrap-up policy development.
May 22, 2008 * Review Future Land Use Map.
June 26, 2008 *Community Open House for citizens to review and comment on work completed on Land Use Plan.
July 24, 2008 * Review Tools for Managing Development, Action Plan and Schedule for Implementation.
August 28, 2008 * Wrap-up of Phase II.
September 2008 Joint work session with Bertie County Board of Commissioners and Planning Board to review Phases I and II of the Land Use Plan and recommend any needed revisions prior to submission for state review.
October 2008 Submit draft Land Use Plan for state review and comment.
November 2008 Review state comments on draft Land Use Plan and make necessary adjustments.
December 2008 Board of Commissioners holds required Public Adoption Hearing.

* Regularly scheduled Planning Board meetings.

Appendix B:

Required Policy Analysis

The CRC's Land Use Planning Guidelines require Bertie County to provide two types of analysis of local land use and development policies and the future land use map. The first required analysis is of the consistency of the land use plan with the CRC's Management Topics. The second required analysis is of the impact of the local policies on the Management Topics. Both of these analyses are contained in this appendix to the plan.

Consistency of Plan with Management Topics

1. **Consistency between goals and management topics – direction of policies.**

   Public access. Access policies contained in the plan are intended to provide public trust water access opportunities for the public along the shoreline within the planning jurisdiction. The policies recognize that the quality and quantity of access to public waters is an essential component of the lifestyle of the area and contributes to its economy. Policies recognize that water access is a key for the development of the retirement and second-home economy and that the availability of water access is an important factor in the community's quality of life. Policies support continued operation of existing access sites and development of additional pedestrian, boating, and fishing access to ensure that all segments of the community are served.

   In particular, policies encourage the development of public access sites by local, state, and federal governments, as well as the provision of access by the public sector. The policies provide for an inventory and evaluation of the appropriateness of potential water access sites and encourage donations by property owners of sites that are suitable for public access. Bertie County will explore sources of revenue to acquire and develop access sites and facilities and will ensure that public access is protected and encouraged through the development review process. Policies support State minimum use standards for the design and operation of access facilities so as to minimize negative impacts on water quality, as well as conflicts with other natural resources and surrounding land uses. Marinas and docking facilities are allowed consistent with State standards.

   Land use compatibility. Planning goals place high value on guiding land development that is consistent with the capabilities and limitations of the area's natural systems, heritage, and life-styles, as well as promoting sustainable economic development. Goals prioritize protection of Bertie County's many natural areas that have high biologic, economic, and scenic values and 2) provision of clear direction to assist local decision making and consistency findings for land use regulations such as zoning and land

subdivision, as well as private projects. Policies prohibit uses in estuarine and public trust waters that interfere with their use or navigation or that have negative impacts on their biological, social, economic, and aesthetic values. Uses in coastal wetlands are limited to those that are water-dependent and cannot be located elsewhere. Policies encourage land uses and development activities that conserve architectural and historic resources and that minimize impacts on non-coastal wetlands. Policies encourage low-density and low-intensity development that is consistent with the area's rural character.

Infrastructure carrying capacity. A major goal of the Plan is to provide infrastructure systems that encourage and promote sustainable industries and job opportunities as well as promote orderly residential growth. Policies in the Plan encourage identification of priorities for transportation upgrades and enhancement, through continued participation in the NCDOT Transportation Improvement Program and the RPO Technical Coordinating Committee. Public and private streets serving development must meet minimum construction standards. Policies require new developments within the service area of county or municipal water or sewer systems to connect to these systems, although the policies recognize that septic tanks are an acceptable wastewater alternative when public systems are not available and soils are suitable. Polices allow use of land application package treatment plans where public service is unavailable. Policies require property owners and developers to manage stormwater to avoid flooding, erosion, and sedimentation impacts to downstream areas.

Natural hazard areas. The Plan's goal is to "minimize threats to life, property, and natural resources resulting from development located in or adjacent to natural and man-made hazard areas." The Plan supports continues participation in the National Flood Insurance Program and supports enforcement of CAMA minimum use standards, the North Carolina Building Code, and the local Flood Damage Prevention Ordinance. The County will consider participation in the Community Rating System score to make the area safer and to reduce federal flood insurance premiums. Policies prohibit future construction of public facilities in hazard areas unless no other option is available, and support coordinating existing and planned development and transportation infrastructure to ensure adequate evacuation routes during emergencies.

Water quality. The Plan's goals for coastal waters is to maintain, protect, and where possible, enhance water quality. Water quality considered to be an important "quality of life" component of the area and an important factor in the area's economic development. Policies encourage an overall low-density development, with emphasis on cluster development and other land planning techniques such as Low Impact Development that reduce impervious surfaces and increase open spaces associated with new development. Policies also support planning to maintain site hydrology to the maximum extent possible

and support consideration of local buffer requirements. Bertie County encourages farmers and timber operators to employ Best Management Practices, supports requirements for open water and upland marinas to minimize water quality impacts, and requires proper state stormwater and erosion control permits prior to issuance of building permits or final subdivision approvals.

Local concerns. Three of the planning goals address components of economic development – jobs that allow individuals to live and work in the County; quality of life that attracts and retains young adults, retirees, and other groups; and infrastructure that supports sustainable industries and job opportunities. Based on these goals, Bertie County selected economic development as the local area of concern to address in the Land Use plan. Policies include using natural and historic resources to create a heritage tourism program that will generate jobs and improve overall livability in the area. Two heritage corridors are created – NC 308 from Roxobel in the west to the San Souci area in the southeast where it intersects with NC 45 and NC 45 from its intersection with the NC 308 corridor north along the Chowan River to Colerain. Another policy addresses development of a plan to remove and properly dispose of abandoned, dilapidated manufactured homes.

2. Consistency between future land use map and land use plan requirements.

A. Residential density.

The residential densities depicted on the future land use map are consistent with the capabilities of Bertie County and the participating municipalities. Typical densities are shown below:

Classification	Estimated Density
Traditional Development Areas	1.6 units/gross acre
New Growth Areas	
Retirement-Resort	1.33 units/gross acre
Transition Areas	1.33 units/gross acre
Agriculture-Forestry-Rural Housing	1 unit/10-acre gross
Conservation I	N/A*
Conservation II Overlay	N/A*

*Conservation I areas are areas that are not generally available for development. Conservation II areas are those to be protected. The Conservation II overlay applies policies to guide development in all of the non-conservation land classes. These policies place additional limitations on the compatible uses and activities of the underlying land classifications.

B. Comparison of environmental composite map, land suitability map, and future land use map.

There are no material differences between the development patterns as shown on the future land use map, the development constraints shown on the environmental composite map, and land suitability patterns shown on the land suitability map. All of the lower capability areas shown on the composite map and the lower suitability areas shown on the land suitability amp are classified as Conservation.

C. Comparison of land classifications that depend on central water service and planned water service extensions.

Traditional Development Areas depend on central water service. Water service is readily available or close-at-hand for areas with this designation. The provision of water service to areas thus designated is consistent with policies contained in Section 8 of the Plan. Infrastructure Carrying Capacity policies provides that densities up to 2 units per acre are allowed in areas with available water service. The Traditional Development Areas are intended for development at this density.

D. Natural Hazards.

Policies for land uses in flood hazard areas and estuarine system AECs allow development subject to the provisions and requirements of the National Flood Insurance Program (NFIP), CAMA minimum use standards, the North Carolina Building Code, and the local Flood Damage Prevention Ordinances. The County will continue to enforce the state building code and local ordinances to mitigate risks. The County will also periodically update the Multi-Jurisdictional Hazard Mitigation Plan and will consider participation in the Community Rating System.

The major evacuation Infrastructure for Bertie County includes NC 11, NC 42, NC 45, NC 305, NC 308, US 13, and US 17. The North Carolina Transportation Improvement Program (TIP) includes two major highway projects for Bertie County. These are four-laning of US 13/17 from Windsor to SR 1503 (completed and open) and four-laning US 13 north of Windsor to NC 42.

Policies in the Plan include annual identification of transportation priorities to seek to include in the TIP and requirements for private and public roads to be designed and constructed to NCDOT's minimum standards. Property owners or developers of new development that significantly impacts traffic conditions or safety will be required to participate in facility upgrades.

E. Protection of water quality and shellfishing waters

Although there is an abundance of public trust waters in Bertie County, shellfishing waters are limited. According to the Shellfish Sanitation and

Recreational Water Quality Section, all shellfishing waters in the County are classified as prohibited for the harvest of shellfish.

The Land Use Plan supports management of land uses and development to maintain and enhance water quality, as well as conserve valuable coastal resources and maintain the aesthetics of waterfront areas. The participating local governments consider water quality to be a significant "quality of life" component and an important factor in the area's economic development.

Policies in the plan seek to reduce non-point source discharges in order to protect and restore water quality. Bertie County encourages low density development through cluster development and Low Impact Development techniques that reduce impervious surfaces and increase open spaces. The County implements a 75' shoreline buffer for Planned Unit Developments. Policies encourage site planning to maintain site hydrology to the maximum extent possible and encourage farmers and timber operators to employ accepted Best Management Practices. Marinas are encouraged to establish pump-out stations and to participate in the "Clean Marina" program. Proper erosion control and stormwater permits are required prior to issuance of building permits or approval of final plans for subdivisions.

Analysis of the Impact of Policies on Management Topics

The planning guidelines require the local governments to analyze the impacts of the land use and development policies on the CRC's Management Topics. This analysis must include both positive and negative impacts. If negative impacts are identified, the plan must include policies to mitigate the negative impacts.

The impacts of the Bertie County land use plan policies are shown on the following Table – Analysis of Impacts of Bertie County Policies on Management Topic. Based on this analysis, all of the policies have either a beneficial or neutral impact on the Management Topics. Therefore no mitigation policies are required.

Analysis of Impacts of Bertie County Policies on Management Topics

Management Topics	Public Access	Land Use Compatibility	Infrastructure Carrying Capacity	Natural Hazard Areas	Water Quality	Local Concerns (Economic Development)
	• *Provide public trust water access opportunities for the public*	• *Policies protect natural systems* • *Policies provide clear direction for approval of land development*	• *Water & other key facilities/services available in required locations at adequate capacities to support planned growth & development patterns*	• *Policies have location, density, & intensity criteria to help new development & redevelopment avoid or withstand hazards*	• *Land use & development criteria & measures that abate impacts that degrade water quality*	• *Policies support Bertie County economic development goals*
1.1	Beneficial	Neutral	Neutral	Neutral	Neutral	Beneficial
1.2	Beneficial	Neutral	Neutral	Neutral	Neutral	Beneficial
1.3	Beneficial	Neutral	Neutral	Neutral	Neutral	Beneficial
1.4	Beneficial	Neutral	Neutral	Neutral	Neutral	Beneficial
1.5	Beneficial	Neutral	Neutral	Neutral	Neutral	Beneficial
1.6	Beneficial	~~Beneficial~~ Neutral	Neutral	Neutral	Beneficial	Beneficial
1.7	Neutral	~~Beneficial~~ Neutral	Neutral	Neutral	Neutral	Beneficial
2.1	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
2.2	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
2.3	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
2.4	Beneficial	Neutral	Neutral	Neutral	Beneficial	Beneficial
2.5	Neutral	Neutral	Neutral	Neutral	Neutral	Beneficial
2.6	Neutral	Beneficial	Neutral	Neutral	Beneficial	Neutral
2.7	Neutral	Beneficial	Beneficial	Neutral	Beneficial	Beneficial
3.1	Neutral	Neutral	Beneficial	Beneficial	Neutral	Beneficial
3.2	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
3.3	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
3.4	Neutral	Neutral	Beneficial	Neutral	Neutral	Beneficial
3.5	Neutral	Neutral	Beneficial	Neutral	Neutral	Beneficial
3.6	Neutral	Neutral	Beneficial	Neutral	Beneficial	Beneficial
3.7	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
4.1.1	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral

	Public Access	Land Use Compatibility	Infrastructure Carrying Capacity	Natural Hazard Areas	Water Quality	Economic Development
4.1.2	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
4.1.3	Neutral	Neutral	Neutral	Beneficial	Neutral	Neutral
4.1.4	Neutral	Neutral	Neutral	Beneficial	Neutral	Neutral
4.1.5	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
4.1.6	Neutral	Neutral	Neutral	Beneficial	Neutral	Neutral
4.1.7	Neutral	Neutral	Neutral	Beneficial	Neutral	Neutral
4.1.8	Neutral	Neutral	Neutral	Beneficial	Neutral	Neutral
4.1.9	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
4.1.10	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
4.1.11	Neutral	Neutral	Neutral	Beneficial	Neutral	Neutral
4.2	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
4.3.1	Neutral	Neutral	Beneficial	Beneficial	Neutral	Neutral
4.3.2	Neutral	Neutral	Beneficial	Beneficial	Neutral	Neutral
5.1.1	Neutral	Beneficial	Neutral	Neutral	Beneficial	Neutral
5.1.2	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
5.1.3	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
5.2	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
5.3	Beneficial	Neutral	Neutral	Neutral	Beneficial	Beneficial
5.4	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
5.5	Neutral	Beneficial	Neutral	Neutral	Beneficial	Neutral
6.1.1	Beneficial	Neutral	Neutral	Neutral	Neutral	Beneficial
6.1.2	Neutral	Neutral	Neutral	Neutral	Neutral	Beneficial
6.1.3	Neutral	Neutral	Neutral	Neutral	Neutral	Beneficial
6.2	Neutral	Neutral	~~Beneficial~~ Neutral	Neutral	Neutral	Beneficial
6.3	Neutral	Neutral	Neutral	Neutral	Neutral	Beneficial

Appendix C: Bertie County Hazard Mitigation Action Plan

Action #	Actions	Hazard	Objective(s) Addressed	Relative Priority	Funding Sources	Responsible Party	Target Completion Date
Preventive Actions							
P-1	Revise/update regulatory floodplain maps.	Flood	1.1	High	FEMA NCDENR NCEM	EMC BI	2006-2007
P-2	Develop a geographic information system (GIS). Use the GIS to map current land uses and to map proposed future land uses (CAMA Land Use Plan Update) as an aid in assessing community vulnerability.	All	1.1 3.1 3.2	High	Local	BC EMC BI	2006-2007
P-3	Consider participating in the Community Rating System (CRS) to reduce flood insurance premiums for citizens.	Flood	3.2	Moderate	Local	BC EMC BI	2007-2008
P-4	At the next CAMA Land Use Plan Update: 1. Establish more specific growth guidelines and policies and specifically delineate sensitive environmental areas for protection; 2. Adopt a more limited policy on the types of uses allowed within flood hazard areas. 3. Adopt a policy to not extend public services and utilities into flood hazard or other environmentally sensitive areas to discourage growth.	All	1.1 4.1	Moderate	Local	BC CM EMC	2007-2008
P-5	Consider adopting a zoning ordinance that: 1. Establishes zoning districts and sets standards for future development. 2. Includes standards for clustering of residential lot development to help preserve flood hazard areas from development. 3. Includes a flood hazard overlay zone to ensure that inappropriate development is adequately controlled.	All	1.1 3.1 4.1	Moderate	Local	BC CM	2007-2008
P-6	Consider adopting subdivision regulations that include minimum standards for property divisions.	All	3.1 4.1	Moderate	Local	BC CM	2007-2008

Action #	Actions	Hazard	Objective(s) Addressed	Relative Priority	Funding Sources	Responsible Party	Target Completion Date
P-7	Review and update the flood damage prevention ordinance to: 1. Ensure maximum protection from flood hazard events. 2. Raise the minimum finished floor elevation to at least 2' above base flood elevation (BFE) to provide more flood protection for new or substantially improved structures. 3. Consider prohibiting any fill within the 100-year floodplain to discourage development. 4. Prohibit enclosures to the lower areas of elevated buildings, including breakaway walls. 5. Continue to require and maintain FEMA elevation certificates for all permits for new buildings or improvements to buildings on lots including any portion of the 100-year floodplain.	Flood	3.2 4.1	High	Local	BC EMC BI	2005-2006
P-8	Inventory existing lots and structures within flood hazard areas to establish baseline data regarding current state of development within flood hazard areas.	Flood	1.1	Moderate	Local	BC BI EMC	2007-2008
Property Protection Actions							
PP-1	Prioritize repetitive flood loss properties for acquisition and relocation. Seek Federal and State funding (voluntary program (CRS 420/520).	Flood	1.1	High	FEMA NCEM	BC CM	2006-2007
PP-2	Establish a coordinating committee to ensure that all parties responsible for stormwater management within the County communicate to ensure maximum cooperation in developing and maintaining stormwater drainage systems.	Flood	1.1 3.1	Moderate	Local	BC NRCS EMC BI	2007-2008
PP-3	Establish and maintain a coordinated debris inspection and removal program.	Flood	1.1 3.1	Moderate	Local	BC NRCS EMC BI	2007-2008
Emergency Services							
ES-1	Review rebuilding activities in wake of recent hurricanes and flooding and establish policies/procedures for	Flood	1.1	High	Local	BC BI	2005-2006

Action #	Actions	Hazard	Objective(s) Addressed	Relative Priority	Funding Sources	Responsible Party	Target Completion Date
	minimizing repetitive flood losses.					EMC	
ES-2	Ensure adequate evacuation time in case of a major hazard event.	All	2.1	High	Local	BC EMC NCDOT	2005-2006
ES-3	Evaluate areas with limited evacuation capacity and pursue methods for improving capacity	All	2.1	High	Local	BC EMC NCDOT	2005-2006
Public Information Activities							
PI-1	Establish and maintain information on retrofitting techniques at the public library. Publicize through citizen news bulletins.	All	1.2	High	Local	BC CM BI	Ongoing
PI-2	Advise/assist property owners in retrofitting homes and businesses.	All	1.2	High	Local	BC CM BI	Ongoing

Appendix D: Hazard Mitigation Action Plan
Towns of Colerain, Kelford, Powellsville, and Roxobel

Action #	Actions	Hazard	Objective(s) Addressed	Relative Priority	Funding Sources	Responsible Party	Target Completion Date
Preventive Actions							
P-1	Revise/update regulatory floodplain maps.	Flood	1.1	High	FEMA NCDENR NCEM	EMC BI Towns	2006-2007
P-2	Support Bertie County in the development of a geographic information system. Use the GIS to map current land uses and to map proposed future land uses (CAMA Land Use Plan Update) as an aid in assessing community vulnerability.	All	1.1 3.1 3.2	High	Local	BC EMC BI Towns	2006-2007
P-3	Consider participating in the Community Rating System (CRS) to reduce flood insurance premiums for citizens.	Flood	3.2	Moderate	Local	BC EMC BI Towns	2007-2008
P-4	At the next CAMA Land Use Plan Update: 1. Establish more specific growth guidelines and policies and specifically delineate sensitive environmental areas for protection; 2. Adopt a more limited policy on the types of uses allowed within flood hazard areas. 3. Adopt a policy to not extend public services and utilities into flood hazard or other environmentally sensitive areas to discourage growth.	All	1.1 4.1	Moderate	Local	BC CM EMC Towns	2007-2008
P-5	Consider revising zoning ordinances to: 1. Include standards for clustering of residential lot development to help preserve flood hazard areas from development. 2. Include a flood hazard overlay zone to ensure that inappropriate development is adequately controlled.	All	1.1 3.1 4.1	Moderate	Local	BC CM Towns	2007-2008
P-6	Study the feasibility of adopting subdivision regulations.	All	3.1	Moderate	Local	BC CM Towns	2007-2008
P-7	Work with Bertie County to review and update the flood damage prevention	Flood	3.2	High	Local	BC	2005-2006

Action #	Actions	Hazard	Objective(s) Addressed	Relative Priority	Funding Sources	Responsible Party	Target Completion Date
	ordinance to: 1. Ensure maximum protection from flood hazard events. 2. Raise the minimum finished floor elevation to at least 2' above base flood elevation (BFE) to provide more flood protection for new or substantially improved structures. 3. Consider prohibiting any fill within the 100-year floodplain to discourage development. 4. Prohibit enclosures to the lower areas of elevated buildings, including breakaway walls. 5. Continue to require and maintain FEMA elevation certificates for all permits for new buildings or improvements to buildings on lots including any portion of the 100-year floodplain.		4.1			EMC BI Towns	
P-8	Inventory existing lots and structures within flood hazard areas to establish baseline data regarding current state of development within flood hazard areas.	Flood	1.1	Moderate	Local	BC BI EMC Towns	2007-2008
Property Protection Actions							
PP-1	Work with Bertie County to establish a coordinating committee to ensure that all parties responsible for stormwater management within the County communicate to ensure maximum cooperation in developing and maintaining stormwater drainage systems.	Flood	1.1 3.1	Moderate	Local	BC NRCS EMC BI Towns	2007-2008
PP-2	Work with Bertie County to establish and maintain a coordinated debris inspection and removal program.	Flood	1.1 3.1	Moderate	Local	BC NRCS EMC BI Towns	2007-2008
Emergency Services							
ES-1	Work with Bertie County Emergency Management to review rebuilding activities in wake of recent hurricanes and flooding and establish policies/procedures for minimizing repetitive flood losses	Flood	1.1	High	Local	BC BI EMC Towns	2005-2006
ES-2	Work with Bertie County Emergency Management to ensure adequate evacuation time in case of a major hazard event.	All	2.1	High	Local	BC EMC	2005-2006

Action #	Actions	Hazard	Objective(s) Addressed	Relative Priority	Funding Sources	Responsible Party	Target Completion Date
						NCDOT Towns	
ES-3	Work with Bertie County to evaluate areas with limited evacuation capacity and pursue methods for improving capacity	All	2.1	High	Local	BC EMC NCDOT Towns	2005-2006
Public Information Activities							
PI-1	Work with Bertie County to establish and maintain information on retrofitting techniques at the public library. Publicize through citizen news bulletins.	All	1.2	High	Local	BC CM BI Towns	Ongoing
PI-2	Work with Bertie County to advise/assist property owners in retrofitting homes and businesses.	All	1.2	High	Local	BC CM BI Towns	Ongoing

Appendix E: Maps Used in Plan Preparation

The Bertie County Land Use Plan Update contains the following maps:

Planning Area
Planning Area Water Lines
Planning Area Sewer Lines
Existing Land Use
Environmental Composite
Land Suitability
Future Land Use
Heritage Corridors

Other maps have been prepared to support the analysis contained in the plan. These maps are available for review at the Bertie County Planning Department and are listed below:

Areas of Environmental Concern
Areas of Environmental Concern (with DWR Water Quality classifications)
Planning Area Subbasins
Wetlands
Soils – Septic Limits
Flood Hazard
Storm Surge
Northwest General Land Use Patterns
East General Land Use Patterns

Appendix F: Definitions of Terms Used in Policy Statements

Adequate: Sufficient to achieve intended purpose.
Allow/permit: Authorize, let something happen.
Continue: Follow past and present procedures to maintain desired goal, usually with local government staff involved at all levels from planning to implementation.
Encourage: To favor or foster.
Identify: Catalog and confirm resource or desired item(s) through the use of local government staff and actions.
Implement: Actions to guide the accomplishments of Plan recommendations.
May: Provides the option, but not required.
Prohibit: Not allowed.
Promote: To proactively encourage, positive steps.
Protect: To guard against a deterioration of a desired state.
Provide: Take the lead in supplying the needed support to achieve the desired goal.
Shall: Mandatory, not optional.
Should: An officially adopted course or method of action intended to be followed to implement plan goals. Though not as mandatory as "shall," it is still obligatory course of action unless clear reasons can be identified that an exception is warranted.
Support: To shore up; may imply financial support.
Will: May be expected or supposed to.
Work: Cooperate and act in a manner to create the desired goal.

Appendix G: Carrying Capacity Analysis: Water, Wastewater Systems, and Transportation					
Sub-planning area	**Western area** Includes towns of Lewiston-Woodville, Roxobel, and Kelford	**North-central area** Includes towns of Aulander, Powellsville, and Askewville	**Southeast area** Indian Woods Twp. west of Windsor and Merry Hill community and areas along US 17	**Eastern area** Includes Colerain and the unincorporated area along NC 45	Windsor (not in planning area)
Estimated level of intensity/density	Includes rural corridors along NC 42 and NC 308. The approximate population of the subarea is 4,300, with about 25% in the towns and the remainder in rural clusters and farmsteads. About 1,700 acres developed at estimated density of 2.5 persons/acre.	This subarea is corridor formed by NC 42 and NC 13 between Windsor and Hertford Co. It includes towns of Aulander, Powellsville, and Askewville. The total population is estimated at 4,000. Approximately 1,400 or 35% of the population is in incorporated areas. Remainder is in rural clusters and farmsteads. About 2,000 acres are developed at overall density of 2.0 persons/acre.	This subarea is located along the southern edge of the county on the west and east of the Town of Windsor. It includes areas along NC 308 and US 17 to the east of Windsor. The total population is estimated at 2,000 persons. There are no incorporated areas in this subarea. The subarea includes rural settlements. Approximately 1,500 acres are developed at an overall density of 1.2 persons/acre.	This subarea is located along NC 45 and the Chowan River in the eastern area. It includes the Town of Colerain in the north. The estimated population of this area is approximately 6,000 persons. Much of this area is in agriculture; however, much of the development is located in retirement and seasonal oriented communities. Approximately 2,400 acres are developed at an overall density estimated at 2.5 persons/acre.	The estimated population of the Town and the surrounding ETJ is 5,000 persons.
Water system	This area is served by the Bertie County Water System. The system has sufficient capacity to meet demand for the planning period. The system uses 42% of supply.	This area is served by three water systems: Aulander, Powellsville, and the Bertie County Water System. All have systems have sufficient capacity to meet demand for the planning period. Aulander: use 25% of supply; Askewville served by Bertie Co.: and Powellsville: use 38% of supply.	This area served by the Bertie County Water System.	Colerain and the unincorporated areas served by Bertie County Water System.	

Appendix G: Carrying Capacity Analysis: Water, Wastewater Systems, and Transportation					
Wastewater systems	Lewiston-Woodville operates the only public wastewater collection and treatment system in this subarea. This system has the following characteristics: Customers = 221 Average daily flow = 0.060 MGD Permitted daily flow = 0.15 MGD % capacity = 40%	Aulander and Powellsville operate public wastewater systems in this planning area. Askewville contracts with the Town of Windsor for sewer service. Aulander collects and treats; Powellsville collects and pumps to Ahoskie for treatment. Systems have the following characteristics: Aulander Customers = 600 Average daily flow = 0.334 MGD Permitted daily flow = 0.334 MGD % capacity = 100% Powellsville Customers = 150 Average daily flow = 0.012 MGD Permitted daily flow = 0.025 MGD % capacity = 48% The Aulander system will require repairs and upgrades to treat inflow and infiltration during the planning period.	No public systems serve this area of the county.	Colerain operates the only public wastewater collection and treatment system in this subarea. This system has the following characteristics: Customers = 165 Average daily flow = 0.033 MGD Permitted daily flow = 0.025 MGD % capacity = 48%	

Appendix G: Carrying Capacity Analysis: Water, Wastewater Systems, and Transportation					
Transportation	Major roads are NC Hwy 42 to Lewiston-Woodville and NC Hwy 308 to Kelford and Roxobel. There are no identified road capacity issues. Needed improvements noted in the Bertie County Comprehensive Transportation Plan (CPT) include construction of a new 4-lane divided freeway connecting Bertie County with Martin and Hertford Counties to replace NC11/42. The new highway is needed to improve mobility, connectivity, as well as to encourage economic development. Safety along this corridor should improve as access is more appropriately managed. Pavement strengthening and resurfacing of NC 11 is also needed. Development of a bicycle route along NC 308 is recommended, with portions to be located in this subarea. Sidewalk improvements are proposed in the CTP for the Roxobel, Kelford, and Lewiston-Woodville.	Primary arteries are NC Hwy 42 to Aulander and US Hwy 13 to Askewville and Powellsville. Needed improvements identified in the Bertie County CTP include upgrades of US 13 to a 4-lane divided highway from NC 42 to the Herford County Line and from north of Windsor to NC 42. Improvements are needed to Wakelon Road (SR 1001 - a section of this road is located in this subarea), Helena Road (SR 1200), and Connaritsa Road (SR 1200), including upgrade to 24 feet with shoulders and turn lanes at all major intersections. Recommended improvements to NC 42 at Powellsville to US 13 north of Ahoskie include multi-lanes, with bypass of Ahoskie. Pavement strengthening and resurfacing to SR 1108 to NC 305 is needed. A number of bridges in this subarea have been determined by USDOT to be deficient and in need of replacement. On US 13, Bridge No. 53 over White Oak Swamp, Bride No. 57 over Quioccosin Swamp, and Bridge No. 51 over the Cashie River are deficient and have been identified in the NCDOT 5 Year Work Plan for replacement as federal funds become available. There are no identified road capacity issues. Development of a bicycle route along NC 308 is recommended, with portions to be located in this subarea. Sidewalk improvements are proposed in the CTP for the Towns of Aulander, Powellsville, and Askewville.	Major roads include US Hwy 17 and NC Hwy 308 and Hwy 17.There are no identified road capacity issues in the planning area, although portions of US 17A located in the Town of Windsor planning area are currently near capacity. Development of a bicycle route along NC 308 is recommended, with portions to be located in this subarea.	Major arteries include NC Hwy 45 to Colerain and west and parallel of the Chowan River. US Hwy 17 connects this area to Windsor, the County seat. Recommended improvements include upgrading Hwy 17 from the existing 4-lane major thoroughfare to a 4-lane divided freeway with a median from US 17A east of Windsor to the Chowan River Bridge. It is recommended to widen NC Hwy 45 to 24 feet with paved shoulders and turn lanes where necessary. Sections of Wakelon Road (ST1001) located in this subarea need to be widened to 24 feet with paved shoulders and turn lanes added at major intersections. State Bicycle Route #3 is located in this subarea, with bicyclists sharing the road with vehicles due to lack of bicycle lanes. Due to the Hwy 17 upgrade, this bicycle route may be relocated by NCDOT. Development of a bicycle route along NC 308 is recommended, with portions to be located in this subarea. Sidewalk improvements are proposed in the CTP for the Town of Colerain	