North Carolina Coastal Zone Management Program

BERTIE COUNTY

LAND USE PLAN

1986

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enville, NC

[redacted]

B E R T I E C O U N T Y L A N D U S E P L A N

Prepared for the

Bertie County Economic and Industrial Planning and Development Commission

With assistance provided by

Stephenson and Associates

Greenville, N.C.

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I. INTRODUCTION

This publication represents an update of the existing county land use plan. The original plan and its five year updates are required by the Coastal Area Management Act. The Bertie County Economic and Industrial Planning and Development Commission is the local planning agency. This document is in accordance with the land use planning guidelines (Subchapter 7B - 15NCAC).

Land use planning is the very core of the planning process. All other phases of planning are performed to service the projected land use pattern outlined in the land use plan. The land use pattern of an area is also serviced by the economic development of the county. This idea was supported by Winston Churchill when he said, "We shape our buildings and then our buildings shape us". Almost every aspect of our lives is affected by land use.

The land use pattern of today's Bertie County is very different from the days of early settlement. At one time, the county was a densely forested habitat for many forms of wildlife. As man settled in the area, he soon began to alter the landscape. Widely scattered development of farms or plantations first appeared on the land. This occurred along the major water courses in the county. Later, inland, compact rural development began to appear on the landscape. This development was concentrated at the crossroads of major land routes. Growth continued along these routes and some industrial activities have evolved at the busiest of these crossroads.

Increased mobility has also had an impact on land use. Automotive vehicles have eased the movement of people and goods and have brought on different land use needs. Further, we have witnessed an increase in leisure time. These two factors have accounted for recreational development, particularly along water courses, and industrial expansion into rural areas. Changes such as these are expected to continue. This development includes all the necessary housing, services and space required for growth.

The land use plan can help keep the desired character of Bertie County intact during the process of change. It is intended to serve as a tool for development and guide growth to meet the people's needs.

Land use planning is based on many factors including topography, drainage, soils, existing uses of land, availability of community services, highways, population projections, trends in economic development and future land use needs. A coordination of these elements is mandatory. Planning is essential to avoid the chaos typical in other areas experiencing fast growth. But land use planning is not an end in itself. Although the plan allows for changes in the future, it must be implemented to receive the benefits from its adoption.

There are many tools that a county government has at its disposal to implement a land use plan. A county may: 1) regulate land use, 2) affect land use by the provision of services, 3) purchase or condemn property which usually determines what uses will occur, and 4) tax property to affect what will occur. The usual tool for implementation is zoning.

County zoning requires an immense effort in public education since it can only be placed in effect by the electorate. The potential benefits of zoning are of sufficient magnitude to justify great effort on behalf of its adoption if zoning is needed. However, new alternatives to zoning are available for implementing the land use plan. These include, but are not limited to: 1) moratoriums on development, 2) housing unit quotas, 3) maximum population limits for services, 4) land banking, 5) development rights transfers, and 6) timing and sequencing controls.

Since the last land use plan update in 1980, the county has moved steadily forward, implementing many of the policies set forth at that time. The forsight of the county commissioners, the county manager and other county officials have provided an excellent foundation on which to build the future of Bertie County. Already, in the area of resources protection the county has accomplished all of the 1980 policy implementation procedures including the following: 1) completion of the soil survey in the county, 2) completion of the flood insurance study, 3) showed concern for the water withdrawals from the Roanoke and Chowan Rivers, 4) continued the use of minor permit letting system to protect AEC's, 5) developed a flood and hurricane evacuation plan, and 6) has discouraged county services in areas where a negative impact on the environment could occur. For resources production issues the county has accomplished all of the policy implementation procedures including: 1) use of the soil survey for soil conservation and septic tank permit letting, 2) supported proper forest management practices, 3) announced the use value concept in taxing county property, and 4) worked toward obtaining groundwater data for the county for the purpose of monitoring groundwater levels. And in the area of economic and community develpment, again the county accomplished all of its policy implementation procedures, as follows: 1) provided additional money for the economic development commission, 2) participated in numerous state and federal economic development programs, and 3) improved community solid waste disposal, recreational facilities and secondary roads. In summary, Bertie County has moved forward in the land use planning process. Now, it is time to improve upon the many past accomplishments by proceeding with the land use plan for 1986.

Many issues have accumulated during the past several years. The land use planning guidelines (Subchapter 7B), indicates that certain issues must be addressed. However, the following issues are not a part of this document because of Bertie County's location: 1) encroachment into maritime forests, 2) stormwater runoff associated with phosphate or peat mining, 3) off-road vehicle use, 4) encroachment into coastal dune fields, 5) channel maintenance and beach nourishment, and 6) marinas and floating homes. The citizens of the county acknowledge where they presently stand in this document. They do not wish to be controlled or manipulated by those outside the community or external forces if they can help it. The objectives of this plan are as follows: 1) to update population and economic data, 2) to update existing land use, 3) to interrelate storm hazard mitigation planning with the emergency management program, 4) to integrate the issues, policies and implementation into the 1986 land use plan, and 5) to formulate a time frame in which to pursue the land use planning process. The people of Bertie County know they are directly responsible for controlling the county's destiny. They know that the easiest way for all people to benefit from the human and natural resources of Bertie County is to move steadily forward into the future with an acceptable land use plan and planning process.

II. DATA COLLECTION AND ANALYSIS

Regional Setting

In many ways, the growth of Bertie County in the past and its prospects for future development can be attributed to its relative location. Land use in Bertie County is a product of the regional setting and distribution of the natural and human resources in the county.

Bertie County is located on the inner portion of the Atlantic Coastal Plain physiographic province. This province extends from Massachusetts to Florida and includes many types of landforms. The Coastal Plain is a series of exposed ancient marine terraces most of which are rolling hills and low-lying wetlands. Bertie County is nearly flat at the lower elevations in the southeast and rolling hills at higher elevations toward Roxobel and Kelford.

The county is situated at the confluence of two major rivers. The Roanoke River, one of the largest drainage systems crossing the coastal plain, provides a wealth of natural resources along its course. Another natural asset in Bertie County is the Chowan River. It is the upper portion of the Albemarle/Pamlico Sound which is the second largest estuarine system on the east coast of the United States.

The flow of water into and from this estuarine system should be of deep concern to the citizens of Bertie County. It should be noted that the natural resources in and around Bertie County have not yet been as impacted as other areas along the east coast. However, other areas which are now densely developed were not impacted either when they were primarily rural. Bertie County is located near several urban areas witnessing fast growth. As these areas grow, Bertie County will probably feel their impact. The Hampton Roads area, a region of rapid growth, has already sought to fulfill its potable water and electricity needs within Bertie County's sphere. Although urban places offer different choices and amenities than rural areas (i.e., shopping, the arts, education, and employment opportunities), a balance must be achieved. Bertie County offers many resources to share, but the impact of unplanned resource development could be detrimental.

Bertie County is a rural crossroad in the maze of an intensively complex, heavily populated eastern seaboard. The pressures for and impact of development will intensify. The challenge facing Bertie County is to preserve the rural, agrarian livelihood valued by the residents while still providing the economic and community development needed to maintain a healthy lifestyle.

Population and Economy

Bertie County is a very large county with a relatively small number of people. The county occupies approximately 701 square miles and has a population of 21,686 persons, making a population density of 31 persons per square mile. This constitutes a rural county. Only 25 percent of all

persons in the county live in towns with a population greater than 1,000.

Few changes have occurred in the county since the completion of the land use plan in 1980. A brief description of existing trends in the population and economy of the county follows.

Population Characteristics

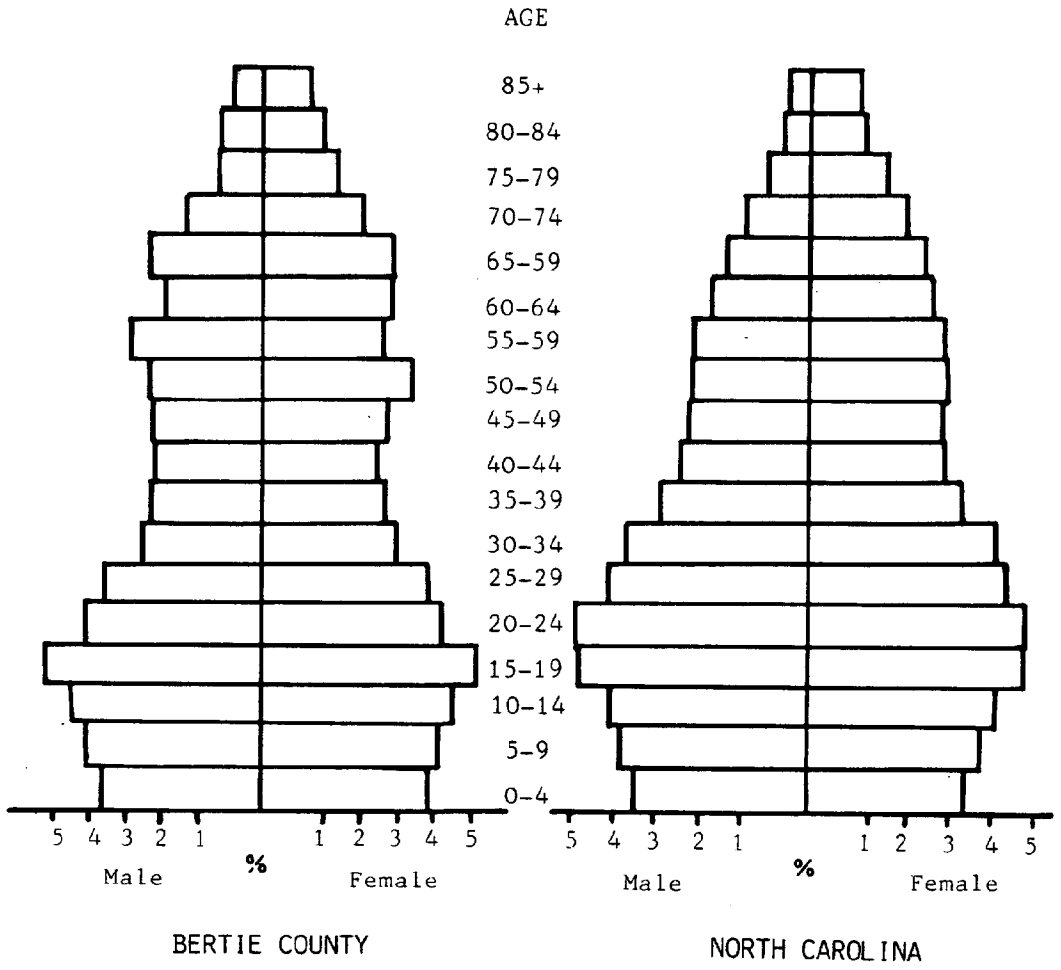
A population can best be described in terms of age, sex, race and its distribution. Age structure is probably the most important population characteristic in estimating future demands for services and facilities such as schools, housing and public works. Sex and age characteristics are the basic causative elements in determining birth and death rates, as well as mortality and migration trends. Sex and age characteristics as well as their distribution are the components of the population pyramid.

Median age is a statistical measure of age composition. It is defined as the age that divides the population into two groups of equal size: one half of the group is older than the median age and the other half is younger. The median age for Bertie County is not significantly different from the state's. In 1980, the median age for Bertie County was 29.4 years. The median age for the state was 29.6. This implies that one half of the population in Bertie County is less than 30 years old.

The population pyramid combines several population characteristics into one complete graph. It shows the distribution of the county's population by sex and age. The population pyramids for Bertie County and North Carolina are shown in Figure 1. By examining the shape of the pyramid, it is possible to analyze the population's combined age-sex characteristics. The interpretation of the Bertie County pyramid is as follows:

1) The base curves inward - this is a result of the reduction in birth rates. In the future, there will be a reduced demand for secondary schools.
2) The bulge in the 15-19 age group - as this age group moves toward the work force age, more jobs will have to be provided, consequently unemployment may rise or the out-migration in this age group is possible.
3) The middle section is concave - this indicates that a relatively small proportion of the county's population is 30 to 45 years old. This may represent a vestige of out-migration from the area during the 1950's. This section of the population constitutes a major portion of the labor force and buying power of the county's population.
4) The large proportion over age 50 - this is much more evident for the county than for the state. This trend should have at least two major implications for the planning program:

A Comparison of Population Pyramids for the State and Bertie County, 1980



Source: N.C. State Government Statistical Abstracts, 1984.

Figure 1

a. It will produce specialized demands on services and facilities, particuarly in the area of health care delivery systems and recreation. This is because older persons require greater medical attention and more specialized recreation programs than the rest of the population. The demand for a local hospital now and in the future is evident from this population trend.
b. With a larger number of families receiving fixed incomes (ie. pensions, social security), fluctuations in the economy and social policies will have a greater impact on the county's financial situation.

5) The disproportionately large number of women over 50 years old - emphasis should be placed in the future on providing cultural and recreational programs designed for older women.

These aspects of the age/sex structure of the population should be considered for future county planning endeavers.

Population Trends

An analysis of growth trends will indicate future pressures on the land and water resources as well as public services and facilities. Examination of historic growth patterns will provide a basis for forecasting future population levels.

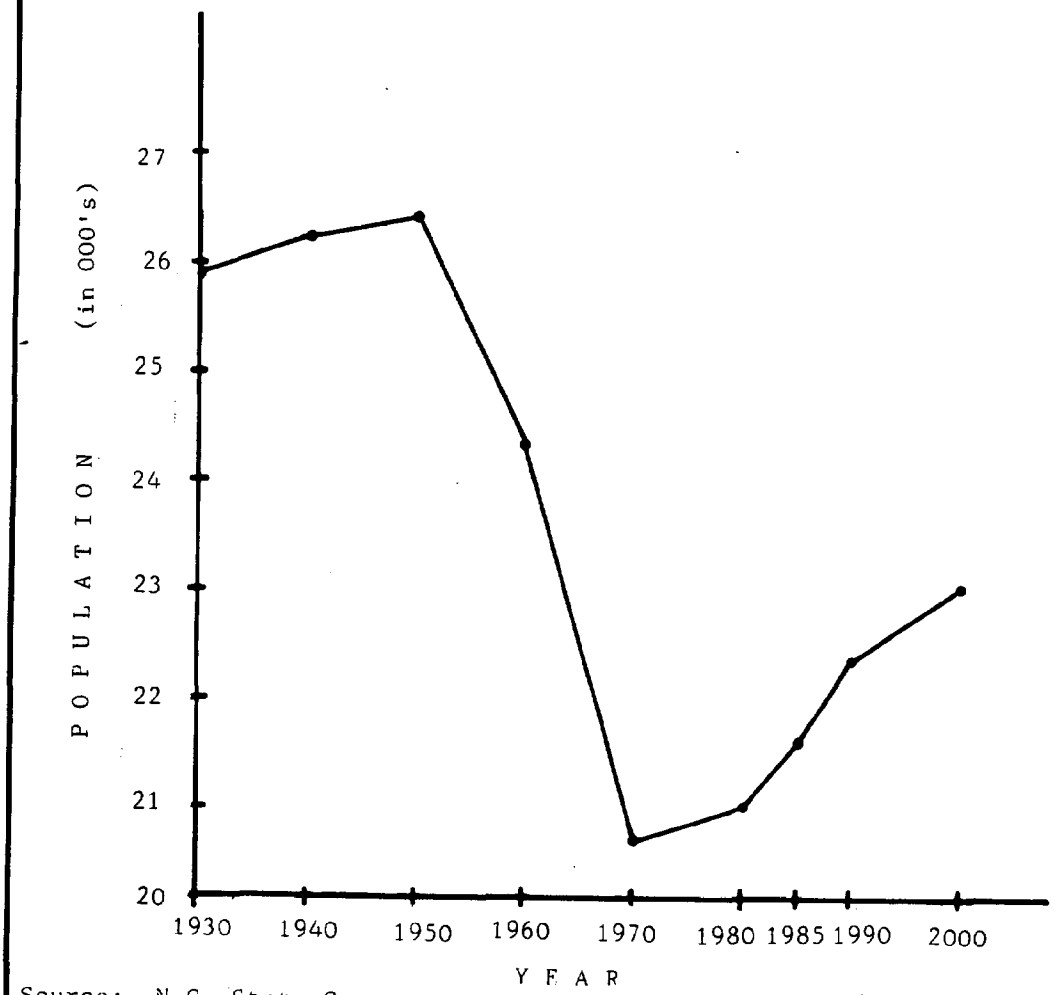
Figure 2 shows population changes in the county since 1930. As shown in the graph, Bertie County's population has grown within the last ten years after two decades of significant out-migration. According to the North Carolina Department of Administration estimates, it is expected to increase slightly over the next 15 years. It is unlikely that this gradual increase will have a serious impact on the demand for services and facilities. The growth patterns for county towns can be seen in Table 1. Notice that growth in the county is greater than in the towns.

Certain areas serve as bedroom communities for towns in neighboring counties. The Aulander area has grown nearly 30 percent since 1970 and the area around Powellsville has grown at an equally rapid rate. Lewiston-Woodville has grown almost 16 percent since 1970. Growth in these areas can be attributed largely to employment opportunities in bordering counties.

A tabulation of the seasonal population is designed to help local governments prepare for great swells in the number of people who seasonally place service and other demands on a local government. No such condition exists in Bertie County and none is expected to materialize in the future. Presently, slight seasonal population fluctuations are associated with temporary farm related jobs during harvest season.

County Population Change
1930 - 2000

1930-1940	1.4 %	1980-1985	3.1 %
1940-1950	0.9 %	1985-1990	2.9 %
1950-1960	-7.9 %	1990-1995	2.2 %
1960-1970	-15.7 %	1995-2000	0.1 %
1970-1980	2.4 %		



Source: N.C. State Government Statistical Abstracts, 1984.

Figure 2

POPULATION CHANGE WITHIN INCORPORATED PLACES 1960 - 1980

	1980	1970	% Change 1970-1980	% Change 1960-1970
Askewville	227	247	- 8.1	26.6
Aulander	1214	947	28.2	-12.5
Colerain	284	373	-23.9	9.7
Kelford	254	295	-13.9	-18.5
Lewiston-Woodville	671	580	15.6	-17.6
Powellsville	320	247	29.6	- 2.2
Roxobel	278	347	-19.9	-23.2
Windsor	2126	2199	- 3.3	21.3
Total Incorporated Population	5374	5235	1.0	-16.4
Bertie County	21024	20528	2.4	-15.6

Source: N.C. State Government Statistical Abstracts, 1984.

Table 1

Regional Aspects of the Economy

An understanding of the function and structure of the economy of Bertie County is a critical component of the county planning and management program. It provides essential economic information for decisions concerning the future.

The economy may be divided into two parts: basic and non-basic sectors. The basic sector is made up of all activities which export goods and services to places outside the county or which sell to people or firms who come into the county. This activity brings money into the county. The non-basic sector is made up of all activities which produce goods and services for consumption within the county. These activities tend to turn the same money over and over again. To give a better idea of this concept, consider a manufacturing firm that has chosen to locate in Bertie County. This firm is classified as a basic industry. Housing, food stores, and health care services must be provided for the incoming employees. This demonstrates how a growing basic economy usually promotes the development of non-basic activities.

Economic Base and Employment

Bertie County is primarily a rural county with an agribusiness base. In 1981, retail sales totaled $54.5 million, yet much of the county income is derived from the sale of agricultural products. In 1981, for example, the estimated income from all farm products sold totaled almost $70 million. The county is best known for peanut production and is a leader in producing tobacco, soybeans, hogs and poultry products. Agriculture is also a leading employer in the county. Table 2 lists the percentages of persons employed in each economic sector. Compared to the average for the state, Bertie County employs nearly ten times as many people in agriculture, forestry and fisheries.

Manufacturing firms located in the county are also major employers. Nearly 40 percent of the county residents are employed in this sector of the economy. Nearly one-half of the county's manufacturing comprises textile and forestry products companies (Table 3). Greater diversification in the manufacturing sector should be considered in the economic development of the county. With recent declines in the tobacco and textiles industries, it will become increasingly more important to promote different types of industrial development, which is a major concern for the Bertie County E.D.I.P.D. Commissioner.

Unemployment in the county has been an item of concern, yet these figures have followed national trends. The 1983 Bertie County value was slightly higher than the state level, but was significantly different from surrounding counties (Table 4).

Income

Mean and median income values are measures used in most analyses of income characteristics, but it is important to make the distinction

EMPLOYMENT OF PERSONS 16 YEARS OR OLDER BY INDUSTRY, 1980

	Percent of Employment	
	Bertie Co.	N.C.
Agriculture, Forestry, Fisheries, Mining	13.42	3.64
Construction	5.53	6.22
Manufacturing	38.76	32.76
Transportation, Communication, other Public Utilities	2.56	6.10
Wholesale and Retail Trade	15.37	18.38
Finance, Insurance and Real Estate	3.85	7.10
Personal Entertainment and Recreation	3.12	3.78
Health Services	3.54	6.12
Educational Services	7.96	8.46
Other Professional and Related Services	2.37	3.25
Public Administration	3.47	4.13

Source: N.C. State Government Statistical Abstracts, 1984.

Table 2

MAJOR MANUFACTURING FIRMS

Firm	Location	Age	Product	Employees
Bema Manufacturing Company	Hwy 13/17 Byp. Windsor	1981	Bathing Suits	45
Blue Bell, Inc.	Rt. 4 Windsor	1967	Garments	190
Cardinal Chemical	Rt. 4 Windsor	1979	Chemical Distribution	5
Coastal Concrete Company, Inc.	Hwy 13/17 Byp. Windsor	1963	Cement Products	14
Coulbourn Lumber Co.	Hwy 17 Windsor	1938	Lumber	115
Gillam Bros. Peanut Sheller, Inc.	Spring St. Windsor	1935	Peanuts	25 (60 Seasonal)
Lea Lumber & Plywood Plants #3 and #20	Hwy 13 Windsor	1939	Veneer	223 and 34, respectively
R. J. Reynolds Experimental Farm	Rt. 1 Merry Hill	1961	Research	60
Southeastern Timber	Hwy 17N Windsor	1962	Lumber	60
Stephenson Crab Co.	Hwy 13/17 Byp. Windsor	1983	Fish Products	120
Williford Lumber Co.	Hwy 17N Windsor	1962	Furniture Squares and Chips	25
Windsor Wood Products	Hwy 17N Windsor	1965	Furniture Components	25
Workers Owned Sewing Company	Granville St. Windsor	1979	Contract Sewing	50
Bunch Pattern Works	Hwy 308 Lewiston	1947	Industrial Patterns	9
Gregory Manufacturing Company	City Lewiston	1923	Farm Machinery	150
Louisiana Pacific	Hwy 308 Lewiston	1953	Lumber	80

Table 3

MAJOR MANUFACTURING FIRMS
Continued

Firm	Location	Age	Product	Employees
Perdue, Inc.	Hwy 308 Lewiston	1976	Chicken Processing	2600
Columbian Peanut Co.	City Aulander	1952	Peanut Products	35 (140 Seasonal)
Northeastern Agri-Supply	Hwy 11 Aulander	1979	Chemicals and Fertilizers	8
Perry-Wynn Fish Company	River Road Colerain	1927	Fish Products	15 (250 Seasonal)
Roxobel Apparel	Cemetary Road Roxobel	1983	Childrens Clothes	50

Source: Bertie County E.D.I.P.D.

Table 3 Continued

AVERAGE UNEMPLOYMENT RATES FOR

1984 and 1983

	Jan	Feb	Mar	Apr	May	Jun	Jul
STATE	8.1	7.6	7.2	6.3	5.8	6.2	6.6
Bertie	12.5	11.2	10.3	9.4	8.4	9.2	9.1
Chowan	9.1	7.2	5.9	5.0	3.8	4.3	4.5
Halifax	12.8	12.5	11.1	10.4	10.3	13.2	11.1
Hertford	10.0	9.7	8.8	7.8	7.1	7.1	8.5
Martin	11.3	10.3	9.5	8.2	7.7	10.3	11.2
Northampton	11.1	10.8	9.4	8.4	9.3	12.0	10.2

	Aug	Sep	Oct	Nov	Dec	1984 Avg.	1983 Avg.
STATE	6.1	6.3	6.8	7.0	7.2	6.2	8.9
Bertie	10.0	10.0	10.0	10.0	10.1	10.0	13.2
Chowan	3.8	5.3	6.3	6.5	7.4	5.8	7.6
Halifax	10.2	9.6	11.0	11.3	11.7	11.3	12.2
Hertford	9.6	9.4	9.9	10.0	9.7	9.0	9.5
Martin	9.2	9.2	10.3	9.8	10.8	9.8	14.8
Northampton	11.1	10.1	10.6	10.9	11.5	10.5	11.3

Source: Employment Security Commission, 1985

Table 4

between the two measures. Most people, when speaking of the "average", are actually referring to the arithmetic mean. In the case of incomes, the mean is simply the sum of all family incomes divided by the number of families. Since this value does not account for the allocation of income, it may be considered a general value which describes the total income available in the area. The median income is the income level at which one-half of the families make more and half make less. Median income describes income distribution and, as such, may be considered a better measure of the income of families in the area. In an area where a considerable difference exists between the number of families in the lower income groups and those in the upper income groups, the median may be considerably less than the mean income. These two figures will be equal only in the case of an even distribution.

In 1979, the median family income was $16,792 and the mean family income was $19,513. These figures are compared with the state and surrounding counties in Table 5. In Bertie County, mean income is slightly higher than median, indicating a lower standard of living. The disparity between mean and median income reveals an important economic problem. A median income substantially lower than the mean implies that the area has a disproportionately larger number of families in the lower income group. This notion is supported by the percentage of population that is classified as living within the lower income level (Table 5). Nearly 30 percent of the county population maintains an income below the poverty level. This figure is representative of the general economic condition of the rural portion of the coastal plain region. While this figure has improved since 1969, it should be a major concern for the county's leadership.

Summary

The population and economic characteristics for Bertie County indicate that economic diversification should be a goal for economic development. A greater variety of industries should be invited to locate in the county. Too much dependence on one type of industry, such as textiles, is economically unsound. Economic diversification would help raise low income levels, reduce unemployment and lower out-migration rates.

MEASUREMENTS OF INCOME LEVELS

1969 and 1979

	Mean Income		Median Income		Percent of All Persons With Income Levels Below the Poverty Level	
	1969	1979	1969	1979	1969	1979
STATE	$ 8,872	$19,513	$ 7,774	$16,792	20.3	14.8
Bertie	6,056	14,950	4,829	11,861	44.3	29.4
Chowan	7,604	16,771	6,397	13,295	30.0	24.0
Halifax	6,964	15,404	5,799	12,819	38.7	29.5
Hertford	6,885	16,797	5,912	14,341	34.7	24.3
Martin	6,532	16,135	5,711	13,867	34.8	24.1
Northampton	6,171	16,080	4,782	12,190	46.0	28.1

Source: 1984 North Carolina Statistical Abstract

Table 5

III. EXISTING LAND USE

Bertie County has a total area of 461,000 acres. This figure includes a total of 20,600 acres which is water . This abundant water area consists of the Chowan and Roanoke Rivers, and the Albemarle Sound. The Cashie River and several smaller streams are included in this waterscape. The average daily flow from all sources exceeds 6,200,000 gallons per minute.

Generally, the topography is level to gently sloping. Elevation ranges from sea level at the confluence of the Chowan and Albemarle Sound to over 100 feet near Lewiston. The soils range from excessively drained soils along the river terraces to very poorly drained clays throughout the county. Water management and erosion controls are required on a majority of the acreage within the county. Wind erosion is a problem on sandy soils.

Forested land is the most common type of land use in Bertie County. It consists of approximately 320,000 acres which accounts for nearly 70 percent of the total land in the county. Of this acreage, almost two-thirds of the forested areas are privately owned and one-third are owned by corporations. The main forest types found are Loblolly-short leaf pine, oak-pine, and oak-hickory. There are some areas that due to clearing without reforestation, insect and disease problems, and lack of forest management, are a problem.

Cropland accounts for approximately 22 percent of the total area in the county. It is the second most dominant land use within the county. Approximately 70 percent of the cropland acreage requires drainage or management for erosion control.

Area in cropland is continually changing. For the most part, however, cropland is slowly rising. Some land that has been cleared by logging operations is being reverted to cropland. This has proven to be beneficial to some farmers, as larger farms are usually more efficient.

Areas devoted to pastureland are continually decreasing in the county. It accounts for less than one percent of all land in the county. Much of the land once used as pastureland is marginal land that is being converted to accommodate hog and broiler production.

There has been a slight increase in built-up land associated with urban areas. Commercial and residential land uses have developed along the major corridors of the county. These consist of service-related facilities to accommodate highway travelers and single family, non-farm residences respectively.

Growth Patterns

Bertie County, as a whole, is not experiencing rapid growth. It is unlikely that any major land use compatibility problems will occur within the near future.

Land use changes may occur in the more remote areas of the county.

Most of the county population is concentrated in or around the communities. Smaller concentrations exist in rural areas at county crossroads. These population pockets have promoted development of convenience-oriented outlets, such as gas stations and convenience stores.

There may be areas that will require special attention in the future. Compatibility problems will occur if development is haphazard or unplanned. These include areas that are currently or anticipated to experience development in the future. The strips of land along the major highway corridors in the county will require planning. The area south of Windsor along U.S. 17 is an area with a variety of competing land uses. On part of this area is the county industrial park. Development is likely to continue in this area and it is recommended that it be restricted to uses that complement the industrial park and highway users. Other areas of concern include the Merry hill section in the southeastern section of the county, the N.C. 11 corridor and the Roxobel-Kelford area.

Merry Hill serves as a bedroom community to nearby Plymouth in Washington County, the location of Weyerhaeuser, a major regional employer. It is likely that this area will experience continued growth.

The northeastern portion of the county, including Lewiston-Woodville, Aulander, Roxobel and Kelford, is also experiencing additional growth due to industrial development. The location of a processing plant has increased the need for residential development to house its employees. It is anticipated that future land use changes will result from production related industries moving into the area and a need for housing will increase.

County Planning Units

The county has been divided into eight planning units for the purpose of analyzing the existing land uses and related activities in greater detail. The planning units are as follows:

1) U.S. 17 Corridor
2) N.C. 11 Corridor
3) Roxobel-Kelford
4) Powellsville
5) Askewville
6) Merry Hill
7) Chowan River
8) Roanoke River and Roquist Pocosin

The planning units are delineated on the generalized existing land use map in Figure 3 (end flap). There are several units which require special management attention and others offer potential for positive economic development. The environmentally sensitive areas must be protected because of the natural resources they hold for Bertie County. The corridors are major regional transportation routes and are subject to compatibility problems if allowed to develop in an unplanned or haphazard manner. The following narrative details the existing land use patterns found in each of the planning units.

U.S. 17 Corridor Planning Unit

The U.S 17 corridor extends from the Chowan River to the Roanoke River including the Windsor urbanized area. It does not include other planning units through which it passes. The planning unit approximates a corridor 1,000 feet in width on either side of the center line of the highway. This unit includes the county industrial park, a large variety of competing land uses in the Windsor planning area, and highway-oriented businesses.

The area east of Windsor has two rural crossroads. They are located at Midway and at Greens Cross Church. Midway, with Taylor's Store about one half mile north on N.C. 45, has a number of commercial and highway-oriented land uses. From the Chowan River to Windsor, agriculture and forestry are the dominant land uses. A concentration of residences occur at Edenhouse, some of which are "second homes". Other residential land uses are either farmsteads or rural non-farm homes. For approximately a mile east of Windsor land uses are primarily residential with several commercial establishments scattered along the highway.

The land south of Windsor is densely to moderately developed up to the floodplain of Roquist Creek. Immediately south of Windsor for approximately two miles is a mixture of land uses. This is one of the most unattractive areas in the entire county. It largely consists of substandard housing with scattered marginal commercial establishments along the highway. The area has continuous unpaved ingress/egress along the highway and numerous unkept signs and billboards. It is aesthetically displeasing for travelers or visiters to observe such conditions.

The area between the Roquist Creek floodplain and the Roanoke River floodplain is composed primarily of forest and agricultural land uses. The uplands are sandy and several sandpits are located near the Roanoke River floodplain. This area, in contrast to the land immediately south of Windsor, is visually attractive.

In summary, this planning unit, which includes Windsor and its environs, has much of the county's commercial, industrial, and highway-oriented land uses. This unit, by virtue of these land uses, contributes substantially to the county's tax base compared to the small amount of land included in it.

N,C. 11 Corridor Planning Unit

The N.C. 11 corridor extends from the northern county line southward to the Roanoke River. It does not include other planning units through which it passes. The planning unit approximates a corridor 1,000 feet in width on either side of the center line of the highway. This unit includes the communities of Aulander and Lewiston-Woodville. Substantial growth in this unit has taken place recently and will likely continue.

The re-routing of N.C. 11 with limited controlled access through western Bertie County has allowed traffic to flow smoothly to and from the Virginia Tidewater. The land uses along the highway are mostly forests with scattered cultivated fields, except for a large concentration of

agricultural activity in the Lewiston-Woodville area. A number of sand and gravel pits are scattered along the artery south of Lewiston-Woodville on sand ridges in the Roanoke River floodplain.

In the Aulander area, urban growth continues southward along N.C. 305. Residential land uses also continue along other roads extending from the central business district, particularly toward Millennium in Hertford County.

About eight miles south of Aulander are the communities of Lewiston and Woodville, which have been merged. Lewiston is a small compact town which centers on the junction of N.C. 308 and old N.C. 11. Woodville, a younger village, differs in that it is oriented toward the industrial development along the railroad and the old highway south of Lewiston.

Traveling along N.C. 11 is pleasant. This route experiences little congestion, with occasional exceptions near Aulander and Lewiston. This planning unit has and will show substantial industrial growth if the communities are able to develop the necessary infrastructure. This area will contribute an increasingly significant proportion to the county's tax base if development continues.

Roxobel-Kelford Planning Unit

The Roxobel and Kelford communities and their outlying area are located in the extreme northwest portion of the county. This planning unit is bounded on the north and west by the county boundary, on the south by the Roanoke River and Roquist Pocosin planning unit. The eastern border is the N.C. 11 corridor. This planning unit is a good example of rural Bertie County. It is comprised of several small farm service centers, cropland and forests.

This planning unit has the highest elevation in the county with several small areas exceeding 100 feet. It is also on an interfluve between the Cashie River and the Roanoke River. Near the Roanoke River floodplain, fairly steep slopes prevail from the upland areas. Most of the uplands and sandy ridges are cultivated, and the majority of the steep slopes, pocosins, and floodplains are forested. Most roads follow the interfluves, such as N.C. 308 and N.C. 11 to U.S. 258 at Rich Square. Several places along N.C. 308 south of Kelford are non-farm residential areas. In addition, there is a major agricultural processing plant in this planning unit. In general, this planning unit represents a fine example of a stable rural portion of the coastal plain.

Powellsville Planning Unit

The Powellsville planning unit is in the north central portion of the county. The southern boundary of this unit is located so that stream drainage is to the north. It is bounded on the west by the N.C. 11 corridor and on the east by the Chowan River planning unit. This unit represents another good example of rural Bertie County with small rural communities, large forested areas, and farmland.

Powellsville is located just south of Hertford County and less than

five miles from Ahoskie. This community formed at the crossroads of N.C. 42, C.R. (county road) 1321, and a railroad, now abandoned. U.S. 13 presently bypasses the town along its western boundary. Much of the farmland in this unit is situated along rural roads that follow the interfluves. Forests, which are located in pocosins and swamps, comprise most of the land area. Small crossroad communities such as Trap, Cremo, Hexlena, and Connaritsa are fine examples of the small, older rural settlements of the county. Along the roads near Powellsville and along U.S. 13, rural non-farm residences are increasing. This is probably due to the extension of community water lines. Generally, this planning unit is a stable rural environment with some growth occurring due to its nearness to Ahoskie.

Askewville Planning Unit

The Askewville planning unit is the second largest in the county and approximates the Cashie River drainage basin above Windsor and the U.S. 17 corridor. This is another unit which shows a mix of farms, forests, and rural communities.

This planning unit is primarily forested with most small farmland areas scattered along rural roads. It is largely a poorly drained upland area with several small crossroad communities such as Rhoades, Buena Vista, and Todds Crossroads. The county land fill is located on C.R. 1221 north of Republican in this planning unit. A few isolated sand pits are scattered throughout the area. In general, this area is sparsely populated and mostly forested.

Merry Hill Planning Unit

The Merry Hill planning unit is located in the southeastern portion of the county and includes the lower Cashie River and its floodplain. The Merry Hill unit is located across the Roanoke River from Plymouth where many people work. This unit also includes a section of estuarine shoreline at the confluence of the Roanoke and Chowan Rivers.

This planning unit has the lowest elevations in the county with pocosins, floodplains, and wetlands. Most of the area is forested except along the roads. The roads tend to follow the interfluves between creeks and swamps such as Salmon Creek, Black Walnut Swamp, Cashoke Creek, Cashie River, and the Roanoke River.

The area is sparsely populated with most residences along N.C. 308 and C.R. 1540. Some residential development is scattered on a few bluffs of Batchelor Bay and Albemarle Sound. Merry Hill is a small farm service center and the only concentrated rural community in the unit. Some linear residential development is located along N.C. 308 and C.R. 1500 near U.S. 17. With the re-routing of N.C. 45 south of Midway, some scattered residential development is occurring. Of interest is the newly developed access area at the Sans Souci Ferry site. In summary, the Merry Hill area is largely forested with residences along the roads. Water-oriented recreational activities in isolated areas on the streams and sounds have occurred and will likely increase.

Chowan River Planning Unit

The Chowan River planning unit includes Colerain and several small rural crossroads such as Goose Pond and Perrytown. In the northern portion of the unit, farmland is about equal to the forested areas. In the southern portion of the unit where most of the land is poorly drained, forest land dominates the area.

Along the Chowan River the shoreline is either a steep bluff, low narrow sandy strands, or wetlands. There are eight locations along the shoreline where development has occurred. From Colerain Beach to Willow Branch Landing, these small concentrations are related to commercial fishing activities, permanent residences, summer cottages and recreation activities. Most bluff areas have an elevation greater than thirty feet and are subject to erosion during the winter winds out of the northeast. Low lying areas are subject to flooding from wind tides when easterly winds are blowing. With most of the shoreline undeveloped, serious problems do not abound at the present time.

In summary, this planning unit has some of the best soils in the county. It has the most developable shoreline and is adjacent to the most estuarine waters in the county. Except for its shoreline location, this planning unit is similar to other rural farming communities in the county.

Roanoke River and Roquist Pocosin Planning Unit

The Roanoke River and Roquist Pocosin planning unit is the most elongated and largest in the county. It consists almost entirely of poorly drained areas. The area west of the N.C. 11 corridor is a large meander which consists mostly of swamp interspersed with sand ridges. The ridges are usually cultivated while the swamps are forested. The area is very sparsely populated with only a few structures scattered along unpaved roads.

Between N.C. 11 and U.S. 17, the area is divided into two low lying areas: 1) the Roquist Pocosin, and 2) the Roanoke River floodplain. The Roquist Pocosin is primarily forested with cultivation in slightly better drained soils along its edge. This area includes the ridges along which N.C. 308 is located. Several small crossroad communities are located along the road with scattered rural residences between them. The Hope Plantation and a school are also located along the road. The Roanoke River floodplain is separated from the Roquist Pocosin by a sand ridge along which C.R. 1108 is located. Several linear-shaped communities are located in the area. Farming occurs on the higher sand ridges in the floodplain and along the road and the remaining area is in woodland. Some of this area is a conservancy preserve.

The remainder of this planning unit is east of U.S. 17. This area consists of the Roanoke River floodplain and numerous sand ridges which are cultivated. The floodplain is almost entirely woodland. In general, this area consists of low lying, poorly drained forested areas with some cultivated fields on the higher soils. Settlement in the area is along the roads that follow sand ridges. This includes several small crossroad concentrations and scattered residences between them.

Special Planning Areas

Within each of the county's planning units are special areas or sites that merit attention. These include: 1) estuarine water, 2) public trust water, 3) estuarine shorelines, 4) wetlands, 5) swamp forests, including floodplains and pocosins, 6) fragile or unique habitats, and 7) historic and archaeological areas and sites. The first four of these areas are classified as "areas of environmental concern" (AEC's). Historic areas and sites are also classified as AEC's, provided there has been approval by state authorities.

There are three types of AEC's which have been designated in the county. They include estuarine waters, estuarine shorelines, and public trust water. There are no designated wetlands in the county. The definitions of these areas are found in G.S. 113A-113 (b)(2).

Estuarine waters are defined as the waters of the bays, sounds, rivers and tributaries seaward of the dividing line between coastal fishing waters and inland fishing waters. Estuarine waters are important in that they are among the most productive natural environments in the state. These waters support the basic aquatic life that sustain the commercial fisheries. Nine of the ten leading commercial catches within the state are dependent on the estuary for life.

There are nine areas in Bertie County that are classified as estuarine waters. They include:

1) Albemarle Sound
2) all man-made tributaries
3) Roanoke River
4) Conine Creek
5) Thoroughfare Creek
6) Middle River
7) Eastmost River
8) Chowan River - from confluence to 300 yards south of the U.S. 17 bridge
9) Cashie River - from Sans Souci Ferry to its mouth

The management objective for the areas of environmental concern is to give highest priority to its protection in order to maintain the biological, social, economic, or aesthetic values associated with it. The development of navigation channels and the use of wharfs are examples of appropriate alterations in this area, provided that such changes will not be detrimental to the biological and physical character of the system. Incompatible uses would include projects which directly or indirectly block or impair existing navigational channels, increase erosion along the shore, or disrupt the ecology of the shellfish waters. There are presently no such incompatible uses in the county.

The estuarine shoreline, another type of AEC, is considered a component of the estuarine system because of its close association with adjacent estuarine waters AEC's. Estuarine shorelines are defined as non-ocean shorelines which are especially vulnerable to erosion, flooding or

other adverse effects of wind and water. They are intimately connected to the estuary and are defined as those areas in the county that border the water bodies defined as estuaries. The AEC jurisdictional area is defined to extend for a distance of 75 feet landward from the mean high water mark. Unless measures have been taken to prevent erosion, no development should occur within these areas. This 75 foot line can be used to determine setbacks in all ordinances such as subdivision and health regulations.

Public trust waters are the third type of AEC found in the county. These areas consist of all natural bodies of water in the county excluding privately-owned lakes to which the public has no right of access. Mismanagement of development in these areas could be extremely harmful. These areas are critical in that they provide a valuable recreational outlet for the public and also serve to support commercial and sport fisheries. Control over development in public trust areas is presently exercised by the state or federal government. Bertie County can assist in managing these areas by controlling development adjacent to them with regulatory devices such as setback lines, minimum lot sizes, septic tank ordinances, floodplain ordinances, and sedimentation controls.

Although not rigidly defined as a form of AEC in North Carolina, there are two areas in the county that merit concern: 1) the Roanoke River valley and 2) the Roquist Pocosin. Both of these areas contain swamp forests that support native plant and animal communities. They provide conditions or characteristics that have not been greatly damaged by local human activity, but flood control provided by the U.S. Army Corps of Engineers has created local problems. It is recommended that development in these two areas be restricted to rural land uses such as forests. They should be maintained in a manner consistant with good forest and wildlife management practices. Agricultural development should be limited and closely monitored in these areas.

Other areas exist within the county that are not classified as AEC's, but are fragile or unique environments. This includes the areas that are home to endangered birds, wildlife and vegetation. Areas such as these can be nominated for consideration as AEC's by the county.

Historic and archaeological sites should receive special consideration in land use planning. These areas are defined as places and properties owned, managed, or assisted by the state pursuant to G.S. 121 and properties or areas that have been designated by the secretary of the Interior. A National Historic Plantation and the King House, both located in the Roquist/Roanoke planning unit, are presently registered places. There are other sites in the county that require consideration and preservation as well. The North Carolina Division of Archives and History lists 135 archaeological sites and 16 historic sites in Bertie County, including Windsor. The number and location of underwater archaeological sites are not known at this time. Development at or near to these sites should be in keeping with the character of these places and its history.

Summary

In general, there are no significant land use compatibility problems

in the county. It is suggested that stringent management and planning practices be maintained in these environmentally sensitive land and water areas to maintain their existing integrity.

IV. EXISTING PLANS, REGULATIONS, AND CONSTRAINTS

This section contains a summary of the conditions, plans, and policies related to land use. Items included in this section contribute to the overall county land use planning process.

Transportation Plans

Bertie County is included in the regional plan of the Ahoskie Division of Highways. It does not have a county transportation plan. The North Carolina Department of Transportation has planned specific improvements for the roads in the county. Expansion of the Highway 17 bridge over the Chowan River is the only major improvement planned. Other specific plans are included in Table 6.

Due to the relative situation of Bertie County, many of its roads are widely used by travelers, but Highway 17 is the most heavily used artery in the county. There is 457 miles of paved roads and 181 miles of unpaved roads for a total of 638 miles of roads. Of this total, about 96 percent of the roads are rural with the remainder in urban areas. Only 25 percent are part of the state's primary highway system. With respect to usage, the highway system in the county appears to be adequate. There should be no need to develop alternate routings in the near future.

The major routes in Bertie County include U.S. 17, U.S. 13, and N.C. 11. The minimum average daily traffic flow on U.S. 17 is 3,300 vehicles; on U.S. 13, 1,900 vehicles; and on N.C. 11, the flow is 2,000 vehicles. Maximum flow of traffic can be pinpointed to specific sites along the roads. Along U.S. 17, maximum flow is 7,300 vehicles just south of Windsor. Near Aulander, N.C. 11 receives 2,800 vehicles per day. Highway U.S. 13 has a high traffic volume of 5,000 vehicles per day in two locations: 1) immediately north of Windsor and, 2) due north of Powellsville.

The traffic pattern indicates that a large amount of movement occurs from the county to the nearby communities of Ahoskie, Edenton, Williamston, and Plymouth. It also shows that internal movement is centered on Windsor and to a lesser degree on Lewiston-Woodville, and Colerain.

Public transportation is available for Bertie County on a limited basis. In addition to some limited opportunities for public transit along the major routes by Trailways, the Choanoke Public Transportation Authority (CPTA) provides the major portion of transit services. At the present time the CPTA provides a morning service five days per week throughout the county. In addition, CPTA provides senior citizen groups with transport Monday through Friday, and transit to the county mental health facilities on Monday and Tuesday. During the summer, summer school students are provided transportation to the senior high school and the school in Aulander. Other services by CPTA are 'on demand'.

BERTIE COUNTY TRANSPORTATION IMPROVEMENT PLANS

1985 - 1993

Location	Route	Status	Est. Cost	Description
11.6 mile stretch north of Roanoke R. bridge to intersection south of Windsor	U.S. 13/17	FY85	$1.5 million	Update section, add safety features, resurface and widen southbound lane
FEDERAL AID BRIDGE REPLACEMENT				
Roanoke River at Williamston	13 -1- 10	FY86	$10.9 million	Replace entire bridge with dual-lane high rise structure
Conine Creek Southbound Lane	13 -1- 40	1985 completion	$1.7 million	Replace southbound lane
Between Conine Creek and Roanoke River	13 -1- 30	FY86	$1.1 million	Replace most of structures in south-bound lane

Source: N.C. Division of Highways, Ahoskie Regional Division Chief, 1985.

Table 6

Schools

The Bertie County Board of Education currently operates seven elementary schools and one senior high school in the county. Elementary schools serve grades K-8 and are located throughout the county. The senior high school located about three miles north of Windsor, serves the entire county. Secondary education is also provided by a private institution, Lawrence Academy, located in Merry Hill. Post-secondary education is offered by Roanoke-Chowan Technical Institute (RCTC) in Ahoskie and Martin County Community College (MCCC) in Williamston. Both MCCC and RCTC have located branch campuses in Windsor. The Bertie County school system was reorganized in 1985 (see Table 7). The purpose of the reorganization was to maintain quality conditions in the schools and to adjust to a decline in school population. A school bond issue was passed which will allow for necessary remodeling and rebuilding plans. Colerain school is almost completely rebuilt.

School enrollment has declined since construction of many of the county's education facilities. Reorganization was necessary to economically support the loss of students. This trend can be seen in the table below:

YEAR	ENROLLMENT
1968-69	6,118
1973-74	5,559
1979-80	4,885
1984-85	4,261

Enrollment is expected to rise by 1990. Table 8 describes the existing conditions in the Bertie County Schools. It lists capacity, enrollment, and allotment for each school.

Existing Plans and Regulations

This section outlines the plans and regulations in force in Bertie County. This discussion should provide the citizens with an idea as to how plans and regulations are related to land use. A broad range of regulatory powers are available to the county, however, most of the regulations that have a major impact on land use in the county are enforced at the state or federal level. The following is an outline of the regulations that are currently enforced. State and federal regulations which are enforced in the county are listed in Appendix A.

Community Facilities Plan

Bertie County does not have a community facilities plan. A county-wide water bond election was defeated in 1978 and has not been reconsidered since that time. Studies completed regarding the water and sewer needs of the county as a part of Region Q include a survey conducted by the Mid-East Commission in 1975. A similar study was completed in 1968. There are several private and municipal systems located throughout the county which are described elsewhere in this document.

BERTIE COUNTY

PLAN FOR REORGANIZATION OF SCHOOLS

Attendance Area	Schools serving Area by grades	1984 - 85 Membership	Projected Plans for use	Resulting Organization	1990 Membership
Askewville	Askewville K-8	171	Addition	K - 8	195
Aulander	Aulander K-8	374	Addition	K - 8	400
Powellsville	C. G. White K-8	402	No change	K - 8	260
Colerain	West Colerain K-5	269	Abandon	K - 8	500
	Colerain 0 - 0	166	Rebuild	K - 8	
West Bertie	West Bertie K-8	671	Addition	K - 8	750
Merry Hill	J. P. Law K-8	199	Addition	K - 8	200
Windsor	Southwestern K-8	979	Convert to K-8 Windsor District	K - 8	1,020
Bertie Senior	Bertie Senior 9-12	1,196	Convert to 9-12 Senior High Addition	9 - 12	1,180
Total		4,261			4,505

Source: Bertie County Schools Superintendent, 1985

Table 7

BERTIE COUNTY PUBLIC SCHOOL FACILITIES

1984-85

SCHOOL	CAPACITY	ENROLLMENT	ALLOTMENT	TEACHER/PUPIL RATIO	GRADE TAUGHT	YEAR ERECTED PLUS ADDITIONS
Askewville Elem.	240	171	8.5	20.1	K-8	1964, 85
Aulander Elem.	350	374	18.5	20.2	K-8	1964, 75, 85
Southwestern Elem.	800-1,000	979	51	19.2	K-8	1962, 1968
Bertie Senior High	1,200	1,196	82	14.6	9-12	1962, 68, 70, 72, 82, 85
C. G. White	600	402	22	18.3	K-8	1951, 70
Colerain Elem. At completion	475	0	0	0	0	Razed - 84 , Completion 86
John P. Law Elem.	225	199	10.5	19.0	K-8	1961, 85
West Bertie Elem.	725	671	32	21.0	K-8	1961, 1975
West Colerain Elem.	200	269	13.5	20.0	K-5	1932, 61
		4,261				

Source: Bertie County School Superintendent, 1985

Table 8

Recreation Program

The county does not have a recreation program. Since revenue sharing programs have ceased, recreational activities are now funded and coordinated by individual organizations. There is no allocation of county funds for recreational activities.

Solid Waste Collection/Disposal

Bertie County operates a solid waste system, consisting of a landfill and rural dumpster collection operation. The landfill is located in the Askewville planning unit. A study is currently under way to make recommendations for improvement of this system.

Prior Land Use Plans

Bertie County utilizes the 1980 CAMA plan for references on land use policies. Policies regarding land use in the county are outlined on pages 41-44 in that plan. Once the 1986 CAMA plan is adopted, it will supercede the 1980 plan including the policies therein. At the present time there are no county regulations governing land use.

Floodway Ordinances

Ordinances are currently enforced in the county as certain areas have been designated as flood hazard areas. In 1980, a flood insurance rate map prepared by the National Flood Insurance Program was rejected by the county due to data inaccuracies. An Alabama-based consulting firm has been contracted to design maps with greater accuracy. Hearings have been held for the approval of the maps and were adopted in 1985. The county is in the National Flood Insurance Program.

Building Codes

On July 1, 1985, the state building code was adopted in the county. This follows legislation that requires each county to adopt regulations on a staggered schedule based on population. The state presently enforces certain federal codes such as CAMA permits. Information is available from the county building inspector's office.

Septic Tank Regulations

Septic tank regulations are enforced in Bertie County. These regulations meet the minimum standards established by the North Carolina Division of Health Services. A copy of these regulations can be obtained through that office.

Zoning and Subdivision Regulations

Bertie County has not enacted zoning or subdivision regulations. Further, only Windsor and Aulander enforce a zoning ordinance.

Implementation and Enforcement Ordinance

The CAMA minor permit issuing system is enforced in the county. This system governs development within designated AEC's.

Constraints Related to Community Facilities

Most types of development are dependent upon the location and capacity of sewer and water facilities. These basic necessities are often the controlling factor in the location of growth. Expansion of water and sewer lines into undeveloped areas typically promotes development. Bertie County does not have a county-wide water or wastewater system, nor are there plans in the foreseeable future for construction of such. The following narrative describes the location and capacity of the community water and wastewater systems according to the planning units.

U.S. 17 Corridor Planning Unit

The Town of Windsor operates a municipal water system that is supplied by three deep wells. They have a combined pumping capacity of 1,000 gpm. Approximately 400,000 gallons of water are stored in a ground tank and a water tower. The Town of Windsor also sells a supply of water to the South Windsor Water Association which is located approximately two miles from town. Maximum demand is calculated to be 1,440,000 gpd and average demand is 300,000 gpd.

Windsor also operates a 1,150 mgd secondary treatment wastewater facility with positive solids removal. The effluent from this facility is discharged into the Cashie River. Additional connections could be made to this system as it is operating with a 75,000 gpd surplus.

N.C. 11 Corridor Planning Unit

The Aulander area has three water systems in use at this time. The Town of Aulander presently uses two deep wells with a combined average yield of 700 gpm. This system was constructed in 1924 and serves 1,300 residents. The town stores the water in a 225,000 gallon ground tank and a 75,000 gallon elevated storage tank. There are 65 fire hydrants tapped into this system. Maximum capacity is computed at 600,000 gpd and peak load is 300,000 gpd. It is capable of expansion to accomodate approximately 250 more persons.

The South Aulander Water Association, Incorporated, is located along highway N.C. 305 south of Aulander. This system is supplied by one deep well which has a yield of 100 gpm. It has been in operation since 1925. Water is stored in a small hydropneumatic pressure tank and there are no fire hydrants integrated into this system.

The Millenium Association is located in a small community less than one mile north of Aulander. It was organized in 1964 and consists of a well with a pumping capacity of 160 gpm. Water is stored in a 5,000 gallon pressure tank and several hydrants are connected to the system. The system serves approximately 300 persons and is being planned.

A land application wastewater treatment plant is presently in operation in Aulander. Its capacity is 0.341 mgd. The North Carolina Division of Environmental Management has required that the facilities in Aulander be upgraded. The Town of Aulander expects to have a land application system, a form of tertiary treatment, in operation soon. It is planned to have a design capacity of 0.08 mgd and will serve approximately 1,000 persons with an average daily flow of 0.06 mgd.

Millenium and South Aulander residents have septic tanks for sewage disposal. Soils in these areas are generally limited for wastewater disposal by use of septic tanks and absorption fields.

The Lewiston-Woodville Utilities Association operates a water system that was constructed in 1964. This water association serves 250 connections and 35 hydrants. Its two wells, when combined, yield 300 gpm. Water is stored in a 100,000 gallon tower. The maximum daily demand is 432,000 gpd and the average daily demand is 62,700 gpd. In 1981, a new pressure demand switch was added to the system. This system cannot be expanded.

The Lewiston-Woodville Utilities Association operates a wastewater collection and treatment facility. It was constructed in 1969 and serves the corporate limits of both towns. It is a 0.070 mgd secondary wastewater treatment plant that is being studied for increased capacity. Permission to design an experimental system has been granted. A moratorium has been placed on this system and the community is involved in a "201" study. Effluent from this system enters the Cashie River.

Roxobel-Kelford Planning Unit

The Roxobel water system was built in 1964 and is supplied by two deep wells that yield a combined 300 gpm. Water is stored in a 75,000 gallon elevated storage tank. Maximum daily capacity is calculated at 216,000 gpd and the average daily demand is 50,000 gpd.

Roxobel residents presently utilize individual on-site systems for their wastewater disposal. The soils of this area are generally suitable for residential septic tanks.

The Town of Kelford near Roxobel had a water system constructed in 1963 and presently serves 270 people. It consists of a well that pumps an average of 200 gpm and a 75,000 gallon water tower. Water is untreated prior to distribution. Nearly 30 hydrants are connected to this system. Maximum demand is calculated at 144,000 gpd and the average demand is 50,000 gpd. This system cannot expand at the present time.

Septic tanks are widely used in the area surrounding Kelford. There are moderate limitations for the location of septic tanks in this area because of the soils.

Askewville Planning Unit

The Town of Askewville is a small community located north of Windsor and east of U.S. 13. The Askewville water system serves approximately

80 connections. It is supplied by two wells which have a combined capacity of 200 gpm. However, one well is inoperable at the present time.

Askewville residents presently rely on on-site wastewater disposal systems, but the soils are generally limited for efficient operation of septic tanks.

Chowan River Planning Unit

The Town of Colerain is located about one half mile west of the Chowan River in northeastern Bertie County. Its municipal water system serves approximately 280 community residents. It was constructed in 1938 and consists of two wells with a combined pumping capacity of 660 gpm. A 38,000 gallon elevated tank stores the water. Eighteen hydrants are tapped into this system. This system cannot be expanded.

The wastewater collection and treatment facilities for Colerain serve 275 residents within the town limits. It is a secondary treatment plant. The facility was constructed in 1976 and has a capacity of 75,000 gpd with a 38,000 gpd surplus. The discharge location is on a tributary of the Chowan River. Since this system is operating at 50 percent, there is sufficient capacity for the community to plan for development. However, the effluent quality is not in compliance with state standards. Residents outside the town limits rely on septic tanks for wastewater disposal.

Powellsville Planning Unit

The Powellsville area is supplied by two water systems. The water system that serves the Town of Powellsville was constructed in 1954. It is supplied by two wells that have a combined yield of 115 gpm. The system distributes to 330 persons and uses a 10,000 gallon tower and a 5,000 gallon ground tank for storage. Fifteen hydrants are integrated into this system. The town has planned a new distribution system which will be completed in 1986.

The East Powellsville Water Corporation serves nearly 200 persons. The system is divided into two separate locations which are unconnected. One well is situated northeast of Powellsville and yields 50 gpm. Water is stored in a 2,000 gallon pressure tank. An additional well southeast of Powellsville yields 100 gpm and is stored in a 2,500 gallon storage tank.

The community does not have a wastewater treatment facility. The efficient operation of septic tank absorption fields is limited due to soil limitations.

Roanoke River and Roquist Pocosin Planning Unit

The Clear Water Valley Association and Beacon Light Water Association are located on N.C. 104. Each system consists of one well. The Beacon Light Water Association was constructed in 1974 and serves 40 persons. Water from this system is untreated and is stored in a 1,077 gallon storage tank. The well yields 75 gpm.

The Clear Water Valley Association serves 35 persons and yields an average of 50 gpm. Water from this source is untreated and stored in a 1,800 gallon storage tank.

There are no facilities for wastewater disposal in this area. Septic tanks are widely used, but the soils are not well-suited for septic tank absorption fields.

Soils Limitations

The soil survey for Bertie County has recently been completed and is scheduled for publication soon. Preliminary analysis shows 41 soil bodies or mapping units. Of the 41 soil bodies, only 12 are well drained, ten are moderately drained, and one is excessively well drained. These areas will not present problems for industrial or urban development, but these soils are best suited, in most cases, for farming and/or forestry activities.

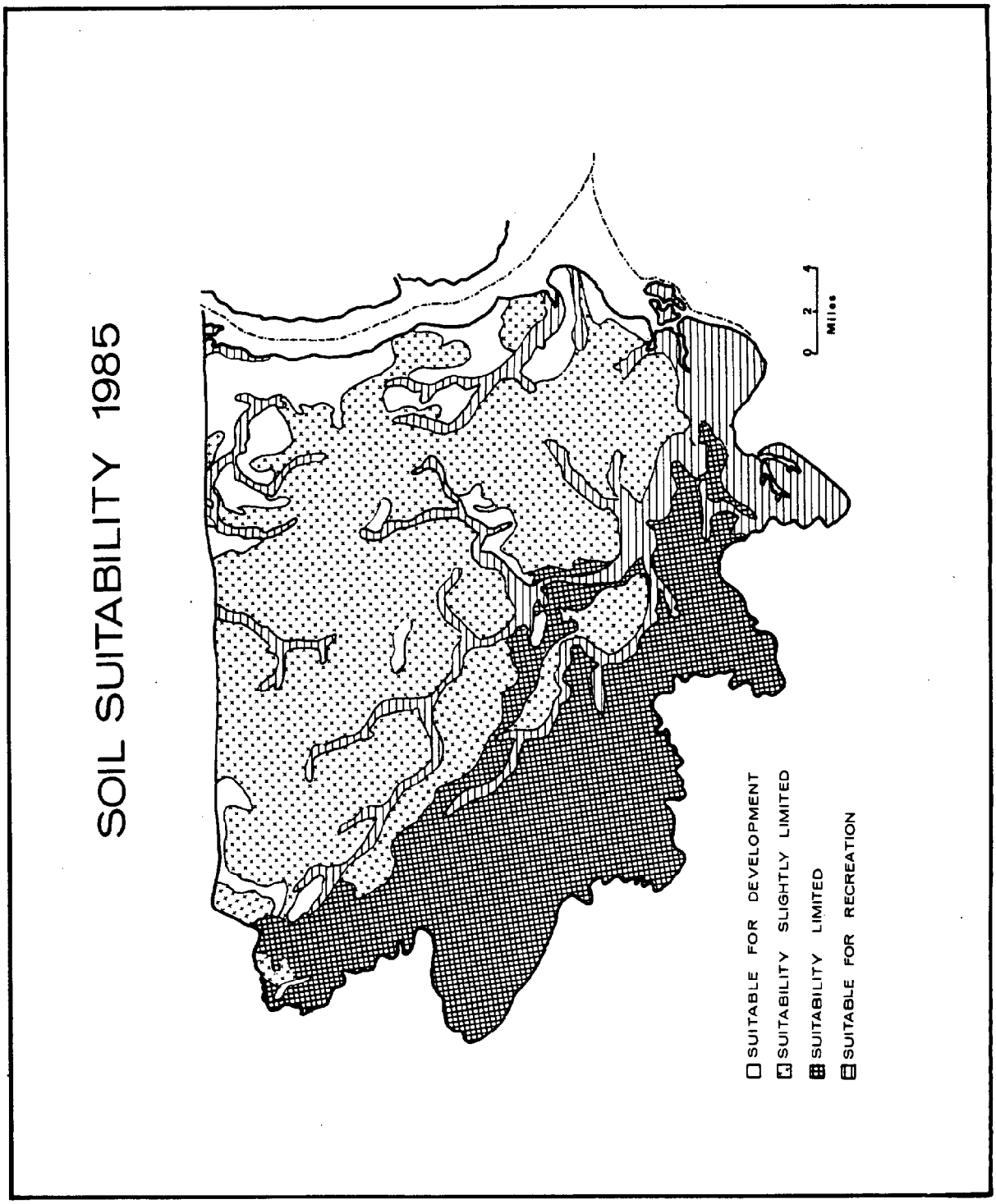
There are 14 poor to very poorly drained soil bodies in the county. Three soils are extensively floodable. Nearly 80 percent of the soils in the county have limitations for septic tanks due to poor drainage, seasonably high water tables, or permeability problems. The map in Figure 4 outlines these areas. When the soil survey is published, these soil bodies can be located more accurately. The survey will be a very useful tool for recommending areas which could be developed.

Summary

Seven planning units in the county have either water or wastewater facilities or both. The Merry Hill planning unit relies on individual wells and on-site wastewater disposal. Most water systems in the county have chlorinated water systems. Powellsville is the only community that does not have its water system metered for billing purposes.

The towns of Aulander, Colerain, Lewiston-Woodville and Windsor operate wastewater treatment facilities and plants. Residents of other communities rely on private on-site wastewater disposal systems.

The capability of soils usually limits development in certain areas. Areas not limited by soils include the Aulander region, some areas in the vicinity of Windsor, and the Colerain area.


SOIL SUITABILITY 1985
SUITABLE FOR DEVELOPMENT
SUITABILITY SLIGHTLY LIMITED
SUITABILITY LIMITED
SUITABLE FOR RECREATION
0 2 4
Miles

V. STORM HAZARDS PLANNING AND MITIGATION

Introduction

All land use plan updates are required to mitigate and plan for storm hazards. Storm hazards are far more serious than commonly perceived, but the series of tornados which struck eastern North Carolina in March of 1984 may have raised attention to storm planning and mitigation. This section of the land use plan is offered to help Bertie County prepare for these hazards.

There are numerous natural hazards but, due to many factors, only a few are likely to occur in Bertie County. These hazards are:

1) Flooding and Erosion
   a. Estuarine
   b. Riverine
2) Earthquakes
3) Drought
4) High Winds (hurricanes and northeasters)
5) Tornados
6) Snow Storms
7) Hazardous Waste Dumping (man-induced impact on natural systems)

Of particular importance to Bertie County land use planning are storms and their resultant erosion, flooding and high winds. Although Bertie County is located inland from coastal waters, flooding of the Cashie, Chowan and Roanoke Rivers is not an unlikely phenomenon.

In order to effectively plan for storm hazards and their periodic reoccurrence, a comprehensive approach is necessary. This involves combined efforts of the local planning commission and the Emergency Management Coordinator in the Emergency Operation Center.

There are typically four parts of a comprehensive emergency management plan. One part includes the land use plan. The four parts are defined as:

1) Mitigation - the activities which actually eliminate or reduce the probability or occurrence of a disaster caused by a hazardous event. It also includes land use planning and other long-term activities which reduce the effects of hazardous events.
2) Preparedness - the activities that are necessary when mitigation measures have not, or cannot, prevent disasters caused by a hazardous event. This involves the emergency management team to assist in saving lives and property and to enhance response operations.
3) Response - these activities follow an emergency

or disaster. Of primary concern is emergency assistance to casualties. Also, the emergency management team seeks to reduce secondary damage and to speed recovery operations.

4) Recovery - these activities involve short and long term operations. In the short term, the emergency management team attempts to restore all systems to normal operation. This includes vital life supporting systems. In the long term, recovery involves return to life at normal or improved levels. This step should involve the county planning process.

In general, mitigation and long-term recovery require the county planning process, while preparedness, response and short-term recovery fall within the responsibility of the Emergency Management Coordinator. Coordination between emergency management and local planning officials is mandatory for a successful mitigation of hazards.

The Division of Coastal Management encourages local governments to focus on three phases of hazards planning. These include storm hazard mitigation, post-disaster recovery and evacuation plans. In storm hazard mitigation, it is recommended that an inventory of hazardous areas be completed. The intent of this inventory is to put into perspective the level of existing development within the hazardous areas. It is designed to inform local officials of what proportion of the population, housing, and county tax base may be suject to damage in the event of a disaster. Policies should be formulated to deal with redevelopment in the hazardous areas.

A post-disaster reconstruction plan is designed to operationalize clean-up procedures after the storm. This involves the immediate clean-up and plans for long-term redevelopment. A recovery task force should be established to schedule priorities for redevelopment. Repair and reconstruction guidelines should be established. This phase of the plan requires coordination of the local government and emergency management officials.

The local government is required to evaluate the adequacy of evacuation routes used in emergency situations. The routes should be critically assessed for their efficient use. If the required evacuation time exceeds the standard warning time as provided by the National Weather Service, officials should consider adopting policies which would improve the adequacy of the routes. This step may involve coordination with the Division of Emergency Management and the Department of Transportation.

Hazard Mitigation

The first step of hazard mitigation is to identify the frequency and magnitude of the hazards in the county. This involves studying storms, including their frequency of occurrence and severity levels. This step can be done by using records from the past, as these are the only data available to predict future storms. Generally, it can be stated that the

larger the storm, the less often it occurs. Consequently, although a large storm may not have recently occurred, planning mitigation must still be undertaken. The local government must be prepared now for the possible occurrence of disasters at any time.

The second step of hazard mitigation is to conduct a vulnerability analysis. This step determines what is at risk. In order to assess this information, research must determine the type and location of prior property damage, and the potential for damages as well as the location of previous injuries to people. Generally, the vulnerability study analyses the potential for death, injury and destruction of property.

The third step of hazard mitigation includes general and specific measures for minimizing damage that is likely to occur. The general measures include, but are not limited to the following:

1) Building Codes
2) Zoning Ordinances
3) Tax Incentives/Disincentives
4) Land Use Management
5) Safety Codes
6) Preventative Health Care
7) Public Education
8) Building Use Regulations, and
9) Resource Allocations

Most of the general measures involve adoption, compliance and enforcement by the local governments. The role of the planning commission is leadership in the adoption process and coordination among the participating governmental agencies. The planning commission is also involved in the compliance and enforcement of the measures. The specific measures include, but are not limited to, the following:

1) Flood Measures
    a. Stream channelization
    b. Construction and protection of farm ponds, retention basins and reservoirs
    c. Reforestation and preventing deforestation
    d. Land conservation techniques such as contour plowing, grass waterways, plow/plant cultivation and cover crop plantation, and
    e. Flood-proof buildings
2) High Winds
    a. Roof anchors
    b. Window size and thickness codes
    c. Mobile home tiedowns
    d. Windbreaks
    e. Forest and farm management, and
    f. Real estate disclosure laws
3) Erosion
    a. Wetlands protection
    b. Swamp forest protection

c. Construction and protection of breakwaters and levees, and
d. Public information programs

4) Preventative Health
a. School innoculation
b. Rodent/insect eradication
c. Water purification
d. Sanitary waste disposal
e. Health codes/laws/inspections, and
f. Public health education

Several of the specific measures are currently in operation in the county. Others are functioning, but need improvement. The county may choose to incorporate the other measures into their current regulations.

Storm hazard mitigation requires coordination of many agencies for successful operation. A comprehensive effort is necessary to fully realize a mitigation plan and its relation to the overall emergency and county planning processes.

Identification of Hazard Areas

Bertie County has two major hazard areas which require action: 1) the Chowan River shoreline and wetlands, and 2) the Roanoke River floodplain and wetlands. Each of these areas are identified on the map in Figure 5 (in end flap). Other hazard areas of lesser areal extent are: 1) the Cashie River floodplain, 2) Black Walnut Swamp and wetlands, 3) Salmon Creek Swamp and wetlands, and 4) Roquist Creek and Pocosin. These areas are integrated into the two major hazard areas listed above. Most are located nearby or drain into the major hazard areas.

Identification of these areas has involved two major sources: 1) the county soil survey, 2) the U.S.G.S. topographic maps of the area, plus the flood insurance study. Specification of the exact location of the hazard areas is difficult in this study. Because of map scale, the boundaries are too general to specifically delineate between hazard and non-hazard areas. A boundary as such requires large scale maps commonly used in a flood insurance study which is currently in use in the county. However, for land use planning purposes, the location of boundaries at this scale is adequate.

Risk of Damage in Hazard Areas

The level of damage to life and property in the hazard areas of Bertie County is considered relatively small as indicated in Table 9. There are several clusters of development along the Chowan River that are vulnerable to storms brought about by high winds, flooding and wave action. At the Colerain Landing, waterfront development includes a petroleum storage facility, a fish processing plant, restaurant and a recreation area. The remaining clusters are primarily residential developments with eight clusters between Bull Pond Point and Edenhouse Point and five clusters from Edenhouse Point to Terrapin Point. Most of these residential

SEVERITY OF RISK IN HAZARD AREAS

Hazard Area	Severity Rank	Erosion/ Scour	Wave Action/ Battering	Flooding	High Wind
Estuarine Shoreline AEC	1	●	●	●	●
V-Zone Flood Zone	2		O	●	●
Wetland AEC	2	O	O	O	O
A-Zone Flood Zone	3			●	O
B-Zone Flood Zone	3			O	O
Remainder of County	4				O

Risk levels: High (●), Moderate (O), Low ( )

Table 9

clusters are situated above the slosh zone. However, approximately fifteen dwellings are situated within the slosh zone, and an additional forty dwellings are located very close to the slosh zone. Other structures can be considered to be outside of storm waves and flooding. However, these structures can suffer from wind damage, falling trees and flying debris.

While the Roanoke River has controlled flow because of several dams upstream of Bertie County, inundation can occur both naturally as well as being man induced. On the upper Roanoke River the dwellings and roads are located above the twenty foot contour while trails and unimproved roads are usually more than fifteen feet. On the lower Roanoke River the dwellings and roads are located above the fifteen foot contour, except at Cashoke Landing where a dwelling is located at approximately ten feet. Inundation from storm tides can exceed this level, but not often enough to warrant major concern.

On Roquist Creek near U.S. 17 a dwelling is located very close to the floodable area and could receive flood waters. On the Cashie River there are two areas of concern. One is at the Sans Souci ferry site where one dwelling is less than five feet above normal river level and another is less than ten feet over normal river level. At Windsor the central business district, sewage treatment plant and a number of dwellings can be considered vulnerable to flood waters. The occasional forcing of water upstream by high winds into the Windsor area and associated storm rainfall can create a vulnerable condition on the low lying land.

It is likely that damage to public and private utilities will occur from high winds. Additionally, it is likely that several roads at low lying bridges may be flooded during the storm period and immediately thereafter. Of particular concern are the U.S. 17 bridges over Salmon Creek and Edenhouse Creek.

Estimated Severity of Possible Hazard Damage

We have been witness to recent damage along the Chowan River brought about by the waning energy of a hurricane. With the full force of hurricane winds or a prolonged Nor'easter, the potential for damage exists for all frontage property along the Chowan River with other hazard areas being flooded. There are no less than approximately fifty residential and commercial structures which are vulnerable to storm hazard damage. Using a replacement cost of $50.00 per square foot and an average 1,000 square foot per structure, the damage, if totally destoyed, could be as high as $2,500,000.00

Anticipated Development in Hazard Areas

The people of Bertie County have been wise in their use of land through the years. Most development has occurred on the high ground except for a few instances. The waterfront development at Colerain is understandable since the land uses are river oriented. Other developments are oriented toward residential uses.

With the increasing population and economy within the county as well as outside the county there will be a demand for intensifying water oriented land uses. While Bertie County is not in the mainstream of coastal development, it should be anticipated that development in and near hazard areas will occur.

Existing Hazard Mitigation Policies and Regulations

At the present time, flood insurance rate maps are available as a mitigation policy. The county building code and the existing land use plan also tend to contribute to mitigation policies by the county, but the county Disaster Relief and Assistance Plan is the major document to mitigate hazards. There are also state and federal regulations in effect in the county.

Hazard Mitigation Policies

Existing Bertie County policies allow development to occur in hazard areas. It is expected the development within the hazard areas will occur in the future. If development is to occur in these areas, it should be safe development, that is, it should be hazard-proof. Where and what kind of development should occur in Bertie County, and how this development should be constructed so as to minimize damage in the event of a major storm are the two issues facing those that formulate policies and regulations in Bertie County.

It is the policy of Bertie County to mitigate storm hazards by adopting the following measures in the next five years:

1) Bertie County Flood Damage Prevention Ordinance - This ordinance should be designed to meet the National Flood Insurance Program. The ordinance should also be designed to minimize flood damage by referring to accepted practices and methods that would set forth uniform rules for developers.
2) Bertie County Hazard Area Redevelopment Policy - This policy is related to the Building Code and the Flood Damage Prevention Ordinance. The policy is to indicate that reconstruction after a storm be subject to the regulations of the building code, which states that if any building damaged in excess of sixty-five percent of its value will conform with the code requirements for new buildings when repaired. Also, in the flood damage prevention ordinance it should require that all existing structures must comply with requirements related to the 100-year flood elevation,

with the code requirements for new buildings when repaired. Also, in the flood damage prevention ordinance it should require that all existing structures must comply with requirements related to the 100-year flood elevation, which is if any repair, reconstruction, or improvement of a structure is equal to or exceeds sixty-five percent of the market value, the improvement or repair must follow the building code regulations.

Post-Disaster Reconstruction Plan

A post-disaster plan will permit Bertie County to deal with the aftermath of storms in an organized and efficient manner. The plan provides the mechanisms, procedures, and policies that will enable the county to learn from its storm experiences and to rebuild the county in a wise and practical manner.

A post-disaster reconstruction plan encompasses three distinct reconstruction periods:

1) The emergency period - the reconstruction phase immediately after a storm. The emphasis is on restoring public health and safety, assessing the nature and extent of storm damage, and qualifying for and obtaining whatever federal and state assistance might be available.
2) The restoration period - the weeks and months following a storm disaster. The emphasis during this period is on restoring community facilities, utilities, and essential business so the county can return to normal activities.
3) The replacement period - the period during which the community is rebuilt. The period could last from months to years depending on the nature and extent of the damages incurred.

It is important that local officials clearly understand the joint federal-state-local procedures for providing assistance to rebuild after a storm so that local damage assessment and reconstruction efforts are carried out in an efficient manner that qualifies the community for the different types of assistance that are available. The requirements are generally delineated in the Disaster Relief Act of 1974 (P.L. 93-288) which authorizes a wide range of financial and direct assistance to local communities and individuals. The sequence of procedures to be followed after a major storm event is as follows:

1) Local damage assessment teams survey

storm damage within the community.
2) Damage information is compiled and summarized and the nature and extent of damage is reported to the North Carolina Divsion of Emergency Management (DEM).
3) DEM compiles local data and makes recommendations to the Governor concerning state actions.
4) The Governor may request a Presidential declaration of "emergency" or "major disaster". A Presidential declaration makes a variety of federal resources available to local communities and individuals.
5) Federal relief assistance provided to a community after an "emergency" has been declared typically ends one month after the initial Presidential declaration. Where a "major disaster" has been declared, federal assistance for "emergency" work typically ends six months after the declaration and federal assistance for "permanent" work ends after 18 months.

Federal disaster assistance programs previously provided aid for communities to rebuild in the same way as existed before the disaster occurred. This policy tended to foster recurring mistakes. However, recent federal policy has started to change the emphasis of disaster assistance programs. Specifically, Executive Order 1198 (Floodplain Management) directs all federal agencies to avoid either directly or indirectly supporting future unwise development in floodplains, and Section 406 of the Disaster Relief Act can require communities, as a prerequisite for federal disaster assistance, to take specific actions to mitigate future flood losses. Bertie county has been provided a comprehensive listing of the federal disaster assistance programs that may be available following a major storm.

Organization of Local Damage Assessment Team

A local damage assessment team should be in place and include individuals who are qualified to give reliable estimates of the original value of structures, an estimated value of sustained damages and a description of the repairs. The logistics involved in assessing damage to Bertie County after a major storm will possibly necessitate the organization of several damage assessment teams. The Bertie County Disaster Relief and Assistance Plan is in place and provides the county with such teams.

The Emergency Management Coordinator should immediately undertake a recruitment effort to secure the necessary volunteers and to establish a training program to familiarize the members of the damage assessment team with required damage classification procedures and reporting requirements. It is suggested that Bertie County assume the responsibility for developing and implementing a training program for both county dam-

age assessment teams and the town damage assessment teams. In establishing the assessment teams, it might be very difficult to fill certain positions, because the services of some individuals will likely be in great demand after a storm disaster. The Emergency Management Coordinator should establish an active "Volunteer File" with standing instructions on where to report following a storm. Damage assessment forms and procedures should be prepared and distributed to volunteers as part of the training program.

Damage Assessment Procedures and Requirements

Damage assessment is defined as a rapid means of determining a realistic estimate of the amount of damage caused by a natural or man-made disaster. For a storm disaster, it is expressed in terms of: 1) number of structures damaged, 2) magnitude of damage by type of structure, 3) estimated total dollar loss and 4) estimated total dollar loss covered by insurance.

After a major storm event, members of the Damage Assessment Team should report for a briefing from the Emergency Management Coordinator. In Bertie County the Emergency Management Coordinator should establish field reconnaissance priorities according to the extent of damage and where landfall occurred. Because of the potentially large job at hand, the limited personnel resources available to conduct the assessments, and the limited time within which the initial assessment must be made, the first phase of the assessment should consist of only an external visual survey of damaged structures. A more detailed second phase assessment can be made after the initial damage reports are filed.

The initial damage assessment should make an estimate of the extent of damage incurred by each structure and identify the cause such as wind, flooding, or wave action of the damage to each structure. This first phase assessment should be made by "windshield" survey.

Damaged structures should be classified in accordance with the suggested State guidelines as follows:

1) Destroyed (repairs would cost more than 80 percent of value).
2) Major (repairs would cost more than 30 percent of the value).
3) Minor (repairs would cost less than 30 percent of the value, but the structure is currently uninhabitable).
4) Habitable (some minor damage, with repairs less than 15 percent of the value).

It will be necessary to thoroughly document each assessment. In many cases, mail boxes and other information typically used to identify specific structures will not be found. Consequently, the damage assessment team must be provided with tax maps, (aerial photographs with property line overlays) other maps and photographic equipment in order to record and document its field observations. Enough information to com-

plete the damage assessment worksheet must be obtained on each damaged structure.

The second phase of the damage assessment operation will be to estimate the value of the damages sustained. This operation should be carried our under the direction and supervision of the Emergency Management Coordinator. A special team consisting of tax clerks, tax assessment personnel, and other qualified staff should be organized by the Emergency Management Coordinator. This team should be incorporated into the plan. In order to estimate total damage values it will be necessary to have the following information available for use at the Emergency Management Office:

1) A set of property tax maps (including aerial photographs) identical to those utilized by the damage assessment field team.
2) County maps delineating areas assigned to each team.
3) Copies of all county property tax records.

In order to produce the damage value information required, the following methodology is recommended:

1) The number of businesses and residential structures that have been damaged within the county should be summarized by damage classification category.
2) The value of each damaged structure should be obtained from the marked set of tax maps and multiplied by the following percentages for appropriate damage classification category:
   a. Destroyed - 100%
   b. Major Damage - 50%
   c. Minor Damage (uninhabitable) - 25%
   d. Habitable - 10%
3) The total value of damages for the unincorporated areas of the county should then be summarized.
4) The estimated value loss covered by hazard insurance should then be determined.
5) Damage assessment reports should be obtained from each municipality and the data should then be consolidated into a single county damage assessment report which should be forwarded to the appropriate state officials.
6) Damage to public roads and utility systems should be estimated by utilizing current construction costs for facilities by lineal foot.

The damage assessment is intended to be the mechanism for estimating overall property damage in the event of a storm disaster. The procedure recommended above represents an approach for making a relatively

quick, realistic damage estimate after a storm. Damage assessment is provided for in the Bertie County Damage Relief and Assistance Plan.

Organization of Recovery Operations

Damage assessment operations as provided in the county disaster plan are oriented to take place during the emergency period. After the emergency operations to restore public health and safety and the initial damage assessments are completed, the guidelines suggest that a recovery task force to guide restoration and reconstruction activities during a post-emergency phase which could last from weeks to possibly more than a year. The responsibilities of the recovery task force will be:

1) Establishing an overall restoration schedule.
2) Setting restoration priorities, in advance, by definition.
3) Determining requirements for outside assistance and requesting such assistance when beyond local capabilities.
4) Keeping the appropriate State officials informed using situation and damage reports.
5) Keeping the public informed.
6) Assembling and maintaining records of actions taken and expenditures and obligations incurred.
7) Proclaiming a local "state of emergency" if warrented.
8) Commencing cleanup, debris removal and utility restoration activities which would include coordination of restoration activities undertaken by private utility companies.
9) Undertaking repair and restoration of essential public facilities and services in accordance with priorities developed through the situation evaluations.
10) Assisting private businesses and individual property owners in:
    a. obtaining information on the various types of assistance that might be available from federal and state agencies.
    b. in understanding the various assistance programs, and
    c. applying for such assistance.

    When a major storm does eventually hit Bertie County and major damages occur, consideration should be given to establishing an assistance team to carry out the above functions as long as there is a need to do so.

A sequence and schedule for undertaking local reconstruction and restoration activities is presented. The schedule was deliberately left vague because specific reconstruction needs will not be known until after a storm hits and the magnitude of the damage can be assessed.

Reconstruction Operations

The Bertie County Reconstruction Task Force should be the following individuals:

1) Chairman of the Board of County Commissioners
2) Bertie County Manager
3) Emergency Management Coordinator
4) Chief County Tax Appraiser
5) County Finance Director
6) County Code Inspections Director

The following policies have been formulated to enhance reconstruction after storm recovery:

1) Building permits to restore structures located outside of designated AEC areas that were previously built in conformance with local codes, standards and the provisions of the North Carolina Building Code shall be issued automatically.
2) All structures suffering major damages as defined in the County's Damage Assessment Plan shall be repaired or rebuilt to conform with the provisions of the North Carolina Building Code and other related ordinances.
3) All structures suffering minor damage as defined in the Bertie County Damage assessment Plan shall be permitted to be rebuilt to their original state before the storm condition, provided non-conforming use regulations are met.
4) For all structures in designated AEC's and for all mobile home locations, a determination shall be made for each AEC as to whether the provisions of the N.C. Building Code, the State Regulations for Areas of Environmental Concern, or other ordinances appeared adequate in minimizing storm damages. For areas where the construction and use requirements appear adequate, permits shall be issued in accordance with permitting policies 1, 2 and 3. For AEC's where the construction and use requirements do not appear to have been adequate in mitigating dam-

ages, a Temporary Development Moratorium for all structures located within that specific AEC shall be imposed.

5) All individual mobile homes located in mobile home parks sustaining some damage to at least 50% of their mobile homes in the park shall be required to conform to current ordinances.
6) Permits shall not be issued in areas subject to a Temporary Development Moratorium until such a moratorium is lifted by the Bertie County Board of Commissioners.
7) All damaged water and sewer systems (both public and private) shall be repaired so as to be elevated above the 100-year floodplain or shall be flood-proofed, with the methods employed and the construction being certified by a registered professional engineer.
8) All damaged roads used as major evacuation routes in flood hazard areas shall be repaired so as to be elevated at least one foot above the 100-year floodplain evacuation.
9) All local roads that have to be completely rebuilt shall be elevated so as to be above the 100-year floodplain elevation.

Temporary Development Moratorium

Under certain circumstances, interim development moratoriums can be used in order to give a local government time to assess damages, to make sound decisions and to learn from its storm experiences. Such a moratorium must be temporary and it must be reasonably related to the public health, safety and welfare.

It is not possible to determine prior to a storm whether a temporary development moratorium will be needed. Such a measure should only be used if damage in a particular area is very serious and if redevelopment of the area in the same manner as previously existed would submit the residents of the area to similar public health and safety problems. The Bertie County policy regarding the proclamation of temporary development moratoriums shall be to:

Require the Bertie County Emergency Management Office to assess whether a Temporary Development Moratorium is needed within one week after the damage assessment process is completed. Such an assessment should clearly document why such a moratorium is needed, delineate the specific uses that would be affected by the moratorium, propose a specific schedule of activities and actions that will be taken during the moratorium period, and establish a specific time period during which the moratorium will be in effect.

Adequacy of the Bertie County Disaster Relief Plan

The purpose of the Disaster and Relief Plan is to prevent or lessen the effect of disasters on the people and property in Bertie County. The plan, adopted in 1983, is considered adequate in its intent, scope and composition.

Adequacy of the Bertie County Hurricane Evacuation Plan

The purpose of the evacuation plan, which was adopted in 1977, is to provide for an orderly and coordinated evacuation to minimize the effects of hurricanes on residents and visitors in the county. The plan's scope, organization, concept of operation, warning and alert system, increased readiness action checklist, evacuation areas, routes and shelter locations, reentry procedures, responsibility groups, communications and public information activities, are considered adequate. It must be realized that this is the plan for Bertie County citizens, and not a plan to shelter an excessive number of visitors or evacuees from other counties.

VI. ISSUES, POLICIES AND IMPLEMENTATION

Land Use Issues

Land use issues are related to the concern for, or that which affects, the welfare and the happiness of the citizenry. The people should have a continuous interest in how the land is used, both now and in the future. Of particular importance to the future of Bertie Countians, is how well we perform as stewards of our land today. Some issues revolve around how to protect our natural resources. This includes how we use them and how we manage them. Other issues are concerned with economic and community development. How can we protect our natural heritage while we attempt to sustain or increase economic growth and improve our communities? Many of these issues evolve from a difference of opinion as to how our land is to be used. The resolving of these and other issues can be accomplished through continuous public participation.

In the 1976 CAMA land use planning guidelines, each community was given the opportunity to voice their opinion on the issues that were perceived to be a community concern. A questionaire was sent out to 2,500 families asking for opinions on the county's needs, environmental issues and the budgetary procedures of the county government. The Planning Board then established goals for growth in the county.

The goals identified in 1976 and used again in 1981 were:

1) to protect, manage and utilize natural resources in the county,
2) promote greater economic development,
3) improve the quality of life for area residents,
4) to be alert for land development problems in the county, and
5) to ensure a more efficient local government.

A list of objectives to attain these goals was provided in the 1976 plan. Although many of those objectives have been accomplished, much remains to be done. A list of these objectives appears on pages 41-44 in the 1976 CAMA plan and on pages 49-50 in the 1981 CAMA plan.

In order to facilitate an understanding of the present land use issues in Bertie County, a land use issues information matrix was devised (see Table 10). The matrix indicates twenty-eight issues. Because all issues do not have the same degree of importance geographically, the matrix shows their distribution among the planning units. The catagories to show the degree of concern are: 1) critical, 2) moderate, 3) slight, and 4) none. The matrix was distributed to the planning commission members and a few county officials. Their input has resulted in the final matrix. The various issues are self-explanatory. Each catagory will be discussed in the policies section to follow.

BERTIE COUNTY ISSUES INFORMATION MATRIX

CRITICAL CONCERN X
MODERATE CONCERN I
SLIGHT CONCERN 0
NONE -

	ROUTE 11 CORRIDOR	ROUTE 17 CORRIDOR	ROXOBEL/KELFORD	MERRY HILL	CHOWAN RIVER	POWELLSVILLE	ASKEWVILLE	ESTUARINE WATERS	PUBLIC TRUST WATERS	ROANOKE RIVER AND ROQUIST POCOSIN
COMMUNITY WATER FACILITIES	X	X	0	-	0	0	0	-	-	I
COMMUNITY WASTEWATER TREATMENT	X	X	0	0	I	I	I	-	-	0
TOURISM/RECREATIONAL DEVELOPMENT	X	X	0	0	X	0	0	-	I	X
INDUSTRIAL DEVELOPMENT	X	X	0	-	-	-	0	-	-	-
SIGNS/BILLBOARDS	I	I	-	-	-	0	0	-	-	0
COMMERCIAL DEVELOPMENT	X	X	0	-	-	-	-	-	-	-
IMPROVEMENT IN COMMUNITY/COUNTY SERVICES	X	X	I	I	0	I	0	-	-	-
IMPROVEMENT OF DEVELOPED AREAS (DWELLINGS)	0	X	0	0	0	I	0	-	-	I
ODORS FROM AGRIBUSINESSES	0	X	X	-	-	-	-	-	-	-
FARM MANAGEMENT PRACTICES (RUNOFF)	0	0	I	I	I	I	I	-	-	X
FOREST MANAGEMENT PRACTICES (RUNOFF/HABITAT)	0	0	0	I	I	I	I	-	-	X
ABANDONED STRUCTURES	0	0	0	I	I	I	0	-	-	0
HIGHWAY IMPROVEMENTS	I	X	0	0	I	I	I	-	-	0
ROANOKE RIVER FLOOD CONTROL	0	0	I	0	-	-	-	I	I	X
PUBLIC ACCESS TO PUBLIC WATERS	X	X	I	I	I	0	0	-	-	X
HISTORIC PRESERVATION	I	X	I	0	I	0	I	-	-	I
COMMERCIAL & RECREATIONAL FISHERIES	I	I	0	0	X	0	0	X	X	X
HIKING TRAILS	-	I	-	-	-	-	-	-	-	I
FLOOD PLAIN DEVELOPMENT	X	X	I	X	I	I	I	-	-	X
IMPACT ON SURFACE AND GROUND-WATER QUALITY	X	X	I	I	X	I	I	X	X	X
UNCONFORMING LAND USES IN RURAL AREAS	I	I	X	X	X	X	X	-	-	X
MINING OR QUARRYING OF EARTH MATERIALS	I	I	I	I	I	0	0	-	-	X
IMPROVEMENT & PROTECTION OF LAND & WATER HABITATS	0	0	I	I	X	I	I	X	X	X
IMPROVEMENT IN THE APPEARANCE OF PERSONAL PROPERTY	I	X	0	0	0	0	0	-	-	I
SOIL LIMITATIONS FOR SEPTIC SYSTEMS & DEVELOPMENT	X	X	X	X	X	X	X	-	-	X
STORM HAZARDS	X	X	X	X	X	X	X	X	X	X
SHORELINE DEVELOPMENT	-	0	-	I	I	-	-	X	X	X
PUBLIC PARTICIPATION IN LAND USE ISSUES	X	X	X	X	X	I	I	X	X	-

Table 10

Land Use Policies

The land use issues of Bertie County can be resolved through strategies or policies. This provides a basic approach and a guide for solving land use issues before they materialize or become unsolvable. At the center of policy formulation is the county planning effort. The reasoning here is that the county planning office has the necessary resources to be the major source of data and information which is essential in determining issues and policies . Further, it is equally important to solicit public views on issues and related policies. The planning process allows this to occur most effectively.

The formulation of policies, herein, is based on an open process of consultation, negotiation and compromise. The policies set forth in this plan are a result of this formulation process. There are twenty-eight issues directly related to a single policy in these land use policy categories. An overall policy was articulated for each which represents a myriad of policy alternatives. Consequently, each issue has a related policy and a way to implement it. In a word, an issue is resolved by a policy through an implementative process. This procedure is an improvement over having several policies for a single issue, and a hodge-podge of implementation mechanisms. Here in this plan, a single issue, with a single policy, and related implementation tasks are used.

To successfully accomplish this land use plan we must decide on a course or courses of action. Through the policy statements, which indicate how we intend to solve the land use issues, we reveal our prudence and wisdom in the planning and management processes of implementation. The land use policies are divided into three categories: 1) resources production, 2) resources protection, and 3) economic development. Table 11 shows how each issue fits best into one of these categories.

Resources Production Policies and Implementation

Bertie County has 701 square miles of natural resources; no more, no less. Some of these resources are renewable, such as the forests. Some are non-renewable, such as sand or other minerals. Others, such as soil or water, are a combination of living and non-living materials. These resources can only be renewable as long as their environments are kept suitable for continuous use, or can be non-renewable if they cannot be rebuilt or repaired within minimal financial constraints. In general, the county should direct its land use policy toward protecting its natural resource base. The purpose for this protection is to ensure a future economic return from the resources as well as to safeguard the environment from degradation.

Policy and Implementation Related to Farm Management Practices

Agricultural activities utilize surface water, groundwater, and soil resources for the growing of farm products. This is a major activity in Bertie County, and the one that yields the greatest economic return. Consequently, the protection of the natural resources for agricultural use is most important. It will be a matter of policy that all

LAND USE POLICY CATEGORIES AND THE RELATED ISSUES

Resources Production	Resources Protection	Economic Development
1) Farm management practices	1) Roanoke River Flood Control	1) Community water facilities
2) Forest management practices	2) Historic Preservation	2) Community wastewater treatment
3) Mining or quarrying	3) Hiking trails	3) Industrial development
4) Commercial & recreational fisheries	4) Impact on surface & ground-water quality	4) Signs & billboards
5) Tourism/recreational development	5) Unconforming land uses in rural areas	5) Commercial development
6) Public access to public waters	6) Improvement & protection of land & water habitats	6) Improvement in community/ county services
7) Flood plain development	7) Soil limitations for septic systems & development	7) Improvement of developed areas
	8) Storm hazards	8) Odors from agri-business
	9) Shoreline development	9) Abandoned structures
		10) Highway improvement
		11) Improvements in the appearance of personal property

Table 11

farm managers use the most effective methods for maintaining suitable environment for sustained agricultural production, and that this production will not degrade the in situ environment or the environments juxtaposition to it. In order to carry out this policy the following items will be implemented during the next five years:

1) To utilize the Bertie County Soil Survey in managing and planning all aspects of agricultural production,
2) To specifically plan and manage agricultural use only where soil capability classes I, II, III and IV, and "prime farmland" are designated (see Appendix II),
3) To spcifically use land in other capability classes for pasture, woodland or wildlife,
4) To fully support and participate in the Bertie Soil and Water Conservation Program,
5) To participate in and support the protection of all fragile environments, particularly the surface waters, by employing the best management practices available, and
6) To inaugurate an annual Bertie County Fair for the purpose of promoting education and information about agriculture, forestry, fisheries conservation, industry, economic development, and citizen participation.

Policy and Implementation Related to Forest Management Practices

Forestry activities utilize the same resources as farming activities. Forests occupy the most land in Bertie County. They are an important use of the land in that, most woodlands are located in or adjacent to fragile environments. It will be a matter of policy that all woodland managers use the most effective methods for maintaining a suitable environment for sustained forestry production, and that this production will not degrade the environment. In order to carry out this policy the following items will be implemented during the next five years:

1) To utilize the Bertie County Soil Survey in managing and planning all aspects of woodland production,
2) To plan and manage woodland use where environmentally suitable, or in areas where capability classes V, VI and VIII are located (see Appendix II),
3) To fully support and participate in

the Bertie Soil and Water Conservation District Long-Range Conservation Program,
4) To participate in and support the protection of fragile environments, particularly wildlife habitats and surface waters, by employing the best management practices available, and
5) To inaugurate an annual Bertie County Fair.

Policy and Implementation Related to Mining and Quarrying

There are several areas in the county where quarrying for sand has occurred. These sand pits are major in size, now mostly abandoned and related to past highway construction. It will be a matter of policy that all persons, firms or governmental agencies quarrying or mining in the county are to submit a plan for approval by the County Planning Office. In order to carry out this policy, the following items will be implemented in the next two years:

1) Quarrying and mining guidelines in consonance with N.C. Division of Land Quality regulations will be approved by the County Commissioners,
2) Quarrying and mining activities will only occur on lands deemed unsuitable for agriculture, woodland and wildlife unless the land can be restored to its original state or other acceptable condition.

Policy and Implementation Related to Commercial and Recreational Fisheries

Fishing occurs in the waters receiving runoff and effluents from farms, forests, industry, and rural and urban communities. It is critical that the receiving waters are of a quality that will support a viable habitat for fish, wildlife, and water fowl. Of major consequence is the degraded surface water flowing from other counties and states located upstream from Bertie County. It will be a matter of policy that all land and water users are to utilize the most effective methods available for assuring that the water quality of all surface runoff and effluents are equal to or better than the quality of the receiving waters. Further, it shall be the policy to request other counties, states or any other individuals or organizations to comply to a similar policy. In order to carry out this policy the following items will be implemented during the next five years:

1) To fully support and participate in the Bertie County Soil and Water Conservation District Long-Range Conservation Program,
2) To participate in and support the protection of all fragile environments, particularly the surface waters, by

employing the best fisheries management practices available,
3) To support and comply with local, state and federal efforts to improve the commercial and recreational fisheries, and
4) To inaugurate an annual Bertie County Fair.

Policy and Implementation Related to Tourism/Recreational Development

Tourism and recreational development can take place in Bertie County. The natural resources of the county can support, but are not limited to, the following activities:

Hunting	Swimming
Trapping	Water Skiing
Fishing	Boating
Bird Watching	Canoeing
Hiking	Sailing
Back Packing	Sun Bathing
Running or Jogging	Farm Vacations
Camping	Golfing
Historic Site Visitation	County Fair

These recreational and tourist pursuits, if developed in Bertie County, will allow compatibility with other resource producing activities. Further, it will allow additional primary and secondary sources of income for Bertie County citizens and additional county revenues. It will be a matter of policy to plan for and promote recreational and tourism activities. In order to achieve this development the following items will be implemented during the next five years:

1) To develop a recreation/tourism plan for Bertie County,
2) To organize a recreation/tourism committee within the Windsor area Chamber of Commerce or an advisory committee to the County Planning Office,
3) To participate in and support the protection of all recreational and tourism sites and areas, and
4) To support and participate in the inauguration of a County Fair and other programs and activities that allow citizen and tourist participation.

Policy and Implementation Related to Public Access of Public Waters

At the present time Bertie Countians must leave the county to gain access to public water. Public boating access on the Roanoke River is located at Hamilton, Williamston, Plymouth and at Conaby Creek in Washington County. Public access to the Chowan River is located at Cannon's Ferry and Edenhouse Bridge in Chowan County, and in Hertford and Gates County. There is a public access area to the Cashie River at Sans Souci.

It is a matter of policy to seek additional public access to public waters in Bertie County. In order to carry out this policy the following items will be implemented during the next five years:

1) To support the North Carolina Wildlife Resources Commission and its boating access area program,
2) To seek funds for the purpose of providing two additional boating access areas in Bertie County,
3) To locate and develop an access area on the Roanoke River near to and south of Kelford and Roxobel, and on the Chowan River near Colerain, and
4) To plan and develop these areas, if feasible, as multifunctional recreational facilities.

Policy and Implementation Related to Flood Plain Development

The most fragile environments of the county are the flood plains, pocosins, and wetlands. Nearly all of these areas are woodlands with few exceptions. While it would be wise not to allow development in these areas, it is sometimes not practical. Flood plains are natural storage areas for flood waters. At the present time the Roanoke River is regulated by six dams in North Carolina and located upstream of Bertie County. Because of excessive and poor control the flood plain in Bertie County is unnaturally flooded for long periods, which is tending to alter the habitat. It is a matter of policy to seek to regulate the flow of the Roanoke River to a more natural state. Further, the policy related to the development of the flood plain is for access use to farmlands on sand ridges, forest lands, and recreational and commercial fishing and hunting sites and areas. Pocosins are critical habitats. Development in these areas would not be wise, but is practical. Development in pocosins should relate to woodland production only. In developing these two critical habitats, it is the policy to require a development plan and its approval prior to developing an area. Finally, it is a matter of policy not to allow any wetland, so designated, to be developed. In order to carry out these policies the following items must be implemented during the next five years:

1) Require the proper regulation of the Roanoke River flow through legislation, if necessary,
2) To specifically plan and manage the land and water use in floodplains, pocosins and wetlands using guidelines approved by the County Commissioners, and
3) To support and comply with local, state and federal efforts to maintain these critical habitats.

Resources Protection Policies

It has been suggested in the previous section that in order to realize a fair economic return from farming and forestry, the natural resources must be protected. The protection mechanism is largely one of properly managing our natural resources. It is clear that certain other areas must be protected as well, but for other purposes. These purposes are far beyond self indulgence and economic gain, and mainly one of self preservation. Further, the resources protection here is to improve, maintain and limit uses of the natural resources for public good (see Table 11).

Policy and Implementation Related to Roanoke River Flood Control

In order to at least partially solve the 'striper' decline in the lower Roanoke River and western Albemarle Sound, the dams on the river must be regulated in a manner more consistant with a natural flow. It is very likely that striped bass eggs and fry are swept into the floodplain in April and May in high rainfall years. And in low rainfall years they don't reach the sound. There are other factors involved in this complex situation, but in the main, it is one of protecting the lower river and all that this implies. It will be a matter of policy to protect the fish resources in and adjacent to Bertie County. In order to carry out this policy the following items must be implemented during the next five years:

1) Require the proper regulation of the Roanoke River flow through legislation if necessary, and
2) To support the efforts of the North Carolina Wildlife Resources Commission, Division of Marine Fisheries, and other agencies or groups, public and private, to improve the present flood control operation.

Policy and Implementation Related to Historic Preservation

There are numerous historic sites and other cultural resources in Bertie County. These resources have been identified, but should be protected and preserved if they are deemed worthy for future generations to see. Several sites have received restoration such as the Hope Plantation. This activity should be expanded throughout the county. It will be a matter of policy to plan for and promote historic preservation activities. In order to achieve historic preservation the following items will be implemented in the next two years:

1) To develop a historic preservation plan for Bertie County,
2) To organize a historic preservation committee within the Bertie County Historic Society or an advisory committee to the County Planning Office, and

3) To participate in and support the protection of all historic sites and areas.

Policy and Implementation Related to Hiking Trails

At the present time there is one hiking trail in Bertie County, the historic Cashie-Roquist Pocosin Hiking Trail. A hiking trail can be used for a variety of purposes. Not only can a trail be used for physical fitness, it can also be used for educational purposes in both physical, biological and social sciences. There are numerous areas in the county that short and long trails can be developed for a variety of purposes. But the existing Cashie-Roquist Trail should be improved. To improve and develop hiking trails, the recreation/tourism plan should be accomplished with hiking trails being a part of the plan. It will be a matter of policy to plan for and promote hiking trails. In order to achieve this plan the following items will be implemented during the next five years:

1) To include in the recreation/tourism plan for Bertie County, a section on hiking trails,
2) To participate in and support the protection of hiking trails and adjacent areas, and
3) To locate and develop additional trails, if feasible, and according to the recreation/tourism plan.

Policy and Implementation Related to Surface and Groundwater Quality

Surface water and groundwater are the most valuable resources in Bertie County. Under all circumstances, these water resources must be protected. Surface water is commonly impacted by overusing the available supply and overloading by adding excessive toxics, nutrients, pollutants and contaminants. While the land in Bertie County contributes a share of this excessive loading and perhaps overuse of surface water, most of the problem originates in the upstream areas of the North Carolina piedmont and Virginia. It is difficult for areas downstream to cope with upstream abuses. This is due to the cummulative effect of individual point and nonpoint sources. For Bertie County to improve the surface waters of the county, a great amount of cooperation will be necessary. In the past and at the present time little is being done to improve the water quality of the state's surface waters. While laws are in force to regulate effluents, they are not sufficient to provide 'clean' water. To this end it will be the policy to protect the surface water, particularly its quality, in Bertie County, and to seek to protect all upstream waters, through federal and state legislation if necessary.

Groundwater is the major source of domestic and industrial water supply in Bertie County. Groundwater is commonly impacted by excessive drawdown, contamination from septic tanks, solid waste, landfills and overloading soils with agricultural chemicals. At the present time there does not seem to be a major groundwater problem in the county. However, private domestic groundwater users are not required to have their water

tested, so there is little, if any, information concerning contamination of private domestic wells, deep or shallow. Also, as far as it is known there are no excessive drawdown problems. However, there is a potential for future groundwater problems. These problems could likely result from a greater density of septic tanks and drainfields, and excessive drawdown to supply other areas with water.

It will be a matter of policy to preserve and protect all groundwater resources for Bertie County use only, and to protect the quality of the groundwater.

In order to protect the water resources of Bertie County the following items will be implemented:

1) To support the efforts of the North Carolina Division of Land Resources in protecting water quality,
2) To support the efforts of the Division of Environmental Management to control effluents,
3) To support the efforts of the county and state health services in protecting water supplies and effluents, and
4) To seek the necessary legislative assistance to improve surface water quality in all drainage basins affecting Bertie County.

Policy and Implementation Related to Unconforming Land Uses in Rural Areas

Rural areas are unique regions which possess extensive uses of the land, and the necessary infrastructure to support a relatively sparse population. In general, cropland, pasture and forests are the dominant land uses, and the people of Bertie County have expressed an interest in maintaining the existing environment. Other land uses tend to support the dominant land uses. For example, farmsteads, roads, schools, churches, crossroad retail stores, farm service establishments and other activities assist the rural population in their everyday lives. To have land uses other than what is normally expected would create an unbalanced rural environment. It will be a matter of policy to protect the integrity of the rural areas of Bertie County. In order to carry out this policy the following items must be implemented during the next five years:

1) To establish carrying capacity thresholds for the county,
2) To use these thresholds in devising a growth management plan,
3) To include in this growth management plan, mechanisms that will allow rural land uses to successfully compete in the marketplace, and
4) To require those with potential or actual unconforming uses in rural areas to submit a detailed plan to the planning office for approval or disapproval.

Policy and Implementation Related to Improvement and Protection of Land and Water Habitats

The land and water habitats of Bertie County are home to millions of birds, animals, plants, fish and foul. These species have resided in Bertie County for thousands of years, and many have adjusted to the nature of man. Unfortunately, many have not. Hopefully, all Bertie Countians will realize that if the natural habitat changes because of man, man will also have to adjust; and eventually, it may be that sometime in the future man will not be able to adjust to the change. If we watch the habitat, it will tell us the proper direction to follow in how we are to use our land and water. It will be a matter of policy to improve and protect our land and water habitats. In order to carry out this policy the following items must be implemented in the next five years:

1) To protect those areas in the county as indicated in this land use plan as critical habitats and areas of environmental concern,
2) To improve and/or reestablish land and water habitats for recreational or environmental purposes, and
3) To comply with guidelines and practices established by the Soil and Water Conservation District, North Carolina Wildlife Resources Commission and other conservation groups or agencies.

Policy and Implementation Related to Septic Tank Limitations and Development

Most of Bertie County has soils which are limited for septic tank and drainfield use. With the intensification of development the use of septic tanks as a means of private or industrial wastewater disposal should not be allowed. The reason for minimizing septic tank use is to decrease the potential for groundwater and surface water pollution. It shall be a matter of policy to promote the use of community wastewater collection and treatment systems in developed areas, and not to allow intensive development without community wastewater treatment facilities. In order to implement this policy the following items should be effectuated in the next ten years:

1) To allow septic tanks and drainfield installation only on parcels of land that have complied with the North Carolina Health Services regulations,
2) To promote the improvement and expansion of the existing wastewater treatment systems in the county, and
3) To promote the installation of small wastewater treatment facilities in areas of intensive development in rural communities, such as Quitsna, Midway, Merry Hill, Cahaba, Roxobel,

Kelford, Powellsville, Askewville and Colerain.

Policy and Implementation Related to Storm Hazards

The protection of the natural environment during storms requires the nonoccupance by man, the minimal use of the involved area, or restricted development with necessary mitigation mechanisms in force. There are certain areas such as floodplains and shorelines that prohibit development or very little of it. And there are certain storms that may occur anywhere, at any time, which are nearly impossible to predict or to protect against. Natural phenomena including tornados, hurricanes, snow storms, hail storms and rain storms are part of the natural environment. If man wishes to inhabit areas where these storms frequently occur it is up to man to make the necessary adjustments. Man must either refrain from using these areas or must adhere to stringent regulations in order to occupy such places. Further, certain hazard areas such as floodplains, shorelines or wetlands are better left in their natural state. At the present time in Bertie County there is little reason to develop floodplains, wetlands or shorelines. In order to maintain this balance it shall be a matter of policy to allow floodplains, shorelines and wetlands to remain in their natural state. Further, development in these areas will be for access and recreational uses.

In order to carry out this policy the following items will be implemented in the next five years:

1) To support and coordinate with the Emergency Management Office all phases of the Disaster Relief and Assistance Plan,
2) To support and promote the Flood Insurance Study and its application,
3) To adhere to the provisions of the building code, and
4) To provide for a flood prevention ordinance and a hazard redevelopment policy.

Policy and Implementation Related to Shoreline Development

The protection of shorelines from haphazard development or development that is not in the best interest of the county is good common sense. Shorelines are not an infinite commodity, and once they are developed they are no longer available for other uses. In order to protect the shorelines of Bertie County it shall be a matter of policy to protect the shoreline from intensive development and to allow adequate public access to the public waters.

In order to carry out this policy the following items will be implemented in the next five years:

1) To protect the shorelines in the county

by requiring a sketch plan for any development within two hundred feet of the high water mark,
2) To improve and/or reestablish the shoreline where development has impacted the natural processes,
3) To comply with guidelines and practices established by the Soil and Water Conservation District and other conservation groups or agencies, and
4) To promote, plan, and acquire as much shoreline as deemed suitable for the county for public use.

Economic and Community Development Policies

Bertie County continues to have a chronic unemployment problem. This problem, coupled with its low family income, can be solved through economic development mechanisms or increased out-migration of citizens. Economic development will improve the tax base so that more and better services are available while out-migration will not. The economic development issues have been identified in Table 11. It is possible for Bertie County to achieve economic development while it protects its rural heritage and its natural resources. The purpose of economic development is to generate additional jobs, income and a favorable climate for growth and management.

Policy and Implementation Related to Community Water Facilities

Most of the community water facilities are located in small towns and villages, while a few can be considered small rural systems. These water systems are fairly small, but could be expanded without excessive cost with proper planning and management. It is not recommended that a county water system be developed. It is the policy to assist the community systems in maintenance, improvement and expanding the capability in their existing service areas. In order to carry out this policy the following items will be implemented during the next five years:

1) To organize a Bertie County community water system coordinating committee,
2) To have this committee study the existing systems and plan for their projected needs, improvement and management,
3) To seek funding if the need arises, and
4) To participate in and support the effort of agencies and groups desiring to improve the domestic and industrial water supply.

Policy and Implementation Related to Community Wastewater Treatment

The treatment of wastewater in Bertie County can become a problem in the not too distant future. Most soils in the county are limited for this purpose because of the seasonal high water table and poor permeability in most of the county. Several communities that have wastewater treatment plants and collection systems have reached their maximum capacity. Windsor's wastewater treatment plant has sufficient capacity for their service area with some to spare. It is not recommended that the county develop a wastewater collection and treatment system. It is the policy to improve and expand existing community wastewater collection and treatment facilities, and to construct small wastewater collection and treatment facilities where urban and rural concentrations are large and dense enough to warrant such systems. In order to carry out this policy the following items will be implemented during the next five years:

1) To organize a Bertie County community wastewater system coordinating committee,
2) To have this committee study the existing systems and plan for their projected needs, improvement and management,
3) To seek funding as the need arises, and
4) To participate in and support the effort of agencies and groups desiring to construct or improve small wastewater collection and treatment facilities.

Policy and Implementation Related to Industrial Development

It is recognized that not all industries seek out rural counties in which to locate. It is also recognized that Bertie County does not want all industries to come into the county. Consequently, there must be a marriage between Bertie County's industrial 'want list' and those industries on that list that want to locate in rural areas. This is not an easy thing to accomplish. But it is the best way to assure a steady meaningful economic growth. It is the policy to improve and expand economic development in Bertie County. In order to carry out this policy the following items will be implemented during the next two years:

1) To promote economic development through a coordinated marketing program within the economic development commission,
2) To continue present efforts in industrial development,
3) To provide prospective industries with up-to-date information about Bertie County,
4) To organize and promote the county

fair, and
5) To work toward providing industrial growth mechanisms such as loans, tax relief, land and services.

Policy and Implementation Related to Signs and Billboards

While Bertie County does not have a problem with signs and billboards like other commercialized areas, it could be a problem. At the present time there are signs and billboards that advertise for out-of-county businesses, some that are in disrepair, some that are located in a pristine environment, some that are distracting to the safety and welfare of the highway users, and some that need to be modernized and improved. While it is not necessary to regulate signs and billboards in the county, it is desireable to work with advertising agencies and local businesses to promote the county in the best possible way. It is the policy to improve the type and location of signs and billboards in the county. In order to carry out this policy the following items will be implemented during the next five years:

1) To coordinate advertising agencies, businesses and economic development groups to improve signs and billboards in the county,
2) To devise sign and billboard guidelines to be used on a volunteer basis and in conjunction with the economic development commission, and
3) To work toward beautification of the county's highways and roads including signs and billboards.

Policy and Implementation Related to Commercial Development

Commercial development requires expansion in Bertie County. A major effort should be given to developing retail businesses in Bertie County. Many people have indicated that they have to travel to other counties to obtain equipment, supplies and services. It is the policy to promote commercial development and all that this entails. In order to carry out this policy the following items will be implemented during the next five years:

1) To promote commercial development through a coordinated marketing program within the economic development commission,
2) To continue present efforts in commercial development,
3) To provide perspective businesses with up-to-date information about Bertie County.
4) To organize and promote the county fair, and
5) To work toward providing commercial

growth incentives such as loans, land and services.

Policy and Implementation Related to Improve Community/County Services

There are many services that communities and the county make available to its citizens. Some of these services are expected as required by law, while others have evolved because of need. County and community agencies and officials in the capacity of serving the citizens should keep an open door so problems can be solved. It is the policy to promote public good in community and county agencies by serving the citizens well. In order to carry out this policy the following items will be implemented during the next two years:

1) To promote in-service training programs in the county for the purpose of educating officials and other individuals as to how to handle people problems,
2) To promote the availability of the planning office as a contact agency to direct and coordinate problem solving efforts, and
3) To organize and promote the county fair so that the citizens are made aware of public services.

Policy and Implementation Related to Improvement of Developed Areas

There are several areas in the county that need to be improved. Some of these improvements are related to housing, businesses, roadways, recreation sites and areas, and industrial sites. In many cases the structures are decaying from lack of maintenance. It is the policy to improve developed areas where structures are in need of repair. In order to carry out this policy the following items will be implemented during the next five years:

1) To organize a task force to improve and repair structures that are decaying or dilapidated,
2) To improve the land by removing debris and other unnecessary materials,
3) To organize a beautification task force to improve the scenery in developed areas and elsewhere, and
4) To promote structure and land care guidelines and training sessions,
5) Seek block grant funding.

Policy and Implementation Related to Reduce Odors From Agri-Businesses

Care must be given to controlling air quality. When agricultural processing plants develop offensive odors, health and economic development problems can meterialize. While it is agreed that these processing

plants are desired in the county, it must also be understood that clean air is necessary. It is the policy to maintain a good quality of air in Bertie County. In order to carry out this policy the following items will be implemented during the next five years:

1) To set up air monitoring stations in areas where problems exist if feasible and in relationship to the North Carolina Division of Environmental Management,
2) To have the county sanitarian work with plants having air quality problems so that a solution is mutually agreed upon, and
3) To promote the need for air quality to all citizens.

Policy and Implementation Related to Abandoned Structures

There are numerous abandoned structures in Bertie County. These structures are dangerous, eye sores, a blight on the countryside, and unnecessary. Some of these structures are historical in themselves and should be repaired, while others could be used again. Still, others should be torched by the fire fighters so that they can practice their very important service to the community. It is the policy to reduce the number of abandoned structures in the county. In order to carry out this policy the following items will be implemented during the next two years:

1) To inventory abandoned structures in the county, and
2) To work with the property owner as to the improvement of the structure or its demolition.

Policy and Implementation Related to Highway Improvement

Bertie County has a good highway system. Its paved roads are adequate and most of the unpaved roads are kept in good condition. If Bertie County is to achieve many of its development goals, highway improvement is a necessity. Of major importance is the movement of people and goods during storms or other emergencies. Also, the movement of trucks and buses into and out of the county is a concern. Finally, to put Bertie County on a major artery between Tidewater Virginia and points south would enhance its economic well-being in a way that no other public expenditure ever could. It is the policy to promote the improvement in highways, both within the county and regionally. In order to carry out this policy the following items will be implemented during the next five years:

1) To request that a transportation plan be accomplished by North Carolina Department of Transportation,
2) To request that a study be accomplished by the North Carolina and

U.S. Department of Transportation pertaining to the feasibility to connecting I-64 in Tidewater Virginia with I-20 in Florence, South Carolina, with an interstate highway with its route through Bertie County,
3) To raise low lying roads in the county so they are passable during high water,
4) To improve the bridges where U.S. 17 enters the county, and
5) To upgrade the county road improvement program.

Policy and Implementation Related to the Improvement in the Appearance of Personal Property

So that Bertie County can show the world how great it is, each individual in the county must show that they take pride in themselves, their personal property and the county's collective appearance. It is a well known fact that in any society you must put your best foot forward. The success of Bertie County to achieve economic development depends on how well its people represent the county. And it starts at home, at school, at work, at play and by the individual. It is the policy to promote Bertie County in a positive and aggressive manner. In order to carry out this policy the following items will be implemented in the next five years:

1) To organize a task force to promote individual pride in Bertie County,
2) To organize groups to improve the appearance of personal property and public grounds in the county, and
3) To promote the county fair.

Important Special Issues, Policies and Implementation

During the course of this land use plan update, the people of Bertie County were confronted with a very important special issue. The issue was one of siting a large electrical energy producing facility in the eastern portion of the county. Several public hearings were held which revealed that the land use plan allowed energy producing facilities as one of the acceptable land uses in the county. The public hearing showed an overwhelming support for not allowing the siting of energy facilities in the county. The people indicated that the siting would have, among other things, a negative impact on the natural resources, farming and forestry activities, and the local infrastructure such as roads and highways. The general feeling was that the risk was too great to take. The issue was resolved by the energy producer seeking a site elsewhere. Consequently, the policy of this land use plan is that energy producing facilities are not a desired land use and be prohibited from occurring in Bertie County. In order to carry out this policy, the county commissioners should consider legislative means for implementation.

In addition to the potential environmental impact of energy producing facilities, there is also a concern for the impact of the disposal of hazardous waste in the county. At the present time some hazardous waste dumping is taking place. At several public hearings during the course of this land use plan update, it was noted that empty toxic chemical containers used mostly by farmers are being abandoned so that the residual chemical concentrates can be spilled into the environment. Some of the containers are being deposited in the county's trash receptacles for dumping at the county's solid waste disposal site. In most cases this is probably being done unknowingly. The extent of this impact is not known, but there is reason for concern as it could develop into a major problem.

The people of Bertie County are sensing an increased demand on their rural environment including the possibility of siting for hazardous waste disposal. The recent episode in Warren County has prompted hazardous waste disposal concerns among the citizenry. The consensus is that the people in Bertie County do not want to be told they are to have a hazardous waste dumping site, when there is significant local support against it. Thus, it is the policy of this land use plan that hazardous waste disposal not be allowed. Further, it is the policy to control all forms of hazardous waste disposal in the county, so that Bertie County can maintain its clean environment. In order to implement these policies, the county commissioners should consider legislative means to effectuate the desires of the citizens.

The implementation of these policies should be achieved as soon as possible so that the environment of Bertie County is protected against undue stress and negative impact.

Citizen Participation and the Planning Process

There is a need to increase citizen participation in Bertie County. There were six public meetings in five different communities from February to April, 1985, for the purpose of discussing land use planning issues and policies. In addition, the Bertie County Economic and Industrial Planning and Development Commission usually discussed land use planning at every regular meeting since October, 1984. While the meetings were very well attended by members of the commission, the citizens were noticeably few in number. In order to have a successful land use planning process, which includes successful economic development, citizen participation is needed. It has been known for many years that there is a direct relationship between successful planning and development and citizen participation. In other words, as citizen participation increases, economic growth increases also. This process is deemed less than adequate at the present time.

We have fought hard to gain and maintain a representational form of government in the United States; at all levels. In the planning process, citizen involvement is mandatory. Historically, citizens have been a part of planning and development. Not only are government officials and agencies ineffective without citizen participation, but the planning process would tend to malfunction as well. Usually, citizens desire to participate if an immediate problem needs to be solved. At other times they

become involved only if officials or agencies are not doing what they think they should. But this should not be!

Citizen involvement is a valuable part of the decision making process at all levels of government. The rationale being that citizen participation: 1) influences government decisions, 2) maintains stability in society, 3) supports and advises officials, 4) guards the public interest, and 5) reduces alienation between the people and the government.

Citizen involvement in the planning process is equally important. Citizens have a direct concern and should be involved in the following planning processes: 1) assessing community values, 2) determining issues and policies, 3) choosing alternative plans, 4) approving or modifying plans, and 5) feedback after plans have been effectuated. The citizen's role is as equally important as the public official's role. It should not be thought of as just another time-wasting, unnecessary burden. The citizen's importance is found in the success of improving the well-being of all the citizens. Caring by the citizens, is sharing their time and mind for the public good.

Citizen involvement may occur in different ways. All citizens should generally be involved in: 1) informational, neighborhood or community planning meetings, 2) public hearings, 3) attitude surveys, 4) referendums, and 5) voting. Other types of involvement will depend on the citizen's interests, but all citizens should be involved in at least one of the following: 1) a task force which has been assigned a specific problem to be solved, 2) a citizen advisory committee, 3) county, community or neighborhood planning commissions or boards, 4) elected citizen representative on a public policy-making body, 5) workshops for the purpose of learning how to solve problems, 6) citizen training for the purpose of gaining knowledge about government operations, and 7) volunteer services. There really are many ways the citizens can become involved in their communities. Hopefully, the citizens of Bertie County will recognize this need and respond to it in a positive manner. It is the policy of Bertie County to hold to these statements regarding citizen involvement in governmental affairs, particularly the planning process.

VII. THE LAND USE PLAN

The data have been collected, the information has been digested and analyzed, the issues have been tabulated and studied, the policies have been formulated, the implementation for the policies have been stated, and time frames for effectuation have been set. The final task of the land use plan is to devise a land use plan (see end flap). At this point, the future is brought to the present by assigning different land uses to certain areas. The distribution of these land uses reflect population distribution, economic trends, existing land uses, soils and other natural resources, community services, and storm hazards.

Land Classification

The land use plan uses a land classification consisting of five categories: 1) developed, 2) transition, 3) community, 4) rural, and 5) conservation. These categories are recommended for use in the Land Use Planning Guidelines (Subchapter B) which is part of the State's administrative code.

Developed Land Use

Developed areas provide for continued intensive development. These areas have been and continue to be developed for urban uses. They include the usual urban services such as water, sewer, police and fire protection, and recreational facilities.

Transition Land Use

Transition areas provide for future intensive development. These areas are considered appropriate for urban growth in the future and should be scheduled for the necessary urban services as development occurs. However, these areas should not be developed in hazard nor fragile and environmentally sensitive areas, until most of the land in developed areas has been urbanized.

Community Land Use

Community areas provide for clustered development in rural areas. These areas allow for additional housing, shopping and public services. They are considered to be crossroad communities and tend to serve the immediate community and nearby rural area.

Rural Land Use

Rural areas provide for agriculture, woodlands, mining or quarrying, and low density residential uses. These areas allow for the usual rural land uses which include farming, forests, farmsteads, passive recreation, processing of farm and forest products, farm and forest services, schools, churches, community centers, scattered non-farm residences and general stores.

Conservation Land Use

Conservation areas provide for the management of or the protection of natural resources. These areas allow for the protection of AEC's, unique, fragile or hazardous areas. While agriculture and forestry may occur in certain situations such as floodplains and pocosins, they are to be managed so that the impact on the environment is minimal.

Spatial Arrangement of Future Land Uses

The land use plan shows how land use in Bertie County will be distributed in five to ten years. It is the intent of the plan to maintain the rural character of the county while allowing for industrial and commercial land uses to occur in developed and transitional areas.

Developed Areas

The developed areas in the land use plan correspond to the existing urban areas. Most of the areas presently have land available for development. However, past growth rates show little promise for substantial urbanization. Still, these developed areas have the more desireable land for commerce and industry. Most of the developed areas have the urban services expected for growth. But, these communities must plan to solidify their infrastructures and to fill in the available undeveloped land, particularly Windsor, and to a lesser extent other communities.

Transition Areas

The transition areas in the land use plan are bordering the developed areas. These areas have land available for development to occur. The transition areas near Aulander and Powellsville are expected to be sufficient to handle increased growth. These faster growing communities, because of their proximity to Ahoskie, can be expected to have some spillover growth. The transition areas must be planned now for the necessary services to be in place as development occurs. This includes water, sewers, police and fire protection, and other components of the urban infrastructure. Growth is also expected in the Colerain and Midway areas due to their proximity to the Chowan River. Other transition areas related to urban places occur southeast of Windsor and south of Woodville. A transition area located along U.S. 17 between the Roanoke River and Roquist Creek floodplains is considered a prime location for commercial and residential development. This is due to its proximity to Williamston and the recreational opportunities associated with the nearby natural habitats.

Community Areas

The community areas correspond to the rural concentrations in the county. These clustered settlements, usually at crossroads, appear to be stable, although rural non-farm residences along the major roads contribute to their change in shape and size. If development continues in this manner, considerable land will be lost for rural uses. This should not be allowed to happen.

Rural Areas

The rural areas correspond to the existing rural land uses, which are usually located between the poorly drained areas. Much of the county is in this category. This area holds the valuable farmlands and woodlands, and should be kept in tact. As indicated above, there is a tendency to change rural land uses in favor of community, transition and developed areas. This has been held to a minimum level in this plan.

Conservation Areas

The conservation areas are the county's poorly drained areas along its water courses and in pocosins. These are areas that have critical habitats or are designated areas of environmental concern.

It is these areas that are set aside because of their natural characteristics and their long-lasting contribution to the lives of the citizens of Bertie County; both past and present. To impact the conservation areas would be like removing a part of everyone's life. Consequently, they are to be protected or managed so that they will remain essentially unaltered for generations to come.

Relationship of Land Use Policies and the Land Classification

There are nearly thirty policies which have been generated in the land use plan. These policies are summarized according to resources production, resources protection, and a community and economic development catagories as they are related to the five land use categories (see Table 12).

Developed, Transition and Community Areas Related to Land Use Policies

Generally, policies related to community and economic development are related to the land classification categories of development, transition and community. Developed areas are expected to intensify the use of their land, with vacant urban parcels being occupied before developing the transition areas. This is a cost effective growth management practice. Transition areas are available for expansion by urban areas provided urban services are in place. Clustered areas such as those in the community category provide for moderately intensive settlement, but should be contained in those areas so designated. In all situations it is expected that the quality of life is maintained or improved. In no case are subdivisions, mobile home parks or similar intensive uses to be located outside the developed and transition areas. Community uses are to be reserved for low to moderate density single family dwellings, commercial and institutional uses.

Certain developed, transition and community uses are related to resources protection and production policies. For example, these intensively used areas should not impact rural or conservation areas or spread into them.

SUMMARY OF RESOURCES PRODUCTION POLICIES

LAND USE CATEGORIES

Conservation	Rural	Community	Transition	Developed		
x	x				1)	All farm managers use the most effective methods for maintaining a suitable environment for agricultural production.
x	x				2)	All woodland managers use the most effective methods for maintaining a suitable environment for forestry production.
x	x		x		3)	All persons, firms or governmental agencies quarrying or mining in the county are to submit a plan for approval by the county planning office.
x	x	x	x	x	4)	All land and water users are to utilize the most effective methods available so that the water quality of surface runoff and effluents are equal to or better than the receiving water.
x	x	x	x	x	5)	To plan for and promote recreational and tourism activities.
x	x				6)	To seek additional public access to public waters.
x					7)	To seek to regulate the flow of the Roanoke River to a more natural state, and to require a plan prior to any development in floodplains and pocosins, but not allow development in any wetland.

RELATIONSHIP OF LAND USE POLICIES AND THE LAND CLASSIFICATION CATEGORIES

Table 12

LAND USE CATEGORIES

Conservation	Rural	Community	Transition	Developed	SUMMARY OF RESOURCES PROTECTION POLICIES
x					1) To protect the fish resources in and adjacent to Bertie County.
x	x	x	x	x	2) To plan for and promote historic preservation activities.
x	x				3) To plan for and promote hiking trails.
x	x	x	x	x	4) To protect surface water, particularly its quality, and to seek to protect all upstream water, and to preserve and protect all groundwater resources including its quality.
	x				5) To protect the integrity of the rural areas.
x	x	x	x	x	6) To improve and protect our land and water habitats.
		x	x	x	7) To promote the use of community wastewater collection and treatment systems in developed areas, and not to allow intensive development without community wastewater treatment facilities.
x	x	x	x		8) To allow floodplains, shorelines and wetlands to remain in their natural state.

RELATIONSHIP OF LAND USE POLICIES AND THE LAND CLASSIFICATION CATEGORIES

Table 12 (continued)

SUMMARY OF COMMUNITY AND ECONOMIC DEVELOPMENT POLICIES

LAND USE CATEGORIES						
Conservation	Rural	Community	Transition	Developed		
		x	x	x	1)	To assist the communtiy water systems in maintenance, improvement and expanding the capability in their existing service areas.
		x	x	x	2)	To improve and expand existing community wastewater collection and treatment facilities, and to construct small facilities if warranted.
		x	x	x	3)	To improve and expand economic development.
			x	x	4)	To improve the type and location of signs and billboards.
		x	x	x	5)	To promote commercial development.
		x	x	x	6)	To promote public good in community and county agencies by serving the citizens well.
	x	x	x	x	7)	To improve developed areas or other areas where structures are in need of repair.
x	x	x	x	x	8)	To maintain a good quality of air.
	x	x	x	x	9)	To promote the improvement in highways in the county and regionally.
x	x	x	x	x	10)	To promote Bertie County in a positive and aggressive manner.

RELATIONSHIP OF LAND USE POLICIES AND THE LAND CLASSIFICATION CATEGORIES

Table 12 (continued)

Rural Areas Related to Land Use Policies

Basically, policies related to the rural category are resources oriented. Rural areas are expected to remain essentially rural without urban interference or impact. The rural areas are to be protected for production and preserved for lasting rural uses. Of major importance is the protection of water quality. Since water is cycled throughout our environment, every abuse has a collective and expotential negative effect. Consequently, the citizens are to take every opportunity to protect the quality of water. This will assure an environment that can produce as well as be clean.

Conservation Areas Related to Land Use Policies

Beyond the use of land for space to live and to produce, are areas to be conserved so that a balance is maintained in the environment. It is necessary to hold certain lands and water to act as a buffer or filter for other areas being intensively used. Without the conservation areas, our society would be hard pressed to continue to survive.

VIII. SUMMARY

Introduction

The successful completion of the land use plan does not occur with its adoption. The land use plan is merely the beginning, but a very good one.

Organizations Necessary to Plan

In order to effectuate the plan and implement its policies a considerable amount of work is required. Further, it will require energetic leadership and a substantial amount of citizen participation. A list of committees, tasks forces and civic groups are indicated below according to the policy categories (an asterisk indicates the committees needing to be organized).

Production - Bertie County Planning Commission and Office
Bertie County Fair Committee*
Bertie County Commissioners
Bertie County Soil and Water Conservation District
Recreation/Tourism Committee*
Windsor Area Chamber of Commerce
N.C. Wildlife Resources Commission
N.C. Legislature
U.S. Congress

Protection - Bertie County Planning Commission and Office
Bertie County Commissioners
N.C. Legislature
U.S. Congress
Bertie County Fair Committee*
N.C. Wildlife Resources Commission
Bertie County Historic Society
N.C. Air and Water Resources Divsion
N.C. Environmental Management Divsion
N.C. Health Services Division
Bertie County Emergency Management Office
Hazards Mitigation Task Force*

Development - Bertie County Community Water and Wastewater Coordinating Committee*
N.C. Department of Transportation
Bertie County Planning Commission and Office
Bertie County Commissioners
Community Improvement Task Force*
Bertie County Beautification Task Force*
Pride in Bertie County Task Force*

This involvement will create a movement toward an ongoing planning process and growth management in Bertie County. It must be realized that the involvement must be well orchestrated.

Plans, Documents, and Guidelines Needed in Planning

The working organizations at the state and local level will produce plans, guidelines, legislation and other documents to aid in achieving a fully operational planning process and community involvement. These documents are listed below according to the appropriate policy category (an asterisk indicates the studies and plans which need to be accomplished).

Production - Bertie County Soil Survey*
Bertie County Soil and Water Conservation District Long-Range Program
Quarrying and Mining Guidelines*
Recreation/Tourism Plan*
Guidelines for managing land and water use in floodplains, pocosins and wetlands*

Protection - Legislation to properly regulate the Roanoke River*
Bertie County Historic Preservation Plan*
Recreation/Tourism Plan (hiking trails)*
Legislation to improve surface water quality*
Growth Management Plan*
Rural unconforming use site plan guidelines*
Storm Mitigation Plan*
Building Code
Shoreline development site plan guidelines*

Development - Bertie County Community Water System Plan*
Bertie County Community Wastewater System Plan*
Bertie County Economic Profile*
Bertie County sign and billboard guidelines*
Bertie County Beautification Plan*
Bertie County Economic Development Plan*
Bertie County structure and land care guidelines*
Bertie County Transportation Plan*

Conclusion

To fully realize the importance of the planning process will take years. This land use plan is a beginning. It is highly advisable to begin effectuating the land use plan now. This means leadership and participation by the citizens of the county. It also means the willingness to achieve or work for the common good in an organized manner. In five years an assessment of how successful Bertie County has been will be made. Will Bertie Countians be better off then, than now?

IX. AMENDING THE PLAN

Special and changing circumstances may sometime require a change in the land use plan. A certain policy or land classification may need amendment to suit a peculiar situation within the county. The land use plan may be amended as whole by a single solution or in parts by successive resolutions. The successive solutions may address geographical sections, county divisions, or functional units of subject matter. To change all or some part of the land use plan, the amendment process must be in accordance with a series of procedures. These include a local public hearing, a notice to the Coastal Resources Commission, and approval by the CRC.

Public Hearing

The land use plan may be amended only after a properly held public hearing. Notice of this hearing must appear at least 30 days prior to the date of the hearing and must list the date, time, place, and proposed action. This should be available for viewing at a particular office in the county courthouse and must appear at least once in the local newspaper. Copies of the proposed amendment should be made available at the time of the public hearing.

Notice to the Coastal Resources Commission

The local government proposing a land use plan amendment shall provide information to the executive secretary of the CRC. This information should include a notice of the public hearing, a copy of the proposed amendment, and the reasons for the amendment. This should be delivered to the executive secretary or his designee no less than 30 days prior to the public hearing.

Adoption Procedures

After the hearing, the locally approved amendments should be delivered to the executive secretary of the CRC in the form that they will appear in the land use plan. The CRC will review the changes at the first regularly scheduled meeting held after the executive secretary has received notification of the amendment. After review of the changes, the CRC shall approve, disapprove, or conditionally approve the land use plan amendments. Should the amendments be disapproved, the CRC will provide an explanation of the reasons for its disapproval and offer suggestions as to how the amendment might be changed so approval could be granted. Final amendments to the text or maps shall be incorporated in context in the land use plan and shall be dated to indicate the date the amendment became final. The amended land use plan shall be maintained as required by G.S. 113A-110(g).

APPENDIX I

STATE DEVELOPMENT REGULATING AGENCIES

I. Department of Natural Resources and Community Development (DNRCD)
- permits to discharge surface waters or operate wastewater treatment plants or oil discharge permits; NPDES permits (G.S. 143-215)

A. Division of Coastal Management
- permits to dredge and/or fill in estuarine waters, tidelands, etc. (G.S. 113-229)
- permits to undertake development in Areas of Environmental Concern (G.S. 113A-118)

B. Division of Land Resources
- permits to alter or construct a dam (G.S. 143-215.66)
- permits to mine (G.S. 74-51)
- permits to drill exploratory oil or gas wells (G.S. 113-381)
- permits to conduct geographical exploration (G.S. 113-391)
- sedimentation erosion control plans for any land-disturbing activity over one acre (G.S. 113A-54)

C. Secretary of NRCD
permits to construct an oil refinery

II. Division of Environmental Management
- permits for septic tanks with a capacity over 3,000 gallons/day (G.S. 143-215.3)
- permits for withdrawal of surface or ground waters in capacity use areas (G.S. 143-215.15)
- permits for air pollution abatement facilities and sources (G.S. 143-215.108)
- permits for construction of complex sources; e.g. parking lots, subdivisions, stadiums, etc. (G.S. 143-215.109)
- permits for construction of a well over 100,000 gallons/day (G.S. 87-88)

III. Department of Administration
- easements to fill where lands are proposed to be raised above the normal high water mark of navigable waters by filling (G.S. 146.6c)

IV. Department of Human Resources
- approval to operate a solid waste disposal site or facility (G.S. 130-166.16)
- approval for construction of any public water supply facility that furnishes water to ten or more residences (G.S. 130-160.1)

APPENDIX I, CONTINUED

FEDERAL DEVELOPMENT REGULATING AGENCIES

I. U.S. Army Corps of Engineers
- permits that are required under Section 9 and 10 of the Rivers and Harbors Act of 1899; permits to construct in navigable waters
- permits that are required under Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972
- permits that are required under Section 404 of the Federal Water Pollution Control Act of 1972; permits to undertake dredging and/or filling activities

II. U.S. Coast Guard
- permits for bridges, causeways, pipelines over navigable waters; required under the General Bridge Act of 1946 and the Rivers and Harbors Act of 1899.
- deep water port permits

III. Department of the Interior Geological Survey Bureau of Land Management
- permits required for off-shore drilling.
- approvals of OCS pipeline corridor rights-of-way

IV. Nuclear Regulatory Commission
- licenses for siting, construction and operation of nuclear power plants; required under the Atomic Energy Act of 1954 and Title II of the Energy Reorganization Act of 1974.

V. Federal Energy Regulatory Commission
- permits for construction, operation and maintenance of interstate piplelines facilities required under the Natural Gas Act of 1938.
- orders of interconnection of electric transmission facilities under Section 202 (b) of the Federal Power Act
- permission required for abandonment of natural gas pipeline and associated facilities under Section 7C (b) of the Natural Gas Act of 1938

APPENDIX II

SOIL CAPABILITY CLASSIFICATION

The use of soil information from soil surveys has been a part of land use planning for many years. While the soil surveys have been a part of farm management since the nineteenth century, the use of soils data in planning dates from about the 1950's. Today, soil surveys are used for many purposes other than agriculture.

Soil capability classes indicate the variation or suitability of soils for several types of use. The groups are made according to the limitations of the soils when used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils. There are also suitability classifications for woodland and wildlife. In addition the soil surveys also include information related to suitability for septic tanks and drain fields and other sanitary facilities, and the Unified and AASHO classification systems used for engineering purposes.

There is a wealth of soils information in every soil survey which is published by the U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the North Carolina Agricultural Experiment Station. The explanation of soil capability classes used in this land use plan is as follows:

Class I - These soils have few limitations that restrict their use.

Class II - These soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III - These soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Class IV - These soils have very severe limitations that reduce the choice of plants, require very careful management, or both.

Class V - These soils are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife.

Class VI - These soils have severe limitations that make them generally unsuited to cultivation and limit

their use largely to pasture, range, woodland, or wildlife.

Class VII - These soils have very severe limitations that make them unsuited to cultivation and restrict their use largely to pasture, range, woodland, or wildlife.

Class VIII - These soils and land forms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, water supply, or to esthetic purposes.

Each capability class can be assigned a subclass based on the risk of erosion, risk of water interferring with crop production, or where soils are shallow, droughty or stony.

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