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# WASHINGTON COUNTY LAND USE PLAN

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N.C. COASTAL RESOURCES COMMISSION

COASTAL ZONE  
INFORMATION CENTER

WASHINGTON COUNTY

NORTH CAROLINA

LAND USE PLAN

COASTAL AREA MANAGEMENT

ACT OF 1974

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THIS REPORT HAS BEEN PREPARED FOR  
THE RESIDENTS OF WASHINGTON COUNTY, NORTH CAROLINA

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# Washington County Board of Commissioners

WASHINGTON COUNTY COURTHOUSE | P.O. BOX 207 | PLYMOUTH, NORTH CAROLINA 27962

May 20, 1976

TO: Coastal Resources Commission

SUBJECT: CAMA Plan Submission

In compliance with the Coastal Area Management Act of 1974, we are forwarding for your review officially certified copies of our Land Use Plan.

Under provisions set forth in Part One of the State Guidelines, we wish that you would approve additional historic sites in our County Plan as proposed Areas of Environmental Concern. A list and brief description of these places may be found under cover in our Plan's Synopsis. These sites do not meet the criteria now in use for designating historic places. However, we feel these sites have local significance which merits their inclusion in our Plan.



T. R. Spruill, Chairman  
Washington County Board of Commissioners

Postscript: For your information, we plan to distribute our synopsis by mail to each household in the county.

# Washington County Board of Commissioners

WASHINGTON COUNTY COURTHOUSE | P.O. BOX 207 | PLYMOUTH, NORTH CAROLINA 27962

May 20, 1976

Coastal Resources Commission  
P. O. Box 27687  
Raleigh, N. C. 27611

Sirs:

The County of Washington hereby transmits one certified copy of the Washington County Land Development Plan to the Coastal Resources Commission.

The plan was formally reviewed at a public hearing held at the Washington County Courthouse on May 7, 1976. The plan was adopted by the Board of County Commissioners at their regular meeting held on May 17, 1976.

*T. R. Spruill*

T. R. Spruill, Chairman  
Washington County Board of Commissioners

*Bertie C. Lilley*  
Bertie Lilley  
Clerk

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YOUR PROPERTY AND YOUR COUNTY GOVERNMENT;  
Land Use Planning Under the Coastal Area Management Act

Why We Need a Plan

Hundreds of Washington County residents are relying on the growth of their community to insure the prosperity of their livelihoods and the use and enjoyment of their homes and leisure. Your county government has undertaken a long-range planning program to try to make these interests a reality. Under the North Carolina Coastal Area Management Act, county residents in Washington County and 19 other coastal counties have been asked to express their views on how they want to see their community grow in the future. Your suggestions are now part of a Plan of which this Synopsis is a summary.

How the Plan Was Made

The Plan developed from a series of public meetings begun early in 1975 by a Steering Committee. The County Commissioners appointed seven citizens to serve on this Committee: Billy Sexton, Ken Sallenger, Cleveland Paylor, Ted Martus, Merlin Chesson, Lewis Combs, and Gerald Allen. Together they set out to accomplish three things: first, to acquaint the public with the provisions of the Act; second, to give people a chance to sound off with their views on land use at the Committee's meetings; and third, to assist the County Commissioners in the preparation of the county's Land Use Plan. Getting local residents to form opinions on what they want or didn't want in Washington County was a major task of the Committee. After months of meetings, newspaper articles, radio spots, and a

written survey, the Committee developed a number of thoughtful suggestions as community objectives for the Plan.

#### Understanding the Planning Process

The methods used by the Steering Committee to arrive at their recommendations contained six essential elements.

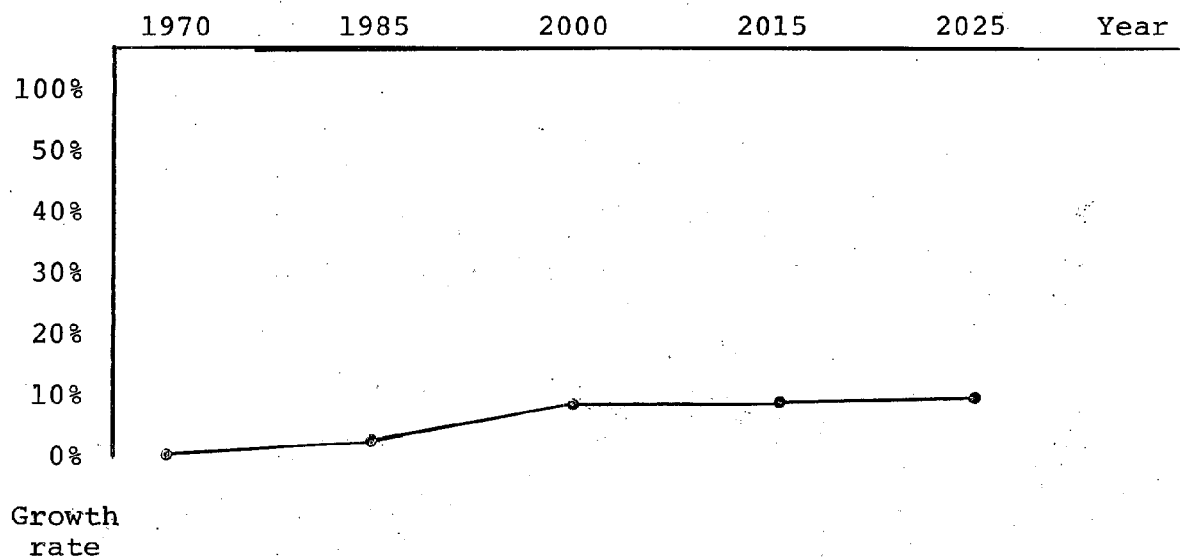
- (1) Important changes in the Town's economy that describe impacts on existing land use.
- (2) Decisions on what we want for future economic growth.
- (3) Limitations on money, soils, and water resources.
- (4) Alternative proposals for dealing with land use issues.
- (5) Ideas put into a Plan along with objectives to carry them out.
- (6) Room in the Plan for adjustments to meet new conditions as they arise.

#### Future Growth in Population

The first step in knowing more about our town's potential begins with learning where we are. In a planning process this usually begins with a study of population trends and local objectives concerning growth. Plymouth, like Washington County, has had a restrained rate of growth by comparison with the state. The chart and table below illustrate this point:

Estimated Population Growth

	1970	1975	1980	1985	2000	2020
Wash. Co.	14,038	14,060	14,100	14,500	15,500	16,800
Plymouth	4,774	4,900	5,120	5,250	5,510	5,960
Roper	750	790	820	840	880	950
Creswell	670	670	690	710	750	810



Although the county's estimated growth is lower than that of the state, its growth rate is ahead of the average for rural areas elsewhere in North Carolina, including the six surrounding counties. This trend is expected to increase in the future in anticipation of new agri-industry coming to the area in connection with the expansion of corporate farming. The towns of Roper and Creswell can expect their populations to increase because of this economic growth, while population increases in the Town of Plymouth will primarily come from annexations and any future expansion of the Weyerhaeuser mill in Martin County. Most county residents prefer this "slow growth" since it preserves the area as they know and like it. In choosing "smallness" as a growth objective, you have indicated that an enjoyable future can be had in Washington County without trading the qualities of a rural county for the ills of an urban area. Ironically, industry is now more inclined to relocate in less populated areas, meaning that strain can be anticipated upon our existing government. However with proper

planning and coordination, there is little doubt that many who could now stand improved standards of living will be able to benefit by the limited growth the majority desires.

#### Our Existing Land Use

Although basically rural today, Washington County before 1900 was largely dense woods and swamp. Logging operations and improved transportation with railroads, bridges, and paved roads in the 1920's and 1930's began to expand the development of farmland throughout the county. The mechanization of farming further accelerated the conversion of wasteland to agriculture. Today, farming dominates the use of land in all parts of the county except for some commercial forests in the western, central and northeastern sections. The swamps which covered much of the area are now confined to the low areas along the creeks and rivers and in the northeastern corner of the county next to Bull's Bay. The urban land use taken up by the towns of Plymouth, Roper, and Creswell amounts to only one percent of the nearly 331,000 acres of land in the county.

#### Land and Water Carrying Capacity for New Development

Of prime concern to future development in the county is the capacity of its soil and water resources to sustain whatever growth is called for. This means that housing, commercial, and industrial sites need to be located where the depth to the water table is sufficient for the safe operation of a septic tank; where the supply of groundwater is ample and of adequate quality; and where the soils pose only slight foundation or footing problems, have only slight or moderate susceptibility to erosion and are

well to moderately well-drained. Few areas of Washington County have all of these characteristics. Most areas, notably the "blacklands" of the southern, central, and eastern sections, have soils which are too mucky and poorly drained to support the kind of urban development found closer to the towns. Although these areas make development costly, they have excellent characteristics for raising crops. Because of this suitability for agriculture and unsuitability for building lots, the southern, central and eastern portions of the county were designated as "rural" areas in the preparation of the county's land classification map. (Described in a following section).

In Plymouth, the availability of public water and sewer will allow development to occur within the capabilities of the ground-water supplies and soil conditions located there. In Roper, sewer plans will extend the present capabilities of its water system to handle its future growth. In Creswell, the new water system will alleviate the limitations on shallow wells from their possible contamination by nearby septic tanks. Since growth is occurring slowly here, this water system will adequately serve the needs of Creswell residents in the foreseeable future. Elsewhere in the county, population growth is so slow that potential impacts will be minimal. Some seasonal population growth along Albemarle Sound and Lake Phelps should slightly offset this slow growth, but the unfeasibility of extending water and sewer lines to these areas and generally moderate to poorly drained soils will pose natural constraints for development in these locations.

Specific help and advice for buying or building upon a site for a home or business is available free from your local planning board, health department, and soil and water conservation district. Consult them. If you survey lots for sale, find out what the constraints are before you begin work. If you buy a lot to build upon, find out if any physical limitations exist that will prevent you from building.

#### Costs for New Services and Facilities

The growth of a community invariably increases the pressure on local government to expand or improve existing services or facilities or provide new ones. Water and sewer systems and new schools are the principal facilities whose costs are major expenditures borne by local residents. The difference between the benefits and costs of these facilities needs to be dealt with consciously when the time comes to vote so that as a taxpayer, you feel that you get what you deserve and can afford.

Recent engineering feasibility studies for new water and sewer lines discuss the need for services in different areas of the county as well as the sources of funds for these improvements.

Existing population in the fringe areas of Plymouth, in Macedonia, and in Creswell justify plans for water service to these places by 1980. Proposed designs beyond 1980 suggest water extensions to N. C. 45 along Mackey's Road from Plymouth, extensions from Roper to Albemarle Beach, Mackey's and Pleasant Grove, and a line built south from Creswell to Cherry. Proposed designs in the distant future would extend service down Long Acre Road, to Skinnersville and Pen Ridge and down Newland Road. This leaves



only the Wenona area and the Lake Phelps area without plans at the present time for public water service.

In another study, sewer improvements were recommended for the Town of Roper to alleviate a major nuisance from inoperative septic tanks, similar improvements were recommended for the Town of Plymouth to upgrade its existing treatment facilities to meet state pollution requirements and new industrial and residential needs in the town's fringe areas. At this time no other sewer service was proposed to other areas of the county. Funds for construction of the proposed water and sewer improvements could be derived from general obligation bonds, from the sale of revenue bonds, state and federal grants, or tap-on fees paid by new customers.

Construction costs paid through general obligation bonds are repaid by all county taxpayers. Users of the service pay an additional cost for operating the plant and paying its interest. Their payments for these expenses could be derived from monthly or sewer bills and tap-on fees.

School facilities can be paid for through a similar system of state and local bonds, and state and federal grants. Operating expenses and interest could be paid for through property assessments and supplementary state and federal programs.

The justification for "mortgaging the future" to have these facilities involves two considerations. First most local residents feel that they live in a good county. Helping improve county services keeps it that way. This is based on the certainty which a number of county residents have that better schools,

tasteful water, or a fool-proof system for sewage disposal are better than none of these things at all. Second, development is certain to occur in this region in the future. To a certain extent, it is dependent upon the availability of services and facilities from local government. If some adjacent county is chosen for new business or industry, then property owners here will not only lose the tax relief they may have had but could also incur heavier taxes from services new residents need who live here but work elsewhere. Although new industry has not been quick to settle here, a defeatist mentality in itself deters investment and accelerates outmigration of our young people. A change in attitude is necessary to accept our "smallness" as an asset worth retaining. At the same time, we all have a responsibility to remind our elected officials that our county has a particular need to plan and coordinate all its actions. These actions should insure that as our county grows, one set of serious problems will not be replaced by another.

#### Economic Trends

Large scale farming and forestry should continue to dominate the county's economic growth. During the early history of the county, Somerset Plantation's 100,000 acre farm could be considered as the forerunner of today's First Colony Farms. After the Civil War, the John L. Roper Lumber Company began acquiring property that by 1910 exceeded 600,000 acres throughout all of Eastern North Carolina. The Roper Lumber Company encouraged farmers to settle in the area and grow crops on their cleared tracts, thus accelerating the development of the county's agriculture. Today

the Weyerhaeuser and Georgia-Pacific mills in Plymouth are the familiar evidence of this major trend's impact.

Future major impact upon the local economy focuses on agriculture. In the next ten years, forest in the Newland Road area below Roper is expected to be cleared and brought into agricultural production. This is based upon the county's accelerated land clearing activity by corporate "superfarms." With improved management of production, a modern generation of agri-industry can become a new and important part of Washington County's economy.

However, until new jobs accompany increased farm production, population growth will be minimal as young and old alike move elsewhere for work. Countering this out-migration is the in-migration of families looking for second homes along our shores. Although this in-migration is continuing, it will be small compared to the growth of the popular resorts in Nags Head, Kill Devil Hills, Kitty Hawk, and elsewhere.

#### Land Use Issues and Problems

These major trends create land use issues: (1) How does "superfarming" affect the water used for drinking and recreation? (2) Should taxpayers or shoreline property owners pay the costs of bulkheading beach property lost to soil erosion? (3) How far out can utilities be extended to growing areas before they become economically feasible? Other problems include the need for more business and industry in the area to diversify the tax base; more and better housing; better police protection; dog control; storm drainage; and the need for more parks and recreation. In the plan, stated goals and objectives deal with these issues and problems.

## Land Use Goals and Objectives

An important part of any plan is setting goals and objectives. Carefully prepared goals and objectives represent local residents' opinions and desires for their county's future growth. They are used in two ways. First they describe the changes and improvements you told us you wanted, touching such topics as economic growth of the county, protection of natural resources, and improvement of local government. Secondly, they establish the framework for future policies, programs and land use regulations that help implement the plan. Through this process land use changes can be guided by your local government instead of occurring in a haphazard manner.

The following list of community objectives describe short-run priorities--things which could be accomplished in the next two years.

### Goal: To Provide for the Economic Needs of County Residents by Attracting New Business and Industry to Washington County

(1) Establish an Economic Development Commission to encourage new industry in Washington County. Hire a full-time industrial developer as a staff for the Economic Development Commission.

(2) Recommend to the State Department of Transportation that U. S. Highway 64 be widened to four lanes across the county.

(3) Support the development of a community water system in the county.

(4) Propose a Wenona-to-Pea Ridge road to the State Department of Transportation.

(5) Work with the surrounding counties to petition the study of an interstate coastal highway.

### Goal: To Protect Natural and Cultural Resources

(1) Improve storm drainage on all creeks in the county to minimize local flooding.

(2) Development regulations to control the breach of watersheds and wind erosion county-wide.

(3) Require bulkheading of shore property subject to erosion from Albemarle Sound.

(4) Complete and publicize a county-wide detailed soil survey.

(5) Regulate the dumping of animal wastes into public waters.

(6) Petition the expansion of Pettigrew State Park at Lake Phelps.

(7) Establish a system of neighborhood parks in the county.

(8) Develop zoning and subdivision controls within Roper, Creswell, and the waterfront areas to provide for orderly development in these places.

Goal: To Improve the Level of Service of Local Government

(1) Improve county police protection, especially against breaking and entering.

(2) Develop a Zenith emergency phone number system to eliminate long distance calls to Plymouth from Creswell.

(3) Establish a dog catcher and kennel for dog control in the county.

(4) Recruit adults to expand supervised league sports in the county.

(5) Expand efforts to publicize the Health Department's schedule of services to outlying areas.

(6) Adopt a Minimum Housing Code.

(7) Expand library services in the Creswell area.

Development Objectives for Roper

(1) Improve storm drainage within the town limits.

(2) Study zoning and subdivision controls within the town and one-mile surrounding area.

(3) Support plans for a community sewer system and improvements to the existing water system.

(4) Support the demolition of unsafe buildings and the expansion of new housing in town.

(5) Petition the county for increased police patrol service at night.

#### Development Objectives for Creswell

(1) Development zoning and subdivision controls within the town and surrounding one-mile area.

(2) Review and update plans for a community sewer system in the town.

(3) Construct additional housing of all types in this area.

(4) Expand and publicize library and health care services in the Creswell area.

(5) Petition the county for increased police patrol service at night.

#### Requirements of the Coastal Area Management Act (CAMA)

CAMA has two major requirements. The first of these is to map the county according to the North Carolina Land Classification System. This classification serves as a guide for future growth and may be used with land use controls such as zoning, subdivision regulations, building codes, floodplain restrictions, and dredge and fill permits.

This Land Classification System is based upon the county's existing land use pattern, population and economic forecasts, natural and scenic features identified, soil types, and the local government's ability to finance services to growing areas. The System has five designations of land: Developed, Transition, Community, Rural and Conservation. Here's what each category describes:

Developed Land Classification. This refers to large towns and cities having complete city services such as water, sewer, police protection, and fire protection. In Washington County, this category describes the Town of Plymouth.

Transition Land Classification. This refers to fringe areas around "Developed" areas which are likely to grow in population to become "Developed" areas in the future. "Transition" areas require the most detailed planning because local government must carefully weigh the cost of extending services against its ability to pay. In Washington County, the only "Transition" areas identified near the Town of Plymouth and in parts of Roper.

Community Land Classification. This refers to small towns and other areas where population growth is occurring, but not as fast as in the "Developed" and "Transition" areas. Consequently, the services planned are on a smaller scale. For example, a "Community" area's population may be large enough to support a public water system but not a public sewer system. In Washington County, "Community" areas describe Creswell and parts of Roper, The Macedonia area, the waterfront communities along all of Albemarle Sound and the lakeshore surrounding Lake Phelps.

Rural Land Classification. This refers to the prime areas for row crops and commercial forests which need to be reserved for that activity. These areas have few services planned in order to encourage the concentration of manufacturing and other urban land uses nearer the towns where tax-supported services can be provided most efficiently. Most of the land in Washington County fits this description, except for the towns, the state park, the wildlife refuge, and the small beach communities.

Table One. Proposed Areas of Environmental Concern in Washington County

Name of AEC	Brief Description	Land Classification of AEC	Appropriate Use
estuary waters	Albemarle Sound, Bull's Bay	conservation	docks and bulkheads
historic places	Somerset Place St. David's Chapel Rehoboth Church cypress trees by 30 Foot Canal near Lake Phelps Morattuck Church Garrett's Island Home Lee's Mill in Roper	conservation	no change from existing land use that would destroy the historic integrity of the site
complex natural areas	Pungo National Wildlife Refuge	conservation	no change from the existing land use that would destroy the natural features of the site
public trust waters	Albemarle Sound, Bull's Bay, Lake Phelps, Pungo Lake, Welch's Creek, Conaby Creek, Mackey's Creek, Scuppernon River	conservation	docks and bulkheads
state parks	Pettigrew State Park	conservation	no change from the existing land use that would destroy the natural features of the site
coastal wetlands	Mouth of Deep Creek cypress off Albemarle Beach	conservation	no change from the existing land use that would destroy the natural features of the site
sound erodible areas	all property fronting Albemarle Sound	rural and community	docks and bulkheads



Specific tools for carrying out the land use recommendations in the Plan are zoning, subdivision regulations, building and housing codes, flood plain ordinances, sediment control regulations, and dredge and fill permits. Each device performs a limited task and only offers workable solutions to the county's growth problems when used together. State law requires that the exercise of these powers be structured through a responsible body of government. In the case of Washington County, the County Commissioners, the various town councils, and local Planning Boards have this authority.

Very simply, local government has a responsibility to plan. Elected officials bear a real responsibility to guide growth just as they have a responsibility to plan and budget the county's resources for health services, drainage, and police and fire protection. All these are a part of Washington County's public interest, and we expect our elected officials to define that interest and protect it. Growth is occurring, and as citizens, we can let it continue on an unguided path or we can try to steer it in a way that creates civic pride and requires less tax money to service. The choice and responsibility for good growth management is ours. It takes work--and revisions--but is almost always a good investment in time and money. Attend and participate in the meetings of your local planning board. We hope you will help when you can--please participate.

## I. INTRODUCTION

from: "Coastal Area Management: A New Look On The  
Horizon" N.C.S.U. Agricultural Extension Office

The coastal area of North Carolina is one of the most important regions in the United States for food production, future expansion of commerce, industry and recreation. To enable orderly growth and protection of important natural resources of that area, the 1974 General Assembly passed the Coastal Area Management Act.

The Coastal Area Management Act is a state law that asks local government in 20 counties in Coastal North Carolina to prepare a blueprint for their future growth and development. The county officials are asked to work closely with local citizens in deciding what their goals are, in planning for their best use.

### Organization

State level administration and coordination will be handled by the Department of Administration and Department of Natural and Economic Resources. The Act creates two citizen agencies:

Coastal Resources Commission--The commission is a 15-member body appointed by the Governor. All members are residents of the coast. Twelve were chosen from among nominees made by counties and towns in the coastal area. Three are appointed at the discretion of the Governor. The Commission is responsible for establishing planning guidelines, approving land use plans and issuing permits for construction when required.

Coastal Resources Advisory Council--The Council is a 47-member body made up of locally appointed representatives from each coastal county, plus representatives from six state government departments. It includes a broad cross section of coastal interests. The Council advises the Commission on those matters before the Commission, and assists local governments.

#### Management Tools Created

There are three major land use management tools created by the Bill: Land use plans, areas of environmental concern and a permit system.

Land Use Plans--Each county will prepare a land use plan. The plans will be based on the goals of the people in the county, the resources available in the county, and the most reasonable path for reaching toward those goals with the resources available. After the plans are adopted, use of the land must agree with the plans.

Areas of Environmental Concern--These areas and their boundaries will be designated by the Coastal Resources Commission by October 1, 1976. We know from experience to be cautious when using these areas. They include marshlands, beaches, sand dunes, navigable waters, national and state parks and areas of historical importance. Designation of an area as one of environmental concern does not prohibit use of that area. It is a warning sign to be careful.

Permit System--Any development within an area of environmental concern must have a permit. The Act does not require a permit for development outside areas of environmental concern. The Act

requires the following projects in areas of environmental concern to obtain a permit from the Coastal Resources Commission. Those projects currently needing state permits: those of greater than 20 acres in size; those that involve drilling or excavating natural resources on land or underwater; and those which involve construction of one or more structures having an area in excess of 60,000 square feet. Local governments will establish regulations for all the other types of developments in areas of environmental concern that will need permits from them.

## II. DESCRIPTION OF PRESENT CONDITIONS

### General Requirements

"a. A brief analysis of the local population and economy shall be made utilizing existing information. Particular attention should be given to the impact of seasonal populations and to economic activities which utilize, are dependent upon, or which may impair coastal land and water resources.

b. Existing Land Use

Existing land use shall be mapped and analyzed, with particular attention given to:

- 1) Significant land use compatibility problems;
- 2) Major problems which have resulted from unplanned development, and which have implications for future land use;
- 3) An identification of areas experiencing or likely to experience major changes in predominant land uses;
- 4) Areas of Environmental Concern.\*

c. Current Plans, Policies and Regulations

This element shall contain:

- 1) A listing and summary of existing plans and policies having significant implications for land use, including at least transportation plans, community facilities plans, utilities extension policies, open space and recreation policies, and prior land use plans and policies;
- 2) A listing and brief description of the means for enforcement of all existing local land use regulations. The following regulations shall be discussed, where applicable: zoning ordinance (including amendments), subdivision regulations, floodway ordinance, building codes, and environmental impact statement ordinances.
- 3) A listing and summary of relevant State and Federal regulations affecting coastal land and water resources (to be provided by the Department of Natural and Economic Resources)."

--from CAMA Guidelines pp. 26-31.

\*Not to be mapped on Existing Land Use Map.

## Present Population and Economy

Population Findings. Total county population including the Town of Plymouth has grown by small percentages of less than ten percent a decade for the last 30 years. (See Figure 1). This growth rate is ahead of that for rural areas in the United States and North Carolina and the surrounding five counties. (See Figure 2) Most of the county's growth between 1960 and 1970 occurred in the fringe areas around Plymouth, due to the proximity of the Weyerhaeuser plant. (See Figure 1)

Age distribution in both the county and the Town of Plymouth shows a trend towards a stable, young adult population in the age group from 15 to 24 that significantly changes to a pattern of out-migrating families leaving the county and taking their young, school-age children with them. This out-migration pattern reverses itself after age 45, indicating a trend towards an older resident population. All these patterns are more pronounced within the Town of Plymouth and among blacks. (See Figure 3)

Since after World War II and the end of logging operations for the J. L. Roper Lumber Company, the Town of Roper's population has been stagnant. Today's population in the town is approximately what it was in 1950, about 790. Like Plymouth, the town's most suitable population is the young and middle aged to elderly. Unlike Plymouth, the young people graduating high school tend to leave and not return. (See Figures 1 and 3)

From prior to World War II until 1960, Creswell had a slowly declining population. After that time to 1970, the town's population grew significantly from 402 to 670. The major increase seems to be

among new families of school-aged children. However, like Roper, Creswell suffers from a heavy migration of its young adults once they graduate from high school. (See Figures 1 and 3)

FIGURE 1

SUMMARY OF POPULATION TRENDS

	<u>1940</u>	<u>1950</u>	<u>% Change from '40</u>	<u>1960</u>	<u>% Change from '50</u>	<u>1970</u>	<u>% Change from '60</u>
Washington Co.	12,323	13,488	+10%	13,488	+ 2%	14,038	+ 4%
Lee Mill Twp.	3,229	3,435	+ 6%	3,444	0%	3,407 <sup>2</sup>	- 1%
Roper	716	793	+11%	771	- 3%	680	-12%
Plymouth Twp.	5,237	6,294	+20% <sup>1</sup>	6,948	+10%	7,512	+ 8%
Plymouth	2,461	4,486	+82% <sup>1</sup>	4,666	+ 4%	4,774	+ 2%
Scuppernong Twp.	2,019	2,244	+11%	1,629	-27%	1,733	+ 6%
Cherry	108	73	-32%	61	-17%	No record	
Creswell	459	425	- 7%	467	+10%	670	+44%
Skinner'sville Twp.	1,838	1,207	-34%	1,467	+22%	1,386	- 5%

Notes: 1. 82% population increase for Plymouth from 1940 to 1950 due to annexation.

2. The 1970 population of 680 for Roper has been contested by the Town as an underestimate. The Town's own estimate of 750 population, however, still indicates a slow population decline.

SOURCE: U.S. Census

FIGURE 2  
COMPARISON OF POPULATION TRENDS

	<u>1960 Pop.</u>	<u>1970 Pop.</u>	<u>%Change, '60-'70</u>
Washington County	13,488	14,038	+ 4.1%
Martin County	27,139	24,730	- 8.9%
Beaufort County	36,014	35,980	- 0.1%
Chowan County	11,729	10,764	- 8.2%
Bertie County	24,350	20,528	-15.7%
Tyrrell County	4,520	3,806	-15.8%
Hyde County	5,765	5,571	- 3.4%
North Carolina (Rural Areas)	2,754,234	2,796,891	+ 1.5%
United States	94,054,425	53,886,966	- 0.3%

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SOURCE: U.S. Census, 1960-1970.



FIGURE 3

AGE-RACE DISTRIBUTION IN WASHINGTON COUNTY

a. Age-Race Characteristics of Unincorporated Washington County

AGE GROUP	BLACK POP. 1960	BLACK POP. 1970	% CHANGE	WHITE POP. 1960	WHITE POP. 1970	% CHANGE
Under 5	685	450	-34%	491	434	-12%
5 - 14	1244	1064	-14%	1066	1123	+ 5%
15 - 24	661	801	+21%	610	892	+46%
25 - 44	872	737	-15%	1109	1297	+17%
45 - 64	486	573	+18%	989	1164	+18%
Over 65	202	233	+15%	407	496	+22%

b. Age-Race Characteristics of Plymouth

AGE GROUP	BLACK POP. 1960	BLACK POP. 1970	% CHANGE	WHITE POP. 1960	WHITE POP. 1970	% CHANGE
Under 5	325	255	-22%	277	228	-18%
5 - 14	515	523	+ 2%	550	528	- 4%
15 - 24	275	367	+33%	342	393	+15%
25 - 44	417	327	-22%	763	750	- 2%
45 - 64	293	339	+16%	612	677	+11%
Over 65	108	131	+40%	187	236	+26%

SOURCE: U.S. Census

FIGURE 3 (Con't)

c. Age-Race Characteristics of Roper (1970 Only)

<u>AGE GROUP</u>	<u>BLACK</u>	<u>WHITE</u>	<u>GROUPS % OF TOTAL</u>
Under 5	38	30	10%
5 - 14	85	97	26%
15 - 24	76	46	17%
25 - 44	59	44	15%
45 - 64	85	70	22%
Over 65	<u>29</u>	<u>43</u>	10%
Sub-Total	372	330	

d. Age-Race Characteristics of Creswell (1970 Only)

<u>AGE GROUP</u>	<u>BLACK</u>	<u>WHITE</u>	<u>GROUPS % OF TOTAL</u>
Under 5	24	42	10%
5 - 14	75	115	30%
14 - 24	36	34	11%
25 - 44	40	97	21%
45 - 64	43	66	17%
Over 65	<u>26</u>	<u>44</u>	--
Sub-Total	244	398	

---

SOURCE: U.S. Census, 1970 (5th Count). Differences between 1st Count and 5th Count tallies due to sampling errors.

### Seasonal Population

It has been stated already that the intent of the Coastal Area Management Act is to plan for the future needs of the residents of Eastern North Carolina. One factor needing particular attention is the impact of seasonal visitors which heretofore have not been considered in population studies. These occasional visitors are expected to grow in numbers, and they will demand the same services as the native residents, excepting schools. If properly provided for, these people can become an asset, rather than a drain, on the county's development.

All the figures shown below in Figure 4 had to be estimated because tourist statistics for Washington County were not readily available. The method used to calculate the figures was to start with the number of overnight accommodations presently available and multiply that total by a reasonable number of persons who might be expected to occupy these units at any given time--in this case the "persons per household" for Washington County from the 1970 Census. A premise was made that tourism in Washington County is based upon the county's proximity to the Dare County beaches.

The summer recreation traffic along Highway 64 is the best indicator to support this. Thus projections of future tourism can be made based upon Washington County's share of the estimated tourist growth in Dare County. These Dare County estimates of vacationers have been prepared by a private consultant, Stephens Associates of Raleigh.

FIGURE 4.

ESTIMATED SEASONAL POPULATION

Motel/Hotel Units	60		280
Campsites	20	x	4.66 persons
Vacation Cottages (1970)	<u>100</u>		<u>per household</u>
	280 units		839 total
			tourists at any
			one time, 1970.

FIGURE 5

PROJECTED SEASONAL POPULATION

1.	1970 estimate of tourist population:	839
2.	1970 estimate of tourists, Dare Co.:	23,720
3.	proportion of 1970 count, Washington County to Dare County	1:28 or 4%
4.	Tourist Forecast, <u>Dare County</u>	Tourist Forecast, <u>Washington County (1:28)</u>
	1980 35,106	1242
	1990 48,481 to 70,000	1,715 to 2,476
	2000 68,067 to ?	2,408 to ?

SOURCE: Dare County Data from Stephens Assoc., 1974  
Washington County Data, DNER estimates, 1975

From the figures shown, any estimate of tourism in Washington County has only represented a small impact on the local economy. A second indicator is travel spending. A 1973 survey by the Department of Natural and Economic Resources' Travel Development Section indicated only a figure of \$391,250 in expenditures or 2% of the gross retail sales recorded this year, \$25,017.00. Beyond 1980 the population projections vary widely. The higher estimates are possible if growth along the Outer Banks occurs at the rate now experienced in areas such as Myrtle Beach, Virginia Beach or Ocean City.

Consequently, seasonal population due to tourism, estimated at 1,398 in 1970 or ten percent of the resident population, does not have a significant impact on the county's economy at present. However, future growth in second homes is expected along Albemarle Sound. At this location, seasonal population growth is expected to have more impact on land use.

#### Economic Findings

Agriculture represents the largest part of the county's economy, as well as its major land use, showing steady increases in production and market sales. Corn, soybeans, hogs and lumber lead all other products in dollar sales. This trend is likely to continue with the impact of corporate "superfarms" reaching their full production over the next decade. During the period 1960-1974, harvest crops acreage rose 78% while forestlands declined by 20 percent. Soybean production has been the major row crop, followed by corn, peanuts, and tobacco. Wheat and other crops make up a small remaining percentage. This increased production, however, has required less farm labor because of mechanization. From 1960 to 1970 the number of farmers dropped by 50 percent.

(See Figure 6)

FIGURE 6  
CROPLAND UTILIZATION

<u>YEAR</u>	<u>PERCENTAGE ACREAGE OF CORN</u>	<u>PERCENTAGE ACREAGE OF SOYBEANS</u>	<u>PERCENTAGE ACREAGE OF WHEAT</u>	<u>PERCENTAGE ACREAGE OF PEANUTS</u>	<u>PERCENTAGE ACREAGE OF OTHER (TOBACCO)</u>
1960	42	42		8	8
1961	34	47		9	10
1962	32	51		8	9
1963	27	56		8	9
1964	27	54		8	11
1965	29	56	3	7	5
1966	29	59		6	6
1967	31	57		6	6
1968	28	62		6	4
1969	30	59		6	5
1970	38	53		5	4
1971	43	45		5	7
1972	42	46		5	7
1973	42	49		4	5
1974	44	46		4	6

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SOURCE: NCDA Land Utilization Survey, Washington County



FIGURE 8  
BUSINESS PATTERNS

Industry	Number of Employees Mid-March Pay-Period	Taxable Payroll Jan.-Mar. (\$1,000)	Total Reporting Units
Washington County			
Total	2,386	4,147	183
Agricultural Services, Forestry, Fisheries	(D)	(D)	1
Contract Construction	54	66	14
Manufacturing	1,463	3,049	22
Apparel & other textile prod.	(D)	(D)	1
Children's outerwear	(D)	(D)	1
Children's outerwear, NEC	(D)	(D)	1
Lumber & wood prod.	323	482	15
Logging camps & logging contr.	85	76	11
Sawmills & planing mills	(D)	(D)	2
Sawmills & planing mills, gen.	(D)	(D)	2
Paper & allied prod.	987	2,400	3
Paper mills, except bldg. paper	(D)	(D)	2
Paperboard containers & boxes	(D)	(D)	1
Sanitary food containers	(D)	(D)	1
Transportation and Other Public Utilities	28	52	4
Wholesale Trade	146	242	13
Retail Trade	426	477	75
Food stores	92	100	16
Grocery stores	(D)	(D)	15
Auto dealers & serv. stations	90	124	13
Misc. retail stores	56	88	11
Finance, ins., & real estate	60	98	11
Services	169	136	37
Personal services	37	23	12
Unclassified establishments	(D)	(D)	6

Source: USDC -- County Business Patterns, 1973



Both the town and the county face population losses in the 18 to 25 year old age group despite modest increases in total population during the period from 1960 to 1970. Consequently the best trained and highest earning persons leave to go elsewhere, reducing the labor pool and the opportunities for new industry.

Plymouth faces severe shortages of vacant, developable land at a time when its extraterritorial area is the fastest growing part of the whole county. This situation greatly increases the need for annexations in the years ahead or else the town's growth potential will be limited.

Manufacturing production in apparel and wood products comprise the second major component of the county's economy. Precise figures on the value of manufacturers are unavailable because disclosure rules were applied to withhold data on individual firms. (See Figures 7 and 8)

Data on the value of products manufactured in Washington County cannot be determined from the information available because of figures withheld to avoid disclosure of individual firms. However, 1974 labor force estimates for the county indicate a total of 460 persons in manufacturing, principally in the Town of Plymouth. This amounts to 16 percent of the locally-employed labor force. A much larger segment of the manufacturing labor force lives in the Plymouth area, but works at the Weyerhaeuser papermill directly across the county line in Martin County.

Retail trade in the county is primarily concentrated in the Town of Plymouth. Retail sales in the county suffer due to the county's small population and the proximity of Washington, Williamston and Edenton. An estimate of gross retail sales per person indicates that Washington County's sales per person is below the average of the surrounding six counties. In addition, significant losses in sales personnel occurred between 1960 and 1970 in Plymouth and the county, but a decline of 50 percent of total sales personnel employed.

Figure 9/RETAIL SALES PER 1000 POPULATION (Estimate Only)

	1973 Gross Retail Sales*	1970 Population **	
Washington Co.	\$15,017,000	14,038	\$1782.08/person
Martin Co.	50,499,000	24,730	2042.00/person
Beaufort Co.	92,615,000	35,980	2574.06/person
Bertie Co.	29,620,000	20,528	1442.90/person
Chowan Co.	25,244,000	10,764	2345.22/person
Hyde Co.	5,931,000	5,571	1064.62/person
Tyrrell Co.	5,890,000	3,806	1547.55/person
*from Sales Management		**From U. S. Census	

### Employment Findings

The largest number of employed persons in the town and the county are blue collar workers employed as operators. The second largest group are skilled blue collar craftsmen and foremen. From 1960 to 1970 the number of persons with skilled white collar jobs has increased significantly (by 150 percent in the Town of Plymouth and 230 percent in the county for professionals and technicians).

FIGURE 10  
OCCUPATIONAL BREAKDOWN OF EMPLOYED PERSONS  
IN PLYMOUTH AND WASHINGTON COUNTY, 1960-1970

<u>JOB TYPE</u>	<u>PERCENT OF TOTAL EMPLOYED, 1960 PLYMOUTH/COUNTY</u>			<u>PERCENT OF TOTAL EMPLOYED, 1970 PLYMOUTH/COUNTY</u>			<u>PERCENT CHANGE 1960-1970 PLYMOUTH/COUNTY</u>
Professionals	8%	/	3%	12%	/	7%	+150%/ +230%
Farmers	1%	/	13%	1%	/	6%	no change / - 50%
Managers	8%	/	5%	10%	/	8%	+125%/ +160%
Clerical	10%	/	4%	12%	/	8%	+120%/ +200%
Sales	8%	/	6%	4%	/	3%	- 50%/ - 50%
Craftsmen	16%	/	12%	13%	/	18%	- 20%/ +150%
Operators	21%	/	20%	24%	/	25%	+115%/ +125%
Housekeepers	7%	/	6%	4%	/	3%	- 40%/ - 50%
Service Workers	7%	/	4%	9%	/	8%	+130%/ +200%
Farm Labor	1%	/	11%	1%	/	47%	no change / - 60%
Common Labor	8%	/	5%	7%	/	8%	- 10%/ +160%

Total employed, Town of Plymouth, 1960: 1673; 1970: 1727.

Total employed, Washington Co. outside Plymouth, 1960: 2415; 1970: 4679.

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SOURCE: U.S. Census, 1960 and 1970.

Note: Percentages shown have been rounded off. To get a close approximation of the actual count of persons in a particular category, multiply the "total employed" figure by the percentage for the given year.

FIGURE 11  
WORK TRIPS OUTSIDE COUNTY OF RESIDENCE:  
WASHINGTON COUNTY AND OTHER AREAS

	Percent of County Labor Force Working Outside County		
	<u>1960</u>	<u>1970</u>	<u>%Increase Over 1960</u>
Washington County	25%	44%	+176%
Wake County	5%	14%	+280%
Mecklenburg County	4%	11%	+275%
Pitt County	8%	21%	+262%
Beaufort County	8%	18%	+225%
Bertie County	9%	31%	+444%
Chowan County	8%	23%	+287%
Hyde County	6%	19%	+416%
Martin County	7%	18%	+257%
Tyrrell County	9%	25%	+277%

SOURCES: 1960, 1970 Census

FIGURE 12  
RATES OF UNEMPLOYMENT FOR  
WASHINGTON COUNTY AND OTHER AREAS

	<u>Average Rate for 9-Year Period 1965-1973</u>	<u>Average Rate for Most Recent Year of Record, 1973</u>
Washington County	6.2%	4.9%
Wake County	2.3%	1.6%
Mecklenburg County	2.1%	1.8%
Pitt County	5.9%	4.1%
Beaufort County	3.8%	3.2%
Bertie County	6.3%	4.6%
Chowan County	4.3%	3.2%
Hyde County	6.7%	7.1%
Martin County	5.4%	2.1%
Tyrrell County	7.8%	6.6%
North Carolina	3.7%	3.5%

SOURCE: N.C. Work Force Estimates, Employment Security  
Commission of N.C.

Unemployment in the county is slightly higher than the average rate for the surrounding six counties, both for the most recent year of record--4.9 percent in 1973--and for the period of nine years from 1965 to 1973, an average of 6.2 percent. County unemployment has consistently averaged higher than the rate for the state at any time, but has been about average for this region.

Family median income in the county rose 205 percent to \$7,177 in 1970 or to a point two percent behind Plymouth's family median income of \$7,313. The county-wide average of median family income is ahead of that for the surrounding six counties, but behind that of the state.

FIGURE 13

MEDIAN FAMILY INCOME:  
PLYMOUTH AND SURROUNDING TOWNS

	<u>1960 Median Income All Families</u>	<u>1970 Median Income All Families</u>	<u>% Change Over 1960</u>
Plymouth	\$4665	\$7313	+157%
Edenton	3918	7250	+185%
Washington	4410	6563	+149%
Williamston	3448	6510	+189%

SOURCES: 1960, 1970 U.S. Census

Figure 14

MEDIAN FAMILY INCOME: WASHINGTON COUNTY  
(NOT INCLUDING PLYMOUTH) AND OTHER AREAS

	<u>1960 Median Family Income</u>	<u>1970 Median Family Income</u>	<u>% Change Over 1960</u>
Washington Co.	\$3495*	\$7177*	+205%
Beaufort Co.	2409	6435	+267%
Bertie Co.	2117	4829	+228%
Chowan Co.	2714	6397	+236%
Hyde Co.	1979	4478	+226%
Martin Co.	2366	5711	+241%
Tyrrell Co.	1927	4307	+224%
North Carolina	3956	7774	+197%

SOURCES: 1960, 1970 U.S. Census

Note:

\*Median family income for all of Washington County in 1970 was \$7,182. This includes the median family income for Plymouth. Without Plymouth, the median family income for the "farm" and "non-farm" families of Washington County (i.e., those families outside Plymouth) was \$7,177. The 1960 statistic of \$3495 was arrived at by the same method.

## Existing Land Use in Washington County

### Existing Land Use Description

Washington County comprises 342 square miles, broken down into the following proportions: 53 percent, agriculture; 40 percent, forest; 6 percent, water; and 1 percent, urban. Of the urban land use, Plymouth is the principal town, connecting with two other small communities, Roper and Creswell, along the county's major access road, U. S. Highway 64, going east to west. Other urban land uses, primarily single family homes and country stores, are scattered by the sides of roads and along the shore of Albemarle Sound from Albemarle Beach to Leonard's Point where N. C. Highway 32 crosses the sound.

**Agriculture.** Agriculture, including commercial forests, is far the dominant land use in Washington County. Pastures and field crops can be found east of N. C. Highway 99 towards Lake Phelps, owned in large part by First Colony Farms. During the period 1960-1974, harvest crop acreage throughout the county rose 78 percent while forestland declined by 20 percent. This dramatic increase is attributable to large scale, land-clearing technology made feasible by the large corporate farms. The scale of First Colony's operations has raised local hog production to all-time records while greatly increasing grain storage capacity in the county with its bonded commercial elevator near Lake Phelps. The significance of large farm investments, suitable soils, and the higher unit prices farm products derive reinforce the continuation of agriculture as the future major land use in this area.



FIGURE 15  
PERCENTAGE UTILIZATIONS OF FARM LAND  
IN WASHINGTON COUNTY

<u>Year</u>	<u>Acreage of All Land in Farms</u>	<u>Row Crop</u>	<u>Idle Crop</u>	<u>Pasture</u>	<u>Forest</u>
1960	94,671	45	not reported	5	50
1961	95,297	39	6	5	50
1962	101,475	41	7	5	47
1963	100,150	43	6	4	47
1964	102,364	43	6	5	46
1965	102,765	43	6	4	47
1966	101,974	48	4	5	43
1967	104,015	50	4	4	42
1968	106,971	49	4	4	43
1969	109,666	49	7	3	41
1970	114,466	53	4	4	39
1971	113,238	56	3	3	38
1972	113,511	56	6	3	35
1973	121,887	55	2	4	39
1974	143,840	51	6	3	40

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SOURCE: North Carolina Department of Agriculture,  
Land Utilization and Crop Acreage Surveys

Commercial forests in Washington County are primarily situated in the area west of N. C. Highway 32 towards Martin County. Swampy areas to the north of Plymouth and Creswell are owned by the lumber companies but are not actively cleared due to their extremely wet terrain. A large timber tract in the center of the county east of Roper, formerly owned by the Shima American Corporation, is the forest area in the county most likely to be converted to field crops in the next ten years. Other forest areas are likely to remain intact in the future with possibly some peripheral residential subdivisions developing in the vicinity of Plymouth down Long Ridge Road (N.C. Highway 1100).

In the Town of Roper, (.9 sq. miles) over one-fourth percent of the incorporated area is under cultivation; approximately 44 percent of the area is devoted to harvested cropland. An additional 27 percent of the town consists of forest and swamp, however these tracts have no significant commercial value. In the Town of Creswell (.6 sq. mi.) only seven percent or approximately 28 acres of the incorporated area is devoted to harvested cropland. More significant is the 53 percent of the area covered by non-commercial forestland and swamp. This amount of non-productive wasteland sharply limits the town's growth and constitutes a major land use constraint.

Commerce and Industry. Most commercial and industrial activities are concentrated in or near the Towns of Plymouth, Roper, and Creswell. Elsewhere, business activity is sharply limited, consisting primarily of county grocery stores scattered along the county's roads. The largest industry in the county is the Plymouth Garment

Company in Plymouth. Outside of Plymouth, industry in the county is limited to the First Colony Farms grain elevator below Creswell and the Williams Lumber Company at Mackey's above Roper.

In the Towns of Roper and Creswell there are no industrial activities. Commercial land consists of tightly clustered small business districts (equally approximately 4 percent of the area in Roper and 5 percent of the area of Creswell).

Housing. Residential land use in the county consists of scattered-site single family homes and mobile homes on individual lots of record, fronting existing roads. Subdivisions and mobile home parks are primarily located around Plymouth and along the shoreline of Albemarle Sound. A 1973 survey of housing conditions estimated 2,997 single family units outside of Plymouth of which 20 units were dilapidated and another 890 were deteriorating. The same survey counted 416 mobile homes in mobile home parks and on individual lots. However, mobile homes have greatly increased in number since then, and in 1976 are estimated to comprise 650 units. This increase is likely to continue in the foreseeable future until other forms of housing are made available in a price range that local families can afford or until new industry with higher wage rates settles in the area. Second home development along Albemarle Sound is expected to continue but at a slow pace over the next ten years. The foreseeable change in this seasonal housing is the occupancy of existing summer houses on a year-round basis.

Residential land in Roper and Creswell are generally clustered around the compact business districts of each town. In Roper, residential areas comprise approximately 16 percent of the town

their absentee owners. In poorer residential neighborhoods, "spot zoning" or garages, stores and dancehalls can be found. Elsewhere the mix of businesses and homes along state roads is generally limited to a number of crossroad communities that were once founded in order to acquire postal service.

#### Problems from Unplanned Development

In Washington County, the problems from unplanned development can be categorized under poor drainage, water degradation, traffic hazards and disorderly growth. Each of these problem areas would be compounded in the future if allowed to proceed without some form of regulation.

Poor Drainage. In this category examples include the forced breach of watershed boundaries to secure agricultural drainage and street flooding. Essentially, the county's terrain is so flat that runoff has nowhere to go. In the case of agricultural drainage, it is possible in this area to secure drainage across one watershed boundary into a particular creek if waterflow into another creek is too sluggish. With further large-scale farming it is feared that the Scuppernong River's floodplain will be further enlarged by drainage from the Mackey's Creek and Pantego Creek watersheds. Street flooding is the local evidence of inadequate storm drainage in the three towns that would increase with new development by increasing the amount of impervious surfaces upon which water runoff could accelerate.

Water Degradation. In this category, examples include well water contamination from on-site septic tanks, stream sedimentation from unstabilized canal banks, and unauthorized animal waste discharge

which in Creswell, these areas cover approximately 21 percent of the town.

Public Lands. The largest government-owned property in Washington County is Pettigrew State Park which consists of Lake Phelps and Somerset Plantation. Second in size to this property is the Pungo National Wildlife Refuge, a game reserve near Wenona which wholly surrounds Pungo Lake. Smaller holdings consist of the State prison farm near the crossroads community of Scuppernon, a state Department of Transportation gravel pit near the Sound Bridge and two state experimental farms: one between Plymouth and Roper and the other on the southside of Lake Phelps. County government holdings include the county Board of Education's school sites in the three towns, the County hospital, Courthouse, Social Services, and Agriculture Building in Plymouth, and a landfill located east of N.C. Highway 45 off Mackey's Road (N.C. 1300).

Both Roper and Creswell have approximately 27 acres a piece of government property within their corporate limits. School grounds are the largest part of this acreage with minor tracts devoted to fire department and municipal offices, storage areas, and their community water facilities.

#### Significant Land Use Compatibility Problems

At the present time land use compatibility problems are limited in the county and the three towns. In the county the best example of a compatibility problem are hog pens nearby homes or churches. Along the shores of Albemarle Sound resident homeowners complain about overcrowded rental trailers which receive little upkeep from

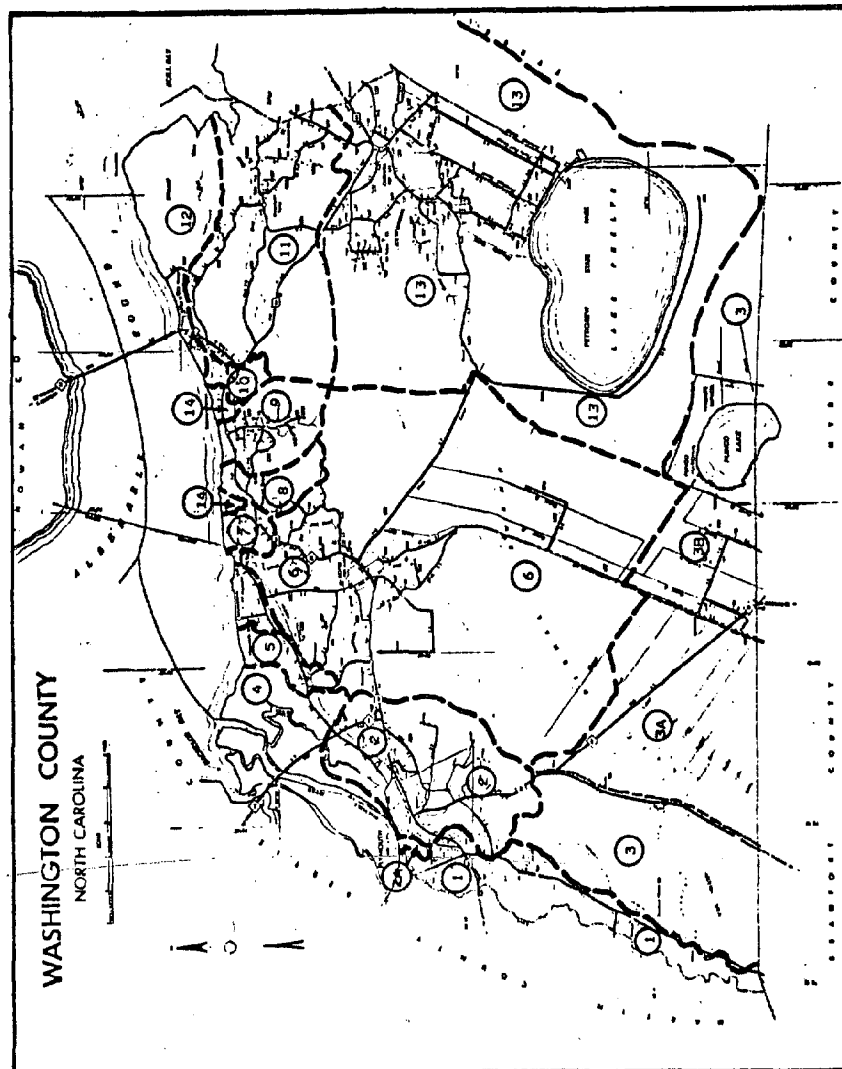


Figure 16

# WATERSHED MAP

- WATERSHED BOUNDARY
- SUB-WATERSHED BOUNDARY
- WATERSHED NUMBER

- 1 Welch Creek
- 2 Conaby Creek
- 2A Bateman's Swamp
- 3 Pungo River
- 3A Albemarle Drainage District No. 4
- 3B Pungo River Drainage District
- 4 Lower Conaby Swamp and River
- 5 Low Grounds
- 5 Westover Canal
- 6 Mackey's Creek
- 7 Lower Mackey's Swamp
- 8 Beech Swamp
- 9 Chapel Swamp
- 10 Cherry Swamp
- 11 Deep Creek
- 12 Laurel Point and Bull Creek
- 13 Scuppernon River
- 14 Group Ditches that Drain Directly Into Albemarle Sound

SOURCE: SCS, 1973

into surface waters from drainage canals. None of these conditions are widespread at the present time but all have significant implications for the future. Compact beach communities along Albemarle Sound are the areas most likely to have drinking water contamination while sediment control and stream discharge problems are more prevalent in the eastern half of the county now being opened for agricultural production.

Traffic Hazards. This is the most observable problem of unplanned development in the county. Examples include traffic congestion on primary roads, impossible secondary roads, inadequate off-street parking and hazardous multiple-driveway intersections. Traffic congestion along U.S. Highway 64 and N.C. Highway 32 is most apparent during the summer months when the two-laned roads are snarled with tourist traffic, log trucks, school buses, and farm combines and tractors. Secondary roads to small subdivisions are often impassible because of inadequate dedication of right-of-way or non-acceptance for maintenance by the State Department of Transportation.

Certain dirt roads now subject to increased farm traffic are requiring increased maintenance due to the weight and frequent passage of additional traffic. Inadequate off-street parking in the county is most apparent in the Macedonia Community between Plymouth and Roper, east of N.C. 45 along U.S. 64, due to clusters of small homes on small lots with numerous short driveways cutting into the main thoroughfare. In the three towns, multiple driveways from strip commercial establishments along U.S. 64 create hazardous turning

movements and generally impede the flow of traffic.

Disorderly Growth. Examples of disorderly land use that is likely to increase in the future includes: overcrowding of dwellings near each other due to lack of building setbacks, lack of sign control, increased storage of junk outdoors, juxtaposed land uses, speculative residential land sales without guarantees of improvement, and costs of government services (police, fire, waste disposal, schools, water and sewer) rising faster than the accrued income received from increased tax assessment. At the present time Washington County is in a relatively early stage of development and its estimated slow growth rate will forstall the impact of these particular land use problems. However, the full impact of these conditions is most certain when the controls available to deal with them are not exercised or are disregarded.

#### Major Growth Areas

Future growth in Washington County can be measured more by increased agricultural production than from increased population. This analysis compares favorably with the differences between the estimated population trends which are low and the estimated land conversion trends which are high. Consequently, minor population growth creating demands for new housing is likely to generate more subdivision activity in the Plymouth area where such population growth is already occurring. However, the major land use change in the next 10 years is expected to be the conversion of tracts in the Newland Road area of the county (via N.C.1126) from forestland to field crops. This increase in lands under cultivation over the



next ten years would bring the county to a plateau in its large-scale land use conversions, reaching an approximate total of 60 percent of the land in the county or about 131,560 acres in agricultural production.

### Current Plans, Policies, and Regulations

The following list of plans, regulations, and policies with a bearing on land use have been prepared for the Washington County Board of Commissioners, and where noted, the Towns of Roper and Creswell. A complete list of plans, policies, and regulations for the Town of Plymouth are contained in the Land Use Plan for Plymouth. They are referred to in this listing only when they tie into plans, regulations, or policies of the county.

Plans and Policies Adopted. The following plans and studies have been adopted by the Board of County Commissioners: A detailed soil survey (SCS) of the entire county has been in progress since 1975. A Housing Survey (Department of Natural & Economic Resources) that inventoried structural conditions of housing in the county was prepared in 1973. A Land Use Analysis (DNER) describing existing land use, population and economy in 1974 was prepared. An Appraisal for Outdoor Recreation (1973) inventorying recreation potential was prepared by the Soil Conservation Service. An Overall Economic Development Plan listing recommendations for priority needs of the county was adopted in 1971 by the OEDP Committee chaired by T.R. Spruill, Chairman of the County Board of Commissioners. It superceded the first plan prepared in 1962 by the same Committee. The county has no thoroughfare plan as such, however, as a matter of policy the Board of Commissioners have recommended the paving of secondary roadways and widening of U.S. Highway 64 before the Primary Roads Council and Secondary Roads Council. The county's policies concerning planning are incorporated into its Ordinance

to establish a Planning Board (1975), based upon the language contained on G.S. 153A Article 18, Part I. The county's policies concerning recreation are incorporated into its Ordinance to Establish a Recreation Commission, based upon the language contained in G. S. 160 and G.S. 160A-353.

Plans Under Consideration. The most current plans being considered in the county are a 201 Sewer Facilities Plan (1975) prepared by L.E. Wooten and Company, for Plymouth and Roper and a Water System Feasibility Study (1975) prepared by Moore-Gardner Associates for the entire county. These plans supercede the following prior water and sewer studies:

1. Comprehensive Water and Sewer Planning - L.W. Wooten and Company  
Report 1970
2. Plans and Specs July 1966 - Plymouth Water System Improvements  
L.E. Wooten and Company, Engineers
3. Plans and Specs June 1966 - Plymouth Water System Improvements  
L. E. Wooten and Company, Engineers
4. Plans and Specs Oct. 1962 - Roper Water System  
L.E. Wooten & Company, Engineers
5. Preliminary Engineering Report - Roper Sewage System  
January 1968 L.E. Wooten & Company, Eng.
6. Preliminary Engineering Report - Creswell Water System  
March 1970 L.E. Wooten & Company, Eng.
7. Preliminary Engineering Report - Creswell Sewage System  
March 1970 L.E. Wooten & Company, Eng.

Plans and Policies Not Being Considered. The County Board of Commissioners have not considered Community Facility Plans or Open Space Policies for the present.

Other Studies. Several other studies with a significant bearing on land use problems in water quality include the following: Soil Conservation Service's Shoreline Erosion Inventory (1972), United States Groundwater Service's Hydrology of the Albemarle-Pamlico Region (1975), and the U.S. Army Corps of Engineer's Environmental Impact Statement on the dredging of the Scuppernong River. The erosion study elaborates on the significant loss of land fronting Albemarle Sound from 1938 to 1972. The hydrology report includes the first study made of the potential impacts of corporate "super-farms" on the ground water resources in the area. The Scuppernong River study is still being prepared by the Corps of Engineers' Wilmington Office and when completed may be able to justify a drainage improvements program for this badly clogged waterway.

Regulations Adopted. The County Board of Commissioners have adopted the following ordinances which have a bearing on land use: A Mobile Home and Travel Trailer Park Ordinance which applies to all the county outside of Plymouth and which is administered by the county's building inspector and planning board. Second, the N.C. Building and Electrical Code: the Building Code applying to all areas of the county outside Plymouth and the Electrical Code applying to all areas of the county including Plymouth. The Building Code is administered by the county's building inspector while the Electrical Code is administered by a joint Plymouth-County electrical inspector. Third, both Plymouth and the county comply with the Septic Tank Regulations and other requirements of the Washington County Health Department which are administered by a District Sanitarian. Fourth, the county and the three towns have applied

for and received approval for Federal Flood Insurance. When the actual maps are completed, a floodway ordinance will be administered through Plymouth's building inspector acting for Plymouth and the county's building inspector acting for the county including the Towns of Roper and Creswell.

Regulations Under Consideration. The Board of County Commissioners at this time are studying a Sediment Control Ordinance for possible adoption. Besides runoff from construction sites, this draft ordinance proposes to regulate the dumping of animal wastes into drainage canals in the county. The county planning board is considering a draft zoning ordinance for the Towns of Roper and Creswell and the waterfront areas of the county. Plymouth has its own Zoning Ordinance. These Zoning Ordinances would be administered through the planning board and elected body. The county planning board is also considering a draft subdivision regulations for the county and the three towns if their town councils choose to adopt the regulations by resolution. If adopted, these subdivision regulations would be administered through local building inspectors and planning boards.

Regulations Not Being Considered. The following regulations are not in force or under consideration at the present time in Washington County: N. C. Plumbing Code, N.C. Housing Code, Historic District Regulations, Environmental Impact Statement Ordinances, or nuisance laws. Concerning nuisance laws, the Board of County Commissioners from time to time will pass a resolution governing carnivals, fortune tellers, and the like; however, these regulations have no legal significance. At present, an individual with a

complaint would have to secure a warrant from the Magistrate who would have to find grounds for the complaint in state law before the warrant could be served.

Federal and State Regulations. List to be supplied by the Department of Natural and Economic Resources.

### III. PUBLIC PARTICIPATION ACTIVITIES

#### General Requirements

"The local planning unit shall, in cooperation with its citizens and all relevant public agencies, identify the major land use issues facing the planning area and formulate a series of objectives to help guide future development. The major land use issues which will be faced during the following ten year period should be identified and analyzed. Such issues should include:

- 1) The impact of population and economic trends;
- 2) The provision of adequate housing and other services;
- 3) The conservation of productive natural resources;
- 4) The protection of important natural environments;
- 5) The protection of cultural and historic resources.

"Alternative approaches for dealing with these issues and their respective implications should then be considered in the development of land use objectives, policies and standards. These clearly stated objectives, policies and standards should serve as a guide to classifying land areas as well as clearly establishing priorities for action during the planning period.

"A brief description shall also be given of the process used to determine objectives, policies and standards, with particular attention given to the participation of the public and relevant public agencies."

- From CAMA "Guidelines"

#### Identification and Analysis of Major Land Use Issues

##### Impact of Population and Economic Trends

The major land use issues affecting Plymouth and Washington County in the coming ten years cover a broad range of problems.

Both the town and county face population losses in the 18 to 25 year old age group despite modest increases in total population during the period from 1960 to 1970. Consequently the best trained and highest earning persons leave to go elsewhere, reducing the labor pool and the opportunities for new industry.

Plymouth faces severe shortages of vacant, developable land at a time when its exterritorial area is the fastest growing part of the whole county. This situation greatly increases the need for annexations in the years ahead or else demands that the county provide urban services in the areas surrounding Plymouth.

Large scale farming and forestry typecast the county's major economic growth. During the early history of the county, Somerset Plantation's 100,000 acre operation prefigured today's First Colony Farms. After the Civil War, the John L. Roper Lumber Company began acquiring property that by 1910 had exceeded 600,000 acres throughout all of Eastern North Carolina. The Roper interests encouraged farmers to settle in the area and grow crops on their cleared tracts, thus accelerating the development of the area's agriculture. Today, the Weyerhaeuser and Georgia-Pacific mills in Plymouth are the familiar evidence of this major trend's impact.

Future major impact upon the local economy will focus on agriculture. In the next ten years, forests in the Newland area in the center of the county (see existing land use map) are expected to be cleared and brought into agricultural production. This is based upon the county's accelerated land clearing activity by corporate "superfarms". With improved management of production, a modern generation of agri-industry can be a new and important part of the local economy's future.



However, until plenty of jobs are made from increased farm production, population growth will be minimal as young and old alike move elsewhere for work. Countering this out-migration is the in-migration of families looking for second homes along our shores. Although this in-migration is continuing, it will be small compared to the growth of the popular resorts in Nags Head, Kill Devil Hills, Kitty Hawk, and elsewhere.

Accessibility into and out of the county is a major constraint in its economic development as the principal arterials (U.S. 64 and N.C. 32 North to the Albemarle Sound Bridge) are seasonally congested with tourist traffic which compete with slower-moving farm vehicles and local traffic on these two lane roads. Since these seasonal traffic volumes are not continuous throughout the year, they fail to justify the costly road-widening projects necessary to ameliorate the congested conditions.

Historically, Roper and Creswell were settled as residential communities built around essential government services. Roper served as the original county seat until 1823 while Creswell grew from the establishment of a post office there in 1826. Over the years, however, local industry and trade moved to Plymouth and Edenton, having side effects of declining population, loss of business, and increasing dependence on county government within the two communities.

Today, these effects are apparent in the increasingly larger percentage of senior citizens living in town and in observable numbers of abandoned or dillapidated buildings. Yet, recent increases in school-aged children at the schools in both places

a return of young families to these smaller towns. Thus, instead of further decline in development, the towns face growth problems similar to those in larger communities such as maintaining basic services for the service-dependent and meeting rising costs for new capital improvements.

All these trends create land use issues. How does "super-farming" affect the water used for drinking and recreation? Should taxpayers or shoreline property owners pay the costs of bulkheading beach property lost to soil erosion? How far out can utilities be extended to growing areas before they become economically unfeasible? Land use goals in the Plan address these issues. These goals with maps of existing land use and future land classification spell out alternative proposals for how the issues can be solved.

#### Adequate Housing And Other Services .

Housing and related services show a similar need for improvement. An attitude survey completed in May, 1975, by the Washington County CAMA Steering Committee helped to determine the service needs of county residents. On a county-wide basis, the first housing priority is for more dwellings of all types. The tremendous increase in numbers of mobile homes points to this shortage of housing alternatives in the county. Housing is further limited by the majority of soil types in the county. These soils drain poorly and have high shrink-swell potential. Ironically the most suitable soil for urban development ~~is to be found along the~~ shores of Albemarle Sound where soil erosion is occurring due to the wind-wave action from Albemarle Sound.

Other related problems are the demand for shoreline property for second homes and the cost of providing services to these homes. In the future, the market for waterfront acreage should increase as the heavily populated areas of the Northeast and Piedmont begin to migrate towards this area in search of home sites near the water.

Priorities noted in the May survey call for improvement in the schools (84%), recreation (68%), increased job opportunities (66%), better shopping opportunities (65%), and improved health services (63%). (See Appendix for survey results).

The cost of providing services ties in directly with the need for economic growth. At present, both the town and the county lose many tax dollars to other counties as local residents take employment and carry on their shopping and recreation elsewhere. At a time when inflation increases government costs, this situation creates a heavy reliance on the property tax to pay for services.

#### Conservation of Productive Natural Resources

Aside from the difficulties of urban land uses, agricultural lands in Washington County face severe problems in accelerated flooding from the breach of watersheds, wide-spread wind erosion from large, barren areas; peat fires; and the pollution of public water supplies from dumping animal wastes. The breach of watershed problems stem from the nearly flat terrain in the eastern half of the county. In this area, drainage canals can be made to drain into either the Scuppernong River watershed or the Pantego Creek or Mackey's Creek watersheds because the flat terrain blurs the watershed boundary. Of concern of farmers along the

Scuppernong River is the increase in that river's floodplain due to the increased runoff from new tracts being brought into production which may need to drain into some other creek. The problem of soil erosion from the wind is unique in eastern North Carolina. This is especially true in the early spring when gusty crosswinds create duststorms across the broad, barren fields before vegetation begins to take root. The highly organic soils which are a characteristic of this area are also prone to catch fire from lightening. This condition cannot be controlled, and a matter of some concern among local farmers is the likelihood of greater fires stemming from the drainage of organic soils for farm production. The dumping of animal wastes is not a widespread practice; however, it is an issue wherever done because of the high degree of contaminated water reaching larger streams which serve public recreation needs.

#### Important Natural Environments

The county's shore areas along Albemarle Sound are the principal natural environment likely to have significant land compatibility problems through 1985. The potential problem is threefold: the shore areas are unprotected from sound erosion--an average of 3.5 feet lost each year--and the soil lost is from the three soil associations having the most favorable characteristics for urban land use. These are the Kalmia-Norfolk-Pactolus association, the Craven-Dunbar-Aycock association, and the Lakeland-Wagram-Ocilla association. These soils also only comprise nine percent of the soils in the county, and consequently their erosion

represents a permanent loss of an especially scarce resource.

Third, the demand for waterfront lots for second homes--a national trend--is likely to double the number of residences from an estimated 100 dwellings at present to 200 dwellings by 1985. This will increase shoreline development from a two mile strip now in sections inbetween crop lands to a four mile strip from Albemarle Beach to Leonard's Point. At present there are no rules, regulations, or standards to govern the location and types of improvements made in this area except for health department regulations concerning the spacing of wells and septic tanks. Consequently, the intense development of a narrow strand of shore will require subdivision regulations and zoning. This will insure that future land use be better protected than it is now by new controls that do not overlap existing laws.

Lake Phelps is another important natural environment which could be adversely affected by poor development practice. Unlike the Pungo National Wildlife Refuge, Lake Phelps has no large buffer of government-owned land surrounding it to limit development. The Lake is almost entirely in private hands except for an experimental farm operated by N.C. State University on the southeastern rim of the Lake near the county line. While development around the Lake's narrow buffer strip is limited to a few scattered homes and cottages, the remaining lots of record could be developed for greatly increased residential and commercial activity. Such activity could accelerate well and septic tank problems and contamination of the Lake from trash, debris and sewage.

The Scuppernong River at one time had been a spawning ground for anadromous fish, but now by local reports is virtually devoid of any fish. This condition is due to past logging and clearing activities which have silted-up this stream as well as the other streams in the county.

#### Protecting Cultural and Historic Resources

Lake Phelps as Pettigrew State Park is the principal cultural resource that could be adversely affected by overcrowding of commercial enterprises or residential subdivisions adjacent to its waters. The principal effects would be deteriorated water quality which would waste the lake's stock of sport fish and reduce its appeal for other forms of water-oriented recreation.

Other historic places in the county are St. David's Chapel, Rohobeth Church, Garrett's Island Home and Somerset Place. The protection of these places would only be limited by the shortage of funds necessary to maintain their restored appearance, since they are not surrounded by any incompatible existing land uses. In addition to the list of historic places mentioned, a stand of 300 year old Cypress trees along the 30 foot canal near Lake Phelps have local significance as historic vegetation associated with the Somerset Plantation.

## Alternatives Considered in the Development of Objectives, Policies and Standards

Alternatives considered in the preparation of this plan's objectives, policies, and standards were sharply restrained by geographic constraints, the slow growth of a small population, and a limited amount of community money to invest in more ambitious proposals. Consequently, the objectives in this plan express the goals of limited growth.

Future population growth will be low, between zero and 4 percent each decade, for the next 50 years. Therefore no large-scale programs or goals are in order by the county government. The processing nature of the area's two largest employers, Weyerhaeuser Corporation and First Colony Farms, are such that the expansion of their future operations will more likely be felt in production rather than in new employment. Consequently, some new services and facilities will be needed in anticipation of small increase in total population, but no "county-side" extensions of utilities is warranted in the foreseeable future. However, considerable attention is still necessary to highway and utility improvement plans and land use controls for the county's future needs.

From the onset, there was never any doubt that agriculture would remain the county's economic base. It was determined that more industry was needed in order to diversify the county's small manufacturing base in textiles and wood products. In this way a small amount of industry would provide revenues needed to balance the county's rising budget as an alternative to raising taxes. This "limited growth alternative" was expressed by local

residents as "keeping Washington County's growth apace with that in other counties" while limiting where this change for industry could occur. In this way, most of the county could be used and enjoyed "as it is". Reinforcing this limited growth attitude, the majority of county residents were unwilling to see their taxes raised to pay for new or improved services; or their county government expand to administer new programs or regulations.

None of the objectives have known environmental side effects that would adversely affect the county's land use. Besides these stated objectives are the land classifications which reflect limited growth in limited developed, transition, and community classes. Most of the county is in the "rural" classification to protect its most productive natural resources.



## Land Use Goals and Objectives

An important part of any plan is setting goals and objectives. Carefully prepared goals and objectives represent local residents' opinions and desires for their county's future growth. They are used in two ways. First, they describe the changes and improvements residents wanted, touching such topics as economic growth of the county, protection of natural resources, and improvement of local government. Secondly, they establish the framework for future policies, programs and land use regulations that help implement the Plan. Through this process land use changes can be guided by your local government instead of occurring in a haphazard manner.

The following list of community objectives describe short-run priorities--things which could be accomplished in the next two years.

Goal: To Provide for the Economic Needs of County Residents by Attracting Business and Industry to Washington County

(1) Establish an Economic Development Commission to encourage new industry in Washington County. Hire a full-time industrial developer as a staff for the Economic Development Commission.

(2) Recommend to the State Department of Transportation that U.S. Highway 64 be widened to four lanes across the county.

(3) Support the development of a community water system in the county.

(4) Propose a Wenona-to-Pea Ridge road to the State Department of Transportation.

(5) Work with the surrounding counties to petition the study of an interstate coastal highway.

Goal: To Protect Natural and Cultural Resources

- (1) Improve storm drainage on all creeks in the county to minimize local flooding.
- (2) Develop regulations to control the breach of watersheds and wind erosion county-wide.
- (3) Require bulkheading of shore property subject to erosion from Albemarle Sound.
- (4) Complete and publicize a county-wide detailed soil survey.
- (5) Regulate the dumping of animal wastes into public waters.
- (6) Petition the expansion of Pettigrew State Park at Lake Phelps.
- (7) Establish a system of neighborhood parks in the county.
- (8) Develop zoning and subdivision controls within Roper, Creswell, and the waterfront areas to provide for orderly development in these places.

Goal: To Improve the Level of Service of Local Government

- (1) Improve county police protection, especially against breaking and entering.
- (2) Develop a Zenith emergency phone number system to eliminate long distance calls to Plymouth from Creswell.
- (3) Establish a dog catcher and kennel for dog control in the county.
- (4) Recruit adults to expand supervised league sports in the county.
- (5) Expand efforts to publicize the Health Department's schedule of services to outlying areas.
- (6) Adopt a Minimum Housing Code.
- (7) Expand library services in the Creswell area.

Development Objectives for Roper

- (1) Improve storm drainage within the town limits.

(2) Study zoning and subdivision controls within the town and one-mile surrounding area.

(3) Support plans for a community sewer system and improvements to the existing water system.

(4) Support the demolition of unsafe buildings and the expansion of new housing in town.

(5) Petition the county for increased police patrol service at night.

Development Objectives for Creswell

(1) Development zoning and subdivision controls within the town and surrounding one-mile area.

(2) Review and update plans for a community sewer system in the town.

(3) Construct additional housing of all types in this area.

(4) Expand and publicize library and health care services in the Creswell area.

(5) Petition the county for increased police patrol service at night.

## Public Participation Summary

### Evaluation of our Public Participation Program

A. Does your land use planning depend on the local planner for direction or does citizen involvement offer direction?

The land use planning effort in Washington County has been a 50-50 effort, with the planner doing the legwork for the Steering Committee, and the Steering Committee making contacts with the public and guiding the planner towards what they want to see put in the county's plan.

B. Unique features of your public participation program that might be useful to other communities.

Ever since the Steering Committee began their public meetings, they have always rotated the place of the meeting to each of the towns in the county--Creswell, Roper, and Plymouth--in order to make public attendance as convenient as possible. The planner has also spoken to nearly every civic group and organization about the purpose of CAMA. Posters have been a big help in advertising meetings.

C. How did you develop your Public Participation Program?

The Steering Committee was created by a resolution from the County Commissioners in December, 1974. At their first organizational meeting, this group decided that regular open meetings and speaking engagements were the best way to get public participation. Regular press and radio features have been added to this, besides the use of an attitude survey that the committee distributed in May to approximately 3200 households.

D. Do you consider your public involvement a success? Please explain.

Judging by the attendance at Steering Committee meetings, you cannot say that public participation is a success in Washington County. Committee members have suggested to people that they come--but time and again they forget. It seems that there is only so much you can do to get people to attend, but attendance is picking up since posters have been used to advertise the meetings. Also word-of-mouth knowledge about CAMA is getting around as residents from different neighborhoods are showing up for the first time to learn more about it. Consequently, we feel that the public participation is going to show more and more improvement as time goes on. Residents have also commented after a meeting that they felt like their contribution had been listened to, and that they simply had not gone to a meeting where a decision had already been made and was just being announced.

E. List some key citizens in your public participation program:  
Name, phone numbers.

Douglas Davenport, (797-4395); Cleveland Paylor, (793-3622);  
Lewis Combs, (797-4486); Barry Harris (793-5823); Phil Gurkin,  
(793-2123); Gerald Allen, (793-3826); Ted Masters, (793-2771);  
Ken Sallenger, (797-4314); Billy Sexton, (794-2218); Dewitt  
Darden, (633-3141); T. R. Spruill, (793-2053); Bill Flowers,  
(793-4181); Guy Whitford, (793-2223); Ernestine Hannon, (793-5015).

## Steps Taken to Inform Local Citizens About the CAMA Program

### A. Newspaper

The following is a list of feature articles which have appeared in the local newspaper, The Roanoke Beacon. This list does not include simple announcements of regularly scheduled Steering Committee meetings. The readership of the Beacon is approximately 8500.

1. November 10, 1974, "Planner Appointed: Board Approves Land Use Planning"
2. January 22, 1975, "First Meeting Held by Land Use Group"
3. March 5, 1975, "Citizen Input Urged: Sexton Elected Chairman of Land Use Committee"
4. March 12, 1975, "Land Use Group Sets Roper Meet"
5. April 16, 1975, "Land Use Body Will Meet With Planning Boards"
6. May 7, 1975, "Preliminary Maps, Land Use Plan Eyed by Group"
7. May 14, 1975, "CAMA Meeting Slated for Creswell"
8. June 11, 1975, "Development Favored: Citizen Survey Results Announced By Planner"
9. June 18, 1975, "Area Management: What It Is and Why?"
10. June 18, 1975, "Roanotes, by Phil Gurkin" (editorial)
11. June 25, 1975, "Area Management: Land Use Planning"
12. July 2, 1975, "Area Management: Guarding Resources"
13. July 9, 1975, "Area Management: By We The People"
14. July 9, 1975, "Roanotes, by Phil Gurkin" (editorial)
15. August 27, 1975, (in progress) "Plan of Goals and Objectives Endorsed by Committee"

### B. Radio

Several Public Service Announcements have been aired over WPNC in Plymouth which broadcasts over a ten-county area, to both announce

meetings and encourage attendance. The Washington County Extension Agent has been very cooperative in drafting his own CAMA presentations for airing during the noon-time "Home and Farm Hour" and in conducting a talk show with the planner, July 7, 1975.

#### C. Television

Television has not been utilized as a medium because there is no local station within the county.

#### D. Bulletins, Leaflets, Newsletters

Since July, 60 posters have been distributed for every regular meeting of the Steering Committee throughout the areas where the meetings were to be held. This has resulted in a big boost in attendance at meetings by local residents.

#### E. Other Methods

The items above describe the techniques we have used to inform people about CAMA. What other method people use to get informed chiefly appears to be word-of-mouth.

### Opportunities for Citizens to Provide Input Into Land Use Planning

#### A. Personal Interviews

This technique has not been used to the extent of some other methods. One of the Steering Committee Members, Cleveland Paylor, took the planner around to interview and explain the purpose of CAMA to six of the principal businessmen in the Town of Plymouth during March and April. Another set of interviews were carried out among local business figures by WPNC station manager, Billy Benner in March to "brainstorm" CAMA's impact on the business community.

## B. Surveys

An attitudinal survey concerning land use goals and objectives was distributed in May through the schools to approximately 2900 households. There were also about 300 surveys distributed among the two senior classes at the high schools in Creswell and Plymouth. An additional 150 surveys were distributed to predominantly black, low-income heads of households by Mrs. Lilly James from the Washington County Economic Development Council. Finally the planner used the survey at his club meetings to poll his audience on land use problems which they were familiar with.

## C. Workshops and Public Meetings

The Steering Committee has had ten regular meetings since January, with an attendance total of 100. The Plymouth Planning Board had considered CAMA issues at eight of their gatherings and the County Planning Board has done the same at six meetings of theirs. By far the greatest number of meetings have been with clubs and organizations--a total of 569 people from 30 different groups. Of the 569, 184 or approximately 32% were women. About 150 or about 26% were over age 65. Other meetings planned in the future will be primarily among blacks, who only composed about 60 or 11% of the 569 addressed so far. Briefings to elected officials have also been done regularly: the county commissioners have received a total of ten reports to date, and the Plymouth Town Council has received a total of five. This difference is due to the Commissioners meeting twice a month while the Council meets only once.

## D. Other Opportunities

Public Service Announcements concerning CAMA have been aired over radio Station WPNC in Plymouth on at least eight occasions. Four



of these PSA's were prepared and sponsored on the county agricultural extension's "Home and Farm Hour" by their local staff. The planner aired the remainder.

#### Quality and Quantity of Feedback From the Public

##### A. Approximate percentage of community providing input

Of the 2900 surveys distributed through the schools, to heads of households, 830 or approximately 29% were returned. Amongst the 300 surveys distributed to high school seniors, 177 or about 59% were returned. Not included in these returns are the extra polls taken of 150 low-income blacks and the club surveys that the planner conducted. Thus in terms of the total population, only a small percentage or about 12% is estimated to have personally responded to a questionnaire on land use. The figure would be higher if you considered it on a "per household" basis.

##### B. Are all ethnic groups and social strata involved?

Yes, we would say that there has been a cross-section of both races and sexes responding to meetings and the survey--not just one group. While there have not been great numbers of people involved on a percentage basis, the proportion of whites involved has been no greater than the proportion of blacks throughout the county.

##### C. Are non-residents and non-voters involved?

Non-voters were polled through the attitude survey of graduating high school seniors from the county's high schools. Their attitudes concerning land use were much the same as their elders, with somewhat more emphasis on recreational needs. Non-resident property

owners represent almost negligible percentages of the total population because most owners of second-homes were identified as residents of Plymouth. Consequently, a separate survey was not made.

D. Future participation activities planned

Future activities are being planned in about the same number as they have in the past. There are now more suggestions from people attending our meetings on how to get better involvement. One of these has been to utilize polling places throughout the county for the location of neighborhood meetings on CAMA.

E. How are you reflecting the responses you are receiving into the land use plans?

The Steering Committee and residents have made their feelings known to the planner on proposals he had made that they did not agree with. Examples of this dealt with map changes on areas of environmental concern and policies concerning trailer regulations. These changes have all been incorporated into the county's plan to reflect what the people want.

This report was prepared by the Washington County Steering Committee and Planner, John McGarrity, and approved by Mayor William Flowers of Plymouth and County Manager Barry Harris, for the Chairman of the Board of County Commissioners, August 29, 1975.

#### IV. CONSTRAINTS

##### General Requirements

"Land Suitability. An analysis shall be made of the general suitability of the undeveloped lands within the planning area for development, with consideration given to the following factors:

- 1) Physical Limitations for Development;
- 2) Fragile Areas;
- 3) Areas with Resource Potential.

"These factors shall be analyzed, and where possible mapped, based upon the best information available.

"The major purpose of this analysis is to assist in preparing the land classification map. It is recognized, however, that some of the areas identified as a result of the land suitability analysis may be designated Areas of Environmental Concern. Any areas so designated as AECs shall be subject to the detailed requirements of Section III of these Guidelines in addition to the analysis carried out under this subsection.

- 1) Physical Limitations for Development - An identification shall be made of areas likely to have conditions making development costly or causing undesirable consequences if developed. The following areas shall be identified:

- (a) Hazard Areas, including the following:

- (1) Man-made (for example, airports, tank farms for the storage of flammable liquids, nuclear power plants);

- (2) Natural, including:

- (a) Ocean erodible areas

- (b) Estuarine erodible areas
- (c) Flood hazard areas
  - Riverine (floodplains and floodways)
  - Coastal floodplains
- (b) Areas with Soil Limitations, including the following:
  - (1) Areas presenting hazards for foundations;
  - (2) Shallow soils;
  - (3) Poorly drained soils;
  - (4) Areas with limitations for septic tanks including both:
    - (a) Areas that are generally characterized by soil limitations, but within which small pockets of favorable soils do exist; and
    - (b) Areas where soil limitations are common to most of the soils present.
- (c) Sources of Water Supply, including
  - (1) Groundwater recharge areas (bedrock and surficial);
  - (2) Public water supply watersheds;
  - (3) Wellfields.
- (d) Areas where the predominant slope exceeds twelve percent.
- (e) Fragile Areas-An identification shall be made of those areas which could easily be damaged or destroyed by inappropriate or poorly planned development.

The following shall be considered:

- (1) Coastal Wetlands
- (2) Sand Dunes along the Outer Banks
- (3) Ocean Beaches and Shorelines
- (4) Estuarine Waters
- (5) Public Trust Waters
- (6) Complex Natural Areas

- (7) Areas that Sustain Remnant Species
- (8) Areas Containing Unique Geologic Formations
- (9) Registered Natural Landmarks
- (10) Others not defined in Part III such as wooded swamps, prime wildlife habitats, scenic and prominent high points, etc.

(f) Areas with Resource Potential, including:

(1) Productive and unique agricultural lands, including:

- Prime agricultural soils
- Potentially valuable agricultural lands with moderate conservation efforts
- Other productive or unique agricultural lands.

(2) Potentially valuable mineral sites;

(3) Publicly owned forests, parks, fish and gamelands, and other non-intensive outdoor recreation lands;

(4) Privately owned wildlife sanctuaries.

(g) Capacity of Community Facilities-An identification shall be made of:

(1) Existing water and sewer service areas;

(2) The design capacity of the existing water treatment plant, sewage treatment plant, schools, and primary roads;

(3) The percent at which the existing water treatment plant, sewage treatment plant, schools, and primary roads are currently utilized."

- From CAMA "Guidelines"

## Land Potential

### Physical Limitations

Drainage. Physical limitation of undeveloped land in the county is that of storm drainage, particularly the forced breach of watershed boundaries to secure agricultural drainage. This condition as well as wind erosion of soil from large scale agricultural clearing operations are unique to the coastal plains topography of eastern North Carolina.

The major physical limitation with development land is the location of homes on sites that have impacted septic tanks ("Sandhills" area outside Plymouth and in the Town of Roper), inadequate storm drainage (Roper and Creswell) and inadequate protection from periodic flooding (Creswell). The beach communities along Albemarle Sound do not have major problems at present but only because their residents do not live there year-round to overtax the capacity of their shallow wells and on-site septic tank systems.

Hazard Areas. Other constraints on future urban development fall into two categories: natural hazard areas and areas with soil limitations. Hazard areas identified in Washington County are of two types: floodplains and shore erosion areas. Floodplain areas are the low, swampy areas adjacent to existing streams which flood typically after a heavy thundershower. Because these areas are so poorly drained, they are unsuitable for most kinds of construction or productive agricultural use. (See Figures 17, 18, and 19)

Areas with soil limitations are those with a high water table, shrink-swell potential, and slow permeability that make the cost of development range from moderate to exorbitant. Such areas cover most

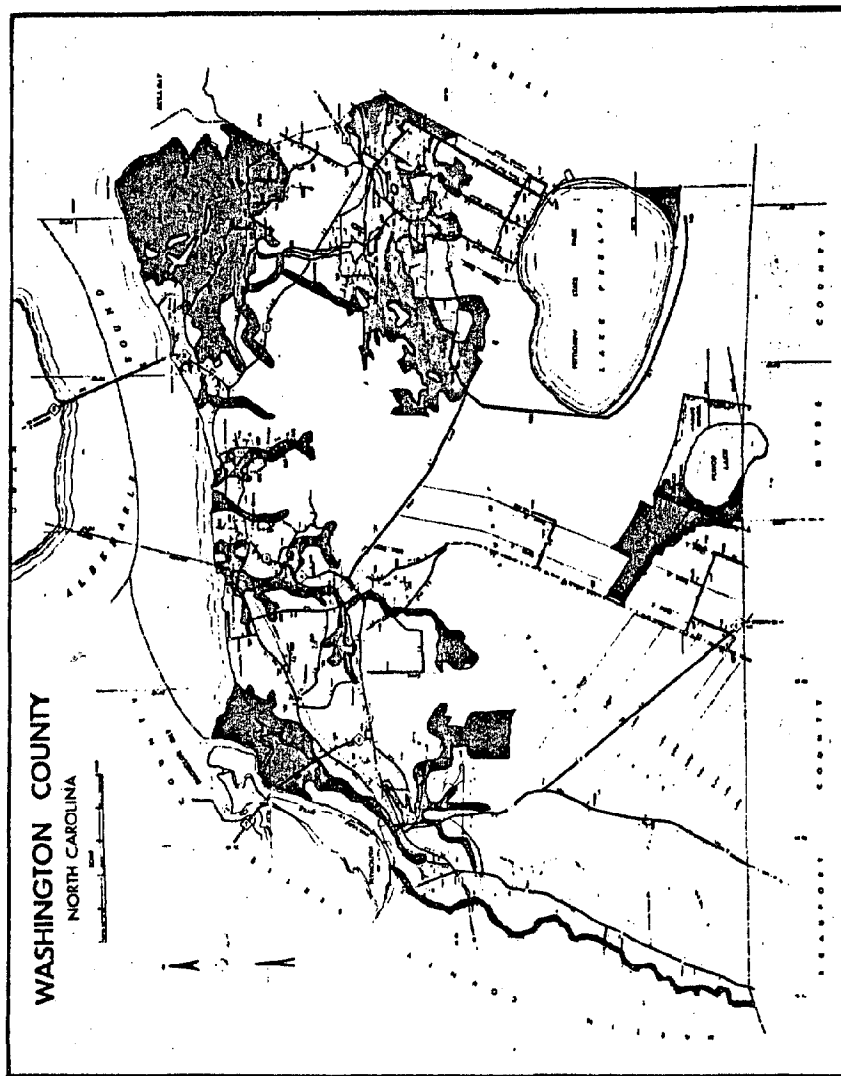


Figure 17  
MAP OF FLOOD PRONE AREAS

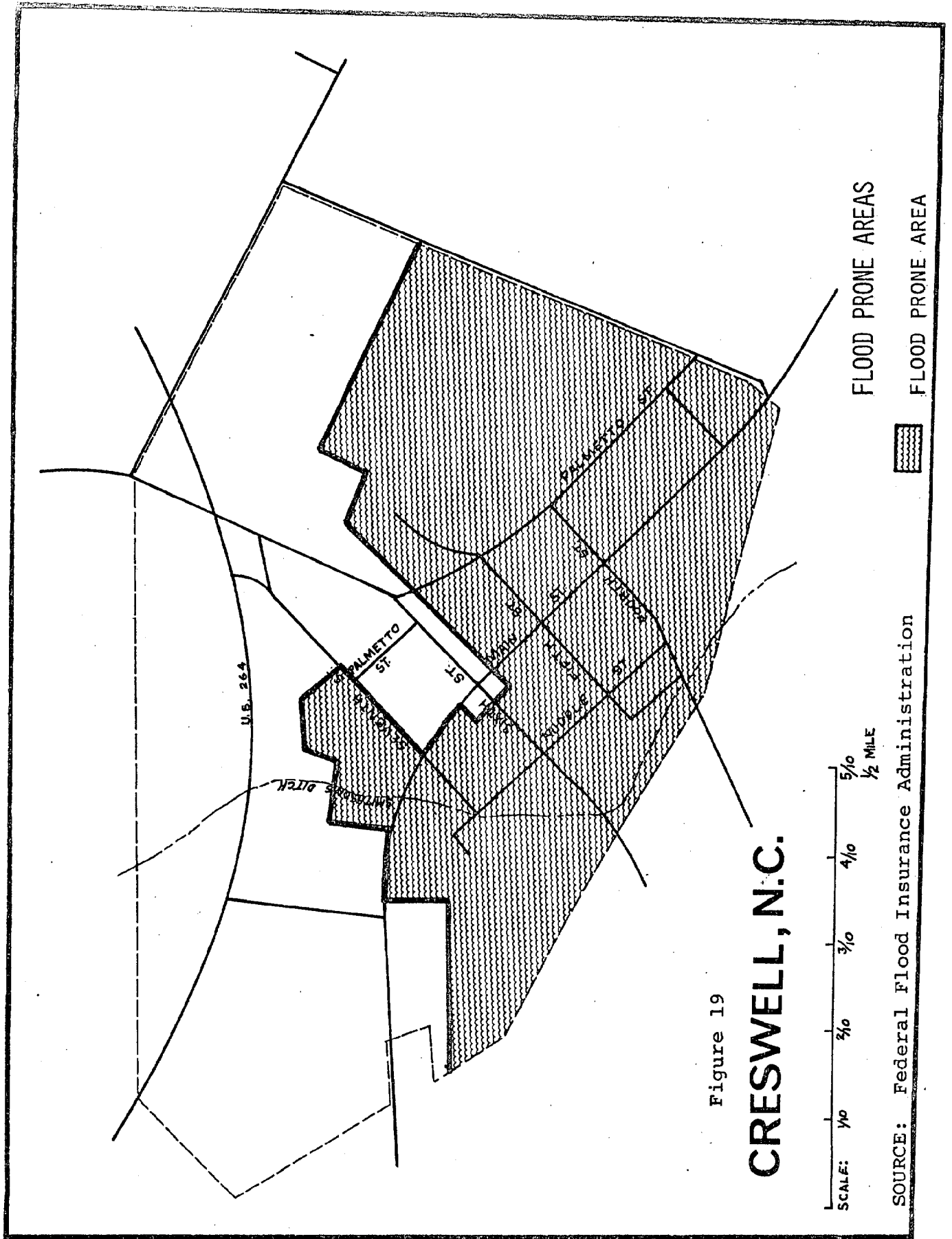
Flood Prone Areas

MAY, 1976

SOURCE: USGS







of Washington County, although these same areas have excellent agricultural potential. On Figure 20 these areas are shown by the numeric codes four through seven. The remaining areas one through three include soils of the Kalmia-Norfolk-Pactolus association which have the best characteristics for urban land use.

Sound erosion along Albemarle Sound is the second hazard area in Washington County. An average of 3.5 feet is lost each year from the shoreline, and the soil lost is from the three soil associations having the best footing and drainage characteristics for urban land use. These are the Kalmia-Norfolk-Pactolus association, the Craven-Dunbar-Aycock association, and the Lakeland-Wagram-Ocilla association. These soils also only comprise nine percent of the county, and consequently their erosion represents a permanent loss of some of the best soils in the county. Moreover, over a period of years the accuracy of the original survey is lost as the waterfront lot line recedes. Under the circumstances, uninformed homebuyers can purchase a lot sold to them by front footage and later find out that the total area is inadequate for installing an individual well and septic tank. This problem is compounded by the futility of a homebuyer bulkheading his lot if adjacent homeowners fail to bulkhead their lots. Then erosion occurs at the fill behind the edges of the bulkhead making further fill and bulkheading necessary.

Water Supply Areas. Washington County is currently well-endowed with a more than ample supply of water. Its surface waters fall within the Roanoke River basin and the Albemarle Sound. Private and municipal water supplies draw upon two aquifers underlying the county, flowing from wells from depths averaging between 10 and 200 ft.

# WASHINGTON COUNTY NORTH CAROLINA

- 1. KALMIA-NORFOLK-PACTOLIUS association:** Well drained and moderately well drained soils with gray fine sandy loam or loamy sand surface layers over friable sandy clay loam subsoils.
- 2. CRAVEN-DUNBAR-AYCOCK association:** Moderately well, somewhat poorly and well drained soils with gray or brownish gray fine sandy loam surface layers over firm to very firm clay loam or clay subsoils.
- 3. LAKELAND-WAGRAW-OCILLA association:** Well drained and somewhat poorly drained soils with gray loamy sand surface layers over sand or sandy clay loam subsoils.
- 4. BLADEN-MYATT-LENOIR association:** Poorly and somewhat poorly drained soils with gray or dark gray fine sandy loam surface layers over firm to very firm clay loam or clay subsoils.
- 5. BAYBORO-HYDE-BLADEN association:** Very poorly and poorly drained soils with black or dark gray loam or silty loam surface layers over firm to very firm clay loam or clay subsoils.
- 6. DARE-DOROVAN-PUNGO association:** Very poorly drained soils with thick to moderately thick organic surface layers over mineral sub-surface layers ranging from sand to clay. (Histosols)
- 7. PONZER-BELHAVEN-WASDA association:** Very poorly drained soils with moderately thick to thin organic surface layers and loamy subsurface layers.



SOIL INTERPRETATIONS  
GENERAL SOIL MAP  
WASHINGTON COUNTY, NORTH CAROLINA

Table 1

7. OF County *	SOIL ASSOCIATIONS	7. IN Assoc.	LIMITATIONS FOR					SUITABILITY FOR					
			DWELLINGS WITH		RECREATION		LIGHT INDUSTRIES	ROADS AND STREETS	GENERAL AGRICULTURE	WOODS	PASTURE		
			SEWERAGE SYSTEMS	SEPTIC TANK FILTER FIELDS	CAMP SITES	PICNIC AREAS						INTENSIVE PLAY AREAS	
12	1. KALHIA-NORFOLK-FACTOLUS												
		Kalhia	30%	Slight	Slight	Slight	Slight	Slight	Slight	Good	Good	Good	Good
		Norfolk	20%	Slight	Slight	Slight	Slight	Slight	Slight	Good	Good	Good	Good
6%	2. CRAVEN-DUNBAR-AYCOCK												
		Craven	35%	Mod. Perm.	Slight	Mod. Perm.	Mod. Perm.	Mod. Perm.	Mod. Perm.	Good	Good	Good	Good
		Dunbar	25%	Sev. Mt. Fl. Perm.	Mod. Mt. Fl.	Mod. Mt. Fl.	Mod. Mt. Fl.	Mod. Mt. Fl.	Mod. Mt. Fl.	Good	Good	Good	Good
2%	3. LAKELAND-JACRAM-OCILLA												
		Avcock	20%	Slight	Slight	Slight	Slight	Slight	Slight	Good	Good	Good	Good
		Lakeland	30%	Slight LFC	Sev. Texture	Sev. Texture	Sev. Texture	Mod. AS	Slight	Fair	Good	Fair	Fair
25%	4. BLADEN-MYATT-LENOIR												
		Wagram	25%	Slight	Mod. Texture	Mod. Texture	Sev. Texture	Mod. Texture	Slight	Good	Good	Good	Good
		Ocilla	25%	Mod. Mt. Fl.	Mod. Mt.	Mod. Mt.	Mod. Mt.	Mod. Mt. Fl.	Good	Fair	Good	Good	Good
23%	5. BAYBORO-HYDE-BLADEN												
		Bladen	35%	Sev. Mt. Fl. Perm.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Poor	Good	Good	Good
		Myatt	30%	Sev. Mt. Fl. Perm.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Poor	Good	Good	Good
12%	6. DARE-DOROVAN-PUNGO												
		Lenoir	20%	Sev. Mt. Fl. Perm.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Good	Good	Good	Good
		Bayboro	35%	Sev. Mt. Fl. Perm.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Good	Good	Good	Good
20%	7. PONZER-BELHAVEN-WASDA												
		Hyde	30%	Sev. Mt. Fl. Perm.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Good	Good	Good	Good
		Bladen	25%	Sev. Mt. Fl. Perm.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Good	Good	Good	Good
26%	8. DARE-DOROVAN-PUNGO												
		Dare	40%	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Poor	Poor	Poor	Poor
		Pungo	30%	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Poor	Poor	Poor	Poor
26%	9. PONZER-BELHAVEN-WASDA												
		Ponzer	40%	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Poor	Good	Good	Good
		Belhaven	30%	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Poor	Fair	Good	Fair
26%	10. PONZER-BELHAVEN-WASDA												
		Wasda	35%	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Poor	Good	Good	Good
		Belhaven	30%	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Sev. Mt. Fl.	Poor	Good	Good	Good

DEFINITIONS OF SOIL LIMITATIONS

Soils have properties favorable for the rated use. Limitations are so minor that they can easily be overcome. Good performance and low maintenance can be expected from these soils.

Soils have properties moderately favorable for the rated use. Limitations can be overcome or modified with planning, design, or special maintenance.

Soils have one or more properties unfavorable for the rated use. Limitations are difficult and costly to modify or overcome, requiring major soil reclamation, special design, or intense maintenance.

Abbreviations for Limiting Factors:

FL - Flood Hazard  
WT - Water Table  
Sh-Sw - Shrink-swell Potential  
Cor - Corrosion Potential

Perm - Permeability  
BS - Bearing Strength  
TSC - Traffic Supporting Capacity  
LFC - Low Filter Capacity

Slt. - Slight; Mod. - Moderate; Sev. - Severe

Abbreviations for degree of limitations:

1/ Structure whose footings are in subsoil.  
2/ Refers to roads and streets that have subsoil for base.  
3/ Peanuts, tobacco, truck.  
4/ Corn, soybean, small grain.

The suitability of surface waters for various uses has been categorized in North Carolina according to a system of water quality classifications, which rank order fresh and tidal salt waters according to their levels of pollution. Higher classification, which denotes, for example, water for food processing can include lower quality uses such as waste disposal, but not without degrading the higher classification to a lower standard. Lower water quality classifications can only be raised to higher classifications through control and treatment of effluents. These nine classifications are depicted in the form of a pyramid and are described in the following table. (See Figure 21a and b)

The following tables reveal that there are only four classifications for surface waters out of a possible nine in Washington County. Of these four, Class SB has the highest water quality. These Class SB waters designate all of Bull's Bay.

Ground water is the exclusive source of water for municipalities, farms and domestic use in the county. Even though this water supply is abundant, groundwater in this area is usually hard and in need of treatment before consumption. The two aquifers underlying the county are the Yorktown aquifer lying in the eastern two-thirds of the county and the Castle Hayne aquifer lying in the western third of the county. Yields on domestic wells vary from less than ten gallons of water per minute to more than 150 gallons per minute while municipal wells--the largest users--pump between 200 and 300 gallons per minute. These rates vary due to the location and depth of the well and its manner of operation.

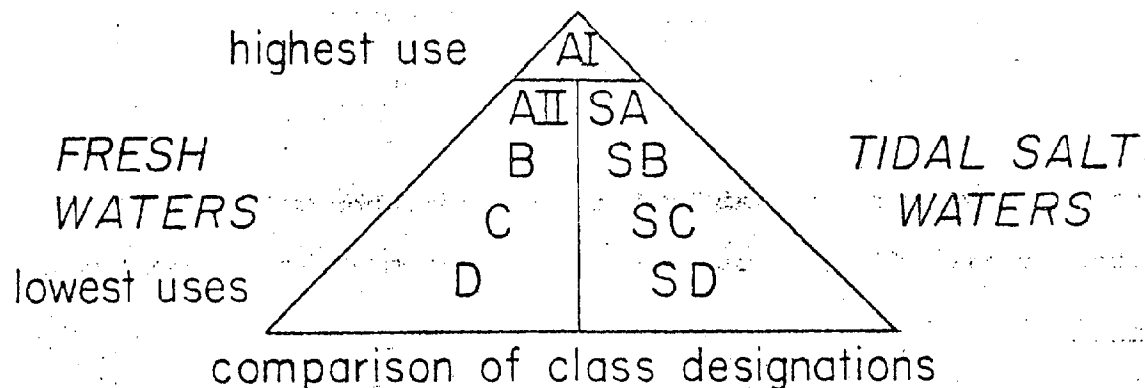
FIGURE 21.a.  
STREAM CLASSIFICATIONS

Name of Stream	Description	Class	Classification	
			Date	Index No.
ROANOKE RIVER	From 18 mile market at Jamesville to Albemarle Sound (Batchelor Bay)	C Sw	9/1/57	23-(53)
Broad Creek	From source to Roanoke River	C Sw	9/1/57	23-54
Welch Creek	From source to Main Line SCL Railroad Bridge	C Sw	7/1/73	23-55-(1)
Welch Creek	From Main Line SCL Railroad Bridge to Roanoke River	D Sw	4/1/71	23-55-(2)
Conaby Creek	From source to Roanoke River	C Sw	9/1/57	23-56
ALBEMARLE SOUND (Batchelor Bay)	West of a line extending from a point of land on the southside of the mouth of Black Walnut Swamp in a southerly direction to a point of land on the east side of the mouth of Roanoke River	B Sw	9/1/74	24
Eastmost River	From Roanoke River to N.C. Hwy. 45	C Sw	9/1/57	24-1-(1)
Eastmost River	From N.C. Hwy. 45, including cutoff between Eastmost River and Middle River to Albemarle Sound	B Sw	9/1/74	24-1-(2)
Kendrick Creek (Mackeys Creek)	From source to U.S. Hwy. 64 at Roper	D Sw	4/1/61	30-9-(1)
Kendrick Creek (Mackeys Creek)	From U.S. Hwy. 64 at Roper to Albemarle Sound	SC	7/1/73	30-9-(2)
Beaver Dam Branch	From source to Kendrick Creek	C Sw	9/1/74	30-9-3
Skinners Canal	From source to Beaver Dam Branch	C Sw	9/1/74	30-9-3-1
Main Canal	From source to Kendrick Creek	C Sw	9/1/74	30-9-4
Canal B	From source to Main Canal	C Sw	9/1/74	30-9-4-1
Canal A	From source to Main Canal	C Sw	9/1/74	30-9-4-2
Lewis Canal	From source to Main Canal	C Sw	9/1/74	30-9-4-3

Bakers Swamp	From source to Kendrick Creek	C Sw	9/1/74	30-9-5
Pleasant Grove Creek	From source to Albe- marle Sound	C Sw	9/1/74	30-10
Chapel Swamp	From source to Albe- marle Sound	C Sw	9/1/74	30-11
Newberry Ditch	From source to Albe- marle Sound	C Sw	9/1/74	30-12
Sleights Creek	From source to Albe- marle Sound	C Sw	9/1/74	30-13
Bull Bay	Entire Bay	SB	7/1/73	30-14
Bull Creek	From source to Bull Bay	C Sw	9/1/74	30-14-1
Deep Creek	From source to Bull Bay	C Sw	7/1/73	30-14-2
Bunton Creek	From source to Bull Bay	C Sw	7/1/73	30-14-3
Scuppernong River	From source to mouth of Riders Creek (First Creek)	C Sw	4/1/61	30-14-4-(
Moccasin Canal and connecting canals	From sources to Scupper- nong River	C Sw	9/1/74	30-14-4-2
Western Canal and connecting canals	From sources to Scupper- nong River	C Sw	9/1/74	30-14-4-3
Ten Foot Canal	From source to Western Canal	C Sw	9/1/74	30-14-4-3- 1
Wine Foot Canal	From source to Ten Foot Canal	C Sw	9/1/74	30-14-4-3- 1-1
Mountain Canal and connecting canals	From sources to Scupper- nong River	C Sw	9/1/74	30-14-4-4
Thirty Foot Canal	From source to Scupper- nong River	C Sw	9/1/74	30-14-4-5
Old Canal	From source to Scupper- nong River	C Sw	9/1/74	30-14-4-6
Phelps Lake	Entire Lake	C Sw	4/1/61	30-14-4-6- 1

Figure 21b

CLASS DESIGNATIONS FOR WATER QUALITY STANDARDS



Fresh Waters

- Class A-I - Suitable as source of water supply for drinking, culinary, or food processing purposes after treatment by approved disinfection only, and any other usage requiring waters of lower quality.
- Class A-II - Suitable as a source of water supply for drinking, culinary or food processing purposes after approved treatment equal coagulation, sedimentation, filtration, and disinfection, etc. and any other usage requiring waters of lower quality.
- Class B - Suitable for outdoor bathing and any other usage requiring waters of lower quality.
- Class C - Suitable for fishing and fish propagation, and any other usage requiring waters of lower quality.
- Class D - Suitable for agriculture and for industrial cooling and process water after treatment by the user as may be required under each particular circumstance.

Tidal Salt Waters

- Class SA - Suitable for shellfishing for market purposes and any other usage requiring water of lower quality.
- Class SB - Suitable for bathing and any other usage except shellfishing for market purposes.
- Class SC - Suitable for fishing and any other usage except bathing and shellfishing for market purposes.
- Class SD - Suitable for navigation and any other usage except fishing, bathing, and shellfishing for market purposes.

Source: NCDNER, Office of Water and Air Resources.



Of concern to local residents is the impact upon their ground-water supplies from large industries and farming operations. Reports have shown that these concerns are not justified, at least at the present time. The Weyerhaeuser papermill in Plymouth draws upon surface waters from the Roanoke River and consequently does not have an impact on that area's groundwater reserves.

A USGS report concluded that the farming activities at First Colony Farms would not appreciably lower the watertable in Washington County, based upon data known at this time. The same report indicated however, that phosphate mining operations in Beaufort County could affect groundwater reserves in Washington County, but that precise effects could not be well-established without further observation.

Of more general concern is the height of the water table in relation to the use of septic tanks for on-site sewage disposal. Since many areas in the county come within two feet of the water table, successful percolation tests may demand that no rainy weather occur during any recent period.\* The lack of sufficient travel for septic tank effluents through the soil thus poses substantial trouble because waste waters receive only partial treatment. In addition, the combined effects of poor drainage and a high water table can occasionally cause serious malfunction to tank and drain systems from effluents backing up instead of flushing out.

Steep Slopes. No lands in the county exceed twelve percent slope except where highway cuts and fills are made and along portions

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\*"Successful" percolation tests can also mislead developers and buyers into thinking that a lot is exempt from septic tank problems. A lot which "perks" in a dry season may fail together during a rainy season. Inquiries among local residents are often necessary to determine if septic tanks cannot work during three or four months of the year.

of the shore along Albemarle Sound west of Leonard's Point. At this location, sound erosion has created some sharp cliffs rising to nearly seven feet in height.

#### Fragile Areas

In general, few fragile land areas exist in Washington County that would be subject to damage or destruction. Furthermore, no remnant species, unique geologic formations, registered natural landmarks or archeologic sites will be found here. However, the county's surface waters comprise the largest group of fragile areas and stand to receive the most damage from unplanned development.

Public Trust Waters. By definition, these waters are described as such:

A. "Description: All waters of the Atlantic Ocean and the lands thereunder from the mean high water mark to the seaward limit of State jurisdiction; all natural bodies of water subject to measurable lunar tides and lands thereunder to the mean high water mark; all navigable natural bodies of water and lands thereunder to the mean high water mark or ordinary high water mark as the case may be, except privately owned lakes to which the public has no right of access; all waters in artificially created bodies of water in which exists significant public fishing resources or other public resources, which are accessible to the public by navigation from bodies of water in which the public has rights of navigation; all waters in artificially created bodies of water in which the public has acquired rights by prescription, custom, usage, dedication or any other means. In determining whether the public has acquired rights in artificially created bodies of water, the following factors shall be considered:

(i) The use of the body of water by the public; (ii) the length of time the public has used the area; (iii) the value of public resources in the body of water; (iv) whether the public resources in the body of water are mobile to the extent that they can move into natural bodies of water; (v) whether the creation of the artificial body of water required permission from the State; and (vi) the value of the body of water to the public for navigation from one public area to another public area."

--CAMA Guidelines pp. 64-65.

In Washington County these waters are those of Bull's Bay, Albemarle Sound, the Scuppernong River, Lake Phelps, Pungo Lake, Welch's Creek, Conaby Creek, and Mackey's Creek. They are among the listing of streams classified for water quality on page 65. The Scuppernong River, Welch's Creek, Conaby Creek and Mackey's Creek, have been damaged for fishing and navigation through poor land clearing practice. All of these streams exhibit poor water flow from siltation which has settled in the streams to block small boats and enlarge the floodplains. The finer silt remains suspended in these waters killing fish habitats and diminishing waterfowl populations. Specific effects of development in Washington County upon the Albemarle Sound, the Roanoke River and Bull's Bay are inconclusive due to lack of data; however, recent reports have recommended that new studies be undertaken to determine such effects as they affect water quality. (From Hydrology of the Albemarle-Pamlico Region by Ralph C. Heath, U. S. Geological Survey.)

Pungo Lake is completely buffered by the federal government's Pungo National Wildlife Refuge and consequently has little adverse

impact from poor land development. Lake Phelps, however, has no such buffer and has been subject to past and present abuse. During the 1920's, active efforts were made to try to drain the lake to increase building sites. Today, the lake is spoiled by floating trash and silt which accumulate on its rim. Although Lake Phelps is the major portion of Pettigrew State Park, the lake's boundary and the boundary for the park have never been established, thus aggravating water quality enforcement and maintenance problems.

Estuarine Waters. By definition these waters are: defined in G.S. 113-229 (n) (2) as, "all the water of the Atlantic Ocean within the boundary of North Carolina and all the waters of the bays, sounds, rivers, and tributaries thereto seaward of the dividing line between coastal fishing waters and inland fishing waters, as set forth in an agreement adopted by the Wildlife Resources Commission and the Department of Conservation and Development filed with the Secretary of State entitled 'Boundary Lines, North Carolina Commercial Fishing-Inland Fishing Waters, revised March 1, 1965," or as it may be subsequently revised by the Legislature.

In Washington County, estuarine waters are the Albemarle Sound and Bull's Bay. Their principal value is for recreation, particularly sport fishing.

Bluegill, white perch and other panfishes such as the war-mouth and flier comprise over 70 percent of the catch. Catfish, crappie and redbreast are next in fisherman-take. Largemouth bass, although it ranks first in preference as a game fish, comprises only about four percent of the catch, while stripped

bass makes up only about three percent. (Data from the N. C. Wildlife Commission)

Coastal Wetlands. By definition, coastal wetlands are "any salt marsh or other marsh subject to regular or occasional flooding by tides, including wind tides (whether or not the tide waters reach the marshland areas through natural or artificial watercourses), provided this shall not include hurricane or tropical storm tides. Salt Marshland or other marsh shall be those areas upon which grow some, but not necessarily all, of the following salt marsh and marsh plant species: Smooth or Salt Water Cordgrass (Spartina alterniflora); Black Needlerush (Juncus roemerianus); Glasswort (Salicornia spp.); Salt Grass (Distichlis Spicata); Sea Lavender (Limonium spp.); Bulrush (Scirpus spp.); Saw Grass (Cladium Jamaicense); Cat-Tail (Typha spp.); Salt-Meadow Grass (Spartina Patens); and Salt Reed Grass (Spartina cynosuroides)." Included in this statutory definition of wetlands is "such contiguous land as the Secretary of NER reasonably deems necessary to affect by any such order in carrying out the purposes of this Section." (G.S. 113-230 (a))

In Washington County there are two small tracts of coastal wetlands. One is located at the mouth of Deep Creek where it empties into Bull's Bay. This area is completely surrounded by swamp and is inaccessible by any means of transportation except boat. Little is known about the species of wildlife at this site. Because of the extremely poor drainage and remoteness of this area it is very unlikely that any adjoining land use will pose serious damage in the foreseeable future. The other area is located

slightly east of Albemarle Beach. Greater impact is expected here because the adjoining land area is being surveyed for a subdivision.

Complex Natural Areas. By definition are "lands that support native plant and animal communities and provide habitat conditions or characteristics that have remained essentially unchanged by human activity. Such areas are surrounded by landscapes that have been modified but that do not drastically alter the conditions within the natural areas or their scientific or educational value.

In Washington County, complex natural areas include the federal government's Pungo National Wildlife Refuge. Its chief value is that of a sanctuary for a variety of game birds and animals, particularly deer, fox, wildcat, quail, squirrel, rabbit, dove, woodcock, snipe, raccoon, opossum, muskrat, raccoon, mink, otter, Canadian geese, wood duck and other breeds of waterfowl. The Refuge also provides sanctuary for small numbers of black bear which still inhabit the area. (Data from N.C. Wildlife Commission)

Historic Sites. By definition historic places are "listed or have been approved for listing by the North Carolina Historical Commission, in the National Register of Historic Places pursuant to the National Historic Preservation Act of 1966; historical, archaeological, and other places and properties owned, managed or assisted by the State of North Carolina pursuant to G.S. 121; and properties or areas that are designated by the Secretary of the Interior as National Historic Landmarks.

The only historic site in Washington County meeting the criteria of the National Register is Somerset Place on the shores

of Lake Phelps. This mansion was once part of the most prominent plantations in the region, and the earliest forerunner of today's large corporate farms. At the present time it is completely surrounded on its land sides by large farms. No adverse impact is likely to occur at the site unless tourist attractions and residential subdivisions begin to occur in the vicinity of Lake Phelps. Other historic sites of local interest which are not on the National Register are St. David's Chapel in Creswell, Rehoboth Church near Skinnersville, Garrett's Island Home near Plymouth, Lee's Mill in Roper, and Morattuck Church near Playmouth. The county also has some striking historic vegetation in a remnant of ancient cypress trees adjacent to the 30-foot canal near Somerset Place. These trees, by local accounts, were planted by the slaves of Somerset Place in the 1700's to demarcate the boundary lines of that property. They were thought to have originally extended all the way to the Scuppernong River nearly five miles away, but over the years were progressively cut for their timber. The remaining stand of trees is about one-half mile in length.

#### Areas with Resource Potential

Productive Agricultural Lands. A 1974 land utilization survey for Washington County reported nearly 70 percent of all land in the county devoted to agriculture, including commercial forestry. In the map of existing land use, row cropland can be found in all parts of the county. However, the largest tracts in production lie in the eastern two thirds of the county, occupied in large part by First Colony Farms. Soils in this area are highly organic and until recently, virtually undrainable. (See Figure 20) However,

corporate farming practice has made these areas productive, particularly for corn and hog raising which have doubled and tripled, respectively, in production since 1970. (See Figures 6 and 15)

Commercial forests for pulpwood and board lumbers are to be found in the western, northeastern, and central parts of the county. Its shipping value is third behind harvested crop, and hog and beef sales. Forest areas in the foreseeable future are likely to remain intact in the western and northeastern portions of the county because the swampy lands there are not economically feasible to drain. Some encroachment of forest tracts in the Newland Road areas of the county are possible by 1985, however this conversion would be for additional cropland, not non-farm activity.

Thus, throughout all of Washington County agricultural lands are likely to remain productive resources, reinforced as they have been with better yields, higher sales and improved management techniques.

#### Potentially Valuable Mineral Sites

The major mineral resource in Washington County are its forests which were described in the preceding section. The full value of this particular resource has not been reached because the principal processing facility in the area, Weyerhaeuser Corporation's papermill, is located directly across the county line in Martin County.

No other major mineral resources are known to exist in the county other than sand which the State Department of Transportation extracts from a pit near the Albemarle Sound Bridge. A 1971 Overall Economic Development Plan for the county cites some Titanium minerals



and Ilmenite sands that may be of commercial interest, but to-date these resources have not been exploited. Lack of capital and poor market conditions are contributing factors to this situation.

Publically-Owned Recreation Lands. The Pungo National Wildlife Refuge and Pettigrew State Park are the two major public recreation lands in Washington County. Both areas abound in fish and wildlife, described in the "Fragile Areas" Section of Part IV. The Pungo Wildlife Refuge covers approximately seven and one-half square miles in Washington County and continues into Hyde County. The largest portion of Pettigrew State Park consists of Lake Phelps, covering about 23 square miles in Washington County, and extending partially into Tyrrell County. Located on the northern rim of Lake Phelps is the historic Somerset Place, described earlier in Part IV under "Historic Places."

The appraisal of recreation potential for Washington County indicates that there are opportunities for development of recreation enterprises both public and private. Eleven kinds of outdoor recreation were appraised as having potential for development. Winter sports were considered to have no potential because of climate.

The types of recreation having potential for development in Washington County are summarized as follows:

Vacation cabins, cottages and homesites have medium potential for future development.

Picnic and field sports have medium potential for future development.

Camping grounds for vacation campers have medium potential and transient campgrounds low potential for future development.

Natural, scenic, and historic areas have medium potential for development.

Vacation farms have medium potential for development with the potential expected to decrease.

Hunting areas for small game and waterfowl have high potential, big game areas have medium potential because of limited habitat resources.

Fishing waters have medium potential for future development.

Water sports areas have a medium potential for development.

Shooting preserves have a low potential for development.

Riding stables have a low potential for development.

Golf courses have a low potential for development.

(Source: See Outdoor Recreation Potential for Washington County)

Additional public gamelands on private lands in Washington County are shown in Figure 22. This information is taken from the N.C. Wildlife Resources Commission's 1975-76 Hunting and Fishing Maps. Primary game species to be found at these locations include deer, quail, rabbit, squirrel, raccoon, dove, and waterfowl.

Privately-Owned Wildlife Sanctuaries. The only privately owned wildlife sanctuary in Washington County is a bear sanctuary in the Bull Bay Gameland which is owned by the Albemarle Paper Company. (See Figure 22).

#### Capacity of Community Facilities

##### Existing Water and Sewer Services Areas

Plymouth and Roper have water service throughout all of their incorporated limits. The Plymouth water service area extends outside the city limits across U.S. Highway 64 to the Plymouth Garment Co. The Town of Creswell is presently laying a water system to serve its incorporated areas.

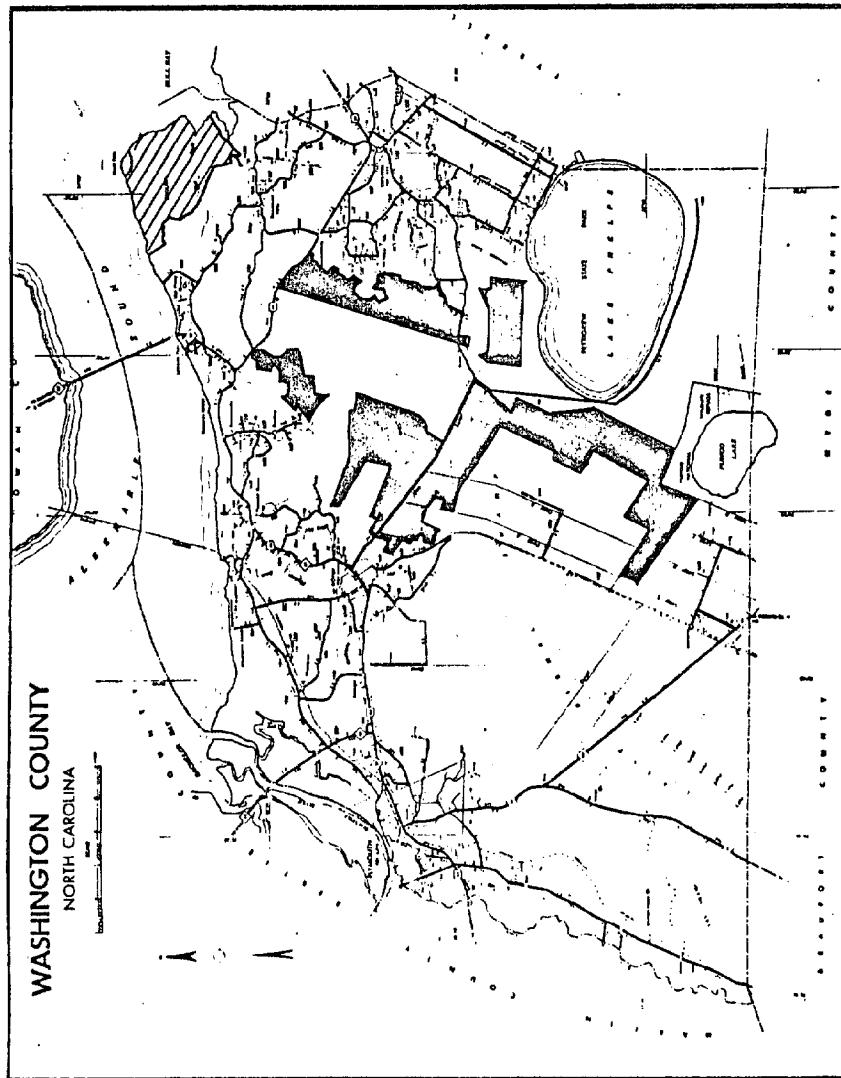


Figure 22

PRIVATE GAME LANDS

BEAR SANCTUARY  
GAME LANDS

SOURCE: N. C. Wildlife Resources  
Commission, 1975-76  
Hunting and Fishing Maps

The only other community water supplies are small, privately operated systems serving several isolated mobile home parks in the vicinity of Plymouth. Only the Town of Plymouth has a sewer system and it only serves the incorporated portion of town, except for short extensions across U.S. Highway 64 to the Plymouth Garment Company, and the Washington County Hospital.

#### Design Capacities and Utilization of Existing Community Facilities.

Since the county has neither a water nor a sewer system of its own, the only existing systems to describe are in the Roper and Creswell areas. (The Plymouth system is described in the Plymouth Land Use Plan.)

The Roper water system is being utilized at 41 percent of its capacity with a flow rate of 150 gallons per minute from a single well. Present plans for improving the Roper system include the addition of a filter to remove impurities and a second well to increase the rate of flow.

Creswell is currently laying a new community water system to be constructed around a 100,000 gallon overhead storage tank. There are no utilization figures to report as yet, however, the system has been designed to satisfy the estimated current needs of that community.

Fire protection is provided by five volunteer fire departments within a four mile radius of each other for all areas of the county except the Wenona area.

Garbage collection is provided in Plymouth, Roper, and Creswell. The county provides bulk containers at scattered site locations.

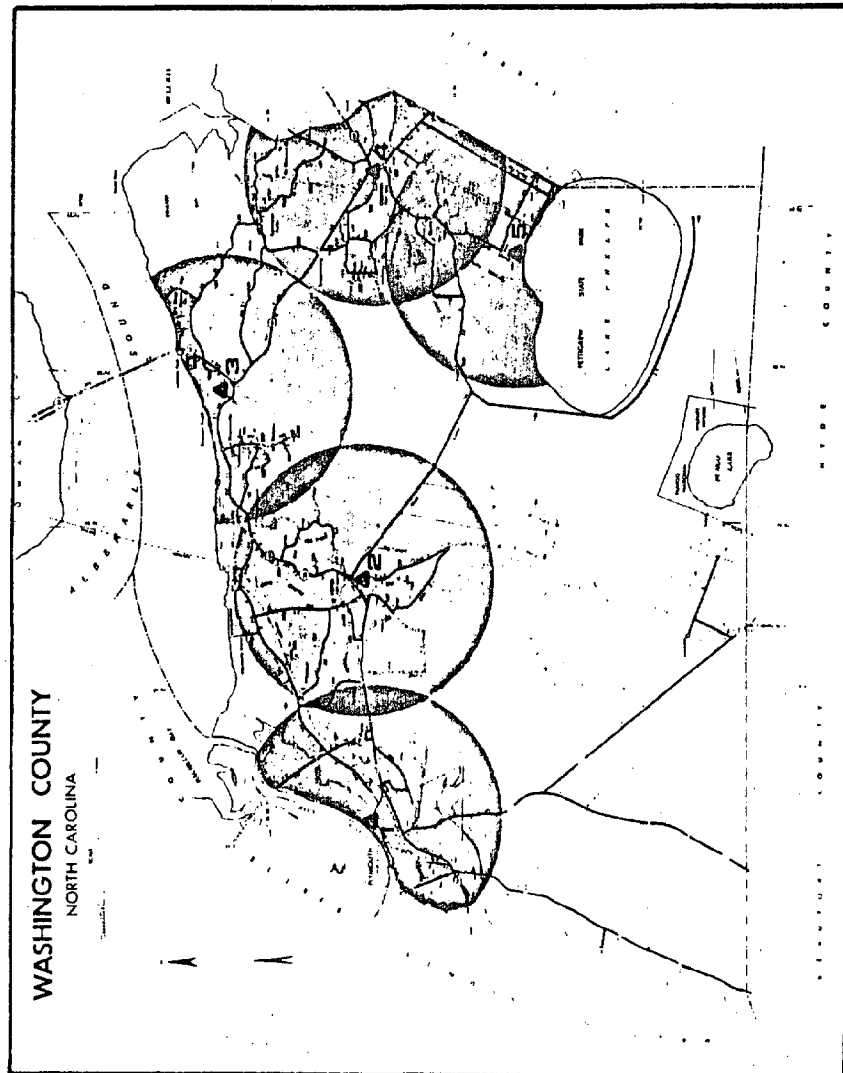


Figure 23

# VOLUNTEER FIRE DEPARTMENTS AND SERVICE AREAS

- ▲ LOCATION OF VOLUNTEER FIRE DEPARTMENTS
- 1. Plymouth Volunteer Fire Department
- 2. Roper Volunteer Fire Department
- 3. Skimmersville Volunteer Fire Department
- 4. Creswell Volunteer Fire Department
- 5. Lake Phelps Volunteer Fire Department

● FIRE DEPARTMENT SERVICE AREA  
(4 Mile Radius)

SOURCE: Washington County  
Manager's Office

All refuse is transported to a 12 acre landfill located off N.C. 1300 (Mackey's Road). This fill is privately operated according to a trench method and is adequate for all present use.

Existing school facilities are generally overcrowded and antiquated. A list and description of existing school facilities and their adequacy is described in Figure 24.

FIGURE 24

## FACILITY DATA FOR WASHINGTON COUNTY

SCHOOL AND GRADES	ACRES	YEAR BUILT	ADDI- TIONS	PROFES- SIONAL PERSON- NEL	CLASSRMS OR TEACHING STATIONS	MO- BILE UNITS	CA- PAC- ITY*	ADEQUACY OF SPECIAL FACILITIES							MEMBER- SHIP	
								ADM. SPACE	MEDIA OR LIBRARY	MUSIC	ART	AUDI- TOR- IUM	GYM- TOR- IUM	GYM- NA- SIUM		CAFE- TE- RIA
Creswell Elem. (4-7)	16.1	1948	—	10	7	1	175	I	I				A		I	242
Creswell High (1-3, 8-12)	14.2	1939	1938, 53, 59	32	22	9	520	I	I					A	I	585
Fourth St. Elem. (1-2)	3.6	1930	1955	14	16	1	400	I	I				A		A	318
Plymouth High (9-12)	21.5	1958	1960, 68, 70	48	35	11	790	A	A	A			A		I	877
Roper Elem. (1-3)	7.2	1924	1942, 59	14	13	2	325	I	I			A		A	I	287
Washington St. Elem. (3-6)	9.1	1930	1943 48, 52	32	29	1	725	I	I			A			I	690
Washington Union Elem. (4-8)	21.2	1953	1945, 60	36	32	1	720	I	I				A		A	766

\*Permanent facilities only

The capacity for elementary pupils was computed on the basis of 25 pupils per classroom and the capacity for secondary pupils was computed on the basis of 25 pupils and 90 percent utilization.

CODE: A - Adequate; I - Inadequate

SOURCE: Washington County School Survey, 1973-1974.

## V. ESTIMATED DEMAND

### General Requirements

"A population estimate for the following ten years shall be made and utilized as the basis for determining land and facilities demand and for classifying land areas. Ten year population projections will be provided by the Department of Administration for use in making population estimates. Projections will be provided for counties and cities and towns having a population greater than 2500. Accurate projections for those areas with a population of less than 2500 are not available and must be developed by the local planning unit.

"The projections provided by the Department of Administration are based on prior trends with annual updates. The local government may wish to use these trend projections as their population estimates or to modify them to include additional factors such as:

1. Seasonal Population;
2. Local objectives concerning growth;
3. Foreseeable social and economic change."

- from CAMA "Guidelines"

### Future Population and Economy

Ten Year Population Projections. Ten year (1985) population estimates for Washington County were interpreted from information provided by the N. C. Dept. of Administration's Office of State Planning. Separate estimates were prepared for Plymouth, Roper, and Creswell by DNER with consultation by the Plymouth Planning Board and Washington County Planning Board.



Figure 25/

## Future Population Estimates

	<u>1970</u> <sup>2</sup>	<u>%</u>	<u>1975</u>	<u>%</u>	<u>1980</u>	<u>%</u>	<u>1985</u>
Washington County	14038	0%	14060	0%	14100	+3%	14500
Plymouth Township <sup>1</sup>	7512	+4%	7800	+4%	8100	+6%	8550
Plymouth	4774	+3%	4900	+4%	5120	+3%	5250
Lee's Mill Township <sup>1</sup>	3407	-1%	3370	-1%	3340	+1%	3380
Roper	680 <sup>3</sup>	+6%	793 <sup>3</sup>	+3%	820	+2%	840
Skinner'sville Township	1386	-8%	1280	-8%	1180	-3%	1140
Scuppernong Township <sup>1</sup>	1733	-7%	1610	-8%	1480	-3%	1430
Creswell	670	0%	670	+3%	690	+3%	710

notes: (1) Township population includes Town population.

(2) Source: U. S. Census

(3) Roper contested its 1970 census and reported its actual population at 750 persons. The 1975 figure reflects an actual head count made in September, 1975. The percentage of change from 1970-1975 is figured on the 750 figure, not the reported 680 figure.

Considerations Made in 1985 Population Estimate. Attitudes of residents in the towns and residents in the rural areas differ considerably concerning local growth objectives. Rural residents generally expressed the desire to want their area kept "like it is" without encroachment of industry and the town's limits into their farmland. Town residents showed greater concern for additional homes, stores, and industry.

Actual population trends from the census indicate only a small overall population growth. The towns and their fringe areas show expansion at the fastest rates while the farm areas show a steady decrease. Data supplies by NCDOA for future population estimates took into account the decreasing number of births and smaller families which substantiate small growth rates. Agri-industry thought to come to the county to be near First Colony Farms may still develop, however, the Farm's short run economic impact

Figure 26  
TOWNSHIPS MAP

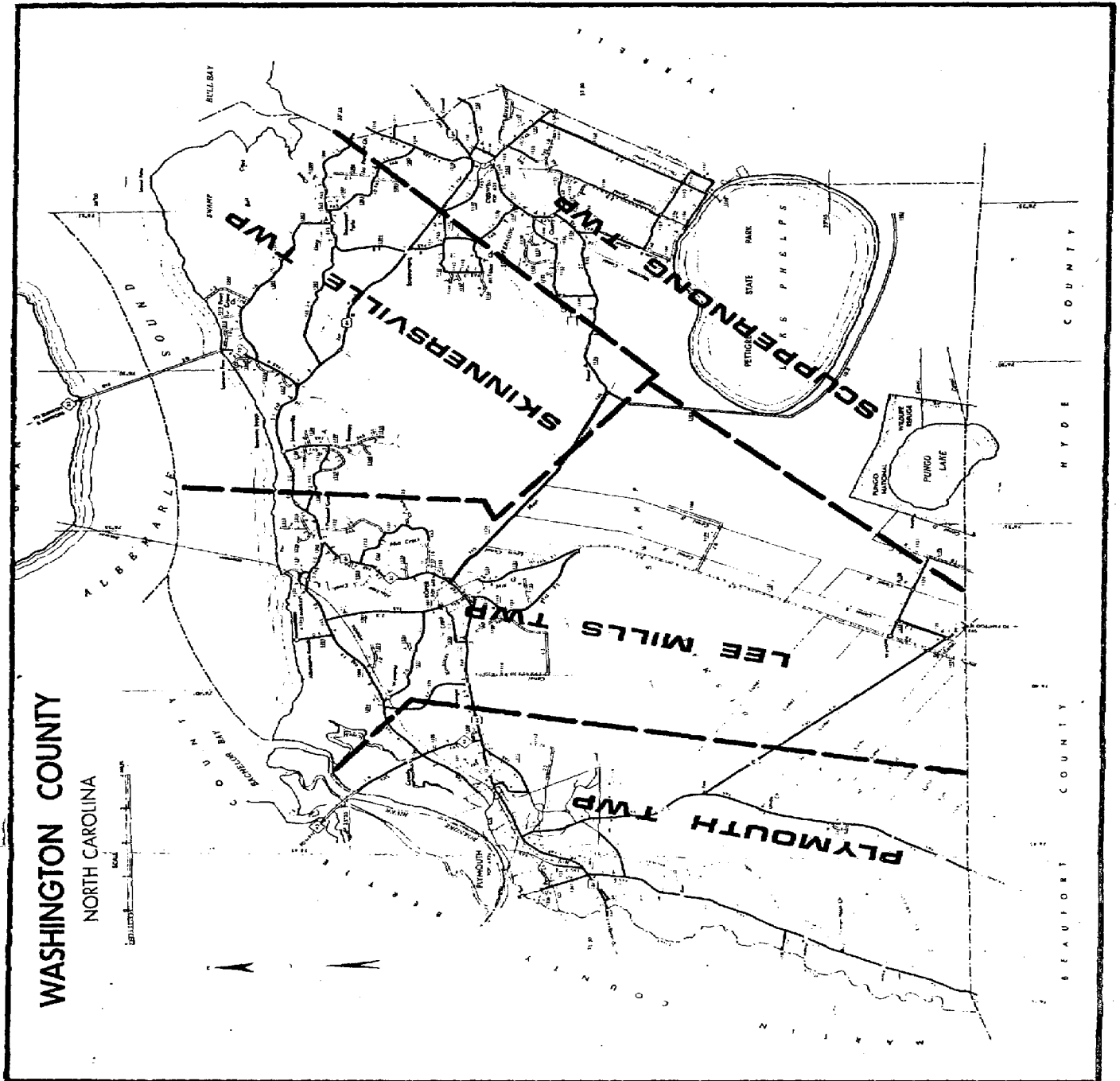
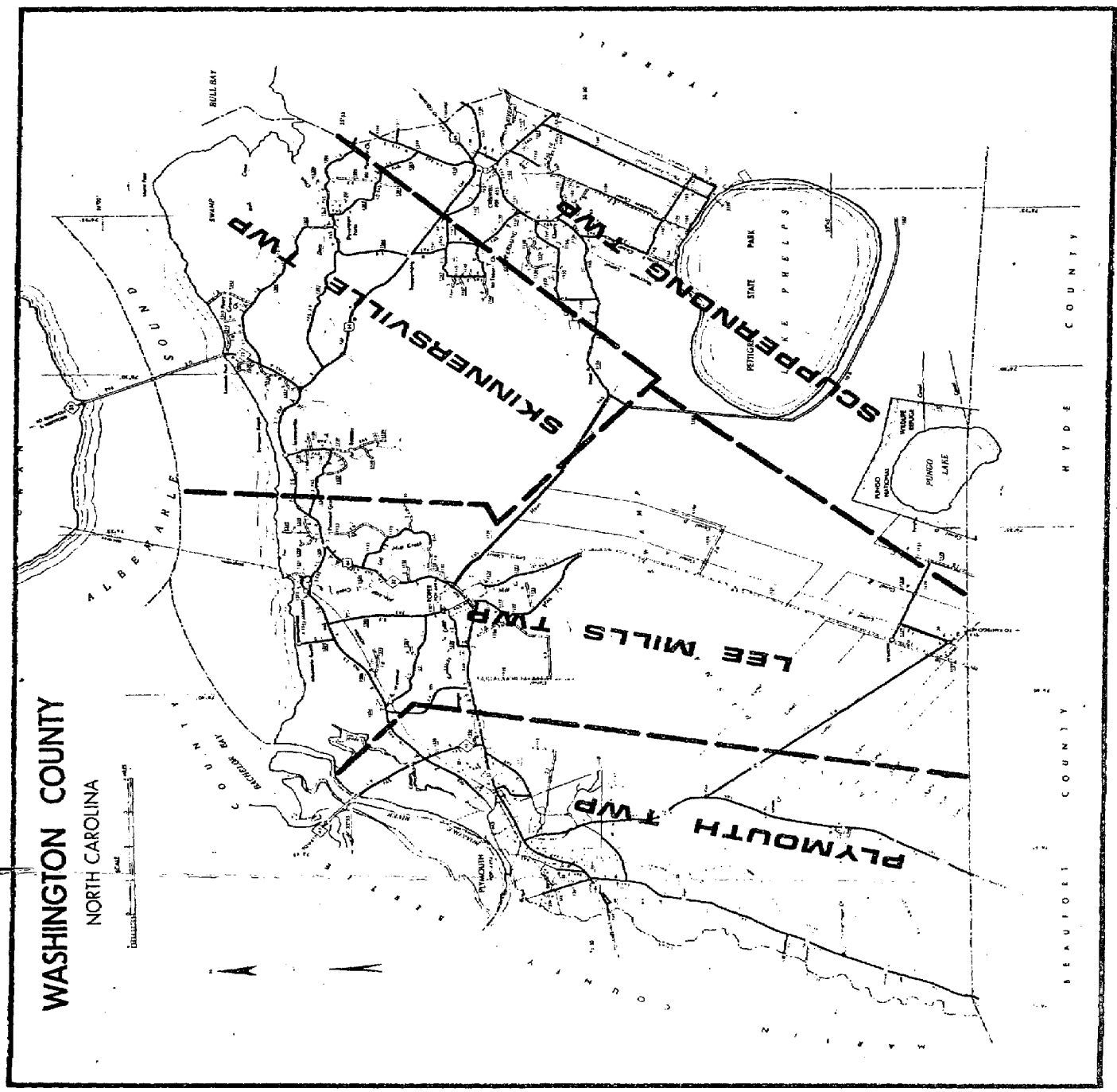


Figure 26  
TOWNSHIPS MAP



will continue to be primarily in production, and secondarily on new employment. Seasonal population is of the "pass-through" variety and does not contribute greatly to the county's economy. Some factors which limit tourism in the county are its small population, income levels, and primary roads congestion. The most well-known and accessible destination point for tourist and recreational activities is Somerset Place on Lake Phelps, and its expansion could possibly improve the county's tourism potential.

Twenty-five and fifty year Population Estimates. The following figures are based upon N.C. Department of Administration's OBERS Series-E Population Estimates and were extrapolated by DNER. They are shown here only to indicate how present conditions might appear in the distant future, not taking into consideration future events. Cautionary foresight is essential when evaluating these statistics. Residents living in the county 50 years ago could hardly have foreseen the amount and kind of change which took place from 1926 to 1976. The only valid conclusion from this information is that the county is certainly to remain an agricultural community having only a small population--no greater than the present population of three counties surrounding it. Within the county, growth can expect to occur fastest along the paved roads in the fringe areas of Plymouth and in the beach areas generally along the U. S. 64 - N. C. 32 corridor.

Figure 27/

## 50 Year Population Estimates

	<u>1985</u>	<u>%</u>	<u>2000</u>	<u>%</u>	<u>2025</u>
Washington County	14,500	+ 7%	15,500	+ 8%	16,800
Plymouth Township	8,500	+15%	9,810	+10%	10,800
Plymouth	5,250	+ 5%	5,510	+ 8%	5,960
Lee's Mill Township	3,380	+ 1%	3,420	+ 4%	3,550
Roper	840	+ 5%	880	+ 8%	950
Skinner'sville Township	1,140	-10%	1,020	+ 8%	1,100
Scuppernong Township	1,430	-13%	1,250	+ 8%	1,350
Creswell	710	+ 6%	750	+ 8%	810

## Population

Long-term Estimates and Local Desires. Figures used to estimate population growth for the years 2000 and 2025 were based upon information furnished by the Department of Administration. However, these population estimates advocate local attitudes about growth, expressed by residents and officials at numerous meetings held during the Plan's presentation. Simply stated, these attitudes advocate "slow growth" for Washington County. Residents have talked about growth not being good for its own sake if it occurs faster than their ability to finance improved services. They have also expressed strong feelings about seeing their area stay as it is and not develop after the fashion of the region's larger towns and cities. Consequently their desires have been carried out with restraint in the preparation of community objectives, future population estimates, and land classification on land and water carrying capacity. Detailed data is unavailable but the following analysis is based upon the Soil Conservation Service's generalized soils maps and conversations with the groundwater division of the Department

of Natural and Economic Resources.

Land and Water Carrying Capacity. Soils are the greatest limiting factor in Washington County since more than 90 percent of them have extremely poor drainage characteristics and high shrink-swell potentials for non-farm land use. (See Figure 20) These conditions create foundation and septic tank problems in homes and businesses which can be overcome but at considerable expense and trouble to the property owner.

Individual wells on individual lots have an ample supply of groundwater, however, the water quality varies from fair to poor because of high mineral content. Well water contamination from septic tank effluents has not been a problem where the Health Department's requirement for 20,000 sq. ft. lots was followed.

In the beach areas where lots have been platted less than 20,000 sq. ft., well water contamination has not yet taken place because the water supply there has only been used seasonally. However, this can become a public health hazard as more people reside in the beach areas full-time. Subdivision controls county-wide and zoning controls in the beach communities are recommended to avert this health problem.

Soil and water carrying capacities have not posed difficulties in Plymouth which furnishes water and sewer service within the town limits. Roper has had serious soil problems due to inoperative septic tanks. This condition has been accelerated by the availability of public water from the town. The Town of Creswell has had serious septic tank problems and has taken action

to avert the contamination of private wells by installing a public water system. However this can lead to further problems from overcrowding areas poorly suited for the use of septic tanks, hastening the day when plans must be drawn for a community sewer system. The Town of Roper has already had such plans prepared and hopes to implement them when it is financially prepared to do so. Subdivision and zoning have been recommended as practical ways to control overbuilding within Roper and Creswell until both their water and sewer systems are capable of higher density development.

Population estimates for the towns and the county's unincorporated areas are such that future growth should not overtax the capability of soil and water resources. However, the adoption of subdivision and zoning controls county-wide in the waterfront areas and in the towns will help the county health department deal more effectively with all plans for new development.

Seasonal Population Impacts. Seasonal population is not expected to be a large factor in Washington County's growth since the county is not a destination for tourists coming to the region. Estimates for seasonal population were provided in Part II of the Plan. The most lasting impact will be upon second home development, but again the rate of impact will be small. Thus, according to a 1951 Geodedic Survey, 40 dwellings existed along all the shoreline fronting the Albemarle Sound. By 1975--nearly 25 years later--that number had increased to approximately 100 dwellings with approximately 100 additional lots of record platted and recorded. These new lots are expected to supply the

local market with its foreseeable needs for second homesites for at least the next ten years.

#### Future Economy

County labor force patterns show a higher level of employment for men compared to women in 1970 compared to the surrounding six counties. This pattern holds true for blacks as well as whites. Further study of industries that are best suited for women and the attraction of such industries to the county can change this trend.

The major identifiable trend and factor in the Washington County economy which would have an impact on further land use is the increased farm and production of bonded grain storage capacity of First Colony Farms. The greatest portion of its existing harvested cropland comes from its 28,700 acre holdings in Washington County. As indicated in Parts II and III of the Plan these holdings are not only likely to continue but increase when idle cropland is made ready for planting. The bonded two million bushel grain elevator on the Farm's property near Lake Phelps significantly increases the county's capacity of commercial grain storage facilities, and could be a major factor in new agri-industry choosing to locate nearby. However, no agri-industry plans in support of the Farm are foreseeable at the present time by the Farm's manager and staff. Furthermore, future increases in the Farm's 300 man employment are expected to draw upon the existing labor pool within the surrounding counties. Minor increases in the Farm's professional staff are expected to be filled by persons from outside the area who may choose to commute



instead of reside in the county. Consequently, the foreseeable land use impacts of this operation will be upon the conversion of woods to pasture and pasture to harvested cropland, not vacant land converted for new industry or new subdivisions.

#### Future Land Needs

In general, future trends appear to increase land under cultivation to approximately 60 percent or about 131,560 acres by 1985. Most of this is expected in the Newland Road area of the county. Urban growth can be expected along the Albemarle Sound beaches, the fringe areas around Plymouth, the Macedonia area in between Roper and Plymouth along Highway 64, and in Roper and Creswell in response to increased farming activities requiring new agri-industry. The demand for waterfront lots for second homes--a national trend--is likely to double the number of residences from an estimated 100 dwellings at present to 200 dwellings by 1985. This will increase shoreline development from a two mile strip now in sections in between crop lands to a four mile strip from Albemarle Beach to Leonard's Point and also around Lake Phelps.

Land demands for the county's estimated population in 1985 are based upon its ten-year population projections. These acreage demands are only for residential housing. Also, they are only shown for the areas of the county with a projected increase in population.

Figure 28/

## Future Land Demand

	<u>1975</u>	<u>1985</u>	<u>Number of People</u>	<u>Number of Households</u> <sup>1</sup>
Washington County	14,060	14,500	+440	+138
Plymouth Township	7,800	8,550	+750	+234
Plymouth	4,900	5,250	+350	+109
Lee's Mill Township	3,370	3,380	- 10	- 3
Roper	793	840	+ 47	+ 15
Skiddersville Township	1,280	1,140	-140	- 44
Scuppernong Township	1,610	1,430	-180	- 56
Creswell	670	710	+ 40	+ 11

<sup>1</sup>One household is estimated to equal 3.2 persons.

	<u>New Households</u>	<u>Density<sup>2</sup> Per Acre</u>	<u>Maximum Land Demand</u>
Plymouth Township	+234	1 hsehld/3 acres	702 acres
Plymouth	+109	1 hsehld/1 acre	109 acres
Roper	+ 15	1 hsehld/1 acre	15 acres
Creswell	+ 11	1 hsehld/1 acre	11 acres

<sup>2</sup>Standards for density are based upon the N.C. Land Classification Systems standards of 2,000 population/sq. mi. for "developed" and "transition" land classifications and 640 population/sq. mi. for "community" land classification.

Actual development could occur on much less land than the amounts shown, but the maximum acreage indicates the land that ought to be available for development throughout the jurisdiction. Thus 109 new households, for example, in Plymouth could be housed together in 1985 on a 25 acre subdivision having 10,000 sq. ft. lots with public water and sewers. However, these 109 families represent mixed income levels and housing needs, creating needs for different prices of housing located in different areas. Also

vacant land available is not uniformly suited for development: some of it has poor soils or would require economically unfeasible utility extensions. Thus, the amount of land needed in any area is computed for vacant land demands over the entire area, and not altogether in one location. The areas of the county not shown to have a land demand were omitted because there was no population increase shown for the ten year period ending 1985. Thus, where no projected growth is shown, existing reserves of platted land are presumed to satisfy the needs in these areas for new permanent and seasonal residents.

Maximum land demands shown for the three towns and Plymouth Township can be adequately satisfied from the supply of vacant land in each jurisdiction, however in the case of Plymouth and Creswell, very little land would be left for other purposes beyond 1985 unless these two towns take steps between now and then to extend their town limits.

Future growth in Plymouth is sharply limited by its past history of annexation. Only four percent of the present incorporated area, or about 77 acres, has been annexed since 1947. Of the estimated developable land within the town limits (about 413 acres) only 30 percent (124 acres) is within a few hundred feet of existing streets and utilities. Consequently, the inventory of available, vacant land that can be developed economically is in considerably short supply to meet future economic needs. However, the 124 acres would be an adequate inventory for the maximum land demand of 109 acres by 1985.

The seven square mile extraterritorial area surrounding Plymouth, in Plymouth Township, has the following pattern: 52 percent, forest (including the floodplain); 41 percent, agriculture; seven percent buildings and roads (up 12 percent from 1964). It is presumed that agricultural lands have the highest potential for conversion to urban land use because they are already cleared and drained. Even if no other housing were to locate outside the extraterritorial limits of Plymouth, the 41 percent of land devoted to agriculture in this zone (about 1837 acres) would more than adequately satisfy the maximum land demand for 702 acres.

The Town of Roper (.9 sq. mi.) also has a more than adequate reserve of vacant land to satisfy its urban land demand. The principal kinds of existing land use in town are residential, 16 percent; commercial, four percent; government and semi-public, five percent; forest and swamp, 27 percent; row crop, 44 percent; and barren areas not under cultivation, four percent. The 44 percent of land for cropland equals approximately 253 acres which is more than an ample stock of land for the estimated 15 acres of urban land demand by 1985.

The major constraint on future development in Creswell (6 sq. mi.) is the lack of an adequate method of drainage from swampy and flood prone areas. Floodprone areas presently constitute about 56 percent of the town's incorporated limits. Cleared and drained cropland only comprises seven percent or about 27 acres of the total land area within the existing town limits. This acreage is adequate for the estimated eleven acre

land demand, but leaves very little land available for other uses.

#### Community Facilities Demand.

##### 1985 Projected Utilization

Because the county's population is widely scattered, future demand for water, sewer and schools will necessarily be dependent upon the capacities of existing facilities in the Towns of Plymouth, Roper, and Creswell. The following evaluation of facilities in these three towns is taken from water and sewer studies prepared by Moore-Gardner Associates (1975) and L. E. Wooten and Company (1976). Separate sections following these describe school and highway needs based upon data provided by the office of the Washington County School Superintendent and the N. C. Department of Transportation.

At the present time, the Plymouth water system is utilized at 50 percent of its capacity and its sewer system is utilized at 41 percent of its capacity. Water flow rates from the town's three wells average 467 gallons per minute which is less than the flow rates recommended for fire-fighting purposes in a town of Plymouth's size. However, the town has a large, surplus of water from its 850,000 gallon storage capacity upon which to draw.

The present population of Plymouth with per capita water demands of 80 GPD requires approximately 400,000 gallons of water daily. It is expected that per capita usage will increase to 100 GPD by the year 2000. The projected population of Plymouth by the year 2000 will be 6,000, which should result in an average day demand of 60,000 gallons. The maximum day demand at 1.75 times average day demand should be 1,050,000 gallons.

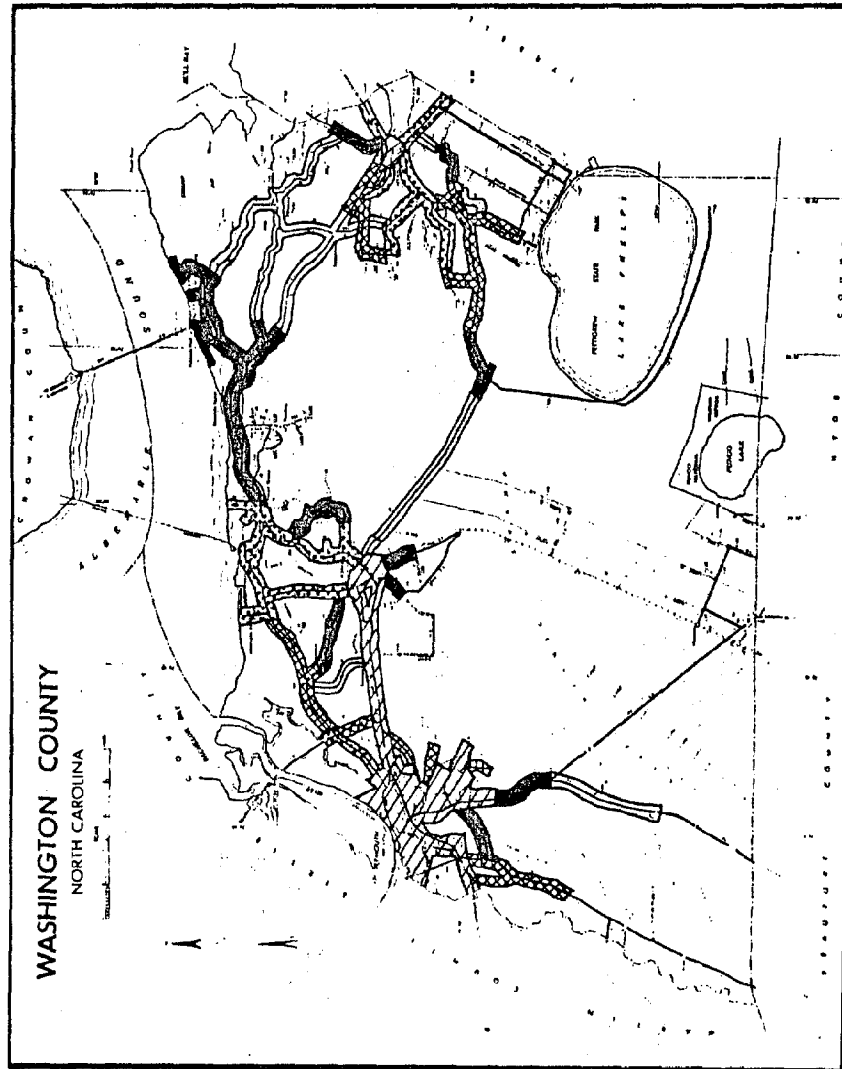


Figure 29

# PROPOSED WATER SYSTEM

Moore-Gardner Study, 1975

- SYSTEM IN USE OR IN PLANNING BY 1980
- SYSTEM BY 1985
- SYSTEM BY 1990
- SYSTEM BY 1995
- SYSTEM AFTER 1995

ALL OTHER ROADS-NO SERVICE PLANNED AT PRESENT

MAY, 1976

Plymouth's existing system of wells and elevated storage are sufficient to meet the projected water demands of the municipality beyond the year 2000, at which time Plymouth should be able to furnish an average of 150,000 gallons per day to County users without exceeding 12 hours pumping time. When this rate is reached, Plymouth should expand its water production capacity so normal daily operations do not exceed 12 hours. It is anticipated that Plymouth will have the capacity to continue to fulfill area water needs. Those areas served by Plymouth outside the corporate limits would be eligible for County participation in financing where feasibility is demonstrated."

(Source: Moore-Gardner Assos. Water Feasibility Study, 1975).

The Roper water system is being utilized at 41 percent of its capacity with a flow rate of 150 gallons per minute from a single well. Present plans for improving the Roper system include the addition of a filter to remove impurities and a second well to increase the rate of flow.

When Creswell completes the improvements outlined above, water demands through the year 1990 should be met with no difficulty. However, there will be no reserve capacity for serving areas outside the corporate limits. As the needs arise, Creswell should expand its water system to meet them. Those areas outside the corporate limits served by Creswell would be eligible for County participation in financing when feasibility is demonstrated, as required under the Washington County Water Plan.

Raw water supplies should continue to be developed from groundwater sources; existing wells, treatment facilities, and elevated storage in Plymouth, Roper, and Creswell should provide adequate flows and pressures until 1985 when the projected average day demand should be 1,046,880 gallons per day. After this, or sooner if demand exceeds projections, additional wells, treatment facilities, and elevated storage will be needed. Elevated storage and booster pumping stations can be located where demand requires. Existing municipal well fields and treatment facilities should be expanded to maximize economy of operations. However, this economy could be offset if long, large diameter water mains with few users along them are necessary to serve relatively isolated population concentrations. In these situations, it may be more economical to develop independent groundwater supplies, treatment facilities, and elevated storage tanks.

It is expected that per capita usage will increase to 75 GPD by the year 2000. The projected population of Roper by the year 2000 is 800, which would result in an average day demand of 60,000 gallons. The maximum day demand at 1.5 times average day demand would be 90,000 gallons.

When Roper completes the improvements outlined above, water demand projected through the year 2000 should be met with no difficulty. In addition, there will be excess capacity for supplying areas outside the corporate limits. If actual demands do exceed projections, supplies can be increased through additional wells. The treatment plant is being designed to facilitate future expansion.



"It is anticipated that Roper will continue to fulfill area water needs. Those areas outside the corporate limits served by Roper would be eligible for county participation in financing when feasibility is demonstrated.

"Creswell has not had a water system on which to estimate consumption. Engineers for the Town of Creswell estimate average day demands by the year 2000 to be 75 gallons per capita per day (GPCD), with maximum day demands at 125 GPCD. The population of Creswell is projected to be 725 by the year 2000. This should result in an average day demand of 54,375 gallons and a maximum day demand of 25 percent greater, or 67,969 gallons (Moore-Gardner study).

"The Town of Plymouth operates a 0.8 MGD extended aeration type wastewater treatment facility that discharges the final effluent to the Roanoke River, a class "C Swamp" stream. The facility is well maintained and is producing an effluent BOD<sub>5</sub> and suspended solids of secondary quality. However, because the treatment facility does not have disinfection facilities, the assigned water quality standards of the Roanoke River are not protected. Also, the treatment facility does not have adequate sludge treatment and disposal facilities and other fail-safe measures such as provision of multiple units for major components of the treatment processes as required by the State, standby power facilities at the treatment plant and at the main pump stations, etc. Accordingly, the Town of Plymouth will be required to upgrade its wastewater treatment facilities to achieve the current and future water quality goals of the Planning Area. Furthermore, the existing sewer system of the Town of Plymouth is subject to excessive infiltration and inflow.

In order to determine an estimated volume for infiltration, wastewater volumes must be compared during low groundwater and high groundwater conditions. Flows during low groundwater conditions in December, 1975 averaged 0.285 MGD, while high groundwater flows in March, 1975 averaged approximately 0.566 MGD. From the data, it is estimated that there is about 0.280 MGD of infiltration seeping into the sanitary sewer system, in Plymouth.

The present individual disposal system (septic tanks) at the Town of Roper are causing a water pollution problem by means of discharging untreated wastewater to nearby water courses. This is considered to be a significant nuisance in the area. Also the long-term use of septic tanks and high groundwater conditions in the area may contaminate groundwater and create a possible health hazard. To achieve the water quality objectives and to promote the health, safety, morals and general welfare of the inhabitants, the Town of Roper will be required to provide wastewater collection and treatment facilities.

The domestic wastewater loadings for the Towns of Plymouth and Roper are based on 20-year population projections, the operating data of the existing wastewater treatment facility and the data assembled from the existing reports. The selected design period of 20 years (1978 to 1998) was chosen as a reflection of reasonable life expectancy of the equipment associated with the treatment facilities and of a reasonable time period for payment of bonds required to build the facilities. The design waste loads and flows are summarized in Figure 30.

FIGURE 30

DESIGN WASTE LOADS AND FLOWS

	Present (1975)			Future (1998)		
	Plymouth	Roper	Total	Plymouth	Roper	Total
Population	4,950	833	5,783	6,500	910	7,410
Flow <sup>1</sup>						
Average Daily Flow, MGD	0.410	-	0.410	0.710	0.090	0.800
Maximum Daily Flow, MGD	1.157	-	1.157	1.420	0.180	1.600
Peak Daily Flow, MGD	1.400	-	1.400	1.775	0.225	2.000
BOD <sub>5</sub> , lbs/day	1000	-	1000	1510	180	1690
TSS, lbs/day	850	-	850	1250	155	1405

<sup>1</sup> Basis of Average Design Flow:

Existing Average Daily High Groundwater Flow

Future Domestic (1500 P.E. @ 100 gpcd)

Sub-Total

10% Industrial Allowance

Inflow Volume (See P. 8 of Appendix I)

Total

0.566 MGD  
0.150 MGD  
0.716 MGD  
0.072 MGD  
0.100 MGD  
0.888 MGD

Roper Wastewater Volume

Domestic (910 P.E. @ 90 gpcd)

10% Industrial Allowance

Sub-Total

Total Wastewater Volume

I/I Rehabilitation

Design Capacity - Existing Plant

0.082 MGD  
0.008 MGD  
0.090 MGD  
0.978 MGD  
0.178 MGD  
0.800 MGD

"A volume of 80,000 gpd is being incorporated into treatment plant design to provide for industrial growth. Such a volume is considered minimal in view of industrial development activities in the Planning Area in recent years.

"Referring to the zoning map (Figure 31) of the Town of Plymouth the areas west and east of the Town have been planned for future light and heavy industrial developments. In order to implement the land use objectives and to enhance the socio-economic conditions of the area, the requested 80,000 gpd volume for industrial growth is warranted." (Source: Wooten Study, 1976)

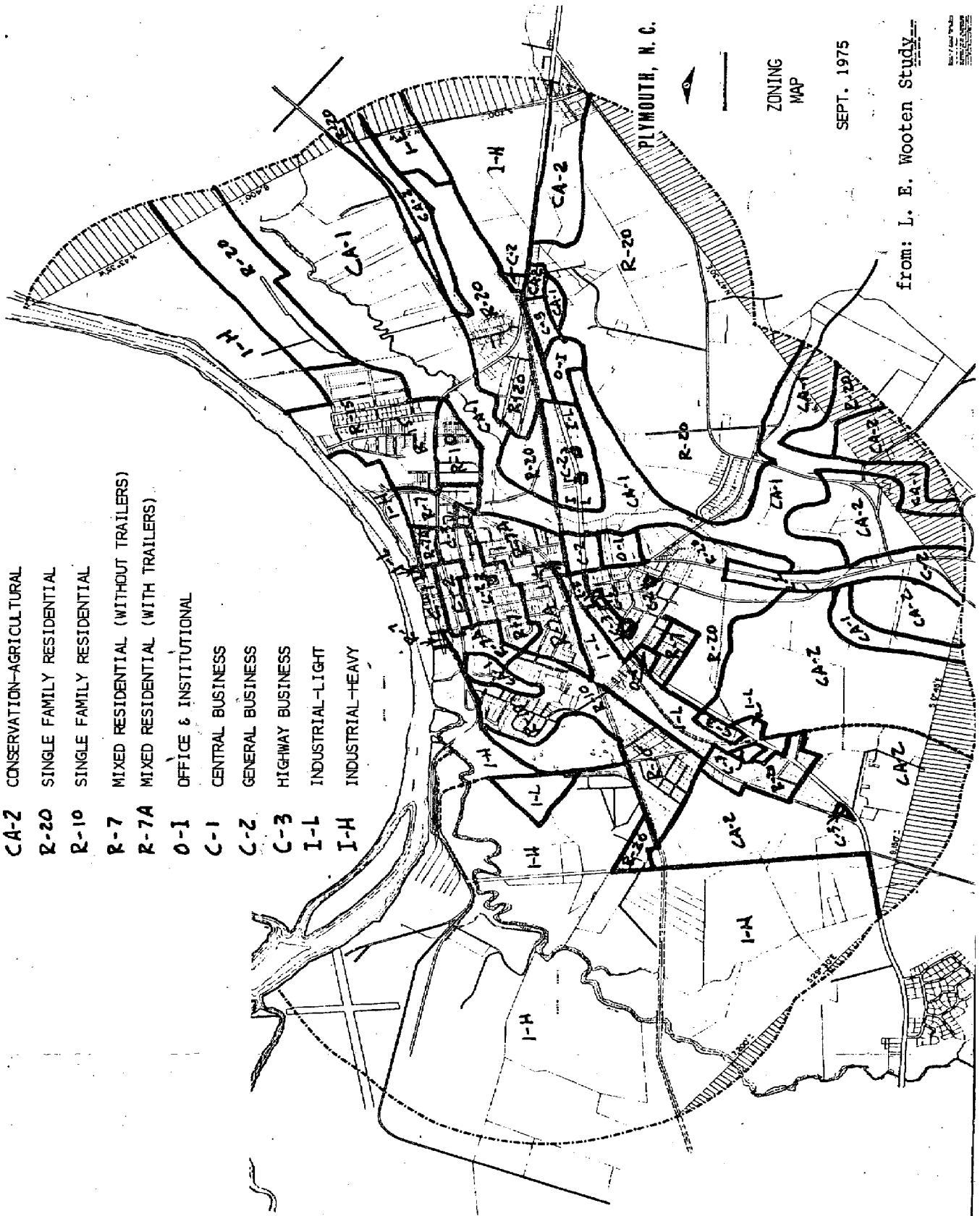
The Town of Creswell has not had anything more than a preliminary report and sketch design (1970) on a sewage system. Consequently, there are no engineering details from which to determine specific needs. However, residents and officials of the town have substantiated the need for sanitary and storm sewage to alleviate the compounding problems from the high water table, poor soils, and poor drainage.

The need for future school sites is based upon enrollment projections and, in North Carolina, the design standards prepared by the Council of Education Planners. Based upon these criteria the present needs seen for school facilities in the county through 1985 call for two new school sites, one elementary, one junior high, totaling about 175 acres and in addition, 25 acres for new improvements to the senior high school at Creswell (total: 200 acres of improvements). Thus, the trend is towards phasing out old and overcrowded facilities to build new facilities where land is available rather than to try to expand existing facilities by eminent domain. No specific sites are in planning at this time

Figure 31

Legend:

- CA-1 CONSERVATION-AGRICULTURAL
- CA-2 CONSERVATION-AGRICULTURAL
- R-20 SINGLE FAMILY RESIDENTIAL
- R-10 SINGLE FAMILY RESIDENTIAL
- R-7 MIXED RESIDENTIAL (WITHOUT TRAILERS)
- R-7A MIXED RESIDENTIAL (WITH TRAILERS)
- O-1 OFFICE & INSTITUTIONAL
- C-1 CENTRAL BUSINESS
- C-2 GENERAL BUSINESS
- C-3 HIGHWAY BUSINESS
- I-L INDUSTRIAL-LIGHT
- I-H INDUSTRIAL-HEAVY



since the related bond issues would have to pass a vote of the people.

Department of Transportation traffic counts for 1973 and 1974 (see Figure 32) indicate that the average number of vehicles traveling over the streets in Plymouth and the major roads in the county are well within design standards for peak capacities. However, this capacity is gained at the expense of reducing speed limits over sections of highway that cannot be widened economically, such as some narrow streets in Plymouth; or are not under consideration for widening at the present time, such as U. S. Highway 64. So 45 miles per hour speed limits become the rule over sections that once were 55 miles per hour, and 25 miles per hour speed limits become the rule over sections that once were 35 miles per hour.

The Town of Plymouth has a Sketch Thoroughfare Plan prepared by the Department of Transportation in 1972 which, however, does not have engineering value. No additional improvements are proposed in Washington County in the Department of Transportation's seven year plan for the county's only principal artery, U.S. 64.

#### Cost of New Facilities.

Detailed costs analysis are beyond the scope of this plan, however, the following information is provided to qualify an evaluation of the county's financial capability to make improvements. The county's Baa bond rating, while not outstanding, is average for this region.

"Baa - Bonds are considered as lower medium grade obligations, i.e., they are neither highly protected nor poorly

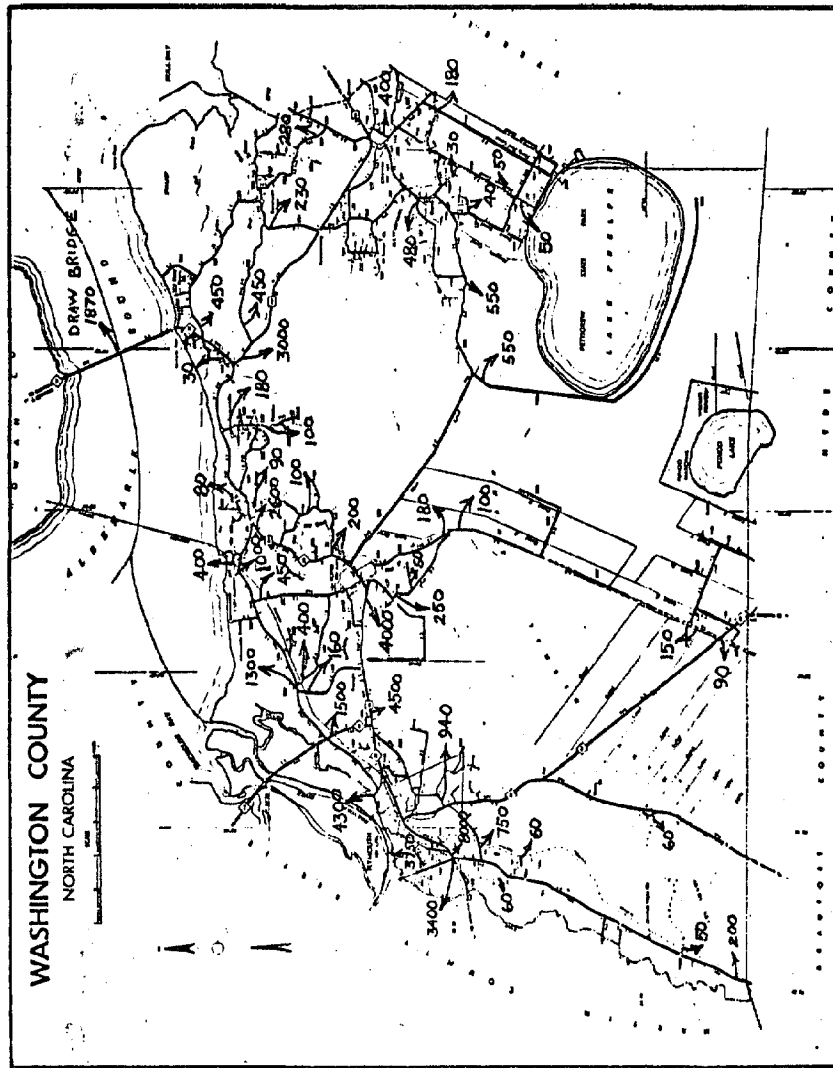


Figure 32  
AVERAGE DAILY TRAFFIC COUNTS

(ADT)  
1974 ADT  
May 1976

SOURCE: N. C. Department of  
Transportation, Office  
of Thoroughfare Planning

secured. Interest payments and principal security appear adequate for the present but certain protective elements may be lacking or may be characteristically unreliable over any great length of time. Such bonds lack outstanding investment characteristics and in fact have speculative characteristics as well." (From: Moody's Bond Rating Service)

On an authorized debt limit of \$114,000,000 the county currently has bonds outstanding in the amount of \$1,430,000. Water and sewer bond issues do not figure in this total if they were revenue bonds. Bonds of this type are underwritten on the basis of their ability to sell on the open market. (General obligation bonds, however, are backed by the full faith and credit of the county.)



## VI. PLAN DESCRIPTION

### Description of Land Classification System

"A land classification map shall be prepared according to the specifications set forth in this section. The following codes shall be used:

<u>Class</u>	<u>Optional Codes</u>	
	<u>Color Code</u>	<u>Letter Code</u>
Developed	Solid rust	D
Transition	Hatched rust	T
Community	Cross-hatched rust	C
Rural	White	R
Conservation	Dot Green	P

"Land classification shall be represented at least with boundary lines around each category mapped, and with a single letter code to indicate which category is intended. However, the map(s) may optionally be submitted using color patterns to differentiate between categories.

"The North Carolina Land Classification System contains five classes of land:

- a. Developed--Lands where existing population density is moderate to high and where there are a variety of land uses which have the necessary public services.
- b. Transition--Lands where local government plans to accommodate moderate to high density development during the following ten year period and where necessary public services will be provided to accommodate that growth.

c. Community--Lands where low density development is grouped in existing settlements or will occur in such settlements during the following ten year period and which will not require extensive public services now or in the future.

d. Rural--Lands whose highest use is for agriculture, forestry, mining, water supply, etc. based on their natural resources potential. Also, lands for future needs not currently recognized.

e. Conservation--Fragile, hazard and other lands necessary to maintain a healthy natural environment and necessary to provide for the public health, safety, or welfare.

These five classes provide a framework to be used by local governments to identify the general use of all lands in each county. Such a system presents an opportunity for the local government to provide for its needs as well as to consider those of the whole state. Also, they can make a statement of policy on where and to what density they want growth to occur, and where they want to conserve the county's natural resources by guiding growth.

As a statement of local policy consistent with statewide needs and goals, the county land classification map will serve as a basic tool for coordinating numerous policies, standards, regulations, and other governmental activities at the local, state and federal level. Such coordination may be described by five applications:

a. "The Land Classification System encourages coordination and consistency between local land use policies and those of State Government. Lands are classified by the local governments. The Coastal Resources Commission then reviews those classifications to ensure conformance with minimum guidelines for the system. The coastal county maps taken together will be the principal policy guide for governmental decisions and activities which affect land uses in the coastal area.

b. "The System provides a guide for public investment in land. For example, state and local agencies can anticipate the need for early acquisition of lands and easements in the Transition class for schools, recreation, transportation, and other public facilities.

c. "The System can also provide a useful framework for budgeting and planning for the construction of community facilities such as water and sewer systems, schools, and roads. The resources of many state and federal agencies, as well as those of the local government which are used for such facilities, can then be more efficiently allocated.

d. "In addition, such a System will aid in better coordination of regulatory policies and decisions. Conservation and Rural Protection lands will help to focus the attention of state and local agencies and interests concerned with the valuable natural resources of the state. On the other hand, lands in the Transition and Community classes will be of special concern to those agencies and interests who work for high quality development through local land use controls such as zoning and subdivision regulations.

e. Finally, the System can help to provide guidance for a more equitable distribution of the land tax burden.

Private lands which are in the Rural and Conservation classes should have low taxes to reflect the policy that few, if any, public services will be provided to these lands. In contrast, lands in the Transition class should be taxed to pay for the large cost of new public services which will be required to support the density of growth anticipated.

The local land classification maps must be updated every five years. Each class is designed to be broad enough so that frequent changes in maps are not necessary. In extreme cases, such as when a large key facility, causing major repercussions, is unexpectedly placed in a county, the Coastal Resources Commission can allow a county to revise its classification map before the five year period is over.

In addition, the Land Classification System allows a variety of detailed land use such as residential, commercial, industrial, recreational, etc. to occur within these classes. There is flexibility under existing zoning enabling statutes to change these detailed land uses whenever necessary.

"Policies, rules, and actions concerning Areas of Environmental Concern shall take precedence over policies, rules, and actions concerning the Land Classifications, in the event of any conflicts."

- From: CAMA "Guidelines"

## Population Allocations to Transition, Community, and Rural Land Classification

Population allocations to the transition, community and rural land classifications in Washington County are based upon the 1975-1985 population estimates and gross land demands established in Part III. The following table summarizes those allocations. (See Figure 33)

### Discussion of Allocated Population Densities

In Plymouth Township, the Transition areas consist of the Liverman Heights subdivision (approximately 90 acres) and a 160 acre tract fronting U. S. 64 where it is intersected by Rankin Lane in Plymouth, extending the length of a branch of Conaby Creek. Both areas are built upon at present. Approximately 50 acres of Liverman Heights are now occupied by single-family dwellings, housing approximately 160 people. The Rankin Lane-U.S. 64 area is a commercial and light industrial strip adjoining the existing town limits of Plymouth and is now approximately 50 percent developed with the Washington County Hospital, the Plymouth Garment Company, the East Carolina Supply Company, and other smaller businesses. The Liverman Heights area is seen as an expanding residential area. The area adjoining U.S. 64 is seen as an expanding commercial and industrial area. Both of these areas are within the capability of the Town of Plymouth to extend water and sewer service by 1985 according to the town manager. Consequently, these areas were assigned population densities of 2000 people per square mile as Transition areas.

Figure 33/

## LAND DEMAND ESTIMATES

	Estimate of Known Acreage	Vacant Acreage	1975-85 Pop. Growth	Assigned Pop. Density Per Sq. Mi.	Pop. Growth Assigned Vacant Land
Plymouth Twp.			+750		
Transition Areas	250	120		2000	375
Community Areas	650	340		640	340
Rural Areas	-	-		-	35
Plymouth			+350		
Developed Areas	1920	20		2000	62.5
Transition Areas	60	60		2000	187.5
Community Areas	50	50		640	50.
Lee's Mill Twp.			- 10		
Community Areas	850	830		640	none
Rural Areas	-	-		-	
Roper			+ 47		
Transition Areas	180	80		2000	47
Community Areas	290	260		640	-
Skiddersville Twp.			-140		
Community Areas	540	490		640	none
Rural Areas	-	-		-	
Scuppernong Twp.			-180		
Community Areas	950	930		640	
Rural Areas	-	-		-	none
Creswell			+ 40		
Community Areas	320	120		640	40

The Community Land Classification Areas in Plymouth Township consist of the extension of Riverside Plantation subdivision (approximately 120 acres); the residential strip development beginning at Trowbridge Road and extending west along U.S. 64 to the Rolling Pines Subdivision two miles from Plymouth (approximately 320 acres); the residential area fronting the Wilson Street Extension north of U.S. 64 (approximately 30 acres); the residential area fronting N.C. 32 South one mile from Plymouth (approximately 50 acres along a 500 foot wide strip divided by N. C. 32). And another 500 foot wide strip beginning at East Main Street-U.S. 64). intersection and extending east approximately 3.3 miles to the township boundary just west of Basnight Crossroad (approximately 130 acres). The existing land use of all these areas, except the Riverside Plantation area, consists of mixed residential and commercial development, interspersed with small tracts of fields and woods. The extension of Riverside Plantation now covers open fields, but this area is anticipated for plating for residential lot sales in the foreseeable future. The existing population of these "Community" designated areas is approximately 640 people per square mile. Vacant land conversion to urban land uses are expected to occur in each of these areas since all the areas except Riverside Plantation front primary arterials (U.S. 64 - N.C. 32) in the fastest growing part of the county - the urban fringe surrounding Plymouth. Furthermore each of these areas can be feasibly served by the Plymouth water system. Thus, because these areas are expected to continue their low-density growth, they have been designated as "Community" areas.

The Town of Plymouth has approximately 1,020 acres (1.6 square miles) "developed" by definition of the Developed Land Classification. All of this land is built-upon except for approximately 20 acres of vacant lots scattered throughout the town. In Plymouth there are approximately 60 acres of Transition land which are adjacent to the Riverside Plantation subdivision, north of East Main Street. This area has been platted for a number of years and has slowly been developed for single family homes on half acre lots. This development is expected to be completely filled by 1985 with all utilities from the town. The only Community areas in Plymouth are in the western part of town, known locally as the "Sandhills" community. About 45 acres of this neighborhood is barren at present, occupied only by a few scattered homes totaling approximately five additional acres (total: 50 acres). This area is expected to develop as a lower middle income community having water service from the town by 1985. It should be noted that Plymouth's projected population is 50 persons more than the amount of "Developed," "Transition," and "Community" lands available, using the population densities incorporated in these definitions. However, because all these figures are estimates only, the general pattern is more significant than the theoretical values. In Plymouth's case, this population could be allotted to "Rural" Land Classification areas in Plymouth. Farm lands presently comprise about eight percent or approximately 154 acres of the total areas inside the town limits. These lands have not been projected for conversion to non-farm use in the next ten years; however, they could be developed if market conditions warranted a greater return



from lot sales instead of harvested cropland. The more significant fact from these patterns is that the Town of Plymouth has a very limited supply of land available for development beyond 1985. Consequently, a local objective has been adopted to conduct an annexation study of the fringe areas surrounding the town.

Lee's Mill Township has two "Community" areas: approximately 550 acres of vacation homesites in a 500 foot strip from the mouth of the Roanoke River to west of Pleasant Grove, and the strip highway development adjacent to U.S. 64-N.C. 32 from the Plymouth Township line approximately 4.7 miles to the western town limits of Roper. This strip is also 550 feet wide, divided by U.S. 64. It totals approximately 300 acres of which 200 acres are now vacant. Although no population growth is projected for Lee's Mill, this estimate is only for numbers of permanent residents. Seasonal population growth is expected in the future in the areas adjoining Albemarle Beach. The U.S. 64-N.C. 32 corridor is already occupied by the Macedonia community with an average density estimated at one person per acre. Current and previous plans have recommended a public water system along this U.S. 64-N.C. 32 corridor, citing the current population density of the area as the system's justification. Therefore, this area and the Albemarle Beach area have been included as "Community" areas in this Plan.

The Town of Roper has ample "Transition" and "Community" land areas upon which to allocate its projected population growth of 47 persons by 1985. All 47 persons have been allocated to the "Transition" areas of the town which already have water service and which would be the areas most likely to receive sewer service when such a system is designed and constructed. "Community"

areas designated on the land classification map for Roper are now vacant and are the principal areas for new subdivision growth in town for the future. Two "Conservation" areas are designated within the town for its two school sites. In the event that these facilities are phased out, these sites may be designated for use as public recreation areas.

Skiddersville Township has a projected population decline for the period 1975-1985. However, as in Lee's Mill Township, this decline does not mean that no one would move to the township in the next ten years, but only that a greater number of people would leave than would settle. At the same time, the resident population decline does not take into account seasonal population growth. In Skiddersville Township, seasonal population growth is expected to be the principal source of new residents in the area during the 1975-1985 period. This growth is expected to occur at the Township border west of Pleasant Grove to Newby's Ditch east of the Sound Bridge (approximately 540 acres). At the present, this area has about 490 acres of land undeveloped within a 500 foot border from the high water mark, however, a number of lots have already been surveyed with roads open to them. Zoning and subdivision regulations have been recommended for this area to limit overcrowding of dwellings in a small area and to reduce fire and septic tank problems.

In Scuppernong Township there are two "Community" areas. The first adjoins the eastern town limits of Creswell, extending approximately three-quarters of a mile east of the town limits

along U. S. 64 in a corridor 500 feet wide (that is, 250 feet each side of the highway). This area is primarily seen as a slowly developing commercial district. Approximately 40 acres of the 50 acres in this area are undeveloped at present, but are expected to develop in the future. Future population growth has not been shown because it is expected to be negligible and very easily accommodated on the vacant land already available. The second "Community" consists of about 900 acres in a 500 foot wide strip surrounding Lake Phelps, from the Tyrrell County line clockwise to the boundary of Somerset Place. There are approximately 60 lots of record with an estimated dozen dwellings existing at present. Further building activity is expected to occur here at a slow but steady rate in the future.

All of the Town of Creswell is designated as a "Community" area, except for the two school sites which have been classified "Conservation." About 120 acres of the 320 acres in this "Community" classification are undeveloped at present, however because much of the land now vacant is floodprone, the actual inventory of vacant land available which does not require extensive drainage improvements is only about 27 acres. While the limited population growth estimated for 1985 can be accommodated on this 27 acres, very little acreage would be available for other activities. Consequently there is a need for Creswell to expand its town limits the same as the Town of Plymouth in order to provide for its future land use needs and population growth beyond 1985. To further this end, the adoption of zoning and extraterritorial jurisdiction were included in the set of local objectives for Creswell.

## VII. PROPOSED INTERIM AREAS OF ENVIRONMENTAL CONCERN

"The 1974 Legislature found that "the coastal area, and in particular the estuaries, are among the most biologically productive regions of this State and of the nation" but in recent years the area "has been subjected to increasing pressures which are the result of the often conflicting needs of a society expanding in industrial development, in population, and in the recreational aspirations of its citizens."

"Unless these pressures are controlled by coordinated management," the Act states, "the very features of the coast which make it economically, aesthetically, and ecologically rich will be destroyed."

"To prevent this destruction the Act charges the Coastal Resources Commission with the responsibility for identifying types of areas, and designating specific areas--water as well as land--in which uncontrolled or incompatible development might result in irreparable damage. It further instructs the Commission to determine what types of use or development are appropriate within such areas, and it calls on local governments to give special attention to these environmentally fragile and important areas in developing their land use plans.

"The identification and delineation by local governments will not serve as a designation of AECs for the purposes of permit letting. The designation of AECs for purposes of the permit program shall be by a written description adopted by the Commission, and such designations will be equally applicable

to all local governments in the coastal area. At the present time the Commission will not attempt to map AECs with sufficient detail to enable a permit letting agency in all cases to determine solely on the basis of such a map whether a particular area falls within an Area of Environmental Concern. The determination as to whether a particular area is within an AEC will be based on the written description of the Area of Environmental Concern which will be adopted by the Commission. The Commission will continue to study the possibility of mapping AECs with sufficient detail to serve in this permit program and may base the permit program on maps if the capability exists to do so.

These amended Guidelines specifically require that the preliminary local plans should include identification of each proposed AEC. The plan must also include written statements of specific land uses which may be allowed in each of the proposed classes of AECs. These allowable land uses must be consistent with the policy objectives and appropriate land uses found in this chapter. In addition, local governments may submit maps delineating proposed AECs with the preliminary Land Use Plan. Such maps are not a part of the land use plan but should be submitted concurrently with it.

Local planners should note that there are a few instances where one category of Areas of Environmental Concern may overlap with another. Where this is found to occur, the policy of the Commission is to require the local plan to adopt allowable land uses within the area of overlap consistent with the more restrictive land use standard.

"No development should be allowed in any AEC which would result in a contravention or violation of any rules, regulations, or laws of the State of North Carolina or of local government in which the development takes place.

"No development should be allowed in any AEC which would have a substantial likelihood of causing pollution of the waters of the State to the extent that such waters would be closed to the taking of shellfish under standards set by the Commission for Health Services pursuant to G. S. 130-169.01."

--From: CAMA "Guidelines"

## Proposed AECs in Washington County

The following seven categories of environmentally sensitive areas have been proposed by the Washington County Board of Commissioners as Interim Areas of Environmental Concern: estuarine waters, historic places, complex natural areas, public trust waters, state parks, coastal wetlands, and sound erodible areas.

### Estuarine Waters

Description. Estuarine waters are defined in G.S. 113-229 (n) (2) as, "all the water of the Atlantic Ocean within the boundary of North Carolina and all the waters of the bays, sounds, rivers and tributaries thereto seaward of the dividing line between coastal fishing waters and inland fishing waters, as set forth in an agreement adopted by the Wildlife Resources Commission and the Department of Conservation and Development filed with the Secretary of State entitled ' Boundary Lines, North Carolina Commercial Fishing-Inland Fishing Waters, revised March 1, 1965,'" or as it may be subsequently revised by the Legislature.

Location. In Washington County, estuarine waters consist of Albemarle Sound and Bull's Bay.

Significance. Estuaries are among the most productive natural environments of North Carolina. They not only support valuable commercial and sports fisheries, but are also utilized for commercial navigation, recreation, and aesthetic purposes. Species dependent upon estuaries such as menhaden, shrimp,

flounder, oysters and crabs make up over 90 percent of the total value of North Carolina's commercial catch. These species must spend all or some part of their life cycle in the estuary. The high level of commercial and sports fisheries and the aesthetic appeal of coastal North Carolina is dependent upon the protection and sustained quality of our estuarine waters so as to safeguard and perpetuate their biological, economic and aesthetic values.

Appropriate Uses. Appropriate uses shall be those consistent with the above policy objective. Highest priority shall be allocated to the conservation of estuarine waters. The development of navigational channels, the use of bulkheads to prevent erosion, and the building of piers or wharfs where no other feasible alternative exists are examples of land uses appropriate within estuarine waters, provided that such land uses will not be detrimental to the biological and physical estuarine functions and public trust rights. Projects which would directly or indirectly block or impair existing navigation channels, increase shoreline erosion, deposit spoils below mean high tide, cause adverse water circulation patterns, violate water quality standards, or cause degradation of shellfish waters are generally considered incompatible with the management of estuarine waters.

#### Fragile, Historic or Natural Resource Areas - Historic Places

Description. Defined as historic places that are listed, or have been approved for listing by the North Carolina Historical Commission, in the National Register of Historic



Places pursuant to the National Historic Preservation Act of 1966; historical, archaeological, and other places and properties owned, managed, or assisted by the State of North Carolina pursuant to the National Historic Preservation Act of 1966; historical, archaeological, and other places and properties owned, managed, or assisted by the State of North Carolina pursuant to G. S. 121; and properties or areas that are designated by the Secretary of the Interior as National Historic Landmarks.

Location. In Washington County the following historic places have been proposed: Somerset Place on Lake Phelps, St. David's Chapel in Creswell, Rehoboth Church near Skinnersville on U.S. 64, line of cypress trees near Lake Phelps adjoining the 30 foot canal (historic vegetation), Morratuck Church near Plymouth and Garrett's Island Home near Plymouth.

Significance. Historic resources are both non-renewable and fragile. They owe their significance to their association with American history, architecture, archaeology, and culture. Properties on or approved for the National Register of Historic Places may be of national, state, or local significance.

Policy Objective. To protect and/or preserve the integrity of districts, sites, buildings, and objects in the above categories.

Appropriate Land Uses. Appropriate land uses shall be those consistent with the above stated policy objective. Land use which will result in substantial irreversible damage to the historic value of the area is inappropriate.

## Fragile, Historic or Natural Resource Areas - Complex Natural Areas

Description. Complex natural areas are defined as lands that support native plant and animal communities and provide habitat conditions or characteristics that have remained essentially unchanged by human activity. Such areas are surrounded by landscapes that have been modified but that do not drastically alter the conditions within the natural areas or their scientific or educational value. Such areas will be determined by the Commission, after consideration of written reports or testimony of competent experts, to be rare within a county or to be of particular scientific or educational value.

Location. In Washington County the Pungo National Wildlife Refuge has been proposed for classification as a complex natural area.

Significance. Complex natural areas provide the few remaining examples of conditions that existed within the coastal area prior to settlement by Western man. Often these natural areas provide habitat conditions suitable for rare or endangered species or they support plant and animal communities representative of pre-settlement conditions. These areas help provide a historical perspective to changing natural conditions in the coastal area and together are important and irreplaceable scientific and educational resources.

Policy Objective. To preserve the natural conditions of the site so as to safeguard its existence as an example of naturally occurring, relatively undisturbed plant and animal

communities of major scientific or educational value.

Appropriate Land Uses. Appropriate land uses shall be those consistent with the above policy objective. Lands within the AEC shall not be planned for uses or kinds of development that will unnecessarily jeopardize the natural or primitive character of the natural area directly or indirectly through increased accessibility. Additionally, lands adjacent to the complex natural area should not be planned for additional development that would unnecessarily endanger the recognized value of the AEC. The variability between kinds of complex natural areas and between land uses adjacent to those natural areas means that the range of permissible uses and intensity of use must be carefully tailored to the individual area.

#### Areas Subject to Public Rights - Certain Public Trust Areas

Description. All waters of the Atlantic Ocean and the lands thereunder from the mean high water mark to the seaward limit of State jurisdiction; all natural bodies of water subject to measurable lunar tides and lands thereunder to the mean high water mark; all navigable natural bodies of water and lands thereunder to the mean high water mark or ordinary high water mark as the case may be, except privately owned lakes to which the public has no right of access; all waters in artificially created bodies of water in which exists significant public fishing resources or other public resources, which are accessible to the public by navigation from bodies of water in which the public has rights of navigation; all waters in artificially created bodies of water in which the public has acquired rights by prescription, custom, usage, dedication or

any other means. In determining whether the public has acquired rights in artificially created bodies of water, the following factors shall be considered: (i) the use of the body of water by the public; (ii) the length of time the public has used the area; (iii) the value of public resources in the body of water; (iv) whether the public resources in the body of water are mobile to the extent that they can move into natural bodies of water; (v) whether the creation of the artificial body of water required permission from the State; and (vi) the value of the body of water to the public for navigation from one public area to another public area.

For purposes of the description in 5.0 and 5.1, the following definitions shall apply:

- (1) Mean High water Mark means the line on the shore established by the average of all high tides. It is established by survey based on available tidal datum. In the absence of such datum, the mean high water mark shall be determined by physical markings or comparison of the area in question with an area having similar physical characteristics for which tidal datum is readily available.
- (2) Navigable means navigable-in-fact.
- (3) Navigable-in-fact means capable of being navigated in its natural condition by the ordinary modes of navigation including modes of navigation used for recreational purposes. The natural condition of a body of water for purposes of determining navigability shall be the condition of the body of water at mean high water or ordinary high water as the case may be, and the condition of the body of water without man-made obstructions and without temporary natural obstructions. Temporary natural conditions such as water level fluctuation and temporary natural obstructions which do not permanently or totally prevent navigation do not make an otherwise navigable stream non-navigable.

- (4) Ordinary High Water Mark means the natural or clear line impressed on the land adjacent to the waterbody. It may be established by erosion or other easily recognized characteristics such as shelving, change in the character of the soil, destruction of terrestrial vegetation or its inability to grow, the presence of litter and debris, or other appropriate means which consider the characteristics of the surrounding area. The ordinary high water mark does not extend beyond the well defined banks of a river where such banks exist.

Location. In Washington County, the following waters have been proposed as public trust waters: Albemarle Sound, Bull's Bay, Lake Phelps, Pungo Lake, Welch's Creek, Conaby Creek, Mackey's Creek, and the Scuppernong River.

Significance. The public has rights in these waters including navigation and recreation. In addition, these waters support valuable commercial and sports fisheries, have aesthetic value, and are important potential resources for economic development.

Policy Objective. To protect public rights for navigation and recreation and to preserve and manage the public trust waters so as to safeguard and perpetuate their biological, economic and aesthetic value.

Appropriate Uses. Appropriate uses shall be those consistent with the above policy objective. Any land use which interferes with the public right of navigation, or other public trust rights, which the public may be found to have in these waters, shall not be allowed. The development of navigational channels, drainage ditches, the use of bulkheads to prevent erosion, and the building of piers and wharfs are examples of appropriate land use.

Fragile, Historic or Natural Resources Areas - Existing National or State Parks

Description. Defined as existing sites that have been acquired for use as national or state parks, as identified by the Secretary of Natural and Economic Resources.

Location. In Washington County, Pettigrew State Park has been proposed for this classification.

Significance. Existing national or state parks are areas containing environmental or natural resources of more than local significance where uncontrolled or incompatible development could result in major or irreversible damage to important historic, cultural, scientific, or scenic values; or natural systems; or would be detrimental to the recreational uses of natural systems. These sites provide: (1) areas of unique or scenic value; (2) recreational uses of natural resources; (3) portrayal and interpretation of plant and animal life, geology and natural features; and (4) preservation of scientific sites and natural areas of statewide importance.

Policy Objective. To protect and preserve the scenic, historic, cultural, scientific and natural values of national or state parks.

Appropriate Land Uses. Appropriate land uses shall be those consistent with the above policy objective. All development in parks shall be planned and executed so as to in no way impair, damage or detract from the values for which the areas were established to preserve and protect. In parks or parts of parks that do not contain natural areas or scientific sites, facilities for such outdoor activities as picnicking, swimming, boating, fish-

ing, hiking, nature study, and camping; and facilities normally associated with simple play fields incident to picnicking and organized camping are examples of appropriate land uses.

Facilities for recreational activities such as organized camping are examples of appropriate land uses. Facilities for recreational activities such as organized sports and athletic contests are examples of inappropriate uses. In parks or parts of parks containing natural areas or scientific sites, minimim developed paths and trails are examples of appropriate land uses. Facilities for recreational activities such as swimming, camping, picnicking, and the like are examples of inappropriate land uses in these areas.

#### Coastal Wetlands - General

Coastal wetlands are defined as "any salt marsh or other marsh subject to regular or occasional flooding by tides, including wind tides (whether or not the tide waters reach the marshland areas through natural or artificial watercourses), provided this shall not include hurricane or tropical storm tides. Salt marshland or other marsh shall be those areas upon which grow some, but not necessarily all, of the following salt marsh and marsh plant species: Smooth or salt water Cordgrass (Spartina alterniflora); Black Needlerush (Juncus roemerianus); Glasswort (Salicornia spp.); Salt Grass (Distichlis Spicata); Sea Lavender (Limonium spp.); Bulrush (Scirpus spp.); Saw Grass (Cladium Jamaicense); Cat-Tail (Typha spp.); Salt Meadow Grass (Spartina cynosuroides)." Included in this statutory definition of wetlands is "such contiguous land as the Secretary of NER reasonably

deems necessary to affect by any such order in carrying out the purposes of this Section," (G.S. 113-230 (a))

#### Coastal Wetlands - Other Coastal Marshland

Description. All other marshland which is not low tidal marshland and which contains the species of vegetation as listed in the first paragraph under Section 1.

Location. In Washington County, the coastal wetlands proposed as an area of environmental concern are approximately 37 acres of freshwater marsh surrounding the mouth of Deep Creek where it enters Bull's Bay and approximately ten acres of marsh on Albemarle Sound approximately 300 yards east of the end of N.C. 132 near Albemarle Beach.

Significance. This marshland type also contributes to the detritus supply necessary to the highly productive estuarine system essential to North Carolina's economically valuable commercial and sports fisheries.

The higher marsh types offer quality wildlife and waterfowl habitat depending on the biological and physical conditions of the marsh. The vegetative diversity in the higher marshes usually supports a greater diversity of wildlife types than the limited habitat of the low tidal marsh. This marshland type also serves an important deterrent to shoreline erosion especially in those marshes containing heavily rooted species. The dense system of rhizomes and roots of *Juncus roemerianus* are highly resistant to erosion. In addition, the higher marshes are effective sediment traps.

Policy Objective. To give a high priority to the preservation and management of the marsh so as to safeguard and perpetuate their biological, economic and aesthetic values.



Appropriate Land Uses. Appropriate land uses shall be those consistent with the above policy objective. Highest priority shall be allocated to the conservation of existing marshlands. Second priority for land use allocation of this type shall be given to development which requires water access and cannot function anywhere else, such as ports, docks and marinas, provided that the actual location of such facilities within the marsh consider coastal, physical and biological systems and further provided that feasible alternatives regarding location and design have been adequately considered and need for such development can be demonstrated. Such allocation may only be justified by the projected land use demands and by community development objectives, but in no case shall the allocation exceed the capacity of the marshland system to sustain losses without harm to the estuarine ecosystem unless the losses would be offset by a clear and substantial benefit to the public.

Natural Hazard Areas - Excessive Erosion Areas - Estuarine and River Erodible Areas

Description. Defined as the area above ordinary high water where excessive erosion has a high probability of occurring. In delineating the landward extent of this area a reasonable 25-year recession line shall be determined using the best available information. The information necessary to identify these areas will be supplied by the State Geologist.

Location. In Washington County, proposed sound erodible areas are defined by a strip of land 75 feet wide from the mean high water mark of Albemarle Sound and Bull's Bay at the mouth of the Roanoke River where it enters Albemarle Sound and extending to the county line where it intersects Bull's Bay.

**Significance.** The estuarine and sound river erodible areas are natural hazard areas especially vulnerable to erosion. Development within this type AEC is subjected to the damaging process of erosion unless special development standards and preventive measures are employed.

**Policy Objective.** To insure that development occurring within these areas is compatible with the dynamic nature of the erodible lands thus minimizing the likelihood of significant loss of property.

**Appropriate Land Uses.** Appropriate land uses shall be those consistent with the above policy objective. Permanent or substantial residential, commercial, institutional or industrial structures are not appropriate uses in estuarine and sound and river erodible areas unless stabilization has been achieved along the affected reach. Recreational, rural and conservation activities represent appropriate land uses in those erodible areas where shoreline protective construction has not been completed.

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## IX. Plymouth-Washington County Plan Relationship

Both land use plans for the Town of Plymouth and Washington County (which includes the Towns of Roper and Creswell) were prepared by the same staff and citizen's Steering Committee to insure the greatest amount of agreements between local objectives for the town and the county. This Committee consisted of seven local residents from the incorporated and unincorporated areas of the county and met throughout 1975. Both the Planning Board for the Town of Plymouth and the Planning Board for the County met jointly to review the draft plan and land classification maps prior to the first submission of the draft plans in November, 1975. The final plans for Plymouth and the county were reviewed in a joint public hearing on May 7, 1976 by members of the Board of County Commissioners and Plymouth Town Council.

X . APPENDIX

Results of Attitude Survey Taken May, 1975

(County-Wide Summary Shown Below)

LAND DEVELOPMENT POLICIES AND GOALS

1. Where do you live (check one)

29%	Town of Plymouth	9%	Skiddersville Township
19%	Plymouth Township	9%	Town of Creswell
15%	Town of Roper	7%	Scuppernong Township
13%	Lee Mills Township		

2. What is your occupation? (check one that best describes yourself)

10%	Farmer	12%	White collar job	21%	Housewife
18%	Student	28%	Blue collar job	3%	Retired
7%	Unemployed	1%	No Response		(Other Write-in)

3. Is your home located on a lot larger than 20,000 square feet?  
(approximately ½ acre)

52%	Yes	42%	No
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4. Do you have your own well?

64%	Yes	22%	No	10%	I am on city water.
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5. Do you have your own individual septic tank?

70%	Yes	23%	No	4%	(using privy)
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6. Are you satisfied with the quality of water?

75%	Yes	22%	No
-----	-----	-----	----

7. Have you had any problems with your septic tank?

16%	Yes	66%	No	10%	Not applicable
					(using privy or city sewer)

8. Do you feel that different types of land uses such as  
residential, commercial, and industrial should be....(check one)

62%	Separated as much as possible, or
22%	Allowed to develop unrestricted.

9. Do you feel that your neighborhood has adequate recreational facilities?  
 25% Yes 68% No  
 If not, what type would you like to see developed (fill in)  
 52%, responding with additional comments
10. Do you want additional residential growth in your community?  
 52% Yes 17% No 27% Not sure
11. Do you want additional industrial growth in your community?  
 66% Yes 14% No 18% Not sure
12. Do you want additional commercial growth in your community?  
 65% Yes 10% No 21% Not sure
13. Are the roads and streets adequate in your neighborhood?  
 53% Yes 40% No  
 If not, what are the major problems? (fill in)  
 33% responding with additional comments
14. Do you feel that the county should strive to increase the health programs and services?  
 63% Yes 25% No  
 If yes, what types of programs and services? (fill in)  
 28% responding with additional comments
15. Do you feel that the county should strive to increase educational programs and services?  
 84% Yes 8% No
16. Do you like your county and neighborhood as it is now?  
 53% Yes 36% No  
 What do you want changed? (fill in)  
 What should be protected or maintained? 39% responding with additional comments
17. Do you feel that air pollution is a problem in the area?  
 34% Yes 55% No
18. Do you feel that water pollution or poor fishing is a problem in the area?  
 43% Yes 48% No



19. Would you rather... 22% A. limit growth, or 53% B. promote the development of additional services such as public water and sewer systems in areas where development could not take place without such services?

20. Would you be willing to pay for such water and sewer improvements?

24% Yes 33% No 32% Not sure

21. Below is a list of some services and functions provided by local government. Please check or fill in those services or functions which need improvement:

38%	police	30%	hospital	44%	garbage pick-up
35%	fire	21%	library	20%	historic pre-servation
51%	dog control	25%	public housing	36%	building inspection
2% responding with additional comments					

22. Additional comments. (attach separate sheets if necessary)

16% responding with additional comments.

SCHOOL SURVEY RESULTS  
SKINNERSVILLE TOWNSHIP

LAND DEVELOPMENT POLICIES AND GOALS

1. Where do you live? (check one)

Town of Plymouth	72% Skinnersville Township
Plymouth Township	Town of Creswell
Town of Roper	Scuppernong Township
Lee Mills Township	

2. What is your occupation? (Check one that best describes yourself)

(15%) 11 Farmer	(6%) 4 White collar job	(24%) 17 Housewife
(13%) 9 Student	(29%) 21 Blue collar job	(6%) 4 Retired
(7%) 5 Unemployed	Other (write in)	

3. Is your home located on a lot larger than 20,000 square feet?

(60%) 43 Yes	(35%) 25 No
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4. Do you have your own well?

(81%) 58 Yes	(15%) 11 No
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5. Do you have your own individual septic tank?

(76%) 55 Yes	(24%) 17 No
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6. Are you satisfied with the quality of water?

(75%) 54 Yes	(22%) 16 No
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7. Have you had any problems with your septic tank?

(13%) 9 Yes	(81%) 58 No
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8. Do you feel that different types of land uses such as residential, commercial, and industrial should be... (check one)

(54%) 39 A. Separated as much as possible, or
(24%) 17 B. Allowed to develop unrestricted.

9. Do you feel that your neighborhood has adequate recreation facilities?

(18%) 13 Yes	(78%) 56 No
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If not, what type would you like to see developed? (fill in)

39 responses (54%)

10. Do you want additional residential growth in your community?  
(50%) 36 Yes (19%) 14 No (29%) 21 Not sure
11. Do you want additional industrial growth in your community?  
(58%) 42 Yes (24%) 17 No (17%) 12 Not sure
12. Do you want additional commercial growth in your community?  
(60%) 43 Yes (15%) 11 No (25%) 18 Not sure
13. Are the roads and streets adequate in your neighborhood?  
(56%) 40 Yes (35%) 25 No  
If not, what are the major problems? (fill in)  
21 comments (29%)
14. Do you feel that the county should strive to increase the health programs and services?  
(63%) 45 Yes (25%) 18 No  
If yes, what types of programs and services? (fill in)  
24 comments (33%)
15. Do you feel that the county should strive to increase educational programs and services?  
(85%) 61 Yes (6%) 4 No
16. Do you like your county and neighborhood as it is now?  
(54%) 39 Yes (40%) 29 No  
What do you want changed? (fill in)  
What should be protected or maintained? 32 comments (44%)
17. Do you feel that air pollution is a problem in the area?  
(31%) 22 Yes (64%) 46 No
18. Do you feel that water pollution or poor fishing is a problem in the area?  
(40%) 29 Yes (56%) 40 No
19. Would you rather... (25%) 18 A. limit growth, or (44%) 32 B. promote the development of additional services such as public water and sewer systems in areas where development could not take place without such services.
20. Would you be willing to pay for such water and sewer improvements?  
(21%) 15 Yes (38%) 27 No (33%) 24 Not sure

21. Below is a list of some services and functions provided by local government. Please check or fill in those services or functions which need improvement:

(35%) 25 police	(31%) 22 hospital	(39%) 28 garbage pick-up
(51%) 37 fire	(11%) 8 library	(19%) 14 historic pre-servation
(49%) 35 dog control	(26%) 19 public housing	(19%) 14 Building inspection

Land inspection, tax & energy controls, bulkhead permits,  
(4%) 3 Other.

22. Additional comments. (Attach separate sheet if necessary)  
13 comments (18%)

SCHOOL SURVEY RETURNS

SCUPPERNONG TOWNSHIP

LAND DEVELOPMENT POLICIES AND GOALS

1. Where do you live?

Town of Plymouth

Skiddersville Township

Plymouth Township

Town of Creswell

Town of Roper

60 Scuppernong Township

Lee Mills Township

2. What is your occupation? (check one that best describes yourself)

(23%) 14 Farmer (15%) 9 White collar job (17%) 10 Housewife  
(12%) 7 Student (25%) 15 Blue collar job (2%) 1 Retired  
(7%) 4 Unemployed

3. Is your home located on a lot larger than 20,000 square feet?  
(approximately 1/2 acre)

(82%) 49 Yes (12%) 7 No

4. Do you have your own well?

(93%) 56 Yes (7%) 4 No

5. Do you have your own individual septic tank?

(92%) 55 Yes (8%) 5 No

6. Are you satisfied with the quality of water?

(85%) 51 Yes (15%) 9 No

7. Have you had any problems with your septic tank?

(17%) 10 Yes (80%) 48 No

8. Do you feel that different types of land uses such as  
residential, commercial, and industrial should be...(check one)

(70%) 42 A. Separated as much as possible, or

(22%) 13 B. Allowed to develop unrestricted.

9. Do you feel that your neighborhood has adequate recreational  
facilities?

(28%) 17 Yes (42%) 42 No

If not, what type would you like to see developed? (fill in)

36 comments (60%)

10. Do you want additional residential growth in your community?  
(58%) 35 Yes (18%) 11 No (23%) 14 Not sure
11. Do you want additional industrial growth in your community?  
(72%) 43 Yes (18%) 11 No (10%) 6 Not sure
12. Do you want additional commercial growth in your community?  
(60%) 41 Yes (17%) 10 No (13%) 8 Not sure
13. Are the roads and streets adequate in your neighborhood?  
(65%) 39 Yes (33%) 20 No  
If not, what are the major problems? (fill in)  
14 comments (23%)
14. Do you feel that the county should strive to increase the health programs and services?  
(62%) 37 Yes (27%) 16 No  
If yes, what types of programs and services? (fill in)  
17 comments (28%)
15. Do you feel that the county should strive to increase educational programs and services?  
(87%) 52 Yes (5%) 3 No
16. Do you like your county and neighborhood as it is now?  
(60%) 36 Yes (32%) 19 No  
What do you want changed? (fill in)  
What should be protected or maintained? 19 comments (32%)
17. Do you feel that air pollution is a problem in the area?  
(18%) 11 Yes (75%) 45 No
18. Do you feel that water pollution or poor fishing is a problem in the area?  
(43%) 26 Yes (45%) 27 No
19. Would you rather (20%) 12 A. limit growth, or (53%) 32.  
B. promote the development of additional services such as public water and sewer systems in areas where development could not take place without such services?

20. Would you be willing to pay for such water and sewer improvements?

(32%) 19 Yes (38%) 23 No (22%) 13 Not sure

21. Below is a list of some services and functions provided by local government. Please check or fill in those services or functions which need improvement:

(33%) 20 police	(33%) 20 hospital	(48%) 29 garbage pick-up
(32%) 19 fire	(45%) 27 library	(18%) 11 historic preservation
(43%) 26 dog control	(17%) 10 public housing	(22%) 13 building inspection

22. Additional comments. (attach separate sheet if necessary)

11 comments (18%)

## SCHOOL SURVEY RESULTS

### TOWN OF CRESWELL

#### LAND DEVELOPMENT POLICIES AND GOALS

1. Where do you live? (check one)

75 Town of Creswell

2. What is your occupation? (check one that best describes yourself)

(12%) 9 Farmer (8%) 6 White collar job (23%) 17 Housewife  
(21%) 16 Student (25%) 19 Blue collar job (3%) 2 Retired  
(8%) 6 Unemployed

3. Is your home located on a lot larger than 20,000 square feet?  
(approximately  $\frac{1}{2}$  acre)

(55%) 41 Yes (44%) 33 No

4. Do you have your own well?

(76%) 57 Yes (21%) 16 No

5. Do you have your own individual septic tank?

(83%) 62 Yes (16%) 12 No

6. Are you satisfied with the quality of water?

(60%) 45 Yes (37%) 28 No

7. Have you had any problems with your septic tank?

(23%) 17 Yes (65%) 49 No (8%) 6 No septic tank.

8. Do you feel that different types of land uses such as  
residential, commercial, and industrial should be  
(check one)

(64%) 48 A. Separated as much as possible, or

(20%) 15 B. Allowed to develop unrestricted.

9. Do you feel that your neighborhood has adequate recreational  
facilities?

(16%) 12 Yes (81%) 61 No

If not, what type would you like to see developed? (fill in)

37 comments (49%)



10. Do you want additional residential growth in your community?  
(51%) 38 Yes (15%) 11 No (29%) 22 Not sure

11. Do you want additional industrial growth in your community?  
(72%) 54 Yes (8%) 6 No (16%) 12 Not sure

12. Do you want additional commercial growth in your community?  
(72%) 54 Yes (5%) 4 No (20%) 15 Not sure

13. Are the roads and streets adequate in your neighborhood?  
(43%) 36 Yes (45%) 34 No

If not, what are the major problems? (fill in)  
31 comments, (41%)

14. Do you feel that the county should strive to increase the health programs and services?  
(72%) 54 Yes (19%) 14 No

If yes, what types of programs and services? (fill in)  
29 comments (39%)

15. Do you feel that the county should strive to increase educational programs and services?  
(89%) 67 Yes (5%) 4 No

16. Do you like your county and neighborhood as it is now?  
(53%) 40 Yes (35%) 26 No

What do you want changed? (fill in) 27 comments (36%)  
What should be protected or maintained?

17. Do you feel that air pollution is a problem in the area?  
(23%) 17 Yes (55%) 41 No

18. Do you feel that water pollution or poor fishing is a problem in the area?  
(45%) 34 Yes (48%) 36 No

19. Would you rather... (13%) 10 A. limit growth, or (69%) 51 B. promote the development of additional services such as public water and sewer systems in areas where development could not take place without such services?

20. Would you be willing to pay for such water and sewer improvements?  
(32%) 24 Yes (23%) 17 No (32%) 24 Not sure.

21. Below is a list of some services and functions provided by local government. Please check or fill in those services or functions which need improvement:

(44%) 33 police	(47%) 35 hospital	(43%) 32 garbage pick-up
(33%) 25 fire	(49%) 37 library	(21%) 16 historic preservation
(50%) 42 dog control	(29%) 22 public housing	(35%) 26 building inspection

22. Additional comments. (attach separate sheet if necessary)

7 comments (9%)

PLYMOUTH TOWNSHIP

LAND DEVELOPMENT POLICIES AND GOALS

1. Where do you live? (check one)

160 Plymouth Township

2. What is your occupation? (check one that best describes yourself)

(4%) 7 Farmer (14%) 22 White collar job (16%) 26 Housewife  
(22%) 35 Student (39%) 62 Blue collar job (3%) 4 Retired  
(1%) 1 Unemployed (1%) 5 Other (write in)

3. Is your home located on a lot larger than 20,000 square feet?  
(approximately  $\frac{1}{2}$  acre)

(61%) 98 Yes (36%) 58 No

4. Do you have your own well?

(83%) 133 Yes (10%) 16 No 9 I am on city water

5. Do you have your own individual septic tank?

(86%) 137 Yes (9%) 14 No 6 I am on city sewer

6. Are you satisfied with the quality of water?

(78%) 124 Yes (19%) 31 No

7. Have you had any problems with your septic tank?

(15%) 24 Yes (78%) 124 No 5 Not applicable-I am on city sewer

8. Do you feel that different types of land uses such as  
residential, commercial, and industrial should be...(check one)

(74%) 118 A. Separated as much as possible, or

(18%) 29 B. Allowed to develop unrestricted.

9. Do you feel that your neighborhood has adequate recreational  
facilities?

(28%) 45 Yes (68%) 108 No

If not, what type would you like to see developed? (fill in)

95 comments (59%)

10. Do you want additional residential growth in your community?  
(44%) 71 Yes (33%) 52 No (18%) 29 Not sure
11. Do you want additional industrial growth in your community?  
(62%) 99 Yes (19%) 30 No (18%) 29 Not sure
12. Do you want additional commercial growth in your community?  
(63%) 100 Yes (13%) 20 No (24%) 38 Not sure
13. Are the roads and streets adequate in your neighborhood?  
(51%) 81 Yes (39%) 63 No  
If not, what are the major problems? (fill in)  
63 Comments (39%)
14. Do you feel that the county should strive to increase the health programs and services?  
(54%) 96 Yes (29%) 47 No  
If yes, what types of programs and services? (fill in)  
43 Comments (27%)
15. Do you feel that the county should strive to increase educational programs and services?  
(79%) 127 Yes (9%) 15 No
16. Do you like your county and neighborhood as it is now?  
(56%) 90 Yes (29%) 46 No  
What do you want changed? (fill in) 60 comments (43%)  
What should be protected or maintained?
17. Do you feel that air pollution is a problem in the area?  
(44%) 71 Yes (44%) 70 No
18. Do you feel that water pollution or poor fishing is a problem in the area?  
(43%) 69 Yes (43%) 68 No
19. Would you rather (36%) 57 A. limit growth, or (42%) 67 B. promote the development of additional services such as public water and sewer systems in areas where development could not take place without such services?
20. Would you be willing to pay for such water and sewer improvements?  
(9%) 15 Yes (44%) 70 No (29%) 46 Not sure

21. Below is a list of some services and functions provided by local government. Please check or fill in those services or functions which need improvement:

(46%) 73 police	(21%) 33 hospital	(46%) 74 garbage pick-up
(24%) 38 fire	(6%) 9 library	(27%) 43 historic preservation
(56%) 90 dog control	(20%) 32 public housing	(25%) 40 building inspection

4 comments (other)

22. Additional comments (attach separate sheet if necessary)

29 comments (18%)

## TOWN OF PLYMOUTH RETURNS

### LAND DEVELOPMENT POLICIES AND GOALS

1. Where do you live? (check one)

237 Town of Plymouth

2. What is your occupation? (check one that best describes yourself)

0 Farmer (24%) 58 White collar job (19%) 45 Housewife  
(22%) 51 Student (27%) 63 Blue collar job (1%) 3 Retired  
(5%) 12 Unemployed

3. Is your home located on a lot larger than 20,000 square feet?  
(approximately  $\frac{1}{2}$  acre)

(28%) 67 Yes (66%) 156 No

4. Do you have your own well?

30 Yes 167 No 50 I am on city water

5. Do you have your own individual septic tank?

38 Yes 170 No 45 I am on city sewer

6. Are you satisfied with the quality of water?

(80%) 189 Yes (19%) 44 No

7. Have you had any problems with your septic tank?

16 Yes 61 No 164 Not applicable-I am on city  
sewer.

8. Do you feel that different types of land uses such as  
residential, commercial, and industrial should be, (check one)

(63%) 150 A. Separated as much as possible, or

(24%) 56 B. Allowed to develop unrestricted.

9. Do you feel that your neighborhood has adequate recreational  
facilities?

(24%) 56 Yes (76%) 179 No

If not, what type would you like to see developed? (fill in)

144 comments (61%)

10. Do you want additional residential growth in your community?

(56%) 133 Yes (15%) 36 No (28%) 66 Not sure

11. Do you want additional industrial growth in your community?  
(70%) 167 Yes (10%) 24 No (18%) 43 Not sure
12. Do you want additional commercial growth in your community?  
(70%) 167 Yes (7%) 16 No (21%) 50 Not sure
13. Are the roads and streets adequate in your neighborhood?  
(46%) 109 Yes (48%) 114 No  
If not, what are the major problems? (fill in)  
98 comments (41%)
14. Do you feel that the county should strive to increase the health programs and services?  
(64%) 151 Yes (25%) 59 No  
If yes, what types of programs and services? (fill in)  
63 comments (27%)
15. Do you feel that the county should strive to increase educational programs and services?  
(85%) 202 Yes (10%) 23 No
16. Do you like your county and neighborhood as it is now?  
(55%) 130 Yes (39%) 92 No  
What do you want changed? (fill in) 100 comments (42%)  
What should be protected or maintained.
17. Do you feel that air pollution is a problem in the area?  
(50%) 119 Yes (39%) 92 No
18. Do you feel that water pollution or poor fishing is a problem in the area?  
(41%) 96 Yes (50%) 118 No
19. Would you rather (19%) 46 A. limit growth, or (58%) 138 B. promote the development of additional services such as public water and sewer systems in areas where development could not take place without such services?
20. Would you be willing to pay for such water and sewer improvements?  
(21%) 50 Yes (27%) 63 No (42%) 99 Not sure

21. Below is a list of some services and functions provided by local government. Please check or fill in those services or functions which need improvement:

(44%) 104 police	(21%) 49 hospital	(50%) 118 garbage pick-up
(23%) 54 fire	(6%) 14 library	(23%) 54 historic preservation
(58%) 138 dog control	(25%) 60 public housing	(27%) 65 building inspection

22. Additional comments. (attach separate sheet if necessary)

44 comments (19%)



LEE's MILL TOWNSHIP

LAND DEVELOPMENT POLICIES AND GOALS

1. Where do you live: (check one)

105 Lee Mills Township

2. What is your occupation? (check one that best describes yourself)

(10%) 11 Farmer (10%) 11 White collar job (18%) 19 Housewife  
(14%) 15 Student (37%) 39 Blue collar job (1%) 1 Retired  
(9%) 9 Unemployed

3. Is your home located on a lot larger than 20,000 square feet?  
(approximately ½ acre)

(48%) 50 Yes (44%) 46 No

4. Do you have your own well?

(68%) 71 Yes (25%) 26 No (3%) 3 I am on city water

5. Do you have your own individual septic tank?

(74%) 78 Yes (18%) 19 No (2%) 2 I am on city sewer

6. Are you satisfied with the quality of water?

(76%) 80 Yes (18%) 19 No

7. Have you had any problems with your septic tank?

(17%) 18 Yes (66%) 69 No (8%) 8 Not applicable-no septic tank

8. Do you feel that different types of land uses such as  
residential, commercial, and industrial should be...(check one)

(54%) 57 A. Separated as much as possible, or

(22%) 23 B. Allowed to develop unrestricted.

9. Do you feel that your neighborhood has adequate recreational  
facilities?

(22%) 23 Yes (70%) 74 No

If not, what type would you like to see developed? (fill in)

51 comments, (49%)

10. Do you want additional residential growth in your community?

(52%) 55 Yes (12%) 13 No (27%) 28 Not sure

11. Do you want additional industrial growth in your community?  
(64%) 67 Yes (10%) 10 No (18%) 19 Not sure
12. Do you want additional commercial growth in your community?  
(67%) 70 Yes (7%) 7 No (18%) 19 Not sure
13. Are the roads and streets adequate in your neighborhood?  
(49%) 51 Yes (44%) 46 No  
If not, what are the major problems? (fill in)  
37 comments, (35%)
14. Do you feel that the county should strive to increase the health programs and services?  
(64%) 67 Yes (24%) 25 No  
If yes, what types of programs and services? (fill in)
15. Do you feel that the county should strive to increase educational programs and services?  
(87%) 91 Yes (7%) 7 No
16. Do you like your county and neighborhood as it is now?  
(47%) 49 Yes (36%) 38 No  
What do you want changed? (fill in) 40 comments, (38%)  
What should be protected or maintained?
17. Do you feel that air pollution is a problem in the area?  
(30%) 32 Yes (59%) 62 No
18. Do you feel that water pollution or poor fishing is a problem in the area?  
(39%) 41 Yes (50%) 52 No
19. Would you rather (22%) 23 A. limit growth, or (52%) 55 B. promote the development of additional services such as public water and sewer systems in areas where development could not take place without such services?
20. Would you be willing to pay for such water and sewer improvements?  
(24%) 25 Yes (28%) 29 No (36%) Not sure

21. Below is a list of some services and functions provided by local government. Please check or fill in those services or functions which need improvement:

(29%) 30 police	(24%) 25 hospital	(43%) 45 garbage pick-up
(33%) 35 fire	(12%) 13 library	(12%) 13 historic preservation
(43%) 45 dog control	(20%) 21 public housing	(23%) 24 building inspection

22. Additional comments. (attach separate sheet if necessary)

13 comments (12%)

TOWN OF ROPER

LAND DEVELOPMENT POLICIES AND GOALS

1. Where do you live? (check one)

121 Town of Roper

2. What is your occupation? (check one that best describes yourself)

(7%) 8 Farmer (10%) 12 White collar job (28%) 34 Housewife  
(23%) 28 Student (13%) 16 Blue collar job (2%) 2 Retired  
(11%) 13 Unemployed

3. Is your home located on a lot larger than 20,000 square feet?  
(approximately ½ acre)

(33%) 40 Yes (59%) 71 No

4. Do you have your own well?

(31%) 37 Yes (26%) 31 No (42%) 51 I am on city water.

5. Do you have your own individual septic tank?

(62%) 75 Yes (34%) 41 No (4%) 5 I am on city sewer.

6. Are you satisfied with the quality of water?

(72%) 87 Yes (25%) 30 No

7. Have you had any problems with your septic tank?

(19%) 23 Yes (68%) 82 No (7%) 9 N/A-No sewer; privy.

8. Do you feel that different types of land uses such as  
residential, commercial, and industrial should be...(check one)

(55%) 66 A. Separated as much as possible, or

(24%) 29 B. Allowed to develop unrestricted.

9. Do you feel that your neighborhood has adequate recreational  
facilities?

(36%) 43 Yes (59%) 71 No

If not, what type would you like to see developed? (fill in)

42 comments (35%)

10. Do you want additional residential growth in your community?

(51%) 62 Yes (8%) 10 No (36%) 43 Not sure

11. Do you want additional industrial growth in your community?  
(63%) 76 Yes (7%) 9 No (26%) 31 Not sure
12. Do you want additional commercial growth in your community?  
(62%) 75 Yes (6%) 7 No (27%) 33 Not sure
13. Are the roads and streets adequate in your neighborhood?  
(53%) 64 Yes (38%) 46 No  
If not, what are the major problems? (fill in)  
32 comments (26%)
14. Do you feel that the county should strive to increase the health programs and services?  
(64%) 77 Yes (26%) 32 No  
If yes, what types of programs and services? (fill in)  
28 comments (23%)
15. Do you feel that the county should strive to increase educational programs and services.  
(78%) 94 Yes (12%) 15 No
16. Do you like your county and neighborhood as it is now?  
(45%) 55 Yes (42%) 51 No  
What do you want changed? (fill in) 48 comments (40%)  
What should be protected or maintained?
17. Do you feel that air pollution is a problem in the area?  
(42%) 51 Yes (49%) 59 No
18. Do you feel that water pollution or poor fishing is a problem in the area?  
(47%) 57 Yes (41%) 50 No
19. Would you rather (19%) 23 A. limit growth, or (52%) 63. B. promote the development of additional services such as public water and sewer systems in areas where development could not take place without such services?
20. Would you be willing to pay for such water and sewer improvements?  
(31%) 37 Yes (31%) 37 No (27%) 33 Not sure.

21. Below is a list of some services and functions provided by local government. Please check or fill in those services or functions which need improvement:

(33%) 40 police	(34%) 41 hospital	(36%) 43 garbage pick-up
(46%) 56 fire	(21%) 25 library	(19%) 23 historic preservation
(50%) 60 dog control	(38%) 46 public housing	(30%) 36 building inspection

(1%) 1, schools, (2%) 2, more stores, (1%) 1, roads

2. Additional comments. (attach separate sheet if necessary)

20 comments (17%)

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