CURRITUCK COUNTY

LAND USE PLAN

1980

CURRITUCK COUNTY

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INTRODUCTION

The 1980 Land Use Plan Update for Currituck County was prepared by the Currituck County Land Use Advisory Committee with technical assistance by Coastal Consultants, Ltd. The purpose of the Plan Update is to assist the citizens of the County, State and Federal governments in making decisions concerning natural resources, facilities, services, and growth of the County. Previous policies were reviewed to determine which policies were still desired, and and what new ones were necessary.

Included in this update are analyses of special areas about which information was developed in order for the Committee to determine policies(e.g. mobile homes, Currituck Banks).

Currituck County is located in the northeastern corner of North Carolina. It is bounded on the north by Virginia, on the east by the Atlantic Ocean, and on the west by Camden County and the North River. Currituck County is divided into three major land areas by natural features. The main portion of the County is the peninsula projecting between the North River and Currituck Sound, Knotts Island is a peninsula that extends into Currituck Sound from Virginia, the third portion is the Currituck Outer Banks, which extends from the Virginia Line to Dare County.

PRESENT CONDITIONS
Section I

The purpose of this section of the Land Use Plan Update is to evaluate existing conditions within the County, specifically demographic and economic patterns.

POPULATION

The consultant's planning approach involves a study of population and housing, together with an understanding of their implications on the use of the land, the capacity of the land to absorb the growth, the capacity of major capital facilities to absorb the growth and finally an adjustment of growth rates through management tools in order to accomplish growth management goals. Because Currituck County had special problems which would interfere with growth projections, it became incumbent to deal with those problems first. Thus, Coastal Consultants, Ltd. began their analysis with a study of the Outer Banks in order to determine the growth policies towards the "subset". This was necessary because any determination of a right of access and development would profoundly affect the projected population and the need for facilities. Having completed that analysis, we studied problems attendant to population.

The population of Currituck County was determined by the U.S. Census of 1970 to be 6,976 people. By township, this population was estimated as:

Fruitville	508
Moyock	1494
Crawford	2487
Poplar Branch	2487

Since 1970, the North Carolina Office of State Budget and Management has attempted to estimate population changes. They estimated that in 1978, the population had risen to 10,600 people. This represents an estimated 5.3% annual growth rate. Furthermore, they estimated that based on the 1976 OBER series the population in 1990 would be approximately 24,400 people, with an annual growth rate from 1978 to 1990 of 7.3%. Until the 1980 census is completed, the county will have to rely on estimated data. In order to check the State estimates, we decided to physically count the number of structures currently being used for residential purposes. We felt that this information would offer us the most reliable gauge of growth.

We determined that as of March 1980, there were approximately 4156 housing units in Currituck County. This number does not include houses that are clearly not in residential use, structures that were removed from the housing stock by fire or flood or collapse. By consulting the property records in the county tax office, we were able to determine when most of the houses were built. (We resorted to this methodology because the county does not have a record of building starts before 1978.) From this information, we determined that 671 units were added within the last five years and 955 units

were added between 1970 and 1975. One of the difficulties with this information is the necessity of counting mobile homes. New additions to the housing stock from mobile homes were estimated to be 298 between 1975 and 1980 and 587 between 1970 and 1975. In order to count mobile homes, we were forced to presume that mobile home additions came from the placement of new or relatively new mobile homes on property (a risky assumption).

Furthermore, our method of analysis presumes that even among inhabitable structures there is a 7% vacancy rate. The Office of State Budget and Management determined that the housing size in the county in 1975 was 3.17 persons per household. We adjusted this rate to reflect declining house sizes of new residents and the vacancy rate and hence used a multiplier of 2.9 persons per house. For purposes of comparison we used a lower vacancy rate of 3% and did not adjust for declining house size. This left us with a multiplier of 3.1 persons per household. The only way to determine the actual rate would be to conduct a random sample of counted structures to measure vacancy and house size. When we checked our results with the census data, we found we had several hundred more people in the county in 1970; this seemed to affirm our judgment that the methodology was appropriate, the excess being seasonal residents.

For purposes of land use analysis, we have found that it is not usually advisable to remove seasonal residents from the study. Seasonal residents impact as much as permanent residents on the environment and the land. Many facilities, particularly water and sewer, must meet sustained peak demand occasioned by regular seasonal use. Other facilities, such as fire and police, roads, and health, must plan to meet seasonal capacity. In fact, only schools and welfare seem planned to permanent population (seasonal residents would be expected to send their children to school in the area in which they are permanent residents). We have attempted to indicate a percentage of seasonal use, although there were too many problems in interpreting the data to use this projection reliably. When the 1980 Census is complete, we will again be able to determine seasonal residents in mobile units and brick and frame housing by subtracting the estimated population from the census population.

The housing data on seasonal and permanent residents does not include persons living in camper trailers or vehicles, nor does it include possible "bulges" in house sizes from summer visitation and passers-through. Given these reservations, we estimate the population as follows:

Although the growth rate for the nine year period was estimated at 5.6%, the growth rate for the last 4 years was projected at only 4.5%, representing some decline. This estimate is higher however than the growth rate projected by the State Office of Budget and Management in that they projected a 3.5% annual increase.

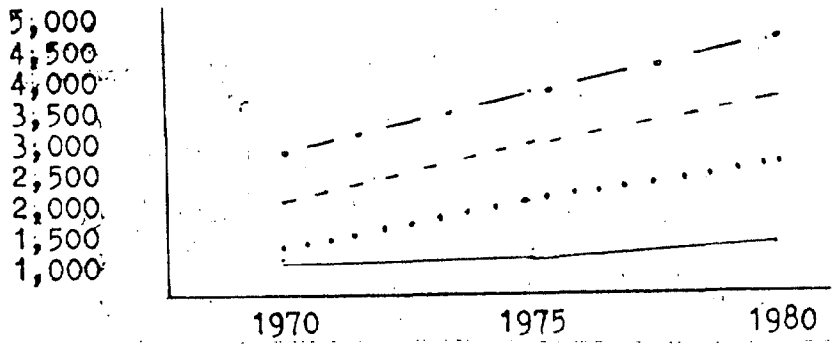
We should note that house size in ocean beach communities appear to exhibit 4.5 persons per unit during peak season. Whether this applies to soundside seasonal communities is not capable of determination. Permanent housing stock and population should be expected to decrease further in house size.

If we break this information into the township unit, we can learn something about those areas of the county which are realizing the most growth. In terms of net increase in population, Poplar Branch township has shown the most growth, namely 549 new housing units (approximately 1593 people) in the last ten years. On the other hand, the highest rate of growth occurred in Moyock township where the annual growth rate exceeded 7.3%.

This information is set out in more detail in the table below:

Township	POPULATION (1970-1980) 1980	1975	1970	1970-80	Rate of growth 70-80	75-80
Fruitville ———	1360	1157	1056	304	2.9%	4.0%
Crawford – – – –	3602	3056	2184	1418	5.7	4.3
Moyock · · · · ·	2567	2056	1369	1198	7.3	5.5
Poplar Branch—·—·	4524	3836	2931	1593	5.0	4.2
TOTAL	12053	10105	7540	4513		

Graphically, growth patterns appear as follows:



Currituck County has incurred a strong growth rate since 1970 which has added an estimated 4500 persons to the total population since 1970. The growth has been fairly evenly distributed throughout the County except in Fruitville Township, which has the smallest population as well as the slowest growth rate.

Currituck County does get a substantial amount of seasonal visitors.(Approximately 25% of its peak population.) The Atlantic flyway and winter resting place for waterfowl and the well-known bass fishery of the Sound generate considerable early and late season tourism, as well as longer term seasonal residents in campgrounds and second homes. The effects of the increased seasonal population as well as the increased permanent population on land use and services are discussed in the sections on capacity, facilities and services.

ECONOMY and EMPLOYMENT

Agriculture is the main economic activity within Currituck County due to the climate, soil conditions and the working habits of the people. The trend is increased value of agriculture products, with fewer farms, mechanization and specialization, and less tenancy.

Agricultural [1]

No. of farms	191
Ave. size of farms (acres)	283
Ave. value of land & bldgs.	$180,771 (per farm)
Value of agric. prod. sold	
Crops	$8,962,000
L/S Poultry	3,450,000
Forest prod.	20,000
TOTAL	$12,432,000
Tenure of Operators	
Full owners	47%
Part owners	38%
Tenants	15%
Estimated Farm Receipts	
Crop	$10,478,585
L/S &Poultry	6,544,000
Forestry	414,000
TOTAL	$17,436,585

[1] Paul S. Stone, Coordinator, Center for Rural Resource Development, North Carolina State University, 1979.

Farmland and Income[2]

	Acres of Harvested and Idle Cropland	Estimated Farm Income
1965	38,714	$ 8,397,628
1966	38,699	7,794,928
1967	39,391	6,795,621
1968	38,550	7,888,630
1969	39,580	9,075,630
1970	39,154	6,621,000
1971	40,848	5,760,000
1972	39,471	7,173,000
1973	43,109	11,123,000
1974	41,590	14,938,000
1975	38,914	13,013,000
1976	41,328	15,046,000
1977	38,545	11,672,000
1978	40,614	9,288,000
1979	41,500	12,432,000

Labor Force[3]

	Total Labor Force	Rate Of Unemployment
1970	2,710	5.5%
1971	2,710	5.5%
1972	2,700	5.2%
1973	2,670	4.9%
1974	2,710	5.2%
1975	2,720	6.3%
1976	2,610	6.5%
1977	2,890	6.6%
1978	4,660	3.9%

Industrial Employment[4]

	Total	Manufacturing	Other
1970	660	60	600
1971	740	110	630
1972	780	120	660
1973	930	160	770
1974	940	130	810
1975	1,010	120	890
1976	1,080	150	930
1977	1,110	180	930
1978	1,180	160	1,020

[2] Office of State Budget and Management, Profile, NC Counties, 1979.

[3] Office of State Budget and Management

[4] Office of State Budget and Management

Sales and Use Tax Gross Collections and Gross Retail Sales [5]

Fiscal	Sales and Use Tax	Retail Sales
1965-66	$ 97,224	$ 7,343,601
1966-67	95,987	8,029,093
1967-68	100,463	8,058,464
1968-69	109,280	8,791,866
1969-70	114,754	9,182,794
1970-71	138,174	11,149,289
1971-72	167,159	12,457,525
1972-73	212,806	17,205,298
1973-74	257.019	25,605,882
1974-75	298,907	34,084,482
1975-76	362,394	35,103,924
1976-77	393,884	39,362,049
1977-78	473,650	40,292,764
1978-79	547,412	40,168,364

Industry--New and Expanded [6]

Cumulative Total for the Years	Investment (in 000s)		Employees	
	New	Expanded	New	Expanded
1960-1964	$950	$600	75	15
1965-1969	55	0	8	0
1970-1974	75	15	70	0
1975-1979	0	0	0	0

[5] Office of State Budget and Management

[6] Office of State Budget and Management

The majority of new growth in the County stems from the in-migration of persons who work in the Norfolk-Portsmouth area. In effect, the income to the County derived from taxes is from the property taxes of the "bedroom community" and the farms. The County is also experiencing an increase in the number of retired persons. Although industrial land use continues to be a small contributer of County income, the tourist industry continues to be a large source of income. The North Carolina Division of Tourism and Travel Promotion reports that receipts from travel expenditures during 1977 amounted to $2,619,000, and in 1978, the latest year figures were available, $2,918,000 came into the County. This amounts to about 21% of total retail income in the County.

EXISTING LAND USE

The existing land use map included in this report shows generally how the development (structures) are distributed throughout the County. The purpose of this map is to indicate the scattered development pattern of the County, with strip development along major roads. This pattern emphasizes the difficulty of providing services in an economical manner to all residents of the County. Pockets of development are shown, especially trailer parks and growth centers such as Moyock and Grandy, where public services are feasible with appropriate densities. Development of the Currituck Banks continues to progress slowly. Access problems, the state of the economy, and the speculative nature of many of the lot sales are probable causes. Furthermore, many lots were purchased by those who are waiting for retirement before building.

In 1979, Howard T. Capps. PA, completed a land use inventory of Currituck County at a scale of 1" =2000' which served as a basis for analysis of existing land use. On these maps are shown forested areas, agricultural uses, roads, water, marshes, and types of structures. Due to their size, they are not included in the report, although they are available for review at the County Building Inspector's office.

Another source of land use information was obtained from the NASA satellite. We obtained color infrared photography of the County for 1979 from which we were able to determine extent of marshland, forest resources, agricultural lands, and water turbidity.

Significant Land Use Compatibility Problems

Many compatibility problems such as commercial or industrial activities in residential areas have been alleviated by enforcement of regulations in the zoning ordinance. Other compatibility problems are complaints about hog lots about odors, removal of fill from the County (soil mining), and mobile home development. These problems are discussed in Section V-Policy.

Problems From Unplanned Development

The primary land use problems in the County have arisen from high density mobile home parks, and mobile home subdivisions which have been located in areas which were previously agricultural. This growth has occurred in a sprawl pattern which has made the provision of facilities and services difficult. Development has taken place in many areas which are environmentally unsuitable (e.g. soils unsuitable for septic tanks, marshland, productive farmland).

Areas Likely to Experience Major Land Use Changes

Much land which could be considered marginal for development (e.g. wet soils, low-lying areas, marshes, shoreline areas) is being developed for residential use, especially for mobile home development. Some agricultural land is also being sold off so that profit can be made for residential development. There is also pressure for development of soundfront and Currituck Banks property for retirement and second homes.

If the U.S. Fish and Wildlife Proposed Purchase of the Currituck Banks north of Corolla and associated wetlands is carried out, a major land use change will occur for that area. The area, which is presently platted with hundreds of lots would be turned into a wildlife preserve.

Areas of Environmental Concern (AECs)

Currituck County has the following AECs within its boundaries: Ocean hazard areas, estuarine shoreline, estuarine and public trust waters, and AEC wetlands. (For descriptions of these AEC types see DNRCD State Guidelines for Areas of Environmental Concern-North Carolina Administrative Code, Subchapter 7H).

The ocean hazard area of Currituck County occurs along the Currituck Banks, a peninsula jutting southward from Virginia into Dare County. The Banks are about 23 miles long and range in width from less than 2000 feet to more than one mile.

Estuarine shoreline and waters of Currituck County include the Currituck Sound, Albemarle Sound, and parts of the North and the Northwest Rivers. These waters total nearly two hundred square miles.

Public trust waters in Currituck County include the upper reaches of the North and Northwest Rivers, and a number of small creeks(e.g. Tulls Creek, Landing Creek). Other water areas would include the Atlantic Ocean offshore from Currituck Banks to the seaward limit of State jurisdiction, and all other estuarine waters. That is- public trust waters include all surface waters except those in privately-owned lakes up-stream of the point of impoundment(e.g. farm ponds at the head of a watershed). Approximately 40% of the County's geographic area is occupied by public trust water and subject to all regulations appertaining to such waters.

Coastal wetland in Currituck County is extensive. The largest area of Coastal wetland occurs along the Currituck Banks (about 11,000 acres.) Other areas include areas of Knotts Island within Makay Island Refuge , areas along the North and Northwest Rivers, the western portion of Church Island, and other areas as shown on the included AEC wetlands map.

CURRENT PLANS, POLICIES AND REGULATIONS

STATE AGENCY PLANS

Transportation Improvement Program, 1980-1986: Prepared by the N.C. Department of Transportation is a statewide schedule of highway improvements to be undertaken during the seven year period 1980-1986. The following projects are proposed for Currituck County:

Project R-520: Widen existing two lane roadway of U.S. 158 to a four-lane (five-lane in some areas) divided facility from Barco to Point Harbor. The project will include removal of existing Intracoastal Waterway bridge at Coinjock and replacement with a four-lane 65 foot high bridge. The project is planned for construction in fiscal year 1984, with a total cost of 34,000,000 dollars. In addition, project K-710 planned for fiscal year 1985 includes a rest area included with the R-520 improvements.

Project W-711: NC 34 from .1 miles north of SR 1232 to NC 168. Project includes construction of 2 foot paved shoulders on NC 34 and installation of side road warning signs near NC 1234.

Feasibility Study of State Acquisition of the Private Road From Dare County to Corolla, September 1, 1979. This study describes the problems with public accessto Corolla from Dare County and the alternatives to this action. The conclusion reached was that the only financially feasible and environmentally sound action which could be undertaken in the near future was the State taking of the road from Duck to Corolla. An environmental impact analysis is currently underway to determine if significant environmental impacts will be expected from the proposed action.

Statewide Comprehensive Outdoor Recreation Plan (SCORP) The purpose of the SCORP is to compile and analyze the existing supply of and demand for recreation facilities in the State. The SCORP analysis is by regions, and has no specific analysis for each County. Currituck County is in Region R, along with Camden, Chowan, Dare, Gates, Hyde, Pasquotank, Perquimans, Tyrrell, and Washington Counties.

North Carolina Water Resources Framework Study: The Study was completed in 1977 by the North Carolina Department of Natural and Economic Resources. The purpose of the Study was to identify water resource needs for River Basins of North Carolina. Currituck County is in the Chowan-Pasquotank River Basin. Resources indicated for protection are: 1) Coastal Marshes in the County, 2) designation of the North River as a public fishing stream, and 3) establishment of a Moyock Creek small flood control project 4) designation od a wooded swamp conservation area along Northwest River.

LOCAL PLANS

Outer Banks Development Plan (1973): This plan discusses development of the Outer Banks and recommends 1) protection of the marshes and dune systems, 2) State acquisition of historic and recreation sites, 3) "cluster" design schemes and water and sewer utilities in new developments, and 4) ferry access from the mainland.

Community Facilities Plan (1973): This plan contains an inventory and analysis of existing community facilities and makes estimates of future needs based upon anticipated population growth and planned land use patterns.

County Development Guide (1974): The Guide designates future land use in various areas as Residential, Employment, Agricultural Production, Timber Production or Conservation. The Guide proposes a limited access scenic coastal highway through the County. Initial access to the Banks is to be provided by a ferry across from Aydlett and Corolla.

Feasibility Study on Water and Sewer Facilities(1974): This study explores requirements, cost estimates, and proposes a financing plan for water and sewer utilities for the Banks and Mainland through 1990.

Currituck County Schools Master Plan (1974): The Plan outlines school construction needs during the period 1975-1985.

Currituck County Economic Development Plan (1975): This plan analyzes population growth and the County economy and proposes recommendations to improve the economy: 1) formulate policies concerning the development of County facilities and services 2) establish a County Recreation Commission and create a Recreation Department within county government 3) establish an economic development commission 4) create an expanded vocational education program within the County school system.

Currituck County Land Use Plan(1976): This Plan was prepared to meet State regulations of the 1974 Coastal Area Management Act.The Plan included background material and analyses, and identified land use issues and discussed alternative solutions to solving land use related problems.

HUD 701 Planning Program (1978): This program compiled a list of potential projects for the County which indicated project purpose, sponsor, benefits and assistance.

A Fiscal Impact Assessment of Development on the Currituck Banks (1979): This report details the likely fiscal impacts (the public costs of serving development contrasted with the potential tax revenue that would be generated) on Currituck County if the Outer Banks are developed (and preserved) in different ways.

FEDERAL

Draft Environmental Impact Statement of the Proposed National Wildlife Refuge on the Currituck Outer Banks(1979): The Draft Statement discusses the proposal of the Fish and Wildlife Service to protect and preserve approximately 15,880 acres of Barrier Beach in Currituck County. Alternatives are addressed, as well as the ecological impacts of present and proposed development along with the projected socioeconomic implications if acquisition were to occur.

Maintenance of the Intracoastal Waterway: The Army Corps of Engineers is working with the State in the proposed bridge replacement in Coinjock. The Corps has held in abeyance plans for maintenance of project depth of the Intracoastal Waterway through Currituck County due to problems in determining suitable sites for dredged disposal.

LOCAL LAND USE REGULATIONS

The land use regulations listed below are in effect in Currituck County:

Zoning Ordinance: The entire county is covered by the ordinance. The ordinance separates the County into districts and regulates and restricts the use of land, buildings, and structures within these districts.

Subdivision Regulations: The regulations govern the arrangement of lots and streets in new subdivisions, and the provision of improvements.

Building Permits: The County has adopted the State Building Code and enforces the Code through the services of a full time building inspector.

Septic Tank Permits: Septic tank permits are required by the County before on-lot sewage disposal systems can be used.

Flood Protection: Provision for flood protection is incorporated in the zoning ordinance. The ordinance requires proposed new construction or substantial improvements to be designed to prevent flood damage and that utilities be designed to prevent flood damage.

Ordinance Regulating, Restricting, and Prohibiting the Use of Power Driven Vehicles on the Outer Banks Barrier Strand: This Ordinance, passed in 1977, regulates the use of power driven vehicles on on public property, and regulates their speed and manner of operation.

STATE LICENSES AND PERMITS

Agency	Licenses and Permits
Department of Natural Resources and Community Development Division of Environmental Management	- Permits to discharge to surface waters or operate waste water treatment plants or oil discharge permits; NPDES Permits, (G.S. 143-215) - Permits for septic tanks with a capacity over 3000 gallons/day (G.S. 143-215.3). - Permits for withdrawal of surface or ground waters in capacity use areas (G.S. 143-215.15). - Permits for air pollution abatement facilities and sources (G.S. 143-215.108). - Permits for construction of complex sources; e.g. parking lots, subdivisions, stadiums, etc. (G.S. 143-215.109). - Permits for construction of a well over 100,000 gallons/day (G.S. 87-88).
Department of Natural Resources and Community Development Office of Coastal Management	- Permits to dredge and/or fill in estuarine waters, tidelands, etc. (G.S. 113-229). - Permits to undertake development in Areas of Environmental Concern (G.S. 113A-118). NOTE: Minor development permits are issued by the local government.
Department of Natural Resources and Community Development Division of Earth Resources	- Permits to alter or construct a dam (G.S. 143-215.66). - Permits to mine (G.S. 74-51). - Permits to drill an exploratory oil or gas well (G.S. 113-381). - Permits to conduct geographical exploration (G.S. 113-391).

	- Sedimentation erosion control plans for any land disturbing activity of over one contiguous acre (G.S. 113A-54).
Department of Natural Resources and Community Development Secretary of NRCD	- Permits to construct an oil refine
Department of Administration	- Easements to fill where lands are proposed to be raised above the normal high water mark of navigabl waters by filling (G.S. 146.6(c)).
Department of Human Resources	- Approval to operate a solid waste disposal site or facility (G.S.130 166.16). - Approval for construction of any public water supply facility that serves at least 15 connectio for year-round residences or 25 or more year-round residents.

FEDERAL LICENSES AND PERMITS

Agency	Licenses and Permits
Army Corps of Engineers (Department of Defense)	- Permits required under Sections 9 and 10 of the Rivers and Harbors of 1899; permits to construct in navigable waters. - Permits required under Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972. - Permits required under Section 404 of the Federal Water Pollution Control Act of 1972; permits to undertake dredging and/or filling activities.
Coast Guard (Department of Transportation)	- Permits for bridges, causeways, pipelines over navigable waters; required under the General Bridge Act of 1946 and the Rivers and Harbors Act of 1899. - Deep water port permits.
Geological Survey Bureau of Land Management (Department of Interior)	- Permits required for off-shore drilling. - Approvals of OCS pipeline corridor rights-of-way.
Nuclear Regulatory Commission	- Licenses for siting, construction and operation of nuclear power plants; required under the Atomic Energy Act of 1954 and Title II of the Energy Reorganization Act of 1974.
Federal Energy Regulatory Commission	- Permits for construction, operation and maintenance of interstate pipelines facilities required under the Natural Gas Act of 1938. - Orders of interconnection of electric transmission facilities under Section 202(b) of the Federal Power Act.

- Permission required for abandonment of natural gas pipeline and associated facilities under Section 7C (b) of the Natural Gas Act of 1938.

- Licenses for non-federal hydroelectric projects and associated transmission lines under Sections 4 and 15 of the Federal Power Act.

Hazard Areas: Man-Made

Currituck County leases from the State a large tract of land on US158 and SR1244. This property includes a concrete air strip. Plans are being made to designate this area for industrial development. The County landfill at this site is under study for expansion. Potential groundwater pollution will be determined before the State will permit expansion.

Hazard Areas: Natural

Soils:

The soils in Currituck County are generally unsuitable for septic systems. However, there are varying degrees of unsuitability, and the areas of unsuitability are site specific and depend on the level of detail used for planning purposes. The mapping of soils presented in this plan follow the detailed soil mapping units and the recommendations for their use limitations by the US Soil Conservation Service.

Mainland

Soil Unit[7]	Depth to Water Table	Rating	Reason
Altavista fine sandy loam	1.5-2.5	severe	wet,floods
Ballahack fine sandy loam	0-1	"	"
Barclay very fine sandy l.	1.5-2.5	"	"
Bertie fine sandy loam	1-2	"	"
Bibb fine sandy loam	0-1	"	"
Cape fear loam	½-1	"	"
Marshland	0-1	"	"
Conetoe loamy sand	6	slight	-
Dare Muck	0-1	severe	wet,floods
Dogue fine dandy loam	0-2½	"	wetness
Dorvan soils	0-½	"	wet,floods
Dragston fine sandy loam	0-1	"	wet,ground-water conta
Hyde loam	½-1.5	"	wet,floods
Johnston mucky loam	0-1.5	"	"
Nixonton silt loam	3-5	moderate	wet
Ogeechee fine sandy loam	0-1	severe	wet
Pasquotank silt loam	1-2	"	"
Ponzer muck	0-1	"	wet,floods
Portsmouth fine sandy loam	0-1	"	wet
Roanoke fine sandy loam	0-1	"	wet,floods
State fine sandy loam	6	slight	"
Wando loamy sand	6	severe	inadequate filtration
Wahee fine sandy loam	0-1	severe	wet,floods
Wasda muck	0	"	wetness
Weeksville silt loam	0-1	"	"
Wickham fine sandy loam	5	slight	-
Rumford loamy sand	6	"	-

[7] U.S. Soil Conservation Service, Soil Survey of Currituck Co.

Currituck Banks

Beach-foredune	Beach 0-3 Foredune 6	v.severe	flood
Corolla fine sand	1.5-3	severe	wet, poor filtering
Corolla-Duckston	1-3	"	"
Duneland	6	severe	unstable
Currituck	0-3	v.severe	wet,flood
Newhan fine sand	6	slight	poor filtering

It is apparent that few suitable soils exist either on the mainland or the banks for on-lot sewage disposal without potential for health or environmental degredation. Even the more suitable soils pose special problems due to their extreme permeability which will allow effluent to enter the groundwater or adjacent water bodies.

By overlaying the map showing past residential growth with the map showing soils suitable for septic systems, we notice that past growth utilized many of the more suitable soils. However, present and future growth will probably utilize many of the more marginal and unsuitable soils. Furthermore, the past growth was generally rural residential and occurred at distances furtherest from the Sound, whereas future growth is likely to be commuter residential and recreational, and occur near the Sound.

GROUNDWATER SYSTEM [8]

Surficial clay, sand, and gravel deposits of post-Miocene age extend over the entire County. The surficial deposits range in thickness from about 30 feet in the northern part to about 110 feet along the North River in the southern part of the county. Sand ridges are conspicuous topographic features.

The surficial deposits are underlain throughout the county by the upper Miocene Yorktown formation. This formation consists of clays, sands, shells and limestones. The Yorktown formation generally increases in thickness progressively in the direction of its stratigraphic dip to the southeast. The Miocene units thicken from about 660 feet in the western part of the County to more than 800 feet at Church Island. Miocene sediments are underlain unconformably throughout the County by the Beaufort Formation of the Paleocene Age.

The water level in the surficial sands is generally ½ foot to 8½ feet below the land surface. North of Aydlett, water from the water table aquifer discharges directly into Currituck Sound from a peat bed at the base of the cliff formed by the Aydlett "Narrow Shore Ridge."

8

Moore, Gardner and Associates, Inc. Report on Currituck County Comprehensive Study as to Population, Economy and Water and Sewerage Requirements to 1990, 1970.

Water in the Yorktown upper and lower aquifers occurs under artesian conditions.(Water under some pressure)The surface of the Yorktown upper aquifer ranges from about 15 feet in the northwestern part of the County to about 5-10 feet along most of the Pungo-Powells Point Ridge to mean sea level along the sounds and major rivers. This surface is slightly below mean sea level in the pumping area of influence in the cone of depression near Moyock. It is about 9-14 feet below the surface at Point Harbor. Annual fluctuations of water levels in the Yorktown upper aquifer are not nearly as large as in the overlying water-table aquifer. The surface of the groundwater aquifer is highest in September-October and lowest in March-May.

Aquifers

Potable water is obtained from the water table aquifer and the Yorktown aquifer throughout the County. However the Yorktown lower aquifer is utilized for domestic water supplies only in the southern part of the County. Surficial sands of the water-table aquifer furnish more water to wells in the county, and in particular the central and southern parts of the County, than any other aquifer. Wells range in depth from 3 to 40 feet, and yield from 2 to 10 gpm.

Quality of Groundwater

In Currituck County, fresh ground water can be obtained in most areas from the water table aquifer and the Yorktown upper aquifer and in some areas the Yorktown lower aquifer. Much of this water contains objectionable amounts of iron or hardness-causing constituents, but water which is satisfactory for most purposes is available in a few localities.

Water Table Aquifer

The water -table aquifer will generally contain the least mineralized water in Currituck County. Sums of dissolved mineral constituents vary from about 35 to 1,000 ppm, but most water tables contain less than 500 ppm total dissolved solids. Chloride concentrations in the aquifer range from 4.5 to 316 ppm, and are less than 100 ppm except in some areas adjacent to the brackish rivers and sounds. Iron ranges from .05 to 15 ppm. Hardness as calcium carbonate ranges from 8 to 621 ppm. Many water-table wells yield water which is classified as soft. These soft waters are from localized sandy zones that contain little shell material and no real pattern of areal distribution can be established for them.

Yorktown Upper Aquifer

The chemical quality of the ground water in the upper Yorktown aquifer in Currituck County is not uniform. Sums of dissolved mineral constituents ranged from 187 to 1,620 ppm. Chloride concentrations range from 12 to 818 ppm. Iron ranges from .01 to 6.4 ppm. Hardness as calcium carbonate ranged from 78 to 524.

Yorktown Lower Aquifer

Few wells are known to produce water from the Yorktown Lower Aquifer in Currituck County. Fresh water can probably be obtained from this aquifer throughout most of the County.

Beaufort Aquifers

No wells are known to produce water from the Beaufort aquifers in Currituck County. It is believed that there is no possibility of obtaining fresh water from these water-bearing zones.

Surficial water is not available in sufficient quantities to be considered a source of supply in Currituck County. At the present time, the cost of treating brackish water such as the North River or Currituck Sound remains high. ($1.00 to $2.00 per 1000 gallons)[9]

Potable water is obtainable from the water table aquifer and the Yorktown aquifer throughout the County.[10] The aquifer at Shawboro appears to be the best source for a proposed County water supply system, since sufficient quantity is available, as well as relatively low chlorides. Test wells show that the chloride content of water from deep wells lessens from the north part of the County to the south.[11] Most private wells in the County rely on the surficial aquifer. Since densities remain low in the County, and yearly rainfall about 50 inches per year, surficial aquifer recharge is generally sufficient for private wells. However, due to the use of shallow wells, groundwater contamination from on-lot sewage disposal systems is a problem, especially in denser areas. In growing areas such as Moyock and Grandy, a public water system will probably be required in the next ten to twenty years.

The figure on page 24, "Relation of the Water Table to Physiographic Features," indicates areas on the Currituck Beach Barrier Spit as having 7.4 and 8.5 feet water table above mean sea level. Their locations are possible sources of water table well fields.[12]

9 River and Associates, Greenville, NC.

10 Moore, Gardner and Associates, p.13

11 DNRCD, Office of Water Resources

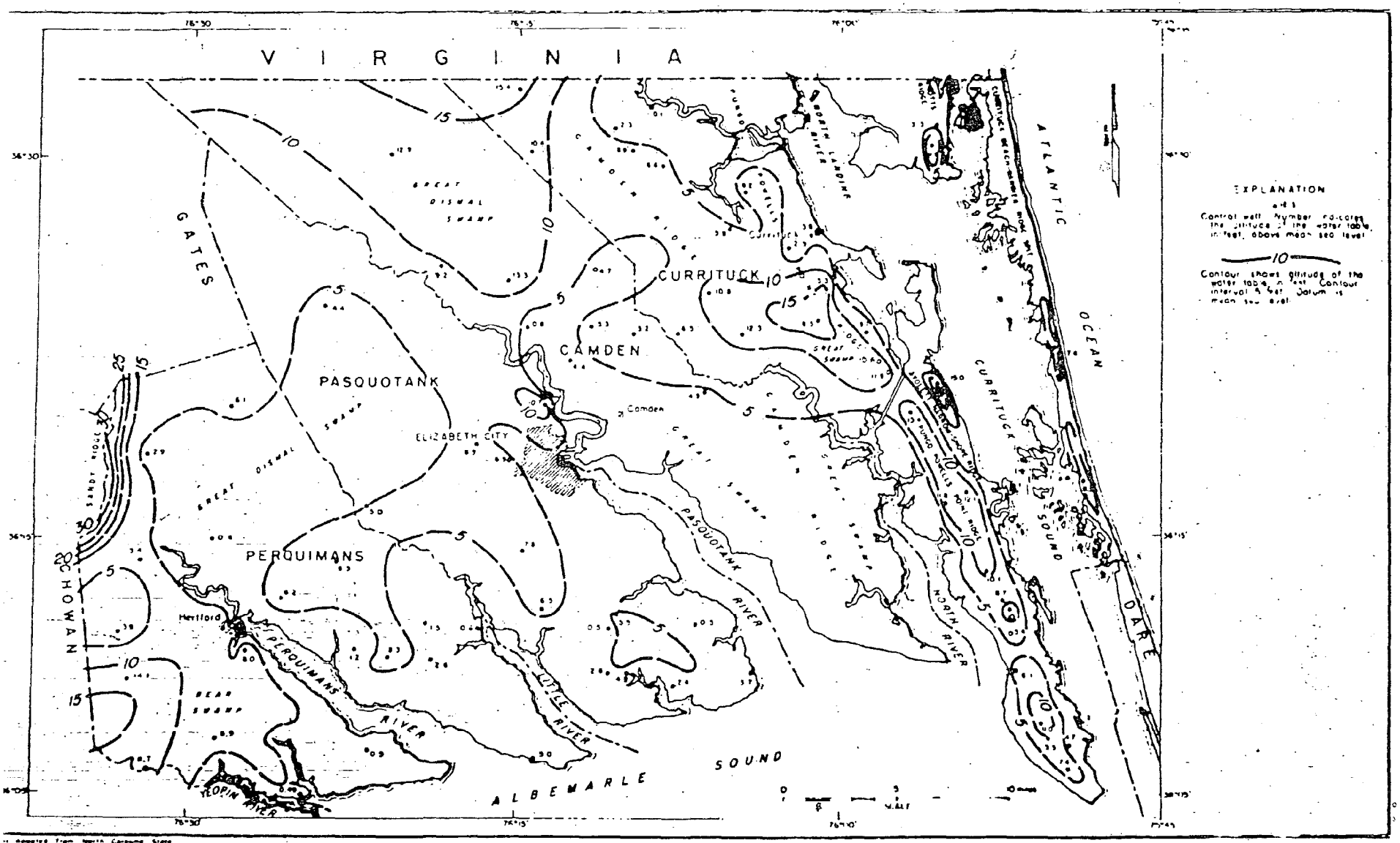
12 Moore, Gardner and Associates, Figure 5.

The surficial aquifer on the Currituck Banks is recharged by rainfall. It is estimated that precipitation in excess of potential evapotranspiration losses results in about 20 inches of surplus water. Because runoff is negligible, all of this water is used to charge the groundwater system. The amount of recharge is considerable if one considers the theoretical amount of water the rainfall represents. Twenty inches of recharge, falling over the 9000 acres of the Banks is about 5 billion gallons or on a daily average, about 14 million gpd. The recharge water is,however, relatively thinly layered. Extensive horizontal collectors are required to obtain sufficient pumping for more than single unit systems. The Ocean Sands development, utilizing horizontal collectors has been shown to pump over 200gpm for a 24 hour period.[13] The major problem in using the shallow well horizontal system is the potential which exists for contamination from on-lot sewage disposal systems or other contaminants such as from an oil spill or other chemical material entering the surface aquifer. Such systems are only feasible if large amounts of space are left open for groundwater recharge and prevention of contamination.

Wells drilled deep (100-300 ft.) by the North Carolina Office of Water Resources have shown availability of water in large quantities in the Duck area. Chloride contents are high, ranging from 680ppm at 120 ft. to 4000ppm at 300 ft. The maximum standard for chlorides is 250ppm. Under certain development circumstances, potable water can be obtained from de-salination of such water.[14] (Ocracoke, for example has such a system, but costs are high at $2.00 per 1000 gal.)

13 DNRCD. Office of Water Resources

14 DNRCD, Office of Water Resources



RELATION OF THE WATER TABLE TO PHYSIOGRAPHIC FEATURES

Moore, Gardner and Asso

Slopes

The Currituck mainland is generally flat. Rising gradually toward the north and west, it varies in elevation between sea level and about 25 feet. The Currituck Banks have a mean elevation of about six feet, but a few of the dunes rise above 70 feet. Less than ten percent of the County's area occurs in gradients of more than two percent.[15]

Fragile Areas[16]

Areas defined as Areas of Environmental Concern (AECs) by the State are fragile areas in Currituck County. These areas include ocean hazard areas, estaurine shoreline, estuarine and public trust waters and AEC wetlands in Currituck County. (See Section I, p. 11 for general location of areas and Section V regarding policy). Other areas considered fragile, but are not designated as AEC are discussed below.

The Outer Banks: Sand Dunes, Ocean Beaches, Shoreline

Sand dunes are barren, partly vegetated deposits of windblown sand. Although the largest, so-called barrier dunes, occur immediately inland from the ocean beach, dunelands (lands influenced by windblown sand deposition) extend from the inland base of the barrier dunes to the line of estuarine water on the sound side. Dunes and dunelands comprise a major portion of the Outer Banks and barrier islands and constitute a protective barrier between the ocean and the sounds, marshes and mainland. Although dunes and dunelands are found along the entire coast, the largest dunes occur in Dare and Currituck Counties.

Ocean and estuarine beaches and shorelines occur along the entire coast. These are land areas without vegetation, consisting of unconsolidated soil material that extends landward from the mean low tide to a point where vegetation occurs or there is a distinct change in predominant soil particle size or there is a change in slope or elevation which alters the physiographic land form, and thus constitutes the transition into dunes or wetlands.

The Outer Banks portion of Currituck County is a slim, elongated penninsula jutting southward from Virginia Beach into Dare County. Slightly less than 8800 acres in area, they are 23 miles long and range in width from less than 2,000 feet to more than one mile. Approximately 6,000 years old, the banks were the product of wind and sand and water. Theories concerning their origin vary. They may have been born when a mainland ridge was surrounded by rising sea levels. It is possible that they were generated by the elongation of a coastal sand spit. Another possibility is that they were formed by the gradual rise of an offshore bar. However, it is clear that they envolved into a shifting string of barrier islands.

[15] North Carolina Department of Conservation and Development, Land Potential Study, Currituck County, NC, 1966, p. 15.

[16] North Carolina DNRCD, Currituck County Land Use Plan, 1976.

The Currituck Banks are composed of highly mobile sand particles. Constantly eroded and redeposited by the forces of wind and moving water, the particles form a matrix of shifting beaches, dunes, sand hills, plains, and wetlands. Though the strand's mean elevation is only six feet above sea level, a number of the migrating hills tower 75 feet above their surroundings. Inlets have periodically pierced Currituck's length, only to be reclosed by sands setting from longshore currents. Still evident on the banks is oceanic overwash, a process which drives them slowly landward. Vegetation is the stabilizing element in this dynamic environment. Grasses, shrubs, and scrub forest tracts capture the migrating sands, and the plants' root systems stabilize the porous soils, reinforcing dune systems. The plants' distribution is governed by wind exposure, water supply, and the sands' nutrient supply and salt content.

Currituck Sound

Because of its biological importance, Currituck Sound deserves special attention here. The sound covers approximately 166 square miles. It is of very low salinity and is fringed with marsh land. Formerly saline, it has become a fresh water body since the closing of the Currituck Banks in the 1800's. An extensive and productive bass fishery has developed, and its marshes are a critical link in the Atlantic Flyway, providing food for great numbers of migratory water-fowl. It is probably the most productive hunting and fishing area in North Carolina, and it serves as a rookery for many shore birds.

It is fed by the Northwest and North Rivers, numerous farm drainage ditches, and by Virginia's Back Bay. It receives much swamp drainage. Much of this influx is slightly acid and low in oxygen.

The sound and its marshes form a complex community of inter-dependent plants and organisms in an aquatic environment. Through an intricate system of cycles, the community members share vital resources such as nutrients and energy. The sun is the ultimate energy source, while decaying marsh vegetation and water grasses are the supplier of nutrients.

The mechanism through which nutrients and energy are shared is the food chain. Plants utilize the sun's energy, in the formation of organic matter. These plants are in turn eaten by herbivorous animals, while flesh-eating carnivores occupy the final links in the chain.

Energy flows through the system in only one direction. Thus the sound community requires a continuous input of sunlight. Nutrients, however, must often be recycled. Decay organisms, primarily bacteria and fresh water worms, provide this feed back mechanism, breaking down organic debris into forms utilized by the plant community.

Currituck is a very special sound. It is low in salinity. It is not affected by lunar tides. And it is very shallow. This uniqueness, however, makes it especially vulnerable to external influences.

The sound has been abused and has reacted accordingly. Extensive dredging has induced high turbidity and harmful siltation in its waters. Sporadic wind tides are insufficient to flush this turbidity from the sound and serve only to resuspend settled silt, thus increasing the water's murkiness. The sound's all important grasses have been adversely affected.

Salt water is an effective remedy for excessive turbidity, floculating suspended sediments and causing them to settle to the bottom. Thus, many persons have advocated returning the sound to a saline condition. These persons also contend that a salt sound would be a greater benefit to the Currituck County economy.

Complex Natural Areas

Complex natural areas 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.

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 an historical perspective to changing natural conditions in the coastal area and together are important and irreplaceable scientific and educational resources.

In a broad but real sense, most of Currituck County is a complex natural area: the vast expanse of water, the Outer Banks, the wetlands. Coastal wetlands (fresh marshes) are discussed elsewhere in this report: this section deals with two other wetland types, bogs and wooded swamps. A close relationship exists between these lands and the areas that sustain remnant species (discussed below) for the swamps and bogs are the preferred--indeed, necessary--habitat for many rare and endangered plant and animal species.

Bog land, nearly 14,000 acres of it, occurs in the northwest corner of the county and extends into Camden County. Nomenclature is confusing for the bog is known as the Dismal Swamp (wooded swamps are discussed below). Bog land is the result of poor drainage. Large areas of the Dismal Swamp are higher in elevation than the surrounding land, but the high water retention capabilities of the soil and the lack of sufficient drainage ways have acted to create the wetland. Bog soils are usually moist to water-logged and are often flooded in the winter. Over time, bogs become overlaid with a layer of organic soil formed by decaying plants and plant materials. It is not uncommon for fallen trees to become embedded in the muck. With proper drainage, bog land can be converted to fertile farm land, although the range of suitability for crops is somewhat limited. Some tracts of bog in Currituck are being drained and converted to farm land or to more extensive use as timber land. Principal tree species include pond pine and loblolly pine. It is probable that much of the existing bog land in the county will be used for one of these two purposes in the future. Bog used for timber land under intensive management could still provide refuge for the big game, deer and bear, found in the county. However, bog converted to agricultural use would have less value for wildlife purposes: in fact, it would be deleterious to certain wildlife communities, particularly deer and bear.

Wooded swamps in the county cover approximately 22,000 acres in the lowlying areas bordering the streams and water courses. The largest swamp areas adjoin the North River. They are often flooded, especially in the winter, by more than a foot of water. These areas tend to dry up during the growing seasons, when growing plants greatly increase the demand for the available water. The dense shade of trees (gum, cypress, and oak) growing in the swamps restricts the growth of aquatic plants that serve as food for ducks and muskrats. Because swamps lie in what is usually termed flood plain areas, they have very little potential usefulness as agricultural lands. They serve as refuge areas for a variety of wildlife and are excellent areas for growing certain types of timber. Modern engineering practices make it possible to fill swamps and convert such land to other uses, but the expense is very great and there is little demand for filling swamp land.

Currituck will probably retain its swamp land intact for many years to come. In time, it is probable that swamps will be managed much more extensively for timber purposes than they have been in the past. The land will continue to provide refuge for wildlife in keeping with its present function. More intensive forest management is not likely to decrease the value of swamps for wildlife. With some planning, proper forestry practices could actually enhance their usefulness as refuge areas.

Areas that Sustain Remnant Species

Areas that sustain remnant species are those places that support native plants or animals, rare or endangered, within the coastal area. Such places provide habitat conditions necessary for the survival of existing populations or communities of rare or endangered species within the county.

The continued survival of certain native plants and animals in the coastal area that are now rare or endangered cannot be assured unless the relatively few well defined areas providing necessary habitat conditions are protected from development or land uses that might alter these conditions. These habitats and the species they support are a valuable educational and scientific resource.

The North Carolina Endangered Species Committee, convened by the Department of Natural and Economic Resources, has compiled a list of endangered plants and animals in North Carolina. The list provides a knowledge of those plant and animal species in North Carolina that are threatened with extinction. In many cases, such as the Venus Fly-trap, Shortia and the alligator, these are species that lend character to our state and that should never be allowed to disappear from our native flora and fauna. In some cases, the threats to the species are not related to man's activities. In others, however, through his destruction of the species' habitat, man is inadvertantly dooming the species to extinction. By identifying species so endangered, and by identifying projects and actions that threaten the species' habitat, State agencies should be able to develop action programs to protect the species and insure their perpetuation. In addition, many of these species are especially useful as living monitors of environmental quality in our state and it is important that they be protected for that reason. (See Appendix A for listing.)

Productive and Unique Agricultural Land

Corn, soybeans, and hogs are presently the county's principal agricultural outputs and are likely to remain so in view of the constantly increasing demand for them.

Soils in the north central part of the county, and in the northwest section adjacent to the Dismal Swamp are particularly well suited to soybean, corn, and Irish potatoe production. Since the Dismal Swamp is actually a bog (a wetland with a highly organic muck soil), there would be an excellent crop potential if parts of it were drained and converted to agricultural use. Muck soils, when properly drained and prepared, can give very high yields of corn and soybeans.

The sandy loam soils in the areas stretching from Barco, near the middle of the peninsula, to Point Harbor, at the southern tip, are quite suitable for growing vegetables and fruits. The most important of these crops were snapbeans, peaches, cabbage, cantaloupes, cucumbers, sweet corn, tomatoes and watermelons. The commercial acreage planted in these crops is expected to decrease because of labor and marketing conditions.

Growing and marketing fresh produce is one of the main commercial retail enterprises in the county. Many residents have taken advantage of the busy tourist flow to and from the Dare County outer banks during the summer season and have erected small roadside produce stands from which they sell produce at retail prices. Often the grower-seller can more than double the return for his crop by retailing it himself rather than by selling it to produce buyers. The gross return from truck crops is almost equal to that of either soybeans or corn. However, the acreage used for truck crop production is less than one-fifth the amount used for the two major crops.

Agricultural workers and farmers expect a modest increase in the production of truck crops in Currituck for roadside marketing. The main reason is that the available market is relatively unlimited. As it is currently operated, the market serves primarily tourists and local residents. Very few farmers sell their produce to commercial wholesalers, and very little contract farming is done. Contract farming offers the best possibilities for a large increase in commercial truck crop production. If vegetable processing is begun in the general region of which Currituck is a part then farmers in the county might find it profitable to enter into contractual arrangements to help provide part of the needed vegetable supply. At the present time, however, the acreage devoted to these crops will probably increase as a function of the increase in tourist traffic using the county.

Potentially Valuable Mineral Sites

The mineral resources of Currituck County are few. Small quantities of titanium oxide, used in paint manufacture occur along the shore of the Currituck and Albemarle Sounds. Because of their small quantity and low grade, they have not attracted commercial interests.

There are large quantities of peat in the Dismal Swamp area. Recent interest in the use of peat for energy source could cause future interest in its use. (See Section V, Policy).

The County has benn experiencing the removal of soil materials for use in other areas. This mining activity is a County concern. (See Section V, Policy).

Publicly Owned Forests, Parks, etc.

The 7,000 acre Mackay Island National Wildlife Refuge is located on Knott's Island in the Currituck Sound. It is owned and operated by the Bureau of Sports Fisheries and Wildlife of the U. S. Department of the Interior.

The North Carolina Wildlife Resources Commission operates the North River and Northwest River Wildlife Management Areas on leased land. These occupy several thousand acres of land. The Commission also operates two water access (boat launching) areas: one near Corolla on the Sound side of the Outer Banks; the other at Coinjock.

There are several commercial camping grounds in the county and numerous duck blinds.

The County itself operates no recreation facilities other than those which are part of its public school property.

Historic Sites

The Twin Houses at Shawboro, the Currituck Beach Lighthouse at Corolla on the Currituck Banks, and the County Courthouse and Jail are listed on the National Register of Historic Places.(See Appendix B for additional historic sites.)

Recreational Opportunity[17]

Without having a county recreation department, a considerable amount of public recreation services are provided in the county. A significant Community Schools program is provided by the Board of Education. Jointly funded by the State, Board of Education budget and other county funds, programs are held at all public schools in the county, and include the following activities:

Adult Basketball - 4 gyms
Adult Slimnastics
Crafts, including ceramics, flower arranging, macrame, crocheting, quilting, needlepoint and flower making, 3 - D art, photography and cake decorating.
Interior Decorating
Disco and square dancing.
Youth Baseball (Community Schools pays umpires and field maintenance), T-Ball and Babe Ruth Leagues.
Day Camp (Free lunch provided), summer program.
Knott's Island Elementary School, ½ days, 5 days/wk.
Griggs Elementary School, ½ days, 2 days /wk.
High School, 3 days per week
Open Gym Program, Sundays at H.S. and Moyock Elementary.
Gymnastics for school children

[17] Coastal Consultants, Ltd. and Ronald D. Johnson, Recreation and Open Space, Currituck County, 1980.

In addition, schools are available for rent by community groups. No charge is made when there is "school or county benefit." The program director reports they attempt to do small things widely, rather than conduct large programs at a central location. He reports that boys and girls are in all school-sponsored programs and that there is good non-white participation.

The Agricultural Extension program in the county appears to provide more recreation-related services than most. The most unique of these is the operation of the Coleman Youth Camp. Seen by some as a 4-H camp, no restrictions are placed on participation. Children are bussed from their home areas alternating transportation between north and south county routes. Children can attend with private transportation also. An attendance of 5,000 was reported for 1979. Lifeguards are hired by the County. Through the good will of the camp owner, the county enjoys a cost-free lease until 1985. Taxes continue to be paid on the property. Facilities at the camp, which is located near Moyock, include two tennis courts, a swimming area, recreation hall, and a rather poor boat ramp used for canoe launching only. A horsemanship ring is provided; lessons are offered. County residents are reportedly free to use the area at other than day camp times. The camp is located on the North West River, across from the state gameland. Seven staff members are employed during the summer. The 4-H Ski and Outing Club, now a family activity, is unique. Other farm and home improvement and 4-H activities typical to Ag. Extension are also provided. The program is jointly financed by federal, state and county government.

A four-county library system operates in the county, with a facility located near the high school. The county pays for utilities, maintenance and salaries for three full time staff, one of whom operates the bookmobile. The staff conducts a story hour and summer program consisting of movies, reading program and puppet shows; an average of 30 elementary students attend once a week. The meeting room receives extensive use by Agricultural Extension and other groups, including uses for art exhibits, 4-H sewing, needlepoint, writers' workshop, craft workshop, Girl Scout training, self defense classes and senior citizen clubs. The librarian reports circulation between 30,000 and 40,000 per year.

Ruritan Clubs in the county are reportedly very active, several churches have adjacent ball fields and basketball standards (although some are very poorly maintained), and Currituck Athletic Association and an adult softball association function in the county.

Inventory of Public and Commercial Recreation Places

20 recreation facilities, and additional support businesses, were listed in the September 1979 bulletin, "Welcome to Currituck County." Except for the Coleman Youth Camp, facilities listed cater primarily to non-residents. The Maple Picnic area is a highway rest stop. School grounds are not included in the list. (See Appendix C for list.)

In addition to facilities listed, Currituck County owns a 30 acre strip, 400 feet wide, immediately north of Corolla stretching from Sound to Atlantic Ocean. On the sound side, there is very little land not fronted by marsh. The county also owns 40 acres of marsh at Ocean Hill, and approximately four acres of scattered lots in Whalehead, south of Corolla. One lot was deeded to the county by the Coastland Corporation.

The North Carolina Wildlife Resources Commission reports licensing 737 waterfowl hunting blinds on the sound; hunt clubs have additional blinds. Most hunting access is by boat across the sound. Deed restrictions imposed on the NCWRC at the time of acquisition of Poplar Branch Access Area require provision of slips for use by guides. Both fishing and hunting guides use the 37 slips.

To many, the state ferry operating between Currituck and Knott's Island is a recreational facility, use of which is worth a detour. To others, the free ferry provides access to recreation (hunting or fishing) on Knott's Island. The ferry operator reports near maximum use from Memorial Day through Labor Day.

23 miles of ocean beaches are also public property below the mean high water mark. Issues related to this are discussed later in the report.

The Twin Houses at Shawboro, the Currituck Beach Lighthouse, the County Jail and Courthouse are listed on the National Register of Historic Places, and are recreation resources. (See Appendix B for additional historic sites.)

County Expenditures for Public Recreation

The Fiscal Year 1979 - 1980 county budget included items for the following:

Library:	$29,459.
Community Schools:	11,028.
Camp Coleman	
Operations:	5,000.
Rebuild Pier:	2,500.
Total:	$47,987.

Some may question including the library budget within recreation expenditures; none can argue about the significance of leisure time spent reading.

The county has previously funded other recreation-related projects. Funds were provided for ball field lights at the Knott's Island Elementary School. A year ago, the county matched a state grant to the county arts council.

Privately Owned Conservation Areas [18]

Swan Island Hunt Club- The Swan Island Hunt Club was recently purchased by the Nature Conservancy. It consists of 812 acres of beach and dune, with a conservation easement on the remaining 5095 acres of shoal and marsh. The clubhouse on an island in the Sound remains in private ownership.

Monkey Island- Monkey Island Tract was the second of the recent purchases by the Nature Conservancy. It is an undeveloped tract of about 775 acres.

Pine Island Area- This involves the southern four miles of the Currituck Banks. Primary ownership includes private owners and the National Audubon Society.

[18] U.S Fish and Wildlife Service, Draft Environmental Impact Statement of the Proposed National Wildlife Refuge on the Currituck Outer Banks, 1980. pp. 173-74.

Water and Sewer Service

Currituck County owns and maintains one community water and sewer system in Ocean Sands subdivision on the Currituck Banks. This system, however, is restricted to that particular development at the present time. Other developments using a "package type system" are the prison unit at Maple, and the public schools.

Other thaan Ocean Sands, the water well systems throughout the County are private. The use amountsof the systems and approximate persons served are listed below.[19]

	Use	Persons
Griggs Elementary School	4500gpd	300
Central Elementary	6500gpd	430
Knotts Island K-8	2000gpd	130
Moyock Elementary	4500gpd	300
J.P. Knapp Jr. High	6000gpd	400
Currituck High	10000gpd	650
Tulls Bay Colony	2000gpd	50
Universal Park	100000gpd	900
Camp Lazy B	18000gpd	180
Victor Sawyers	12000gpd	120
Maple Prison Unit	11000gpd	200

Capacities of each system are variable and information is lacking in many cases. Generally, however the wells are at an average of fifty feet and deliver potable water with little treatment necessary at about about 20 to 60 gpm.

The Ocean Sands sewer and water system was put into operation in July, 1978. Presently, 63 units are on the system. The sewer system is presently designed for 100,000gpd with a 24 hour retention. The water pumping system is designed with two wells pumping 50gpm. The wells use a horizontal collector system. The water system incorporates a 50,000 gallon storage area. The water and sewer system is operating at the present time at about 25% of capacity. Presently, about 10 to 15 units are planned for next year. It will probably be another 10-15 years before the present system is at capacity. The wells have been shown by the engineers to be capable of pumping over 200gpm without salt-water intrusion. Six other wells in the area have been explored and could be added to the system in the future. The sewer system is designed for expansion (1,500,000gpd is possible), however, such expansion would require Ocean outfall.(Presently not permitted, but being studied as part of the Dare County Sewer Project).[20]

[19] Division of Water Resources, NCDNRCD

[20] Telephone interview with Jack Sherill, Coastland Corp.

Other Facilities

Police and fire protection, along with health services are available in the County. Police protection is provided by the County Sheriff's Department and by the State Highway Patrol. The Outer Banks is presently serviced by a deputy sheriff.

Four volunteer fire departments, located throughout the County, provide fire protection. The Outer Banks has limited fire protection in the southernmost section through cooperation with Dare County volunteers, and some fire protection in the north from Virginia. However this service is from such distance is of questionable use in an emergency. Rescue suqads on the Currituck mainland provide emergency health services, although no regular ambulance service is available. The nearest hospital is in Elizabeth City. Two local doctors and two dentists provide general medical care to Currituck County residents.

Currituck County operates six schools. The following table shows registration and acreage of facilities:

School	3/80 Registration	Acreage
Griggs Elementary	299	13.38
Central Elementary	431	51.87
Knotts Island K-8	132	11.46
Moyock Elementary	305	10.51
J.P. Knapp Jr. High	410	46.1
Currituck High	651	90

The Virginia Electric and Power Company is the local service for electrical power. No natural gas supplier is available to the County. The major fuels available are oil and liquid petroleum gas.

The primary road system in Currituck County consists of U.S. 158, NC 3, NC 34, and NC 68, which are two lane highways, except for some segments of US 158. The roads were designed with a maximum capacity of 7,500 vehicles per day. Capacity problems have occurred at approximately 5,000 vehicles per day. U.S. 168-158 is the most direct route from Virginia to resort areas of the Outer Banks, and during peak periods, traffic volume far exceeds the road capacity. In 1978, 13,586 vehicles per day was the estimated volume for an average Saturday in July.

To alleviate the traffic volume, U.S 158 will be widened to four lanes (five in some areas) from Barco to Point Harbor. In addition, the two lane swing bridge at Coinjock over the Intracoastal Waterway will be replaced by a four lane high span bridge.

Solid waste is provided by an arrangement with a private contractor. The County provides dumpsters at Spot, Moyock, and Corolla. The private contractor charges for dumpster use at businesses and institutions. The contractor also provides house to house pickup, although this service is scheduled to end soon. Other residents must haul their own trash to the County landfill at Maple.
The landfill is presently near capacity and the County has asked the State for a permit to expand. The County will be studying the potential for groundwater pollution from the landfill in the 1980 fiscal year.

ESTIMATED DEMAND

Section IV

Population Projections

The North Carolina State Office of Budget and Management projections are as follows:

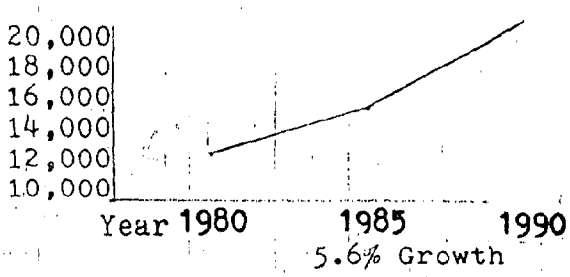
Year	Population
1980	11,900
1985	18,100
1990	24,400

The above projections were based on 1970 and previous census information. Based on recent economic trends and an analysis of housing and school enrollments, we belive the projections may be too high. The following table shows school enrollments:

Year	Students
1959-60	1446
1964-65	1677
1969-70	2646
1979-80	2300

The methodology used to incorporate the housing analysis into the population projections is detailed in Section I, pp. 2-4 and Appendix D, Housing Analysis. In order to project this information into our planning period (1980-1990) we extended the more recent trends and the trends of the past decade. Our projection represented tabularly and graphically is as follows:

Year	Population
1980	12,052
1985	15,825
1990	20,781



A projected population by Township is as follows:

Township	Growth Rate	1980	1985	1990
Fruitville	2.9%	1360	1569	1810
Crawford	5.7%	2602	4752	6270
Moyock	7.3%	2567	3651	5193
Poplar Branch	5.0%	4524	5774	7369

All Townships are showing a strong growth rate except Fruitville. The slower growth rate in this Township is probably due to the problem of access, since a great deal of the Township is made up of Knotts Island and the Currituck Banks north of Corolla. If the proposed US Fish and Wildlife Purchase of the Currituck Banks north of Corolla is carried out, the growth rate of Fruitvill would be expected to fall somewhat. Although growth rates are strong, they are not as problem inducing as the rates of some areas of Dare County which show rates at 12% per year. The County should be able to provide services and facilities to the planning period expected populations without serious difficulty. However, certain areas(such as dense development on poor soils) will present problems for water and sewer if allowed to continue to develop without land use control. (See Policy Section V).

Future Land Needs

The following analysis is presented to project the amounts of land needed to accomodate the projected population to 1990. The analysis is intended to serve as a general indicator of amounts of land which could be used given general standards for land consumed for various development uses. A brief discussion follows of the kinds of uses or factors through which areas were "removed" from potential development in the land use projection model. The policies and methods of implementation for those uses which were removed from development potential in the model are addressed in Section V. The purpose of the analysis is to determine if enough land area exists to accomodate the planning period development in areas suitable for development given the areas which the County wishes to constrain with policies indicated and implemented.

Consideration of Constraints

Sewer: The model makes no provision for a County sewer system being built within the ten year planning period. The provision of sewer by developers under PUD would increase the ability of an area to accomodate population.

Water: The model does not consider water to be a constraint given the projected population in the ten year planning period on a County-wide basis. However, only if policies indicated and implemented occur will this be a viable consideration.

Wetlands: Coastal wetlands which meet AEC definition were considered as constraints and removed from development potential. Other wetlands would be virtually removed from development by implementing the proposed additions to the subdivision regulations which would not permit dredging or filling for development. Currently, the U.S. Army Corps of Engineers is enforcing 404 jurisdiction over wetlands.

Soils Unsuitable for On-lot Sewage Disposal: Implementation of proposed subdivision regulations would require one acre minimum lot size on soils unsuitable for on-lot sewage disposal. The model first removes these soils entirely from development potential to determine if theoretically enough land area is available to develop without resorting to use of these soils.(No such implementation strategy is actually included). Then the model "puts back" these areas with the one acre minimum lot size as the only restriction.

Ocean Hazard Areas: Ocean hazard areas regulated by the State as AECs were removed from potential development in the model by virtue of the restrictions regulating these areas.

Estuarine Shoreline: Although the rules and regulations which apply to these areas do not restrict development completely, the areas approximately 100 ft. from the shorelines were removed from development potential in the model due to the possibility of development being denied a permit.

Woodlands: Other than woodlands which are included in Coastal marshes, woodlands were not considered a constraint.

Flood Hazard Areas: Currituck County is currently not enforcing flood hazard regulations since no detailed study has been done for the County and no elevations are available. Even should such a study be completed during the planning period, the regulations would require certain development standards, but would not prevent development from occurring.

Zoning: Zoning was considered a constraint to the extent that permitted densities were used in the analysis.

State and Federally Owned Land: Areas owned by governmental agencies for recreational and other purposes are constraints to development. Areas on the Currituck Banks considered under the proposed Fish and Wildlife purchase were considered a constraint.(e.g. the model considers assumption of implementation of proposed policies).

Developed Areas: Areas already developed with structures, roads, etc. were removed from development potential.

Hurricane Evacuation: The projected population with policies from the Plan implemented caused the consideration of evacuation to not be a constraint to development.

STANDARDS FOR LAND USE PROJECTIONS

Land Use	Land Consumed per Person (acres)
Residential	.3333
Commercial	.0020
Institutional	.0026
Recreation	.0035
Industrial	.0120

In developing the above standards, residential use was descriptive of the actual situation. For other uses, we consulted national standards and used our experience from similarly situated Counties.

Projections

To project the amount of land that would be needed to meet the 1990 population, we used standards below to estimate the need. The equasion for determining land use requirements is as follows:

$$L90 = L80 + P80\text{-}90\ (Kh + Kr + Kc + Ki + Kt)$$

Where:

L90 = Land required for urban uses in 1990
L80 = Land required for urban uses in 1980; therefore L80-90 is land required for urban uses from additions to the population during these years
P90 = Population added to County between 1980 and 1990
Kh = Standard requirement for residential use
Kr = Standard land requirement for recreational use
Kc = Standard land requirement for commercial use
Ki = Standard land requirement for institutional use
Kt = Standard land requirement for industrial use

Projected population increase to 1990 = 8729. (See p.38.)

Land Acreage Needs 1980 to 1990:

Residential	2909.6
Commercial	17.5
Institutional	22.7
Recreational	30.6
Industrial	104.7
Total	3085.1

Land suited for development with constrained areas considered = 5500 acres. Thus, enough land is available to handle the 1990 growth without using constrained areas. However, by the year 2000, the suitable areas would be used up without public sewer and water. If we consider the more realistic approach in the model that soils unsuitable for septic tanks will be used (we should note that these soils in many cases will support development with with modifications and may receive septic tank permits, but are considered not developable in the first application of the model, and in the second application, one acre minimum lot size is the constraint as proposed in the plan)the following analysis results:

Land suited for development with constrained areas considered for plan implementation: = 30,000 acres.

This analysis indicates that various land controls can be implemented without significantly reducing development potential or limiting area choice.

Community Facilities Needs [21]

Schools: Although school enrollments declined this past year, the trends would indicate that the Currituck County schools may have an additional 1500 students by the year 1990. Present facilities can accomodate approximately 400 additional students. Therefore, additional facility space and faculty must be considered.

Health and Social Services: Additional population and more stringent regulations by governmental agencies indicate an increase of staff and equipment by 50% for 1990. A new office building should be considered to house these services.

[21] Currituck County Service Departments

Police and Fire: 1990 population projections indicate a need to increase the police department budget and manpower by 50% for both Sheriff activities and County jail operations. Increases in seasonal visitors require that police protection must meet peak needs. If the US Fish and Wildlife proposal is carried out, one additional policeman would probably be able to handle development in the planning period. However, should this policy not be implemented and access from the mid-county or north be instituted, police protection needs would increase greatly.

Fire protection is presently adequate for the mainland, but not for theCurrituck Banks. The volunteer fire protection on the mainland plans on an incremental basis, and as population increases, the department responds with more manpower and equipment on a volunteer basis. However on the Currituck Banks, the full time population base is insufficient to support a station. Since this is not a County provided service, the residents must take it upon themselves to provide adequate fire protection.

Sewer and Water: The County has not made specific plans for provision of sewer or water to residents in the planning period. With the population densities anticipated in the planning period, it is anticipated that residents should continue to be able to obtain groundwater and septic tank permits in most areas of the County, other than those areas constrained by law. Implementation of the proposed zoning and subdivision changes to carry out policy (see Section V, Policy) should allow development throughout the planning period without significantly harming the health, safety and welfare of County residents. However, failing to to implement control strategies could cause many problems to occur in areas settled densely. Althougn a County-wide water system is not considered feasible during the planning period, efforts are underway to plan for public water in limited areas, such as the upper Currituck area.

Solid Waste: Solid waste removal could continue to be a problem throughout the planning period, but is generally not considered to be a limitation to development, since it is a matter of priority of County expenditure. A study will be underway in the next fiscal year to determine alternatives to handling the problem. Disposal sites should not be a problem technically, since a number of suitable sites exist, however actually finding sites acceptable politically is another matter. The County will have to allocate more money during the planning period to provide for dumpsters and pick-up contracts to allow better and more reliable service. Maintaining good solid waste removal service on the Currituck Banks will continue to be an expensive proposition.

POLICY DISCUSSION

Section V

Resource Protection

SOILS: The soils in Currituck County are generally poor for development and especially the use of on-lot sewage disposal systems due to either wetness or poor filtering capacity. (see Section II, p. 19) However, the areas of unsuitability are site specific and there are many general areas (such as along NC Route 158) which are suitable. The County considered the following alternatives for dealing with this problem: 1) not allowing development on soils unsuitable for development 2) restricting development on such soils to large minimum lot sizes (3 acres or more) 3) providing for greater distances of vertical separation than presently required 4) status quo

Selected Policy: Restrict new lot development to a minimum lot size of one acre on soils shown on the Currituck County Soil Survey and rated by the U.S. Soil Conservation Service as unsuitable for on-lot sewage disposal.

Implementation: Revise the zonong and subdivision regulations to 1)require minimum lot size of one acre for new development on soils rated unsuitable for on-lot sewage disposal systems 2) change boundaries of zoning districts to provide for lower densities on poor soils and higher densities on good soils.

FLOOD HAZARD: Currituck County is still in the preliminary phase of the Federal Flood Program. Therefore, a detailed flood study has not been done for the County in which flood elevations are given. The County building Inspector is currently not implementing flood hazard area restrictions due to the lack of information. The following alternatives were considered: 1) allow no development in flood hazard areas 2) attempt to determine from topographic maps where flood boundaries and estimated elevations exist, and require structures to be used for habitation to be elevated above this estimated elevation 3) status quo

Selected Policy: The County determined that until a detailed flood study was completed in Currituck County by the Federal government, enforcement of any regulations could not be carried out. The County will adopt appropriate regulations and comply with the Federal Flood Program when the studies are made.

WETLANDS: The County has determined that the wetlands in the County are a valuable resource. Since many other areas exist for development and wetlands are also poor for on-lot sewage disposal, filling of wetlands for development is neither necessary or desirable. The County considered the following alternatives to the selected policy: 1) requiring large lots on wetlands 2) requiring submission of an environmental impact

statement before developing wetlands 3)status quo

Selected Policy: Allow no development on areas designated as wetland which would require dredging or filling except for farm uses, placement of utilities, or uses which would require the interface of wetland areas with water uses (such as marina development) and only with adherence to rules and regulations of CAMA and Corps of Engineers 404 permits.

Implementation: Amend the zoning and subdivision regulations to restrict development in wetlands except in accordance with the above policy.

AECs

Currituck County has the following AECs within its boundaries: Ocean hazard areas, estuarine shoreline, estuarine and public trust waters, and AEC wetlands. The County recognizes the importance of these resources and supports the State's regulations and standards governing the use of these areas. Alternatives considered in dealing with these areas included 1) listing specific uses which would be appropriate in each of the AECs 2) allowing no development in AECs 3) attempting to enforce more stringent regulations than the current State regulations on AECs.

Selected Policy: The County has determined that present State regulations on AECs are sufficient to protect them from significant damage. However in the case of Coastal Wetlands designated as AECs, the proposed policy on wetlands also includes the Coastal Wetlands. Uses allowed in the AECs would be those permitted under the zoning and subdivision regulations. The County proposed to amend the zoning and subdivision regulations to effect greater environmental protection(see Proposed Management Tools for Currituck County, Coastal Consultants, Ltd., 1980)in doing so, AEC areas will have more protection (e.g. poor soils on estuarine shoreline, water quality of surface waters). The policy to support the proposed Fish and Wildlife purchase will further protect important AEC areas on the Currituck Banks. The major thrust of protecting estuarine and public trust waters is to reduce density on soils unsuitable for on-lot sewage disposal, and to prohibit development on adjacent wetlands. Coliform counts in Currituck Sound, however, do not correlate very well with densely developed areas (see Appendix D). High coliform counts could be due to wildlife populations and pollution from Virginia's Back Bay. Currituck County wishes to try to prevent additional coliform from septic tank effluent as much as possible.

MARITIME FOREST: Forest resources on the Currituck Banks are considered to be resources which are associated with other resources such as coastal marshes and land areas considered valuable in conjunction with the proposed U.S. Fish and Wildlife purchase. Therefore the County proposes no additional policy on these areas other than expressed in conjunction with protection of associated resources.

QUALITY OF THE CURRITUCK SOUND

The Currituck Sound is a marsh fringed estuary of extremely low salinity. Though once saline, it has become a fresh water aquatic system. An extensive and productive bass fishery has developed, and its marshes are a critical link in the Atlantic Flyway, providing food for great numbers of migratory water-fowl.

It is fed by the Northwest and North Landing Rivers, numerous drainage ditches, and bu Virginia's Back Bay. It receives much swamp drainage and much of this influx is slightly acid and low in oxygen. Because of its high nutrient load shallowness, and slow movement, the sound is suffering from eutrophication. Each year a continuing trend of more milfoil hinders recreation and altered the successful bass fishing methods.

Portions of the Currituck Sound(from Webster Creek north, see Appendix E) have been closed to the taking of fresh water clams due to high coliform bacteria counts. There have been destructive algae blooms. Large agricultural developments, including livestock operations can increase nutrient loads. Drainage canals may lower salinities and introduce pollutants into the Sound.

The control over potential problems in the Sound rests in a collection of overlapping government controls. The Commission of Health Services sets standards for use of septic systems which are enforced by the County Health Department. The CHS makes regular reports on the quality of shellfishing. The Environmental Management Commission sets standards for wastes and water quality parameters. The EMC monitors water quality in each of the river basins discharging into the Sound. The counties and the municipalities therein are responsible for controlling land use, and among other things, preventing high density of development on unsuitable soils adjacent to the Sound. Although man-made pollution from industry, commerce and residentia development can be controlled by some layer of government, agricultural uses have been exempted by the State from almost all direct and indirect control.

In their 1979 Water Quality Management Plan, the N.C. Department of Natural Resources and Community Development noted that it is highly probable that many streams and coastal waters are degraded but undected at this time due to a lack of water quality monitoring. DNRCD is concerned with several water pollutan namely oxygen demanding substances, bacteria, sediment, nutrients and toxics. Wastes from all sectors of development pose demands on oxygen in the water-an essential to aquatic life. Generally a level of 5mg/l of dissolved oxygen is required to sustain acceptable biological activity. Pathogenic bacteria can be found i both domestic wastewater and runoff from animal feedlots. Pathogen which are most frequently transmitted through water are those which cause infections of the intestinal tract,namely typhoid, and paratyphoid fevers, dysentery and cholera. Livestock operation may cause bacterial contamination of shellfish. Also extensive ditching(agricultural, construction, and residential) can cause bacteria to enter estuaries.

As we noted before, sediment loads have served an important function in the sound, especially by interfering with photo-synthesis and preventing algae bloom despite ample presence of nitrogenous materials. Sedimentation in the coastal area is largely the result of erosion from agricultural use and urban use construction activities. Sediments in the Sound and streams disrupts the food chain. At moderate concentrations, fish cannot spawn; at high concentrations, gills of fish clog and they die. Sediments also cover up bottom food for fish. Fish starve or move away.

Nutrients(phosphorus and nitrogen) are required by plants in order to grow. However, if these levels become too high, algae blooms occur. Excessive nutrient inputs may occur from wastewater discharges, septic tank leachate, heavy concentrations of wildlife, rainfall runoff from agriculture and residential areas.

The Currituck Sound has been shown to have high fecal coliform counts by both the Commission for Health Services and an independent study (Groundwater Transport Study At Carova Beach Subdivision, 1977, Moore Gardner and Associates). The Moore,Gardner study observed the following background fecal coliform levels in Currituck Sound adjacent to Carova Beach:

Location	Fecal Coliform/100ml
Currituck Sound, ½ mile south of Carova Canals	54,000
Currituck Sound, ½ mile north of Carova Canals	138,000

It is also important to note that the dieoff rates for fecal coliform in fresh water are considerably less than that for salt water. The following data is excerpted from the Waccamaw 208 Regional Planning Report. The fecal coliform die-off rates were compared in Waccamaw River fresh water and Intercoastal Waterway seawater.

Time (hours)	Fecal Coliform (Count/100ml)	
	Fresh Water	Salt Water
0	10,000	10,000
6	9,050	2,865
12	8,200	820
18	7,400	235
24	6,700	67
48	4,500	1

Class	Standard(colonies/ml.)
Class A-1 waters	50/100 ml
Calss A-2 waters	1000/100ml
Class B and SB waters (fecal)	200/ml
Class C and SC waters (fecal)	1000/ml
Class SA waters (shellfishing)	70/ml

The County believes that there is no conclusive evidence which indicates the exact cause of coliform pollution of the Sound. Probable causes are wildlife, pollution from Back Bay, runoff of agricultural pollutants, and on-lot sewage disposal systems. At this time, the County's attempts at addressing water quality are limited to decreasing septic tank densities and considering methods to increase salt content of the Sound. The following alternatives were considered: 1) allow no septic tanks on soils unsuitable 2) restrict development on unsuitable soils to large minimum lot sizes(3 acres or more) 3) provide for greater distances of vertical separation than presently required 4) allow new development only with public sewer 5) allow no septic tanks closer than 1000 feet of estuarine shoreline6) status quo

Selected Policy: Restrict new lot development to a minimum lot size of one acre on soils shown on the Currituck County soil Survey and rated by the U.S. Soil Conservation Service as unsuitable for on-lot sewage disposal. Restrict all new lots on the Currituck Banks to one acre minimum lot size on all soils for single family development. All PUD development must be provided with public sewer by developers. The County supports the U.S. Fish and Wildlife purchase proposal to reduce total density on the Currituck Banks. The County will study methods to determine a feasible way to introduce greater salt content in Currituck Sound.

Implementation: Revise zoning and subdivision regulations to 1) require minimum lot size of one acre for new development on soils unsuitable for on-lot sewage disposal systems 2) change boundaries of zoning districts to provide for lower densities on poor soils and higher densities on good soils 3) include a provision for the Currituck Banks to require minimum lot size of one acre for single family development, and PUD development to have sewer provided by the developer.

EROSION

Factors which seem to affect the rate of erosion most significantly are fetch, exposure, wind tides, soils, bank height and land use. Northeast and southeast exposures seem to be the most severe. Major storms of long duration occurring with high tides generally produce the greatest erosion rates. Soils, bank height, and land use appear to have the slightest effect.[22]

The Currituck Banks ocean front is subject to varying degrees of erosion. The recommended recession line varies from 60 feet at the Dare County border to 200 feet at Corolla.[23]

[22] USDA-Soil Conservation Service, Shore Erosion Inventory, 1975.

[23] U.S. Fish and Wildlife

Estuarine shoreline erosion occuring in Currituck County indicates that recession lines should vary from twenty to thirty feet along Currituck Sound and the mouth of the North River. The most erosion occurs along the southwest tip of the County which borders the Albemarle Sound, where recommended recession rates are about forty feet.[24]

In addressing the problem of erosion, the County considered the following alternatives: 1) allow no development within 100 feet of a water body 2) adopt a policy to build erosion control structures 3)require all developers to build erosion control structures when developing shoreline areas4)status quo

Selected Policy: Amend the zoning and subdivision regulations to require plans for development to address erosion mitigation . The County relies on the enforcement of CAMA permits and the standards therein in applicable areas, as well as adherence to the NC Sedimentation Pollution Control Act.

Implementation: Revisions in the zoning and subdivision regulations

Resource Production and Management

AGRICULTURE

Prime agricultural lands are difficult to locate due to the absence of a universally acceptable definition. Although some soil types are better than others for agricultural production, markets and management are often more important to agricultural prodection than the soil type. One measure of prime agricultural lands may be determined from the County generalized soil interpretations. The Wagram-Ocilla-Dragston Association are the only soils in the County which are rated as good for such crops as peanuts, and corn soybeans, small grains and truck farming. These soils occupy about 15% of the County's land area. Soils good for corn, soybeans, small grain and truck farming in addition to those above occupy about 40% additional area. The best soils occupy the central portion of the Currituck mainland peninsula to Coinjock, border the Sound north to Tull Bay, and include areas arund Moyock and Shawboro, as well as the eastern edges of Church and Knotts Islands.(See agricultural map included). These soils are also best for development, and much of the areas mentioned above are used for residential purposes. Soils which are rated poor for agriculture are generally those which are wet or frequently flooded.[25]

[24] USDA-Soil Conservation Service

[25] USDA-Soil Conservation Service

Agricultural production is an important source of income in Currituck County.(See pp.6-7). Soybeans, corn, and truck crops are the most important crops.

The County considered the following alternatives regarding agriculture: 1) limit growth by reuriring large lot sizes (25 acres) for residential development in order to prevent agricultural land from being used for development 2) requiring mobile homes(the form of housing growing at the fastest rate) to locate in mobile home parks to prevent scattered development in agricultural areas 3)status quo

Selected Policy: By 1990, it is estimated that mobile homes will reach 43% of the total housing stock. Since mobile homes are the greatest threat to encroachment of agricultural land, County policy is to restrict mobile home developments in agricultural lands except as allowed by law as an accessory to farm use. The County supports the State farm use tax program.

Implementation: Restrict mobile homes to a special use which requires the mobile home to replace a stick and brick house of grade D or E condition, or an existing mobile home.

COMMERCIAL FOREST LANDS

Over one-half of the total land area in Currituck County is in forest and wooded wetlands. In colonial times, longleaf pine in the County was commercially valuable for pitch and turpentine. When these trees were harvested, second and third growth trees of less value took their place. Generally, commercial forestland has been decreasing in the County due to clearing for agricultural use. The clearing has occurred at a rate of about 1 to 2% peryear. The clearing has generally occurred on the Currituck peninsula along major routes. The County currently has about 75,000 acres of forest land. About 70% is in private ownership, about 15% in commercial ownership, and the remaining in governmental ownership. For commercial production, most of the wood harvested is soft wood such as yellow pine for saw timber, and soft hardwoods (maple, gum) for veneer plywood. About 2000 cords of wood are harvested for pulpwood.[26]

Regarding commercial forestry operation, the County considered the following alternatives: 1) adopt a severence tax on harvesting 2) adopt strict regulations regarding draining of lands and placement of spoil 3)adopting an ordinance providing for reclamation and replanting of cleared areas.

Selected Policy:The County supports the various County, State and Federal programs for managing forest resources.

26 DNRCD, Forest Resources Division

MINERAL RESOURCE PRODUCTION

Although mineral resources are limited in the County, potential exists for the mining of sand, peat in the Dismal Swamp, and soils to be used as fill in adjacent communities(See p.30).

The County considered the following alternatives: 1) adopting a mined land reclamation ordinance 2) prohibiting mining in the County 3) status quo

Selected Policy: Mining is considered an undesirable land use in the County and is to be restricted.

Implementation: Revise the zoning ordinance to allow mining operations only as a special use which would include performance standards restricting the operation of mining and providing for reclamation.

COMMERCIAL AND RECREATIONAL FISHERIES

Commercial fisheries are a significant resource in Currituck County. The following species and respective pounds and values were reported in 1979:[27]

Species	Pounds	Value
Blue	51,000	$7,500
Catfish	48,000	9,000
Eel	77,000	62,000
W.Perch	40,000	12,000
Crab	630,000	105,000
Other	74.000	16,500
Total	920,000	$ 212,000

Six processor companies are located in Currituck County. There are 90 full time fishermen, 200 part time, and 60 persons who have commercial licenses but fish for personal use.

The Bass fishing is the most popular recreational fishing in Currituck Sound. Sales of fishing licenses in the County last year were 4,000.

The DNRCD Marine Fisheries Division has noted that the dissolved oxygen (DO) levels in Currituck Sound are found in many areas to be less than 4ppm.(Generally, 5ppm is needed for good fisheries health). Generally, the entire Albemarle Basin system is undergoing increasing eutrophication. Alteration of drainage patterns causing higher peak loading, septic tanks, and lack of inlets for salt water have contributed to this condition.

27 DNRCD, Marine Fisheries Division

The DNRCD Marine Fisheries Division has indicated that formation of an inlet to Currituck Sound would vastly improve the water quality as well as improve commercial fisheries. More valuable species could then enter the Sound.

Recreational fisheries could be increased with more attention to general recreational improvements for the County. (See policies on recreation and tourism.)

The County considered the following alternatives regarding commercial fisheries: 1) make plans to construct a public sewer system to eliminate possible organics from septic tanks 2) establish large lot (3acres or more) sizes to slow growth and reduce septic tank densities 3) develop a County drainage plan which would attempt to limit high drainage peaks into the Sound 4) prevent development within 300 feet of shorelines to help reduce sedimentation and organic pollutants which enter the Sound 5) status quo

Selected Policy: a) slow growth by restricting mobile home development b) require a minimum lot size on one acre on poor soils for septic tanks c) require a minimum lot size for single family development on the Currituck Banks on land not yet platted of one acre minimum d) require developers of PUDs to install public water and sewer e) support the proposed US Fish and Wildlife purchase to reduce total density on the Banks f) work with the State to determine a suitable method to introduce greater salt content in Currituck Sound.

Implementation: Amend the zoning and subdivision regulations to require minimum lot sizes as stated above, add requirements for PUDs as noted above with an increased requirement for open space, and prohibit mobile homes from agricultural districts except as allowed by law for associated farm use. Work with the state and federal government to support the purchase, and to determine a suitable method to increase the salt content of the Sound.

OFF ROAD VEHICLES

The County has determined that the use of power driven vehicles on the Currituck Banks must be regulated to insure public safety and protection of the environment. The County has in effect an ordinance which regulates and restricts the use of power driven vehicles on the Currituck Banks. The ordinance essentially prohibits the operation of power driven vehicles on the Currituck Banks on areas other than a "cartway, a neighborhood public road, a dedicated right-of-way, or on the foreshore or beach strand." Furthermore, the ordinance restricts speed limits and careless operation.

Economic and Community Development

INDUSTRIAL DEVELOPMENT

Significant industry in Currituck County is practically non-existent. Small industry in Currituck County includes the manufacture of fiberglass, plastics, and liquid fertilizer, as well as agriculture, forestry, and fisheries.[28]

Over half of the labor force of Currituck County commutes from the County to jobs. About 40% commute to the Norfolk-Portsmouth area. The total industrial employment is about 1200, with about 150 in manufacturing. It is unlikely that the County will be able to attract significant industry during the planning period. Although an industrial site area has been identified near Maple, without sewer and water it will be difficult to attract industry. The County considered the following alternatives: 1) develop a County water and sewer system to help promote industry 2) establish an industrial development committee 3) set up an industrial development fund to set aside monies to develop an industrial park

Selected Policy: The dominant economic activities in the County are agriculture, fisheries, and tourism. The County does not desire the location of heavy industry in the County. However, the County would welcome some form of small manufacturing operation which does not pollute the water and air, but does capitalize upon the available work force in the County.

Implementation: Continue to seek out light industry to locate in the County.

SERVICES TO DEVELOPMENT

Services currently provided by the County are schools, health and social services, police, and to a limited extent sewer and water(Ocean Sands) and solid waste(County landfill and and some dumpsters) (see pp.42-43.).

Increasing costs and the general economic picture for the planning period indicates that maintaining existing levels of services may prove difficult. It is not anticipated that increased services nor additional major facilities (County-wide sewer water, recreation programs, County community building, etc.) can be provided in the planning period.[29] However, the County intends to maintain existing levels of service to the population increase during the planning period.(See p. 38). Planning is underway for a limited water system in northern Currituck.

28. ..C. Department of Commerce, Industrial Development Division

29 Webb Fuller, Currituck County Finance Officer

A number of policy alternatives were discussed which would specify increasing and adding a number of services and facilities (e.g. a commitment to begining development of public sewer and water, implementation of a recreation program).

Selected Policy: Continue to maintain the existing level of services to accomodate the population increase. Work toward development of public sewer and water for the Moyock and Grandy areas for the future as these areas grow large enough to make such services feasible. If the economy improves to the extent that surplus funds are available, seek to implement expansion of services, facilities and recreational goals. Require developers of PUDs to provide sewer and water.

Implementation: Revise the zoning ordinance and subdivision regulations to change zoning boundaries and densities to guide development around Moyock and Grandy. Require developers to provide for construction and maintenance of sewer and water in PUDs. Planning is underway for a limited water system in northern Currituck where water problems exist.

GROWTH PATTERNS

Selected Policies and Alternatives:

Currituck County is primarily a rural County with a number of small communities or nodes of development, as well as scattered development along transportation routes. The County wishes to continue the nodal concept, but desires to reduce the scatteration. Moyock and Grandy should develop as the primary nodes for the County. The County desires a slow growth concept(3 to 5%) population increase per year. The County desires to reduce the number of mobile homes in the County, and make provisions for some multi-family development on the mainland.

On the Currituck Banks, the County wishes to maintain the nodal community of Corolla, but supports the U.S. Fish and Wildlife purchase proposal to reduce total densities on the Banks. The County has determined that it is in their best interest to allow development of the Banks south of Corolla in order to maintain the tax base and allow access to the Banks for public and private use. On lots already platted, the County relies on the County sanitarian to insure that septic tanks meet proper requirements before permits are issued. The County encourages replatting to larger lot sizes, but does not feel that forcing a replatting is feasible. On areas not yet platted, the County wishes to allow flexibility in the development pattern by allowing for single-family development on one acre minimum lot size, and for PUD development, multi-family, and condominium development, the developer must provide sewer and water. The County considered the alternative of attempting to prevent development on the Banks through application of growth control devices such as Transfer Development Rights, Land Banking and other slow growth devices. Consideration was given to zoning measures such as eliminating any form of multi-family development and requiring 25 acre minimum lot sizes. The County wishes to emphasize the point that the intent of the support of the proposed wildlife refuge on the Banks, while at the same time supporting growth in the area south of Corolla is to reduce the total density of the <u>entire</u> Banks, since this would provide for a very <u>low</u> density north of Corolla, whereas under the existing situation, the density of the <u>entire</u> Banks could be high in the future.

The County considered direct purchase of large areas. These alternatives were rejected. The policies selected above rely on the proposed Fish and Wildlife purchase being implemented. The County believes that the natural resources of the Currituck Banks cannot support development of the entire Banks. If the proposed purchase is not implemented, the County will study growth timing devices and implement appropriate controls (e.g. a moritorium on building until availability of public sewer and water).

Implementation of the above mentioned policies will occur through revisions in the zoning and subdivision regulations which will change boundaries and densities to promote growth around Moyock and Grandy, limit mobile home development throughout the County, require minimum lot sizes of one acre on the Currituck Banks for single-family development, require the provision of water and sewer by developers for PUD, multi-family development, require open space dedications and public access to the ocean beach.

The County has reviewed the NC DOT study on access to the Currituck Banks from Dare Co. and has determined that the most desirable access to the Banks is a ferry or a bridge from mid-county, and the State taking of the road from Duck to Corolla. Although other alternatives were considered(e.g. northern access by ferry or bridge, a state parallel road from Duck to Corolla ; theywere rejected. The support of the state taking of the road from Duck to Corolla is based upon the preliminary assessment by the DOT that no significant environmental impacts will result. The DOT is currently undertaking an environmental impact study of this proposal. If the study should conclude that significant environmental impacts will result from the State taking of the road, the County will determine what actions are necessary based on the severity of impacts determined.

BEACH ACCESS

Currituck Outer Banks, with exception of some nodes, are essentially undeveloped. No public transportation is available so that the area is inaccessible to the general public. Present use is almost exclusive to landowners, renters and their guests. Development of a road, public beach facilities and information about them will induce visitation, perhaps increasing annually for at least the first five years by 20 percent. Hammocks Beach State Park, in Onslow County, with only passenger-ferry access, has experienced a growth rate in visitation averaging 12.9 percent for the last four years. It is a wilderness beach with a bathhouse, and 30,000 uses.

If a 1979 visitation of 20,000 visitor days can be assumed, a projection can be made. (If 509 residents used the beach every day for 60 days, 30,540 visitor days would be recorded.) It is likely actual visitation is higher, not counting hunting and fishing uses. A rate of 10 percent increase is shown:

1979	20,000 visitor days
1980	22,000
1981	24,200
1982	26,620
1983	29,282
1984	32,270
1985	35,497

At least a 120 day season can be assumed, with weekend use before and after summer vacation period. If access was provided by road, several thousand cars per day could be expected with an average of 2.5 persons per car. New free ferry access, for pedestrians only, perhaps operating from Aydlett to the Corolla area, could easily generate 24,000 visitor days per year. Half of these would be on the weekends. Most of the users would be from outside the county. A fee applied would reduce demand considerably, but not use. Less affluent residents would become content with an annual visit; outsiders would use up carrying capacity.

With the above discussion provided as an example, several alternatives appear, just on the passenger ferry issue. If access is to be provided for a determined use level, then ferry size can be determined. Ferries could be operated by the county or state, they could be owned by a public agency and leased to a concessionnaire, or the boats could be owned and operated by a concessionnaire. Docking facilities would be needed. Mainland parking needs could be pre-determined. Comfort stations and information services would be needed. Access to the ocean beach from the ferry dock is necessary. An emergency plan is needed for Banks evacuation in the event of impending disaster. Channel dredging, buoy maintenance, fuel supply facilities, ship-to-shore communications, safety equipment, dockside shelters and signs would be needed. Personnel salaries, insurance and contract maintenance costs would have to be assumed - by a public agency or concessionnaire. Depreciation and replacement costs would have to be accommodated.

On the beach, depending on the level of use, there may be need for a public safety officer and a maintenance person. The Sheriff's Deputy at Corolla would probably satisfy the former. With an increase in both day users and vacation housing, it is expected that there will be some conflict between those who want beach access and those would like to restrict it.

Beach Access Policies and Public Use Rights

Chapter 7B, .0320 of the North Carolina Administrative Code defines ocean beach as follows: "land areas without vegetation covering, consisting of unconsolidated soil material that extends landward from the mean low tide to a point where any one or a combination of the following occur: (1) vegetation, or (2) a distinct change in predominant soil particle size, of (3) a change in slope or elevation which alters the physiographic land form."

Section .0301 of the same chapter, a declaration of general policy on shorefront access policies, reads as follows:

> It is hereby declared to be the policy of the State of North Carolina to foster, protect, improve and ensure optimum access to recreational opportunities at beach areas consistent with public rights, rights of private property owners and the need to protect natural resources from overuse. These policies reflect the position that in areas other than State Parks, the responsibility of providing adequate beach access rests primarily with local units of government.

Section .0302 adds the possibility that the beach may extend to the point where riparian owners have specifically and legally restricted access above the Mean High Water line:

> This is intended to describe those shorefront areas historically used by the public. Whether or not the public has rights in the defined areas above the MHW mark can only be answered by the courts. The public does have clear rights below the MHW mark.

The Coastal Resources Commission, following a public hearing on January 12, 1979, adopted eight policy statements on shorefront access:

> (a) Development shall not interfere with the public's right of access to the shorefront where acquired through public acquisition, dedication, or customary use established by the courts.
>
> (b) The responsibility of insuring that the public can obtain adequate access to public trust resources of the ocean, sounds, rivers and tributaries is primarily that of local governments to be shared and assisted by state and federal government.
>
> (c) Public beach area projects funded by the state and federal government will not receive initial or additional funds unless provisions are made for adequate public access. This must include access rights, adequate identification and adequate parking.

(d) Policies regarding State and Federal properties with shorefront areas intended to be used by the public must encourage, permit and provide public access and adequate parking so as to achieve maximum public use and benefit of these areas consistent with establishing legislation.

(e) State and Federal funds for beach access will be provided only to localities that also provide protection of the frontal dunes.

(f) The state should continue in its efforts to supplement and improve highway, bridge and ferry access to and within the twenty county coastal area consistent with the approved local land use plans. Further, the state should wherever practical work to add public fishing catwalks to appropriate highway bridges and should incorporate catwalks in all plans for new construction and for remodeling bridges. It is the policy of the state to seek repeal of ordinances preventing fishing from bridges except where public safety would be compromised.

(g) In order to avoid weakening the protective nature of frontal dunes, no development will be permitted which would involve the removal or relocation of frontal dune sand or frontal dune vegetation (15 NCAC .7H.0306 (c). The sands held in the frontal dune are recognized as vital for the nourishment and protection of ocean beaches.

(h) All land use plans and state actions to provide additional shorefront access must recognize the need of providing access to all socio-economic groups.

At the county level, access or open space dedication is "suggested" in the subdivision ordinance, but not required. An informal dedication procedure may have been working in the past, where a developer may have deeded land to the county in order to receive subdivision approval. Except for one parcel, county-owned land on the Outer Banks would not fill the need for recreation space. There is no plan by developers to accommodate day users on the beach; access is usually provided those who purchase lots. Property owners are not required to allow access across one's property unless another's land has access blocked. Where more than one owner is involved, it may require judicial action to determine the party who is to provide an easement or other access.

To encourage landowners to allow recreational use of their land, Article 10B was added to Chapter 113 of the General Statutes of North Carolina. Immunity from tort liability is provided owners or lessees who allow others to hunt, fish, trap, camp, hike or use for other recreations, whether permission was granted or not. It does not relieve owners' responsibility when a fee is received from other than a governmental unit, or when there is failure to maintain a safe place or issue a warning about it to those securing permission who are subsequently injured.

Selected Policies: The County supports the State policies mentioned above regarding beach access. The County desires public access to the ocean beach as well as on the Currituck Sound.

Implementation: Amend the subdivision ordinance to require developers to set aside public access to the ocean and sound when subdividing land contiguous to the ocean and Sound. The County will continue to work with the State Boating Division to obtain a boat landing at the Corolla Lighthouse area, as well as additions and improvements to the existing Wildlife ramps in the County.

RECREATION

Time off from work is to many a status symbol equal to amount of income earned and the material possessions it brings. Yet, the shorter work week earlier predicted is not arriving on the scene as rapidly as expected. Many, however, have three day weekends and thirty-five to forty hour work weeks. Many people see the meaningful portion of their lives as the hours spent in recreation; work merely supports this. We have sprung from the Protestant work ethic into a recreation culture. In spite of increasing amounts of time spent watching television, people are spending more time in museums, attending plays and concerts, reading, jogging, cycling, walking, boating, camping, swimming and in rugged wilderness experiences. Robert C. Lucas predicts that wilderness uses will increase 359 percent between 1960 and the year 2000.[30] Hiking was predicted to increase by 368 percent, camping by 447 percent, nature study by 180 percent.

These are recreation activities that few farmers enjoy; wilderness is something to be conquered in order to live. While the number of farm families in Currituck County is not significantly decreasing, the percentage of farm families because of in-migration can be expected to be no more than five percent in the 1980 census. In rural areas such as this, recreation attitudes and activities are often in the process of accelerated change during a planning process, making trend applications difficult.[31]

[30] Robert C. Lucas, "Natural Amenities, Outdoor Recreation and Wilderness," Ecology-Economics-Environment, 1971.

[31] Frederic O. Sargent, Rural Environmental Planning, 1976.

Factors affecting recreation in Currituck County in the next ten years will be population migrations, land use patterns, trends in rural life, cultural and economic development, energy use and consumption and transportation. Tourism pressure will come as an expansion of the Nags Head resort area, as capacity is reached or as access to Cape Hatteras National Seashore is blocked by repairs to or loss of the Oregon Inlet bridge. Currituck County is next.

Local Interests

Paraphrasing a statement from Rural Environmental Planning, rural recreation planning must be sensitive to local attitudes, institutions and values, land ownership goals, and citizen participation. Moderate income people, who usually are not included in the planning process, are often the majority of rural residents and they need to be accommodated.[32]

Results of the Currituck County Land Use Questionnaire (See Appendix F) indicate the following:

1. 77% favor transportation to the Currituck Banks; first and second choices of method found 46% favoring the Duck-Corolla road and 49% favoring ferry access. Purpose of access was not identified; recreation is judged as having been a major influence. 32% were undecided on a method.

2. 57% approved high density zoning which would allow open space adjacent; 32 % were undecided.

3. 83% favor zoning of some lands for recreation and conservation use only; 3% had no opinion.

4. Respondents were asked to identify, in priority order, inadequacy of county recreation facilities. "Ocean Beach Access" was written in by respondents. Of the first through fourth priorities, those judged to have been most important, the following results were obtained by averaging choices:

32 Sargent

Local Opinions on Recreation Facility Inadequacy

Facility	Priority of Need
Ocean beach access	1 (Least adequately provided)
Swimming	2
Fishing access	3
Golf Course	4
Tennis courts	5
Playgrounds	6
Walking Trails	7
Camping Areas	8
Hunting Areas	9
Picnic Areas	10
Ball fields	11

5. 71% indicated they would pay an additional five cents tax per $100. valuation to provide for the recreation facility they listed as most inadequate.

Local interest was also expressed in development of two specific areas. Expansion of the N.C. Department of Transportation rest stop near Maple was seen as desirable. Installation of more picnic tables and trails at this location, and development of a similar area south of Coinjock to give trail access to the North River Game Land Black Bear Preserve were proposed to serve both residents and travelers, and foster roadside businesses. The NCWRC has indicated they are not interested in building trails into the game lands, but that local government could contact the Wildlife Resources Commission requesting permission to build locally-financed facilities. It is seen as having too low a priority in this study to be included as a recommendation.

Anticipated Demand

Need and interest, coupled with ability to pay costs necessary for participation, identify demand. Demand may exist for a facility or activity unable to be provided because of climate or other environmental condition. As an example, there is a demand in Currituck County for skiing. Because a ski and outing club has been provided through the 4-H program, demand is easily measured at the level of present costs. It is surprising that more than 100 nine to 18 year olds and families pay $200 to $300 per year per person. Skiing goes on elsewhere, with trips to North Carolina resorts and even to Vermont.

This a good example showing obviously non-traditional values and goals surfacing, perhaps from an individual interest and promotion; and it may be an example of self-fulfilling projections discussed in the section on trends. It identifies the difficulty one might have in identifying various demands in urbanizing rural areas such as Currituck. Sargent suggests that attitude surveys in rural areas be sent to 100 percent of the citizens. He suggests that nation-wide standards are not applicable because of the dynamic changes in attitudes and preferences.

With exception of walking for pleasure, watching television, swimming and a few other leisure activities, only a small minority of any given population can be expected to have an interest in a specific recreation activity. The ski club mentioned has attracted about one percent of Currituck population. It provides a life-enriching experience to those involved, just as other types of activities have the same potential. Demand analysis would not show a need for the activity; neither will trend projection or urban planning standards.

Unincorporated urbanizing areas reach a point in development where provision of typical municipal service is sought. If there is no other vehicle than county government either incorporation is sought or the county is expected to provide the service. A look at population projections suggests the time is coming when municipal recreation services including provision of open space will be required. A supply of facilities will create a demand, just as the Coleman Youth Camp has.

Private sector demand and that for sizable urban areas uses larger numbers lending themselves to analysis. It is not part of this study to estimate such demand. It is anticipated, however, that such a study would show potential for a marina with significant dry storage; camping and cabin facilities on the Outer Banks and a modest amount of commercial recreation enterprises discussed in the SCS Report mentioned earlier. It is likely that a golf course would be self-supporting if one could be located close enough to Nags Head, on the peninsula. A given recreation resource within easy reach of a large number of people is potentially a more valuable resource than a similar area located far from users. Demand, however, is dependent upon a number of inter-related variables: population, incomes, urbanization, mobility, leisure time and estimates of the future based on judgment. Extent of development, road (travel) quality and intensity of advertizement are other affecting conditions. A price or money outlay per unit of recreation

is needed in order to construct a demand schedule; the lower the cost, the higher the demand. There is a different demand curve for every income group. In outdoor recreation, the natural resource alone has little or no productivity unless it is combined with capital, labor and management.

When considering the tourist market, the following population information is of interest:

SMSA	1979 Population Estimate
Raleigh	495,016
Norfolk	814,600
Richmond, VA	601,873

People living in the above areas have the option of many competing attractions. The primary competition for Currituck County attractions is Dare County. Dare County summer population is informally estimated to be 100,000± with many miles of ocean beach and other attractions, and with significant amounts of promotion. Population projections are often the basis for attendance projections, consumption projections which imply some relation of demand to supply, increases in demand and expanding levels of supply.

Statistics developed by the North Carolina Department of Transportation show increases in traffic going into Dare County. On both the Currituck Sound Bridge (Highway U.S. 158) and the Alligator River Bridge (U.S. 64), an average six percent annual increase can be expected. Included in the data base for the averages was a 9.5 percent drop in Highway 158 traffic and a two percent drop in Highway 64 counts during 1974. 1978 Currituck Sound traffic was 25 percent higher than 1975 traffic and 72.5 percent higher than in 1970. 1979 figures are expected to show a one per cent decrease for Highway 158, and 22 percent drop on the other two. 40 percent of all monthly traffic occurs on the weekends. Weekend traffic on Highway 158 during June, July and August, 1978, increased ten percent over 1977, at a time when the average daily traffic count increased only four percent.

The Oregon Inlet Bridge regularly receives 38 percent of the total traffic coming into the county. More than 60 percent of the traffic stays closer to Nags Head. The Inlet bridge count was significantly less than the closer locations during the 1974 recession/gasoline shortage; a 52 percent drop in traffic was recorded.

July 1978 weekend day traffic averages were as follows:

Highway 64	3,345 (Combines east and west traffic)
Oregon Inlet Bridge	6,560
Highway 158 Bridge	13,532

In general, it appears that principal demand for attractions in the Currituck area comes from north or west of the county. There is an increasing demand, reduced somewhat by economic conditions and gasoline prices or supply, for potential recreation resources in Currituck County. There must be an awareness of opportunity and a feeling on the part of potential users that facilities are attractive and cost is reasonable.

It is likely, therefore, that with development of similar attractions, promotion and other affecting conditions in Currituck, Dare County beaches and attractions would lose some or share increases in use with Currituck County beaches.

As indicated earlier, as conditions change in Dare County, either from growth or adversity, Currituck County can expect additional tourist pressure. Some assumptions and projections with demand relationships were included in the trend section earlier. Both public and private outdoor recreation organizations must make plans to acquire land relatively early in relation to need. For user-oriented areas, playgrounds and neighborhood parks, location of sites must be near the users. For major county parks, campgrounds and intermediate-type areas, location is more flexible, but quality factors are dominant - woods, waters, vistas. For seashore, wilderness and other resource-based areas, the quality factor is very dominant, for there is no substitute for unique areas if lost, and no marketable demand, even to residents.

A detailed analysis of open space and recreation is available through the document Open Space and Recreation, Currituck County, 1980, Coastal Consultants, Ltd. and Ronald Johnson.

Selected Policies: Although alternatives mentioned above as well as 27 recommendations proposed by the recreation study were discussed, the County feels that in view of the many needs of the Couny, recreation expenditures must be held in abeyance until other needs are met. However, there are many actions which can be accomplished without significant expenditures. The following recommendations from the Open Space and Recreation Plan will be implemented during the planning period:

A. Identify school ground facilities, which if repaired or improved would add to leisure opportunities. Implementation-Work with the Board of Education to identify needs.

B. Contact the North Carolina Wildlife Resources Commission to request improvement of the Coinjock Access Area. Implementation-

Work with the North Carolina Resources Commission.

C. Locate a private concessionnaire to provide a passenger ferry service to the Currituck Banks. Implementation- Seek out through advertisement and State agency assistance a suitable concessionnaire. Request the State to provide docking facilities and channel maintenance.

D. Secure voluntary easements along the ocean beaches from the boundary of the proposed National Wildlife Refuge south to the County line, to allow legal access parallel to the coast at time of high tide. Permanent easements ten feet wide above the Mean High Water Mark are proposed as realistic minimum. An alternative would be to secure easements to a point two feet above Mean High Water Mark elevation. Implementation- Begin an ongoing program to contact landowners to discuss the easements.

E. Establish water access points on the Sound and ocean. Future subdivision approval will be contingent upon dedication of road rights-of way to thewater. Implementation-Revise subdivision regulations.

F. Establish a requirement of dedication of land for public recreation or a cash payment to the County for subdivision approval. Recreation facilities for exclusive use of residents will not be a substitute. Implementation-Revise the subdivision regulations.

G. Establish bike and canoe trails throughout the County. Implementation-Ask for assistance from the State agencies.

H. Establish a County Parks and Recreation Commission. Implementation-Seek volunteers to participate.

I. Establish voluntary programs for recreation and special events in the County. Implementation-Utilize the volunteer time of a Parks and Recreation Commission.

REDEVELOPMENT

At the present time, the County does not have significant areas in need of redevelopment. However, some areas have numbers of dilapidated structures. Some of these structures could have historic and cultural value. In some areas, dilapidated mobile homes exist. Alternative policies included setting aside County funds to assist in improving structures, and maintaining the status quo situation of no particular actions.

Selected Policy: Before structures are destroyed or rebuilt, a determination will be made by the County if the structures have historic or cultural value. If potential exists, an attempt will be made to place such structures on the State and National register of historic places. The County will work toward identifying natural areas (e.g. Pennys Hill) which could have historic or cultural significance.

Implementation: Amend County regulations to require a permit before destruction of buildings. Before a permit is issued,

require a historic and cultural analysis to determine potential. The planning board will be required to review land areas in the County which could have cultural and historic significance and work toward methods to preserve these areas.

COMMITMENT TO STATE AND FEDERAL PROGRAMS

The County supports state and federal programs in the County which include some programs required by law (e.g. CAMA permits). The County supports the Proposed National Wildlife Refuge on the Currituck Banks, state highway improvements, the state taking of the road from Duck to Corolla (in the absence of significant environmental problems if determined by the ongoing environmental analysis by NCDOT) dredging and maintenance of the Knotts Island Ferry, and maintenance of the Intracoastal Waterway. The County also supports state and federal attempts at erosion control and beach nourishment. The County however, does not find that County financial assistance for any of the above mentioned projects will be available during the planning period. The County will work with state and federal agencies to obtain easements and spoil areas for necessary work. County government and agencies will assist state and federal agencies upon request to work out with private landowners necessary arrangements.

ENERGY FACILITY SITING AND DEVELOPMENT

Currituck County wishes to continue to be rural in nature and continue to be oriented toward agriculture, fisheries and tourism. The County does not support the locating and development of energy facilities.

MOBILE HOMES

In the past ten years, mobile homes grew from about 20% of the housing stock to about 36%. (See Appendix D for analysis). In the past five years, the mobile homes as a percentage of total housing starts was about 45%. If this percentage continues, over 1200 mobile homes could be added to the housing stock by 1990.

Mobile homes are found throughout the County, and many are found in mobile home parks. About 1500 mobile homes exist in the County, with about 550 located in mobile home parks. The largest park, Universal Park in Moyock Township, has has about 380. Another large park, the Camp Lazy B, has 60. Mobile homes are located in 14 other mobile home parks.

In terms of grade and condition of the mobile home stock, we find that compared to the total housing stock, mobile homes are rated by the tax assessors as as higher overall in condition and grade.

Most of the mobile homes in the County are taxed as personal property, and therefore for the square footage of living space which mobile homes have compared to "stick and brick" housing, generally pay about an equal amount of tax as a stick and brick house in the same overall condition and grade. However, the upcoming revaluation could cause a considerable change in this pattern, with stick and brick housing valuations exceeding that of mobile homes. Furthermore, it is widely held that police and social services calls to mobile homes are substantially higher than calls to stick and brick type housing,[33] thereby causing a higher degree of expense.

Ignoring the aspects of revenue generation, costs, and long term effects on housing quality (mobile homes generally appear to be considerably depreciated after about 15 years), it is likely that encouraging mobile mome building in areas with poorest housing quality will, if coupled with enforcement of the housing code, most likely result in the immediate improvement of the quality of life in terms of housing. The overall proliferation of mobile homes in terms of revenue generation, costs, and long term effects on the housing stock appears to be generally determental.

Alternatives: The County considered the following: 1) encourage mobile homes 2) allow mobile homes only in mobile home parks 3) require large (5 to 10 acre) minimum lot sizes for mobile homes 4) allow mobile homes only in one small zone 5) require extensive anchoring, skirting, foundations etc. for mobile homes 6) do nothing

Selected Policy: Restrict mobile homes to a special use which requires the mobile home to replace a stick and brick house of Grade D or E and poor condition as determined by the County tax assessor, The County will continue to work with the state and federal governments, and private developers to provide alternate hou

Implementation: Revise the zoning ordinance to provide for the above selected policy.

PUBLIC PARTICIPATION

A. Objectives:

The public participation program is designed as an integral part of the planning process. The following objectives are to be strived for during this process:

(1) to develop an understanding among citizens and the organized private interests in the community of the principal physical problems and needs of the area and the role of planning in dealing with them and bringing about a more liveable environment;

(2) to cultivate a practice among civic leaders and interest groups of sharing in the planning process;

(3) to overcome the lack of, or problems of, established political mechanisms so as to reach segments of the population not adequately represented in the planning and decisionmaking process;

(4) to serve as a forum for communicating the concerns of intereste citizens and interest groups;

(5) to educate the public in technical matters; to keep them well-

[33] Currituck County Sheriff's Dept. and Health Dept.

informed on matters in controversy, proposed and existing laws, policies and regulations and the rationale behind them;
(6) to reflect changes in the public perception of their area, i needs and resources, and the best use of these resources.

B. Approach:

The approach of the public participation program is to combine a educational process with issue raising sessions, questionnaires and public meetings. In order to assure participation of appropriate groups, a sector analysis will be prepared to determine what publics exist and their relative makeup of the community's population and importance.

DETERMINATION OF PUBLICS

It is important to recognize that the public is made up of many of sectors. These sectors vary in the time they spend in the community, the degree and role they play in the political proces their economic and social importance and their interrelationshi with each other.

In Currituck Co. , we have attempted to identify many of these groups according to political and economic-social interests.

Groups Arranged By Political Interests:

A. Permanent residents who participate in the electora process;
B. Permanent residents who do not participate in the electoral process;
C. Temporary residents (summer inhabitants, monthly an weekly residents, day users)
D. Interested non-residents (absentee landowners, land speculators, absentee landowners)

Groups Arranged By Economic-Social Interests

A. Builders and Contractors
B. Realtors and Developers
C. Commercial Businessmen
D. Commercial Fishermen
E. Sport Fishermen
F. Beach Users
G. Government Workers
H. Low Income Persons
I. Retirement Persons
J. Farmers
K. Laborers
L. Industrialist
M. Military Personnel
N. Environmentalists

In order to involve all these publics in the planning process, the Planning Board has identified persons who represent these interests. Specific invitations have been given to persons in these groups to attend meetings during which issues of interes to them would be addressed. Educational material was mailed to them and questionnaires to elicit their response to community issues was mailed to them.

The Planning Advisory Committee and the County Manager determin representative publics for Currituck County. Individuals were selected to represent various publics. Through this process, a of publics was prepared.

Educational Process

A. Newspapers: In order to prepare citizens for the input process, a number of newspaper articles were run in newspapers regarding planning issues. Many general problems were mentioned, such as transportation, water and sewer, and environmental problems.
B. Forum : A public forum was held with specific invitations to various interest groups in the community. The first part of the forum was educational; the second part sought to elicit community issues and problems, as well as a ranking of the issues.
C. Meetings: The planning process has been developed through the presentation of papers on various subject areas which served as discussion material through which policies were formulated. Members of the public as well as the Advisory Committee attended the meetings and helped in the formulation of ideas.

Public Input

A. Advisory Committee on Land Use

The Committee served as the decisionmaking group in determining policies. Because many of the members are elected officials, decisions were cons idered to be reflective of the citizens who they represented. The Consultant presented information, analyses, alternatives, and advice to this Committee, and through discussion, decisions on policy were formulated by the Committee.

B. Issue Forum

The issue forum was designed to elicit planning issues from the community. Special invitations to representatives from selected interest groups as well as the general public were invited. In addition to determining issues, a ranking of issues was accomplished. These issues were uses to design the informational questionnaire which helped the Committee in policy formulation. In order to determine the issues and priorities, a modified nominal group method was used.

C. The Method

The process began when the Committee welcomed the citizens to the forum and explained the purpose.(To solict citizen's ideas about community problems, goals, priorities). It was explained that no attempt would be made at the forum to arrive at solutions at that time.

Thereafter, the participants were given introductory instruction about what land-use means, as well as a discussion of how services, budgeting, and special issues relate to the planning process. At this point an identifiable example from a different situation(not relating to Currituck County) indicating the type of responses desired (issues, not subject areas) was shared with the audience.

The citizens were instructed to work individually and silently on compiling a list of issues of concern to them regarding problems in the County. Each individual was asked in a "round-robin" fashion for one of his statements of an issue. Each response was recorded on a blackboard. No debate, rewording, or combining of items was allowed. The purpose of this phase was to get as many responses as

possible listed without the immediate burden of defense.

This process was continued until each participant had the opportunity to enumerate all of his concerns. After this phase was completed, participants were separated into groups of about five persons each. The subgroups were asked to discuss the issues and agree on the five issues of highest priority on the list. Then the members of each subgroup were asked to vote silently and privately on each of the five most important issues before the subgroup. The voting was done by setting weights on problems selected. The votes on each item were tallied within each subgroup. When all subgroups had completed the voting, a member of the subgroup was asked to report the tallies on each item. These tallies were placed on the blackboard beside each item. When the tallies from each subgroup on each item were totalled, a score for each item was indicated, showing priorities.

Following a brief discussion of the results, the citizens were informed about the use of their concerns in drafting the questionnaire, as well as policy formulation.

In drafting the questionnaire, the priorities from the issue forum were used to design questions in order to determine how the general public viewed the problems which the Advisory Committee on Land Use would be considering during the process of completing the Land Use Plan Update. Since the persons answering the questionnaire would not have the advantage of the monthly meetings to review information, the Committee used the results of the questionnaire as an indicator of public attitude, rather than a"vote" on the issues. When the time came for making policy on the issues, the answers on the questionnaire were discussed and included in the alternative discussions.

The public was notified at the beginning of the process of the monthly meetings of the Committee and the public was invited to participate in the process. Many from the general public attended initial meetings, but the attendance fell off through the process. Generally, at least two meetings per month were held.

A copy of the questionnaire and results are included in Appendix F

For continued and better participation, the following alternatives were considered: 1) issue a monthly newsletter to all residents of the County informing them of modifications of the land use plan and attempts at implementation 2) hold monthly meetings to discuss possible plan revisions and implementation 3) purchase television and radio time to discuss pertinent land use issues and implementation strategies.

Selected Policy: The planning board will hold a special land use meeting annually to discuss the land use plan and implementat Before the meeting, the County will attempt to get newspaper articles printed to announce the meeting and briefly discuss issues and implementation.

LAND CLASSIFICATION

Section VI

The land classification system has been developed as a means of assisting in the implementation of selected policies. By delineating land classes on a map (See maps appended)the County can specify those areas where certain policies (local state, and federal) will apply.

The following classes have been determined to apply in Currituck County:

DEVELOPED

The purpose of the developed class is to provide for continued intensive development of areas currently at or approaching a density of 500 dwellings per square mile that are provided with usual municipal or public services including at least public water, sewer, recreational facilities, police and fire protection. Although Currituck County has no municipalities within its boundaries, two areas generally meet the above criteria These areas are Universal Trailer Park in Moyock Township, and Walnut Island in Poplar Branch Township. These areas have a water and sewer system and are densely developed with mobile homes.

TRANSITION

The purpose of the transition class is to provide for future intensive development within the ensuing ten years on lands that are most suitable and that will be scheduled for provision of necessary public utilities and services. The transition lands also provide for additional growth when additional lands in the developed class are not available or when they are severely limited for development. Areas in the County classified as transition include the communities of Moyock and Grandy, and the Currituck Banks south of Corolla(not including AEC areas). Through implementation of policies selected in the plan, the areas around Moyock and Grandy are expected to grow to the extent that the provision of public water and sewer may be feasible by the end of the decade. The area south of Corolla is the area which the County hopes will develop to allow for public access as well as increase the County tax base. Developers will be required to provide water and sewer. (See next section for policy and land use tie-ins).

COMMUNITY

The purpose of the community class is to provide for clustered land development to help meet housing, shopping, employment

and public service needs within rural areas of the County. The lands shown on the classification map as intended are those in the rural areas of the County characterized by small groupings of mixed land uses,(residences, general store, church, school,etc.) and which are suitable and appropriate for small clusters of rural development not requiring municipal sewer service(e.g. Point Harbor, Bertha, Shawboro).

RURAL

The purpose of the rural class is to provide for agriculture, forest management, and other low intensity uses. Residences may be located in rural areas where urban services are not required and where natural resources will not be permanently impared. In Currituck County, most of these areas are in agricultural use.

CONSERVATION

The purpose of the conservation class is to provide for effective long term management of significant limited or irreplaceable areas. This management may be needed because of its natural, cultural, recreational, productive or scenic value. In Currituck County, this class is applied to major wetlands, state and federal recreation and wildlife conservation areas, all land north of Corolla and wetland south of Corolla included in the proposed U.S. Fish and Wildlife National Wildlife Refuge, and all AEC areas.

RELATIONSHIP OF POLICIES AND LAND CLASSIFICATION

Developed: The trailer parks indicated as developed, Universal Park and Walnut Island are classified in this manner, due primarily to the densities, and the provision of sewer and water. They are not considered as areas where the County wishes to have additional growth. As indicated previously, these areas have a high demand for services, especially police and social services, and therefore have been considered in the services needs for 1990. The County policy is to reduce mobile home development. It is anticipated that due to changes in zoning and subdivision regulations, no more such trailer parks will be permitted. It is not probable that any other areas which could be classified as developed will occur during the planning period, althoughit is hoped that the designated growth areas of Moyock and Grandy will approach such a stage in the next ten year planning period.

Transition: Two of the three general areas designated as transition, Moyock and Grandy, are hoped to be the major growth centers of the County in the future. These areas are located along the major transportation routes through the County, and presently have the land use mix (stores, residential, institutions) appropriate to a potential municipality. The area south of Coroll is expected to develop with a mix of single-family and multi-family, with public water and sewer provided to multi-family.

Community: Community as serve a useful function in a rural County by serving as a focal point for rural residences and providing limited services such as a store, post office, church etc. As shown on the classification map, the County has many community areas which serve this function. Although the County recognized the need for these these small communities, it is not County policy to support the growth of all of them. The County wishes to consolidate its facilities and services in the future to make them more cost effective. In the attempt to reduce sprawl development, implementation of zoning and subdivision changes(larger lot sizes on poor soils, revision of zoning boundaries) will serve to concentrate growth in the transition classification areas.

Developed, Transition, and Community-Appropriate Uses

Appropriate uses in these areas are those which could be considered "urbanized uses" that is residences, commercial, institutional, and industrial. The zoning ordinance will determine the specific uses allowed as well as densities. The exceptions are the areas presently indicated in the developed classification. As noted previously, these areas are not intended to represent "municipality" type uses of land which would include the urbanized uses noted above. Instead, they are only high density residential use.

Rural: The rural class includes areas used primarily for agriculture, or contain forest areas. County policy is to keep these areas in agriculture by implementing zoning and subdivision changes which would limit mobile home use (which in the past has utilized agricultural land in many instances).

Appropriate uses in these areas are farming, forestry, and rural residential. Other appropriate uses would be industrial, mineral extraction, and utility lines and pipes. Changes in the present zoning ordinance would place standards on the industrial, mineral extraction, or utility use.

Conservation: The conservation class, which includes all wetlands, state and federal recreation and wildlife protection areas, the proposed Currituck Banks Wildlife Refuge, and other AEC areas which include ocean hazard areas, estuarine shoreline, coastal wetlands, estuarine and public trust waters, are intended for long-term management to maintain these resources. The overall policy concept and the major thrust of implementation, is to manage development so that the location and density of development is steered away from areas where associated results of development (e.g. septic tank pollution, erosion) will be of less possible harm to conservation class areas. Furthermore, proposed changes in zoning and subdivision regulations will impose

These areas also have soil conditions in and around the areas which could support a gradual increase in densities. Once appropriate densities are reached, it would then be feasible to serve these areas with sewer and water, and serve as concentrated nodes for provision of services. The major method to implement this policy is through changes in the zoning and subdivision regulations. Proposed changes (See Management Tools, Currituck County) would change district boundaries and densities to provide for lower densities throughout much of the County, and allow higher densities around Moyock and Grandy. In this way, the intent is to alter the present sprawl pattern of development to a nodal concept. The purpose is not only to allow for more efficient provision of services, but also to protect the environment by reducing development on marginal soils and in environmentally sensitive areas.

On the Currituck Banks south of Corolla, the third general area designated as transition, the intention is to provide for some development and public access on the Banks. The County has determined that a compromise concept of environmental protection and development is necessary for the Banks. The policy support of the proposed National Wildlife Refuge will mean that a large portion of a County resource will be given up to federal control. The Refuge will be closely controlled by the federal government, and very minimal human use will be permitted. In the area south of Corolla (other than wetlands included in the proposal and AEC areas) it is proposed that the County allow for flexibility of development by the private sector. Transition classification is indicated because implementation of the policy will require developers of PUD, multi-family development to provide sewer and water. The County is committed to provide other services to the area to the same degree that it is provided to mainland residents. It must be noted, however, that in keeping with the flexibility concept, that development of the area in single family detached use could occur. This could happen due to a number of reasons: 1) developers may not be able to provide sewer and water due to inability to find enough water for proposed development, 2) their proposed package plants may not meet County and state and federal requirements for a permit 3) the costs of providing the services, as well as the requirement to give up open space and provide for public access may not be cost effective to make high density development worthwhile. Single family detached units will be required to locate on minimum lot sizes of one acre. Even so, many lots may not be able to meet septic tank requirements, and therefore some areas may not be able to be developed. It is the intention of the County, then, to rely on governmental controls to provide standards which will control development, but allow the private sector to attempt development.

Standards proposed in the management tools would control development. For example, filling of wetlands for development would be prohibited. (See Management Tools, Currituck County). The proposed zoning changes would include a new zoning district, conservation, which would have the boundaries of the class of conservation on the classification map.

Uses in this class would include water dependent uses such as marinas, fish hatcheries and fish ponds, game preserves, lodges, public or private parks, single family detached dwellings, and utility lines or pipes. Minimum lot zize for a single family detached use would be ten acres. The location and construction of any of the above uses would be subject to other standards in the zoning and subdivision regulations, as well as other restrictions such as CAMA regulations on standards in AECs.

INTERGOVERNMENTAL COORDINATION

During the planning process, the County contacted adjacent municipalities, as well as state and federal agencies to discuss alternatives and exchange information. For example, potential problems of hurricane evacuation were discussed with the Dare County Civil Preparedness Coordinator, meetings with the NCDOT were held to discuss road improvements, the Army Corps of Engineers was contacted regarding the bridge at Coinjock and dredging of the Intracoastal Waterway, municipalities in Virginia were contacted to discuss mobile home control, and many other agencies on various issues pertinent to the Land Use Plan Update. The same consultant who helped to prepare the Currituck County Plan also assisted the Town of Southern Shores and other Dare County Beach Communities. A continuous dialog and flow of information between the municipalities was therefore made possible.

The County will continue to maintain intergovernmental coordination by exchange of plan documents, and through attendance of meetings by County officials on issues of mutual interest.

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APPENDIX A

Animals and Plants

INVERTEBRATES

SPECIES	RANGE IN N. C.	PREFERRED HABITAT	GENERAL COMMENTS	STATUS
MILLIPEDS				
Onomeris australora (Milliped)	Macon County, Highlands vicinity.		Also found in Georgia.	Endangered.
Pseudopolydesmus paludicolus	Dismal swamp area only.		Endemic to Dismal Swamp, N.C. & Va.	Endangered.
MOLLUSKS				
Bivalves-(Fresh-water clams)				
Alasmidonta heterodon (Mollusk:bi-valve)	Wake County, Neuse & Little Rivers; Franklin County, Tar River; Pitt County, Chicod Creek.	Moderately flowing water, gravel, sand, or muddy sand.	Found only in 5 rivers outside of N. C.	Endangered.
Catinella pugilator	Currituck County.		Occurs in S. C.	Undetermined

VERTEBRATES

BIRDS				
Pelecanus occidentalis Brown Pelican	Uncommon local resident along coast.	Coastal infringe, sounds & inlets. Nests on low islands.	Nests only in Ocracoke Inlet Production, 1972, about 40 young.	Endangered.

SPECIES	RANGE IN N. C.	PREFERRED HABITAT	GENERAL COMMENTS	STATUS
Haliaeetus leucocephalus Bald Eagle	Rare local resident along coast. Rare visitor elsewhere.	Shores of sounds & large lakes.	Last known nesting site in N. C. in now unproductive.	Endangered
Falco peregrinus Peregrinus Falcon	Uncommon to rare winter visitor along coast.	Coast, mtns. & woodlands. Nests on cliffs.	East U.S. breeding population nearly extirpated.	Endangered
Sterna albifrons Least Tern	Common-uncommon summer resident.	Coastal fringe. Nests on beaches or low sandy islands.	Terns unceasingly use dredge islands for nesting. Low nesting sites of this species very vulnerable to tides and storms.	Endangered
Coturnicops noveboracensis Yellow Rail	Uncommon-rare winter resident on coast	Marshes and grassy fields.	Abundance & dist. in N. C. poorly known. Habitat loss is threat.	Rare.
Latterallus jamaicensis Black Rail	Uncommon-rare summer resident on coast and perhaps inland.	Marshes, wet grassy fields.	As above.	Rare.

VERTEBRATES con't

SPECIES	RANGE IN N. C.	PREFERRED HABITAT	GENERAL COMMENTS	STATUS
Gelochelidon nilotica Gull-billed Tern	Rare summer resident along coast.	Coastal fringe.Nests on beaches or low sandy islands.	Terns increasingly use dredge islands for nesting.	Rare.
Passerculus princeps Ipswich Sparrow	Uncommon-rare winter resident along outer banks.	Found in beach grasses on sand dunes.	Outer Banks may become major wintering area due to habitat loss elsewhere.	Rare.
Pandion haliaetus Osprey	Uncommon summer resident along coast.Transient	Large lakes & rivers, & sounds.	N.C. population relatively stable, but populations to north are threatened.	Undetermine
Thalasseus maximus Royal Tern	Fairly common summer resident.	Coastal gringe.Nests on beaches or low sandy islands.	Terns increasingly use dredge islands for nesting.	Undetermin
Limnothlypis swainsonii Swainson's Warbler	Locally uncommon-rare summer resident coastal plain&mountains.	Swamps & rivers floodplains in coastal plain and Rhododendron thickets in mountains.	High nest mortality from natural causes on coastal plain; distribution in mountains poorly known.	Undetermin

SPECIES	RANGE IN N. C.	PREFERRED HABITAT	GENERAL COMMENTS	STATUS
Charadrius melodus Piping Plover	Locally uncommon-rare summer resident on coast.	Dry, sandy beaches.	Beach nesting birds like this threatened by heavy recreational use of beaches.	Peripheral-Rare breeder in N. C.
Sterno hirundo Common Tern	Uncommon-rare breeding summer resident.	Coastal fringe. Nests on beaches or low sandy islands.	Terns increasingly use dredge islands for nesting.	Peripheral-Rare breeder in N.C.
Thalasseus sandvicensis Sandwich Tern	Uncommon summer resident.	As above.	As above.	Peripheral-Undetermined in N. C.
MAMMALS				
Sorex longirostris fisheri (Merriam) Southeastern Shrew	Dismal Swamp		Endemic.	Endangered.
Blarina telmalestes (Merriam) Swamp Short-tailed Shrew	Dismal Swamp		Endemic.	Endangered.

VERTEBRATES con't

SPECIES	RANGE IN N. C.	PREFERRED HABITAT	GENERAL COMMENTS	STATUS
Synaptomys cooperi Helaletes (Merriam) Southern Bog Lemming	Dismal Swamp		N. C., range periphery.	Endangered
Felis concolor cougar (Kerr) Cougar	Eastern swamps Western mountains.		Endemic	Endangered

VASCULAR PLANTS

Kalmia cuneata	Coastal plains of N.C. & S.C.	Pocosin	Rare-endemic.	Rare.

APPENDIX B

Inventory of Historic Sites

INVENTORY OF HISTORIC SITES *

Map No.	Name or Identity of Site	Location Township	Location Highway	Description of Site
1.	Twin Houses	Crawford	Shawboro, NC 168	No known date. Two identical frame houses which are joined by a hall way.
2.	Forbes House	Crawford	Shawboro Vicinity, NC 168	ca. 1820. Two story house with a gable roof and a shed porch around three sides.
3.	Currituck County Jail	Crawford	Currituck Courthouse NC 34	ca. 1766. An early jail.
	Pilmore Methodist Church	Crawford	Currituck Courthouse NC 34	1928. On the site of the first Methodist sermon delivered in North Carolina in 1772.
4.	Swan Island Club	Poplar Branch	Currituck Sound	Old Sportsman Club
5.	Indian Town Academy	Crawford	Indian Town Vicinity	Undeveloped site
6.	Balance Site	Crawford	Bell Island SR 1245	Undeveloped archaeological site, found projectile points and stone axes.
7.	Goose Site	Poplar Branch	Gray Vicinity SR 1142, Church's Island	Undeveloped archaeological site, found to be possible site of large Indian village.
8.	McKnight Shipyard	Crawford	Indian Creek-North River	Undeveloped. 1st in North Carolina.
9.	Waterlilly Site	Poplar Branch	E. Shore of Currituck Pen.	Undeveloped archaeological site.
10.	Currituck Beach Lighthouse	Fruitville	Corolla Outer Banks	1875. A brick tower 158 feet tall. Built to fill a dangerous gap between Cape Henry to the north and Bodie Island to the south.

* Reprinted from An Appraisal of Potential for Outdoor Recreation, Currituck County, NC, SCS, USDA, Currituck, NC, 1973.

INVENTORY OF HISTORIC SITES

Map No.	Name or Identity of Site	Location Township	Location Highway	Description of Site
11.	Currituck Shooting Club	Fruitville	Currituck Sound, Outer Banks	Private Sportsman Club 1870.
12.	Caffey's Inlet Life-saving & Life Boat Station	Fruitville	Duck vicinity Outer Banks	ca. 1890. An excellent prototype of stations built in the period.
13.	Whaley Site	Fruitville	Albemarle Sound	Undeveloped archaeological site.
14.	Harbinger Site	Poplar Branch	1/3 mil. sq. an SW shore of Currituck Pen.	Undeveloped archaeological site.
15.	Sampson Point Site	Poplar Branch	Sampson Point vicinity, US 158	Undeveloped archaeological site.
	Wright Brothers Memorial Bridge Site	Poplar Branch	US 158	Located at the western terminus of the bridge. Undeveloped archaeological site.

APPENDIX C

Boat Access and Recreation Areas

Name & Location	Acreage, if known	Boat Launch Ramp Unimproved	Boat Launch Ramp Improved	Parking Capacity	Comments
1 - Indian Creek S. of Shawboro	-		X	6-8	Canoe & Cartop launch on road R.O.W.
2 - Newberns Lndng. No.River, Powells Pt.		X		6-8	Dirt Road, Shallow
3 - Ski Lagoon Motel End of SR 1102		X		-	Road parking only "Motel Guests only"
4 - End of SR1106 Pt. Harbor				-	"For Property Owners and Guests" (Swimming)
5 - Hog Quarter Landing, Spot		X		-	7-8 Slips, Dirt Ramp
6 - Walnut Island Trailer Court, Grandy			X	20	Boats for Rent
7 - Waterview Shores, Grandy		X		-	Presumed private
8 - Poplar Branch NC WRC Access Area	4		X	30	Heavy local use.
9 - Riviera Lodge, S. of Coinjock			X	10-15	Access to N. River & Intracoastal Waterwy.
10 - Stoney's Fish Camp, Coinjock	2.5	X		25-30	6 Camp sites, ICW dockside services
11 - Coinjock NC WRC Access Area	5		X	50	Inaccessible when grounds are wet
12 - Hampton Lodge Campground, Coinjock	110		X	4 -50	200 Camp sites, Recreation Bldg.
13 - Currituck Bait Barn, Maple			X	9	
14 - Bell's Island Campground	14		X	40	150 Camp sites; other private facilities
15 - Tull's Bay Marina, Moyock	3		X	10-15	10-12 Slips
16 - Coleman Youth Camp, Moyock			X	10-15	Canoe launch only, swimming, tennis
17 - Barnes Marina & Camp, Knott's Is.				?	
18 - Williams Lodge Knott's Is.		X		?	SR 1260 Road end
19 - Bay Villa Marina & Camp, Knott's Is.				?	
20 - Brumley Road, Knott's Is.		X			SR 1257 Road end; road parking only
21 - Back Bay Ramp N. Knott's Is.			X	25-30	In Virginia; access through Knott's Is.
22 - Corolla Beach Access Area, NCWRC	5				Not accessible except by boat (to gen'l. pu
23 - Coinjock Esso and Gulf Marinas - docking and dockside services on Intracoastal Waterway.					
24 - Mackay Island Nat'l. Wildlife Refuge	700				Access from Knott's I.
25 - North West River Game Land, NCWRC	1251				
26 - North River Game Land, Coinjock	8430			10	Bear Preserve
27 - Maple Airstrip HY. 158 & SR 1246					Leased by county from State of NC
28 - Camp Lazy B, Hy. 615, Knott's Is.	81		X	10-15	300 tent sites, plus with full hookups.

APPENDIX D

Housing Analysis (Including Mobile Homes)

CURRITUCK COUNTY HOUSING ANALYSIS

From our population analysis we found that Currituck County has a strong, although not outrageous, growth rate. From the housing analysis we were able to verify that the county has an aging housing stock, a larger than usual percentage of substandard housing and a large number of mobile homes. The use of mobile homes reached a peak early in the 1970's. The large number of substandard housing and the large number of mobile homes posit some implications for the county in its future development, both in terms of tax base and suitable housing environments for its residents.

In order to complete our housing analysis, we needed (1) to determine the number of units in the housing stock; (2) to determine the condition of the housing stock, both initially in terms of construction and in terms of present condition; (3) to determine the age of the housing stock; (4) to determine the valuation of the housing stock; (5) to determine how the traditional housing stock compares with mobile homes in terms of age, construction,condition and valuation; (6) to determine the location of each class of housing stock, so as to profile condition and change. In the end, we hoped our information would allow us to determine what policy the county should adopt to mobile homes and other aspects of the future housing mix.

STICK & BRICK HOUSING

Methodology: The Tax Assessor's Manual provides a system for tax assessors to use in evaluating a home for assessment purposes. This manual calls on the assessor to determine the grade of the structure on a scale of A to E; the age of the structure; the condition of the structure - Good (G) - Fair (F) - Poor (P). The tax assessors evaluate the structure of every property owner in terms of the above criteria. We have examined every property card in Currituck County in order to extract information on the tax assessment value, the age, condition and structural grade of the housing. Each house can be presented at the mapping unit scale. The tax office has divided the county into approximately 120 mapping units.

Suitability of Housing for Habitation: The Tax Assessor's Manual attempts to establish a degree of uniformity by setting up standards by which to measure the quality of a dwelling. According to the manual, a Class D dwelling is described as "Cheap Quality Construction," whereas a Class E dwelling is described as substandard. Base specifications for these housing types are included in the appendix.

The condition of the house is a function of its physical and functional depreciation. Physical depreciation is the loss of value in a structure due to deterioration caused by physical wear and tear and exposure to the elements. There are two kinds of physical depreciation, one is curable and measured by the cost of repair. The other is incurable, representing deterioration of

the basic structure and a loss in strength. It is measured by estimating the actual remaining life. Functional depreciation is concerned with the lessening of value due to the effect of economic causes. Among the factors to be considered here are (1) structural obsolesence, (2) lack of appeal, (3) lack of livability, (4) inadequacy, (5) neighborhood, (6) insufficiency of utilities, (7) hazards. The Tax Assessor's Manual notes that because "individuals in the low income group are more tolerant of conditions that often affect the cheaper houses which they occupy," more expensive houses tend to suffer more from functional depreciation.

Most houses that were rated Poor (P) in Currituck County had an appriasal value below $1000.00. A house with a 1975 market value of $6000.00 that had used 60% of its physical life would be worth $1000.00. Most "E houses" lack heating and sometimes plumbing. A substandard house which is substantially deteriorated is considered to be unfit for habitation. To a lesser extent, most substandard housing can be expected to reach uninhabitable condition within the planning period. Finally, some cheap quality construction that is in marginally fair condition may deteriorate to Poor condition during the planning period.

We have surveyed the housing stock in the county and by township, and have found the following:

HOUSING STOCK BY GRADE

		A		B		C		D		E	
TOWNSHIP	UNITS	#	%	#	%	#	%	#	%	#	%
Fruitville	261	2	0.8	3	1.2	51	19.5	156	59.8	49	18.8
Crawford	821	1	1.0	32	3.9	246	30.0	355	43.2	187	22.8
Moyock	510	0	0.0	9	1.8	129	25.3	225	44.1	147	28.8
Poplar Branch	1084	4	0.3	54	5.0	215	19.8	541	49.9	270	24.9
County	2676	7	0.2	98	3.6	641	23.9	1277	47.7	653	24.4

HOUSING STOCK BY CONDITION

		G		F		P	
TOWNSHIP	UNITS	#	%	#	%	#	%
Fruitville	261	101	38.7	147	56.3	13	5.0
Crawford	821	195	23.8	501	61.0	125	15.2
Moyock	510	249	48.8	175	34.3	86	16.9
Poplar Branch	1084	358	33.0	629	58.0	97	8.9
County		903	33.7	1452	54.3	321	12.0

Accordingly, 12% of the county's housing stock is substandard and in poor condition. The largest percentages of substandard housing are in Moyock and Crawford townships. Ideally, 321 units should be replaced with structurally sound units in the nearer part of the planning period. This represents a substantial housing need for nearly 1000 people within the county.

In addition to the 12% of poor housing, which is mostly deteriorated, we have another 12.4% which is of "E Grade" but currently in fair condition. An additional 10 years of depreciation will probably result in a large percentage of this group being considered uninhabitable. Most noticeable results will probably occur in Poplar Branch, although all townships are relatively in about the same shape.

SUBSTANDARD HOUSING

TOWNSHIP	P %	E but not P %	D %	Cumulative %
Fruitville	5.0 %	13.8 %	59.8 %	77.7 %
Crawford	15.2	7.6	43.2	66.0
Moyock	16.9	11.9	44.1	72.9
Poplar Branch	8.9	24.9	49.9	83.9
County	12.0	12.4	47.7	72.1

In terms of immediate housing needs, the county should probably emphasize its efforts in Moyock and Crawford townships.

By evaluating all age profiles, we notice that a substantially larger percentage of housing units were built within the last ten years in Fruitville and Moyock township. Much of the new housing in Fruitville township is of "Cheap Quality Construction."

AGE OF HOUSING

	0-5		6-10		0-10	
TOWNSHIP	#	%	#	%	#	%
Fruitville	48	18.4	45	17.2	93	35.6
Crawford	97	11.8	120	14.6	217	26.4
Moyock	78	15.3	82	16.1	160	31.4
Poplar Branch	150	13.8	121	11.2	271	25.0
County	373	13.9	368	13.8	741	27.7

In all, the stick and brick housing stock in the county is in extremely poor condition, suffering from old age and inferior workmanship.

MOBILE HOMES

During the last ten years, the county has had to cope with not only the problem of increasingly more and more outsiders, but also with a growingly larger portion of the housing stock in mobile homes. Due to the large number of views held on this subject, we decided to gather some of the available data. We discovered that mobile units were treated sometimes as realty and sometimes as personalty within the county. We found that the mobile home as realty included about 30% "double wides." The questions we needed answers to included (1) what was the percentage of mobile units in the county (by township); (2) what areas are experiencing more rapid mobile home growth; (3) what is the age, structural quality and condition of the mobile units; (4) how do these units relate to stick and brick housing units in quality.

Methodology: Our methodology relied on information from the real property cards for determining quality of units used as real property. We examined the personal property cards to extract data on units described as personalty. Regrettably, information on these later units is sketchy, generally including only age, square footage and appraised value. We removed from the total count any units that were smaller than 400 square feet. When mobile homes are considered as personalty, they are taxed at 100% of market value. This value does not depreciate and is adjusted yearly for inflation.

Mobile Homes and Total Housing Stock: Mobile homes make up a dramatically large percentage of the housing units in Currituck County. If we assume that the greater majority of units moved into the county are new units or units 1-2 years in age, then we can determine that during the past ten years mobile homes grew from 19.6% of the housing stock to 36%. The majority of new housing units in the county are mobile homes. This profile appears as follows:

MOBILE HOMES & TOTAL HOUSING STOCK (1970-1980)

Years	Number of Mobile Homes	Number of Housing Units	% of Mobile Homes
1970	495	2530	19.6
1975	1082	3485	31.0
1980	1480	4156	36.0

*(Mobile Homes Includes Double Wides and Units Described as Realty)

These numbers do not tell the entire story. A more important question is whether mobile homes are increasing or decreasing in terms of the new housing starts. Here, we observe that the number of mobile homes to stick and brick units was highest during the early 70's and appears to have declined and leveled out in the late 70's.

MOBILE HOMES ADDED IN 1970's

Years	Number of Mobile Homes Added	Number of Total Housing Units Added	%
1970-75	585	955	61.5
1975-80	298	671	44.4
1970-80	885	1626	54.4

If the next ten years were to continue the trend of the past 5 years, the county could expect approximately 1020 mobile units to be added to the housing stock. (Using 4.5% annual growth rate.) Thus, 55.6% of all new units will be mobile homes.

Assuming a continuation of recent trends, thus, the housing mix would take on the following characteristics:

HOUSING MIX, 1980-90

Housing Type	Units Added 1980-1990	Total Units 1990	% of Total 1990
Stick and Brick	1020	3696	57.2
Mobile Home Units	1278	2758	42.7
Total Units	2298	6454	

This would mean that the mumber of mobile units would reach 42.7% of the total stock and level off at near that percentage, presumably even to the year 2000.

In terms of the grade and condition of the mobile home stock, we notice that compared to the total housing stock, mobile homes have a higher structural quality and are in better condition. Since 1970, the adoption of construction standards for the mobile home industry has resulted in higher quality construction. However, we have only limited experience upon which to test the average useful life of even the good structures. The Tax Assessor's Manual leads us to believe that stick and brick homes are over 50% physically depreciated in about 30 years. A mobile unit may reach the same level of actual depreciation in 15 years. (tax assessors do not depreciate mobile units in Currituck County.) Due to the fact that mobile home use is a fairly recent phenomena nationally, we can note that the mobile home stock is newer - although it may age more quickly.

Mobile homes treated as realty comprise a smaller percentage of the housing stock. However, because approximately 40% of the total units in existence were built prior to 1970, we feel comfortable in transferring information on inadequacies gleaned from mobile homes as realty to the entire mobile home stock. Thus, we can surmise that approximately 8.2% of the total mobile home stock is in Poor Condition, another 0.8% can be classified as of substandard construction, "Class E," and finally, 29.6% can be classified as "Class D," or cheap quality housing. This contrasts favorably with the stick and brick housing stock.

SUBSTANDARD HOUSING STOCK (1980)

Housing Type	Number of Units	Poor Condition		Grade E (only)		Grade D	
		#	%	#	%	#	%
Mobile Home	1480	121	8.2	12	.08	438	29.6
Stick and Brick	2676	321	12.0	332	12.4	1277	47.7

We can obtain a profile of the relationship between age (over 10 years old) and condition (Poor) by contrasting mobile home stock in two townships.
In Fruitville township, 70% of the mobile homes are over 10 years of age, resulting in 16.2% being described as in Poor Condition. Whereas, in Crawford township, 33% of the mobile homes are over 10 years of age, resulting in 5.3% being described as in Poor Condition. We should note that very few mobile homes in the county are older than 20 years, however, there are fewer mobile homes 10-15 years old than 15-20 years old. We tend to believe that when the mobile home stock reaches 10+ years, that we will add 8 to 16% additional units to the class of Poor Condition. (For purposes of completing our analysis, we have assumed that 35% of all mobile units will be completely physically depreciated after 20 years of age - this is difficult to predict since we have few mobile homes of high calibre construction that are this old.)

We can contrast the housing stock in 1990, and its projected quality.

Housing Type	Number of Poor Condition 1980	Added Number Poor Condition	Likely Poor Condition for 2000 *
Mobile	121	162	468
Stick and Brick	321	329	653

* 20 year old mobile home, 50% of Grade D (1980)

In terms of the quality of the housing stock, the addition of mobile homes should improve the quality over the short run, although by 1995, the number of mobile homes, age 20 and over, will probably be a major source of poor quality housing. This factor assumes that people will not "trade up" their units, something that may in fact be happening now; also, that construction standards in the mobile home industry will not prove our basic assumption erroneous. We can observe that in 1980 mobile units are a viable alternative to living in poor condition housing.

As we hinted earlier, the mobile home picture is not the same throughout the county. Poplar Branch with its larger population has the largest number of mobile homes in 1980 with 476 units. However, the heaviest growth areas appear to be in Moyock and Crawford townships. The details are as follows:

1980 MOBILE HOME COMPOSITION

Township	Mobile Home Units	Total Housing Units	%
Fruitville	208	469	44.3
Crawford	420	1242	33.8
Moyock	375	885	42.3
Poplar Branch	476	1560	30.5

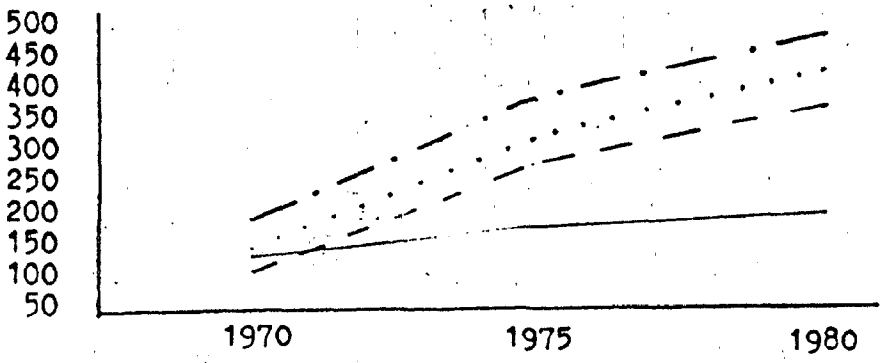
1975 MOBILE HOME COMPOSITION

	Mobile Home Units	Total Housing Units	%
Fruitville	186	399	39.6
Crawford	329	1054	31.2
Moyock	278	709	39.2
Poplar Branch	389	1323	29.4

1970 MOBILE HOME COMPOSITION

	Mobile Home Units	Total Housing Units	%
Fruitville	148	364	40.6
Crawford	148	753	19.6
Moyock	123	472	26.0
Poplar Branch	198	1011	19.6

From the above table we can see that Moyock and Crawford township, which are the fastest growing townships, are experiencing the greatest increase in mobile home construction.



Fruitville ———
Moyock - - - -
Crawford . . . . .
Poplar Branch — · — ·

Expressing the increase in mobile homes in terms of the annual growth rate, we find:

ANNUAL GROWTH RATE: MOBILE UNITS

	Mobile Units			Growth Rate	
Township	70	75	80	70 - 80	75 - 80
Fruitville	148	186	208	3.8%	2.8%
Crawford	148	329	420	12.3%	6.2%
Moyock	123	278	375	13.3%	7.8%
Poplar Branch	198	389	476	10.2%	5.2%

PERCENTAGE MOBILE HOMES TO TOTAL HOUSING STOCK ADDED 1975 - 1980

	Number Mobile	Number Stick	% Mobile
Fruitville	22	48	31.4
Crawford	91	97	48.4
Moyock	98	78	55.6
Poplar Branch	87	150	36.7

PREDICTED 1980 - 1990 HOUSING MIX

Township	Added Number Mobile	Added Number Stick	Total Number Units
Fruitville	72	153	225
Crawford	315	335	650
Moyock	349	278	627
Poplar Branch	291	503	794

Certainly this information on growth rates or pressure for mobile home development, with information on housing units in poorest condition, we find that the townships of Crawford and Moyock had the greatest percentage of housing units in Poor Condition, and the greatest rate of increase in mobile units.

INCREASE MOBILE RATE VS SUBSTANDARD HOUSING

Township	% of Stick & Brick Units Poor Condition	Units in Poor Condition Stick/Brick	Mobile	Annual Mobile Unit Growth Rate 1970 - 1980
Fruitville	5.0%	13	16	3.8%
Crawford	15.2	125	22	12.3
Moyock	16.7	86	30	13.3
Poplar Branch	8.9	97	17	5.2

Ignoring the aspects of revenue generation and long term (20 to 30 years) effects on housing quality, it appears that encouraging mobile home building in areas with the poorest housing quality will, if coupled with enforcement of the housing code, most likely result in immediate improvement of the quality of life, in terms of housing, in the county. On the other hand, efforts to restrict mobile homes in Fruitville and to a lesser extent in Poplar Branch, will have the least effect on reducing the poor quality of the housing stock and therefore seem most justified.

Seasonal Units: It is interesting to note that Fruitville and Poplar Branch also appear to have the largest number of mobile units (not realty) and probably total housing units in seasonal use. We estimated that 120 of the 310 mobile units in Poplar Branch were used on a seasonal basis, and perhaps as many as 50 of the 103 units in Fruitville. In Crawford and Moyock, only about 10% of the units appeared to be restricted to seasonal use. (We judged seasonal use from personal property records, where an individual had an out of state address and no other property listed for taxation except the mobile home.) Figures on Fruitville township pose a problem since most mailing addresses have a Virginia post office box.

CLASS D DWELLINGS *

CHEAP QUALITY CONSTRUCTION

Cheap materials with inferior workmanship. Houses costing $7,500 to $12,500 are usually in or near this class of construction.

BASE SPECIFICATIONS

FOUNDATION - 8" concrete block walls or masonry piers. No basement.

EXTERIOR WALLS - 5/8" lap siding or 1" drop siding painted; no sheathing, 2" x 4" studs, 16" O.C. 1 3/8" pine doors and double hung windows. Brick Veneer Construction similar - Use Masonry Schedule.

ROOF - Double pitch or hipped type; cheap asphalt shingles, 1" sheathing 2" x 4" rafters 24" O.C. No cornice.

FLOORS - Flat grain Y.P. flooring, 1" subfloor, 2" x 8" joists, 18" O.C., timber beams and sills. No attic floor.

INTERIOR FINISH - Y.P. doors and trim throughout; cheap cabinets. Rock lath and plaster, sheet rock or beaded walls and ceilings, papered or painted. No tiling in bath.

HEATING - None included in base price, add from schedule.

FIREPLACE - None included in base price, add from schedule.

PLUMBING - Kitchen sink, automatic water heater, cheap 3 fixture bathroom.

LIGHTING - Electric lighting, concealed knob and tube wiring. Cheap fixtures.

CLASS D GARAGES

BASE SPECIFICATIONS

FOUNDATION - Concrete block or brick piers.
WALLS - 1" drop siding, 2" x 4" studs, 24" O.C.
ROOF - Cheap asphalt shingles on 1" sheathing, 2" x 4" rafters, 24" O.C.
FLOOR - Cinders or gravel.
LIGHTING - None.
DOORS - Cheap sash panel or batten hinged garage doors.

(Brick Veneer Garages same except for wall construction).

CLASS E DWELLINGS

SUB-STANDARD CONSTRUCTION

Very cheap materials with inferior workmanship. Buildings are often without modern improvements. Cheap cottages costing up to $6,000 are in this class of construction.

BASE SPECIFICATIONS

FOUNDATION - Brick, stone, or concrete piers. No basements.

EXTERIOR WALLS - 1" drop siding painted; no wall sheathing, 2" x 4" studs, 24" O.C. 1 3/8" pine doors and windows.

ROOF - Double pitch type roof, cheap metal or asphalt shingle roofin 1" sheathing, 2" x 4" rafters, 24" O.C. No cornice, gutters or conductors.

FLOORS - Flat grain Y.P. flooring painted, 2" x 6" joists, 16" O.C.

INTERIOR FINISH - Cheap pine doors and trim, few cabinets and closet beaded or sheet rock walls and ceilings.

HEATING - No heating system.

FIREPLACE - Cheap fireplace or flue included in base price.

LIGHTING - Electric lighting, knob and tube wiring. Drop cords.

PLUMBING - No plumbing base. Add from schedule for fixtures.

CLASS E GARAGES

BASE SPECIFICATIONS

FOUNDATION - Brick or concrete block piers.
WALLS - Cheap drop siding or corrugated metal on light framing.
ROOF - Double pitched corrugated metal on wood strips, 2" x 4" rafters 24" O.C.
FLOOR - Earth.
LIGHTING - None.
DOORS - None.

APPENDIX E

Sanitary and Bacteriological Surveys

REPORT OF

SANITARY AND BACTERIOLOGICAL

CURRITUCK SOUND AREA

AREA I-16

FEBRUARY 1976 - MARCH 1979

JUNE 6, 1979

AREA I-16

EXHIBIT I	STATION LOCATIONS AND AREA MAP
EXHIBIT II	SHORELINE SURVEY ROUTE
EXHIBIT III	SEWAGE VIOLATIONS
EXHIBIT IV	BACTERIOLOGICAL RESULTS AND MPN MEDIANS
EXHIBIT V	PROCLAMATION AND CLOSED AREA MAP

Total Acres	90,000.
Prohibited Acres	74,500.
Oyster Production	None.
Rangia Clam Production	Good.
Commercial Value	None.
Recommended Changes	Open 15,500 Acres.

AREA I-16

By

SHELLFISH SANITATION PROGRAM
NORTH CAROLINA DIVISION OF HEALTH SERVICES

I. INTRODUCTION

Area I-16 consists of the waters in Currituck Sound from Popular Branch on the north boundary to the Wright Memorial Bridge on the south. (See Exhibit I for area map.) The area is basically considered a brackish area with the only shellfish found in the area being the Rangia clam. The population in the survey area is approximately 3,000 permanent residents, with another 1,000 added as seasonal residents. There are no major pollution sources found in the area, although swine operations are numerous throughout Currituck County.

This area has no commercial value in regard to shellfish production, but has been included in the program because of possible utilization of Rangia clams by local residents and tourists.

II. SANITARY EVALUATION OF SOURCES OF POLLUTION, INCLUDING SEWAGE SYSTEMS

A comprehensive shoreline survey of Area I-16 was begun on January 22, 1979, and was completed on March 1, 1979. Conducting the survey was Steve Vohs of the Shellfish Sanitation staff.

Mr. Vohs and Charlie Jackson, also of the Shellfish Sanitation staff, visited Mr. Donald G. Brown, sanitarian of the Currituck County Health Department, prior to beginning the survey. The purpose of this visit was to outline, with Mr. Brown, the procedure that would be followed and to what extent that Mr. Brown would be involved. It was agreed that Mr. Vohs would conduct all of the field work, including follow-up on corrections. He would also initia

Mr. Brown agreed to assist by promptly advising property owners on repairs, issuing the necessary permits, and by appearing, if necessary, as a witness in any possible legal action. The survey was conducted in this manner; and, and the time of this report, follow-up work is still being conducted.

Because of the peculiar drainage pattern around Currituck Sound, the route that was followed while conducting the survey was complex. It can best be described by observing Exhibit II. All residences, businesses, and places of public assembly were visited. Where the tenants or property owners were present, their sewage disposal systems were inspected. Notices of Violation were issued in cases where malfunctions were found. At the time of this report 5 of the 9 malfunctioning systems that were found have been corrected. A total of 1079 inspections of individual sewage disposal systems were made. (See Exhibit III for sewage violations.)

One section of Area I-16 was not surveyed in the usual manner. The Outer Banks portion, in the vicinity of Corolla, is inaccessible except through the use of a four-wheel drive vehicle. Steve Vohs and Charlie Jackson, along with Bill Biggs, who furnished a four-wheel drive truck, visited this area. No situation was found that was considered to be a potential source of pollution. This village consists of approximately 25 residences and no businesses. There is also some development of beach property for resort use. All of these structures are located well away from the water and their sewage disposal systems are in a sandy soil. Therefore, because of the inacessibility of the area and the apparent favorable conditions of the sewage disposal systems, a house-to-house survey was not conducted.

There are approximately 4,000 residents in this area. Approximately 1,000

of these are seasonal, using their vacation homes only during the summer months.

The animals found were as follow.

Hogs	6400
Cows	235
Horses	30
Dogs	290
Fowl	400

Part of this area is also comprised of a Wildlife Refuge. Thousands of ducks, geese, and swans frequent the area every year.

According to the Soil Conservation Service, there are 5 soil associations in Area I-16; Wagram-Ocilla-Dragston, Ponzer-Pamlico, Capers, Newhan, and Bladen-Bayboro-Hyde. A brief discription of these, concerning their suitability for septic tank systems is on file in the Area I-16 shoreline report and is available upon request.

There was only one marina found in Area I-16. This is the Tulls Creek Marina. Only 18 boats with marine heads were found.

The vegetation of Area I-16 consists of row-crops, mixed pine and hardwood forests, and marsh grasses.

There are no sanitary landfills located in the area. Solid waste is handled through the use of a greenbox collection system, but some open dumping of trash was noted on SR 1270, SR 1239, SR 1165, SR 1133, and SR 1115.

No source of chemical, nuclear, or radiological pollution was found.

III. EVALUATION OF HYDROGRAPHIC FACTORS RESPONSIBLE FOR THE SPREAD OF POLLUTION

Current directions are influenced by winds. There are no sewage treatment plants located in this area and current studies are not needed. Soils in much of the area are not conducive to proper septic tank operation and fresh-water run-off causes problems throughout the area.

IV. BACTERIOLOGICAL SURVEY OF SHELLFISH GROWING WATERS AS INDICATED

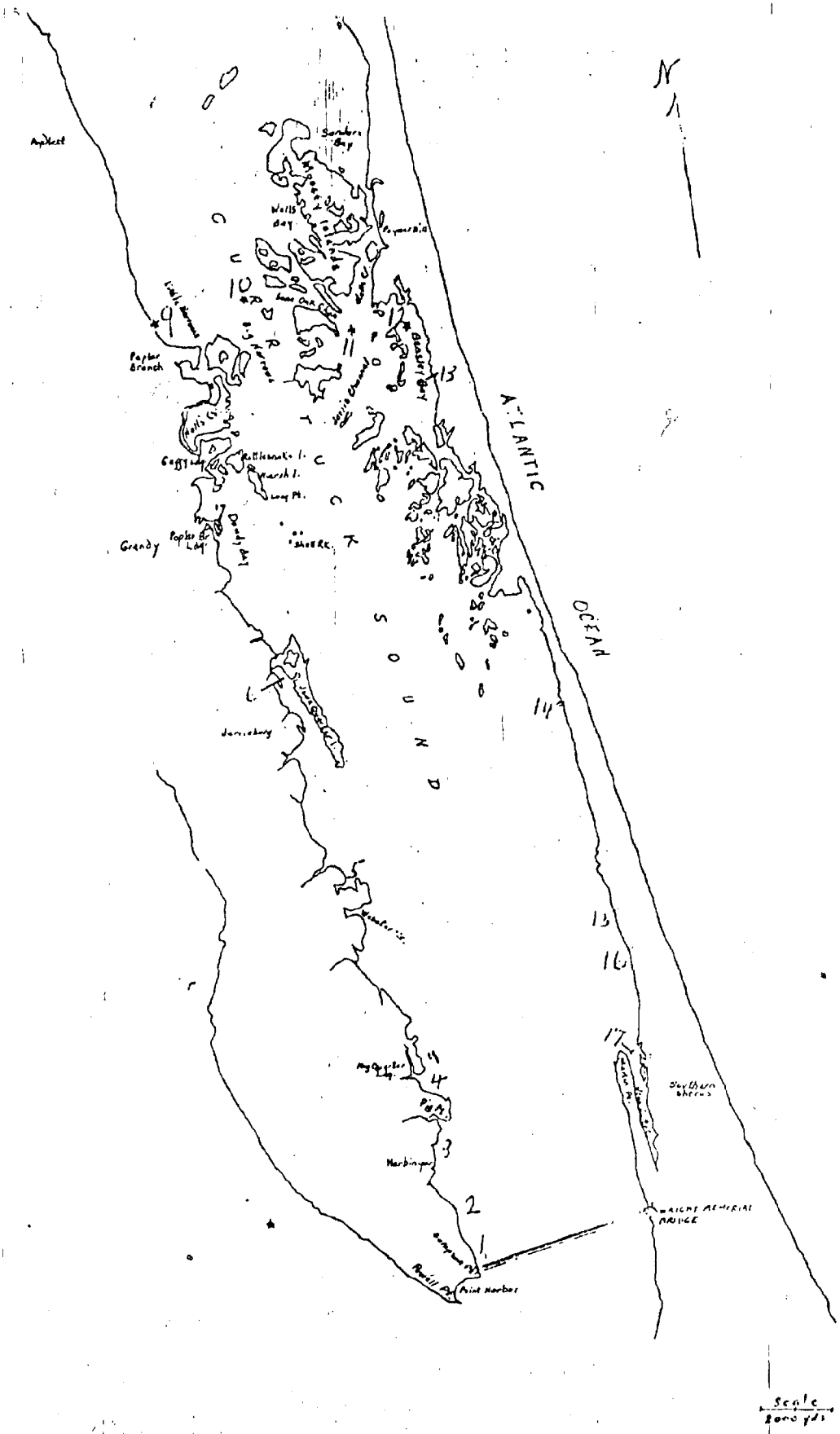
The bacteriological survey was begun in February, 1976, and concluded in November, 1978. During the survey 159 water samples were collected from 17 sampling stations. Results indicate that the upper part of the Sound in the sampling area has high coliform medians. The lower end of the Sound meets standards for an approved area. (See Exhibit I for station locations and Exhibit IV for MPN data.) It should be noted also that fecal coliform counts have been low throughout the survey. Station #1, located near the west end of the Wright Memorial Bridge, had 2 coliform readings exceeding 330; but fecal counts were 3.6 and less than 3.0.

There have been no chemical or radiological samples examined during this survey period.

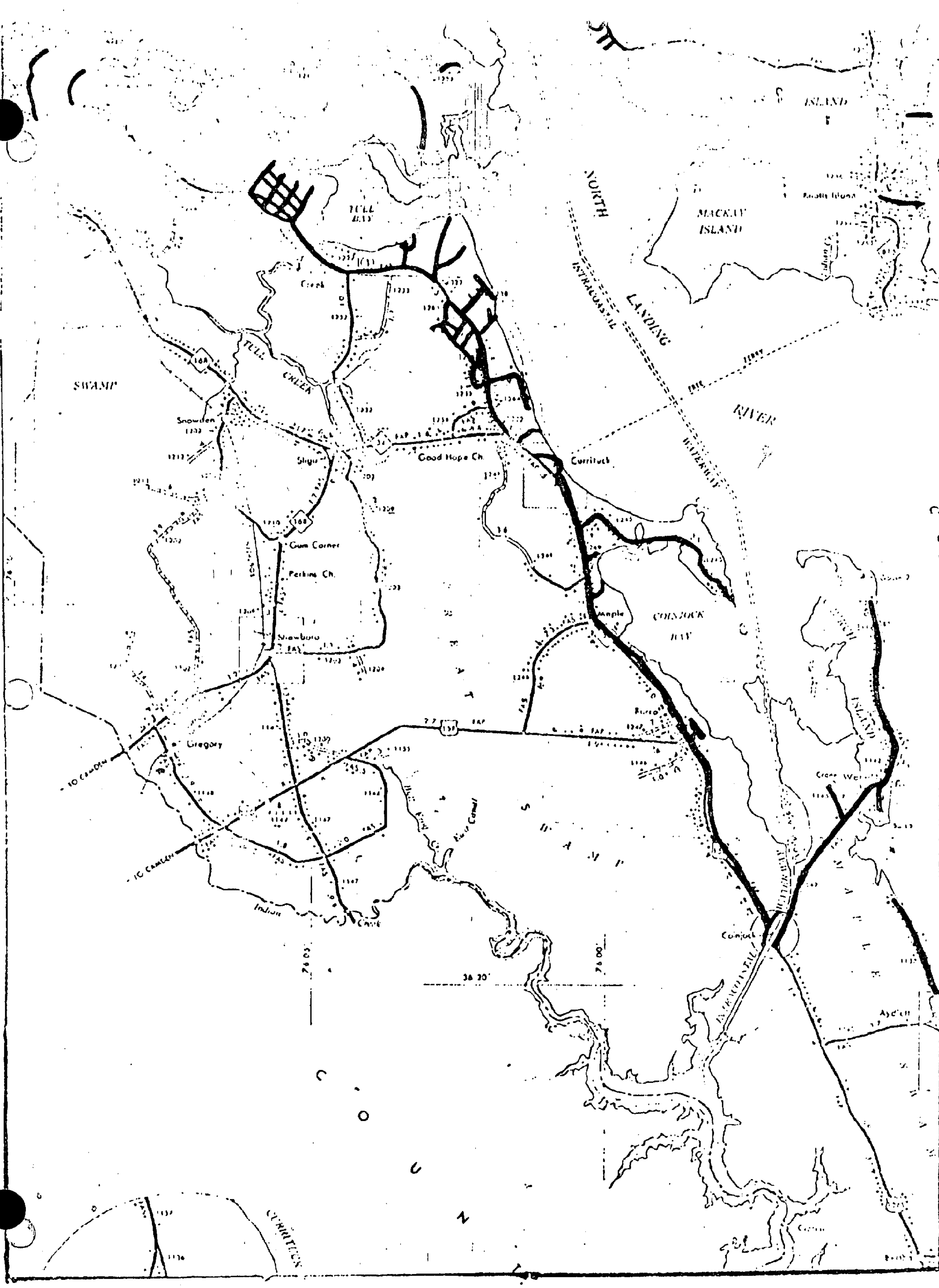
V. ANALYSIS OF THE INTER-RELATIONSHIPS OF THE FORECOING FACTORS AND RESULTING AREA CLASSIFICATION

The bacteriological and shoreline surveys indicate that some of the area can be safely opened to shellfish harvesting. The area to be recommended opened will be the area south of a line from Webster Creek, on the west side of the Sound, to Station #14, on the east side of the Sound. It should be noted that this will have little if any commercial value, but will permit tourists to harvest Rangia clams. Rangia is the only shellfish found in this area.

No other changes are recommended in this area at this time. (See Exhibit V for closed area proclamation and map.)



From U.S.C.&G.S. 1229


NORTH
LANDING
RIVER
MACKAY
ISLAND
TULL
BAY
TULL
CREEK
SWAMP
Snowden
Sligo
Good Hope Ch.
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Gum Corner
Perkins Ch.
Shawboro
Gregory
COINJOCK
BAY
Coinjock
Aydlett
TO CAMDEN
Indian

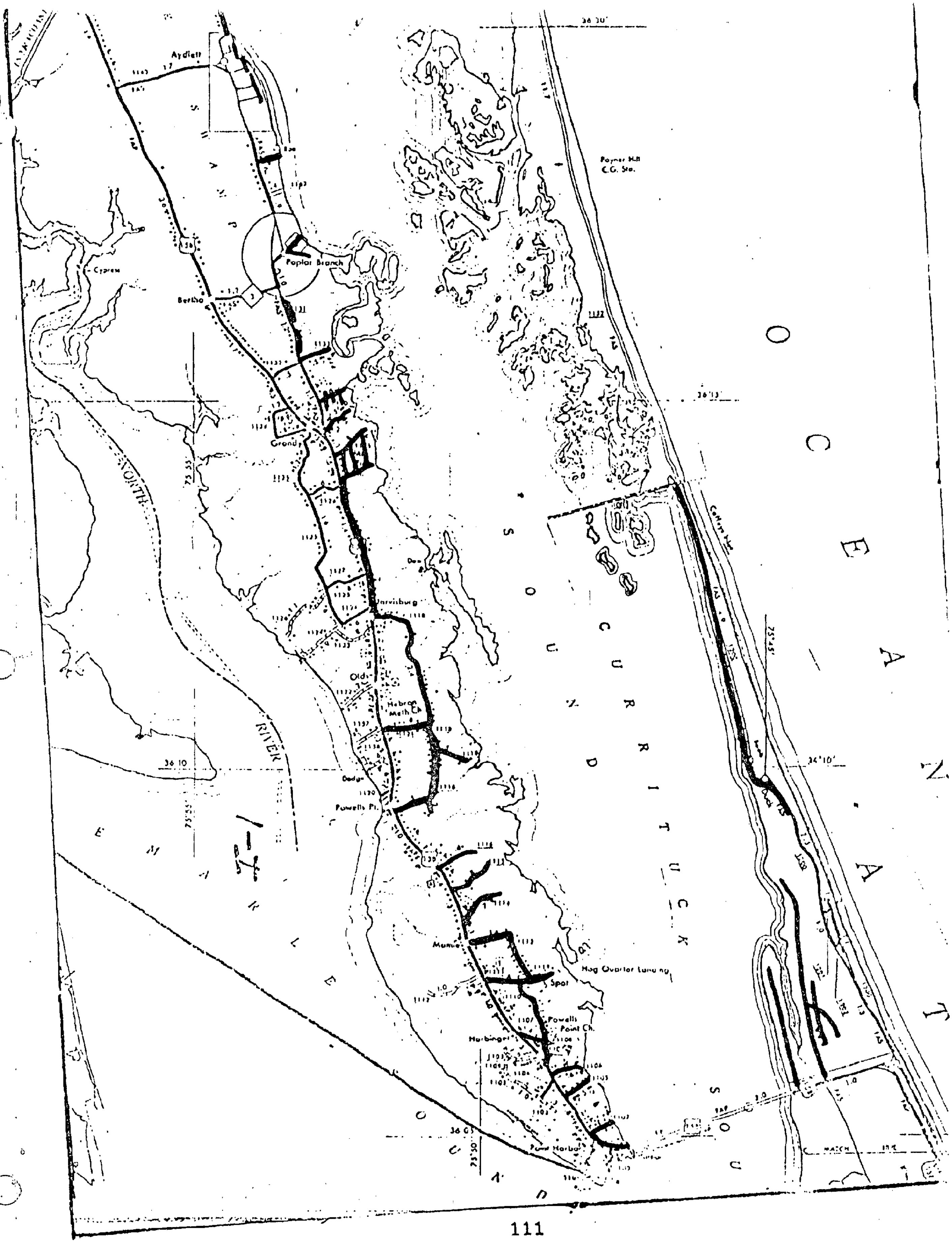

Aydlett
Poplar Branch
Cypress
Bertha
Grandy
Jarvisburg
Hebron Meth. Ch.
Powells Pt.
Mamie
Spot
Hog Quarter Landing
Powells Point Ch.
Harbinger
Point Harbor
Poyner Hill C.G. Sta.
NORTH
RIVER
C U R R I T U C K
S O U N D
O C E A N

EXHIBIT 111

SANITARY SURVEY DATA

AREA Currituck Sound COUNTY Currituck & Dare DATE 1-30-?

No.	Area	Owner	Tenant	Location	Violation
1	I-16	Sally Banks		1st Green House on Right 1145 To Bells Island	Kitchen Waste
2	"	Charlie Banks		[illegible] 1216 [illegible] Red [illegible]	[illegible] Drainfield
3	"	Calek Gray?		[illegible] 1261 [illegible] Gray Shingle House	[illegible]
4	"	Donald Williams		Right Corner 34 & 1269 Brick House	[illegible] Kitchen Waste
5	"	Charles E. Davis	Sam [illegible] Judith Speight?	1165 off 1144 [illegible] [illegible]	Washer Waste Broken [illegible]
6	"	W. L. Tate	Bert Cameras?	Briggs Rd off 1165 off 1144 Currituck?	Privy
7	"		Cashmore? Charles Frank Calamia?	1143 Intra Coastal Waterway Currituck Red House	Washer Kitchen Waste
8	"	W. W. Richardson	Charles Cooker?	1143 Waterway Silver Mill?	Cesspool Drainfield
9	"	Joseph E. Lupton?		Corner 1134 & 1131 Green House	Washer, Kitchen Waste Ball? Test Sink

Steven Vaks? San. Tech.
Surveyors

Total Violations 9

Cumulative Total Corrections [illegible]

N											130/72
1	[illegible] 43	[illegible] 9.1	43 93	[illegible] 3.6	3.6 >1100	1100	[illegible] 43	[illegible] 6.2	<3 3.6	<3 43	43
2	<3 3.6	[illegible] 9	<3 <3	<3 9.1	<3 150	<3 1100	3.6 93	<3 15	3.6 23	3.6 23	23
3	<3 240	2.3 21	15 75	<3 23	<3 93		<3 23	9.1 20	<3 23	<3 93	23
4	3 29	<3 <3	<3 3.6	<3 3.6	<3 11	<3 >1100	9.1 75	<3 3.6	<3 15	9.1 43	13
5	<3 93	9.1 75	3.6 9.1	<3 460	<3 15	93 1100	9.1 93	1.1 460	3.6 23	43 460	93
6	3.6 150	43 1100	240 460	150 1100	460 1100	3 >1100	43 1100	93 1100	15 93	460 1100	1100
7	<3 150	93 240	9.1 23	15 240	3.6 460	93 >1100	15 >1100	<3 43	43 93	460 1100	240
8	23 150	9.1 93	<3 9.1	23 23	[illegible] 93	43 >1100	<3 9.1	43 240	23 43	23 23	69
9	43 >1100	43 460	20 150	<3 23	240 >1100	43 >1100	21 93	9.1 240		15 240	240
10	9.1 460	[illegible] 240	[illegible] 23	3.6 23	23 1100	<3 20	15 93	3.6 460		9.1 23	93
11	15 210	9.1 150	23 23	240 240	3.6 210	9.1 120	3.6 120	3.6 93		43 460	150
12	<3 >1100	[illegible] 1100	3.6 9.2	<3 3.6	9.1 150	3.6 1100	43 43	<3 75		43 43	75
13	[illegible] 1100	4 1100		9.1 9.1	9.1 75	23 >1100	9.1 9.1	1.1 290		240 240	265
14	<3 43	43 210	<3 3.6	<3 3.6	3.6 43	<3 93	<3 23	<3 35		3.6 23	35
15	[illegible] 150	<3 9.1	<3 <3	<3 9.1	<3 460	<3 16	<3 23	<3 20		<3 3	16
[illegible]	<3 23	<3 3.6	<3 <3	<3 9.1	<3 43	<3 460	<3 23	<3 9.3		<3 23	23
7	<3 43	<3 240	<3 <3	<3 <3	<3 93	3.6 460	<3 23	<3 43		9.1 23	43

Connell Purvis

PROCLAMATION

RE: SHELLFISH POLLUTED AREA

By virtue of the authority vested in me as Secretary of the North Carolina Department of Natural Resources and Community Development, and upon the recommendation of Connell Purvis, Director, Division of Marine Fisheries, and Dr. Hugh H. Tilson, Director, Division of Health Services, North Carolina Department of Human Resources, it is hereby announced that effective at sunrise, Monday, June 11, 1979, the following changes in shellfish harvesting areas will take effect:

No person shall take or attempt to take, any oysters or clams or possess, sell or offer for sale any oysters or clams taken from the following polluted area:

CURRITUCK SOUND

All those waters in Currituck Sound upstream of a line across the sound beginning at a point on the east shore at 36° 09' 36" N - 75° 49' 15" W; thence in a straight line to a point on the west shore at 36° 12' 25" N - 75° 46' 05" W, to include all creeks and tributaries.

NOTES: [1] This proclamation is issued under the authority of G. S. 113-182 and N. C. Marine Fisheries Regulation 15 NCAC 3B .1101.

[2] This action amends Regulation 15 NCAC 3B .1111 (1) (a), and opens approximately 15,500 acres.

[3] Hatched areas on map indicate areas closed to shellfishing.

BY AUTHORITY OF THE SECRETARY OF THE DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT.

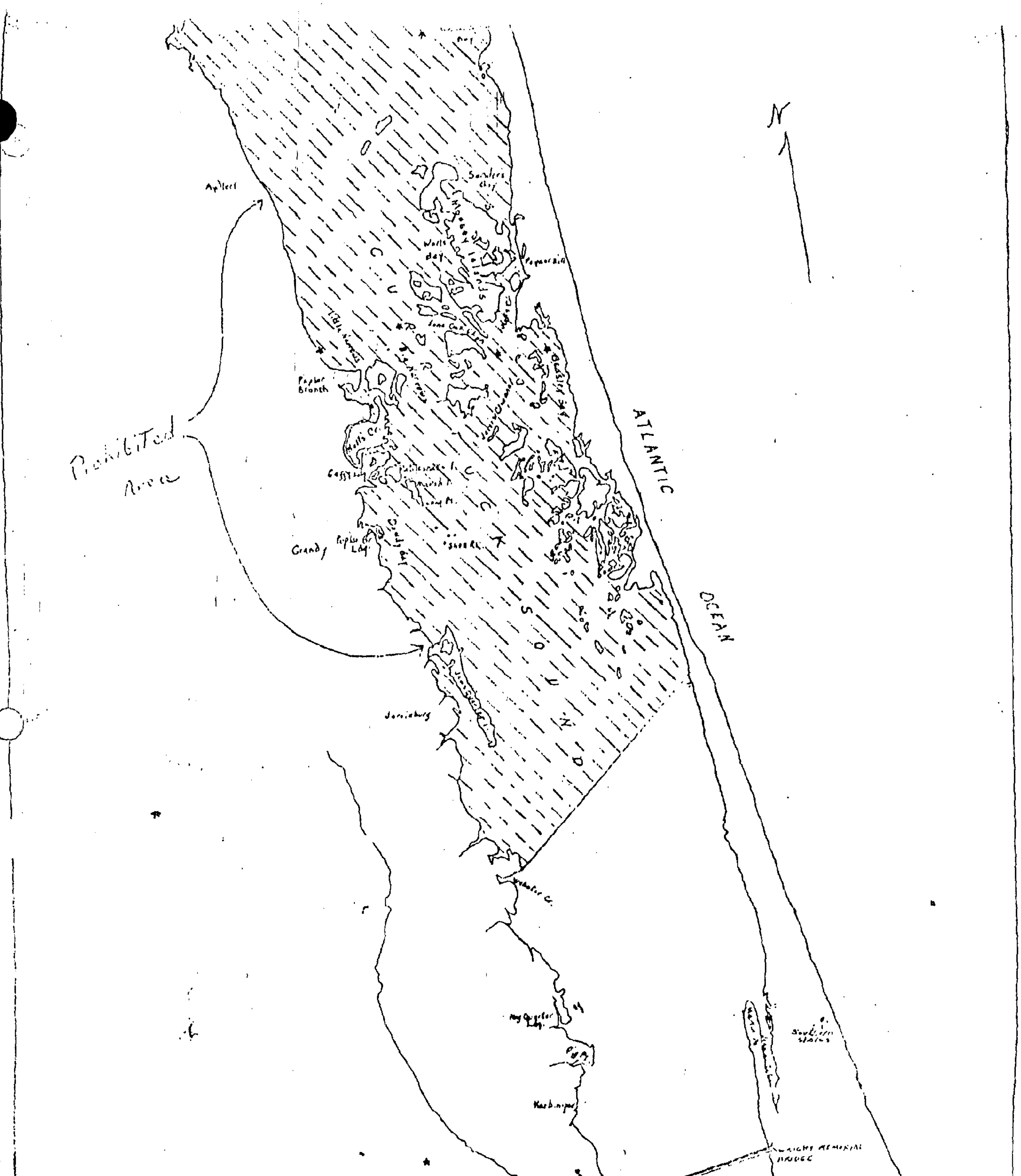
BY: Connell Purvis

Connell Purvis, Director
Division of Marine Fisheries

June 7, 1979
9:30 A. M.

SF-44

/mjr



No person shall take or attempt to take any oysters or clams or possess, sell, or offer for sale any oysters or clams taken from the following areas, at any time:

CURRITUCK SOUND: All those waters in Currituck Sound upstream of a line across the sound beginning at a point on the east shore at 36° 09' 36" N - 75° 49' 15" W; thence in a straight line to a point on the west shore at 36° 12' 25" N - 75° 46' 05" W, to include all creeks and tributaries.

(See U.S.C.&G.S. 1229) (... ...)

REPORT OF

SANITARY AND BACTERIOLOGICAL SURVEYS

NORTH RIVER AREA

AREA I-1

JANUARY 1976 - JANUARY 1979

JULY 17, 1979

AREA I-1

EXHIBIT I	AREA MAP AND STATION LOCATIONS
EXHIBIT II	SHORELINE SURVEY ROUTE
EXHIBIT III	SEWAGE VIOLATIONS
EXHIBIT IV	BACTERIOLOGICAL RESULTS AND MPN MEDIANS
EXHIBIT V	PROCLAMATION AND PROHIBITED AREA MAP

Total Acres	25,000.
Prohibited Acres	15,000.
Oyster Production	None.
Clam Production (Rangia, Only)	Fair.
Commercial Value	None.
Recommended Changes	Open Additional 10,700 Acres.

REPORT OF SANITARY AND BACTERIOLOGICAL SURVEYS

NORTH RIVER AREA

AREA I-1

By

SHELLFISH SANITATION PROGRAM
NORTH CAROLINA DIVISION OF HEALTH SERVICES

I. INTRODUCTION

Area I-1 consists of all the waters and tributaries of North River upstream to the ICWW Bridge at Coinjock. The area is sparsely populated, with no major sources of pollution. The only shellfish produced in the area are Rangia clams and there is no commercial harvesting done in the area. There are presently 10,000 acres of the 25,000 acres in the area opened to shellfishing. (See Exhibit I for map of the area.)

II. SHORELINE SURVEY REPORT

A shoreline survey of Area I-1 was begun on March 19, 1979, and was completed on March 20, 1979. Conducting the survey were Steve Vohs and Doug Penland, Shellfish Sanitation.

Mr. D. G. Brown, sanitarian with the Currituck County Health Department, was notified of the planned survey prior to beginning. It was not necessary to contact the Camden County Health Department since there are no roads providing access to North River on the western side.

The survey began at the intersection of SR 1129 and US 158, near Grandy. All of SR 1129 was included. A southerly course was continued along the western side of SR 1129 to SR 1124. From this point, a westerly direction along SR 1124 was taken to the River. Also included were SR 1126, SR 1123, SR 1122, SR 1157, SR 1120, the western side of US 158 between SR 1120 and SR 1116, SR 1112, SR 1103, SR 1109, SR 1163, and SR 1100. All other roads, paths, and drives, both public and private, between US 158 and North River were included.

(See Exhibit II for a detailed graphic exhibit of the route.)

All residences, businesses, and places of public assembly along the above-described route were visited. Their individual sewage disposal systems were inspected and Notices of Violation were issued in cases where malfunctions were found. Only 2 notices were issued. Copies of these were sent to the Currituck County Health Department. Mr. Vohs will conduct the follow-up of obtaining these corrections.

The soil conditions along the east side of North River, regarding their suitability for septic tank systems, are described in detail in the Shoreline Report and this information is available upon request. Most of the septic tanks in Area I-1 are located in soils described as having "slight" to "moderate" limitations for septic tanks. It is suspected that this, along with the fact that Mr. Brown has been requiring separate systems for washing machine and kitchen wastes for some time, accounts for the low number of failing systems that were found. Out of the 258 inspections that were made, only 2 notices were written. (See Exhibit III for sewage violations.)

Practically all of Area I-1 on the eastern side of North River is a farming community. Very little of it is densely populated. Much of the populated area is inhabited by summer or weekend residents. Of the approximately 900 people living in the area, approximately 300 of them are weekend residents.

All of the area west of North River is comprised of swamp and woodland.

The animals found in Area I-1 were as follow:

Hogs 100 Dogs 25 Horses 6 Fowl 270

These estimates were derived from a combination of actually counting, estimation, and by information gathered by talking with residents of the area. The area is also frequented by some migratory wildfowl during the winter months.

All sewage disposal in the area is achieved through the use of privately owned and maintained ground absorption systems. There are no large sewage treatment plants in the area.

Solid waste is disposed of outside the area. There are no sanitary landfills, nor was any open dumping of trash and garbage observed.

There are no marinas in the area, nor are there a significant number of large boats with marine heads.

No source of chemical, nuclear, or radiological pollution was found.

III. HYDROGRAPHIC FACTORS RESPONSIBLE FOR THE SPREAD OF POLLUTION

This area is a brackish to fresh water area, with the only water movement caused by wind direction. There were no major sources of pollution found in the area; therefore, current studies are not needed. Heavy rains do cause problems in this area as in all of the areas of low salinity.

IV. BACTERIOLOGICAL, CHEMICAL, AND RADIOLOGICAL SURVEYS OF GROWING WATERS

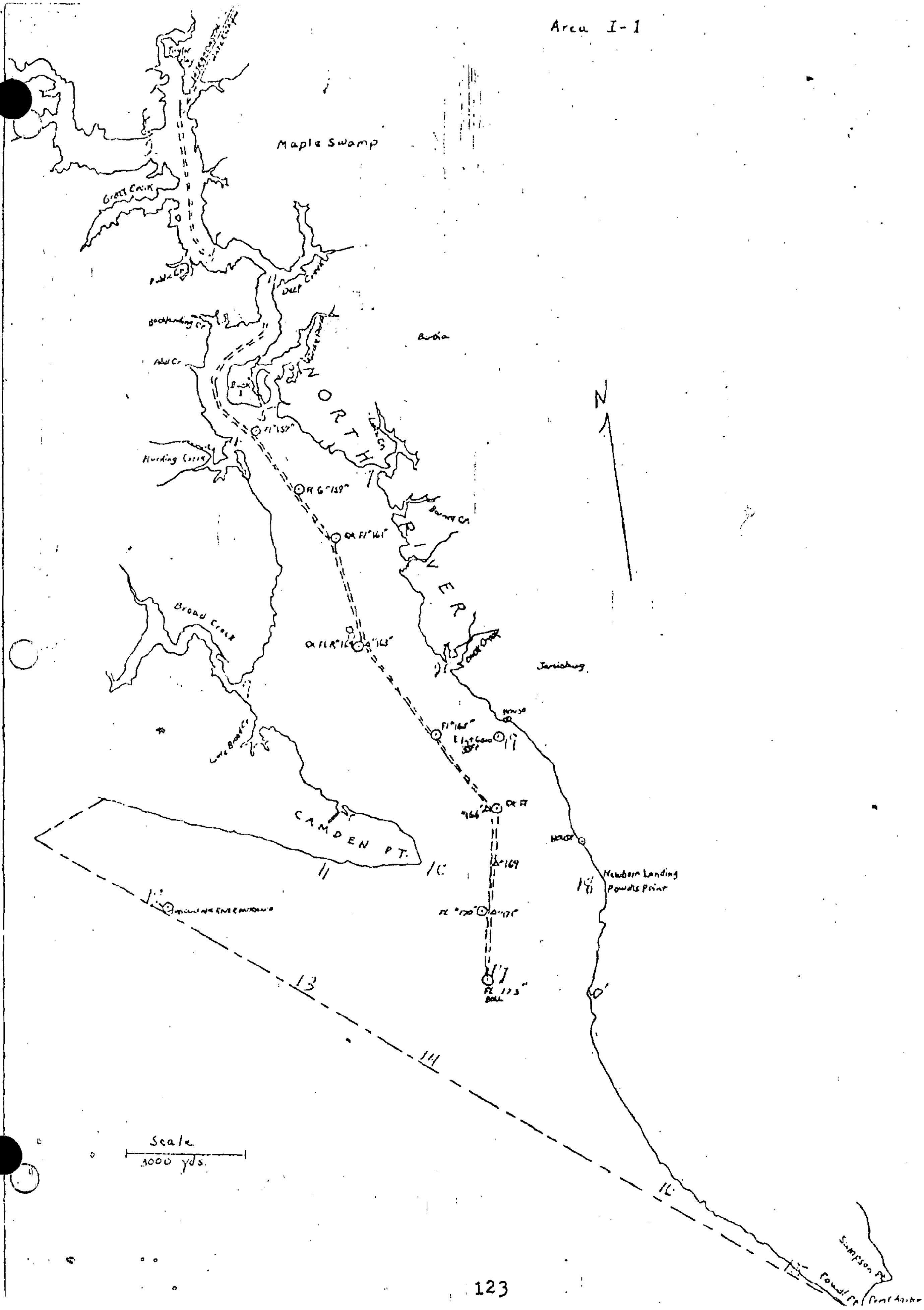
Bacteriological results have been obtained in this area on a random basis since 1974. For the purpose of this report only the data since 1976 will be included. However, it should be noted that the bacteriological results of 1974-75 are similar to the more recent results and are supportive of the recommendations to be made in this evaluation report. Results of the 1974-75 sampling period are available upon request. Sample Stations #1, #2, #3, and #5 had unsatisfactory coliform medians during the 1976 1979 survey. Samples collected on 1-11-79 showed coliform counts that exceeded an MPN of 330 at 17 of the 20 stations sampled. It should be noted, however, that fecal coliform results were acceptable at 13 of the stations and no station exceeded an MPN of 23. All stations exceeding limits for an approved area are located in the upper section of North River. (See Exhibit IV for MPN results from all stations and Exhibit I for station locations.)

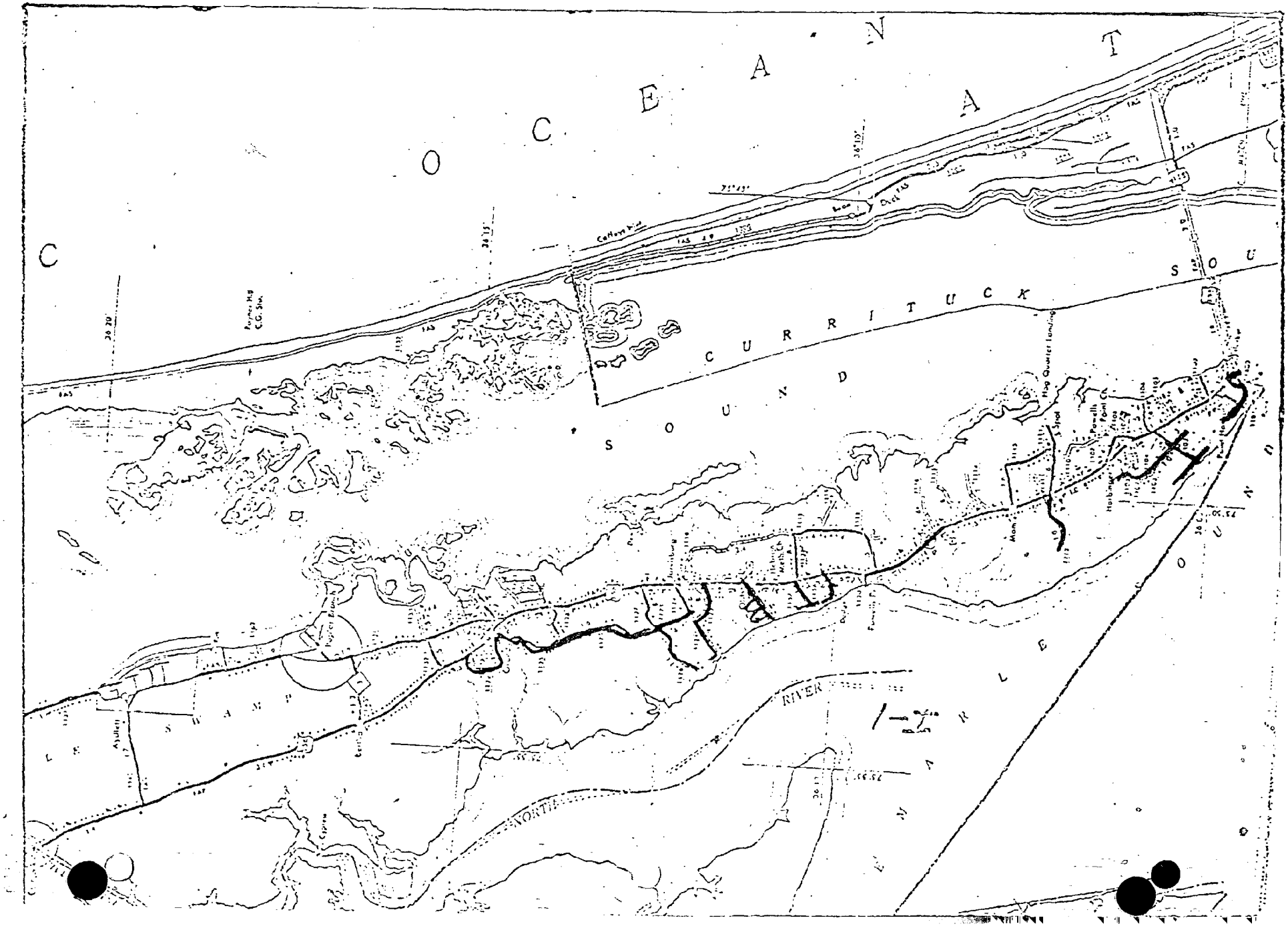
V. SUMMARY AND RESULTING AREA CLASSIFICATION

As has been mentioned previously in this report, the North River area has little commercial significance as a shellfish area. However, some of the present prohibited area can be safely reclassified to an approved area. This will have very little if any affect on the commercial value of shellfish taken from the area. It will give local residents and tourists the opportunity to harvest Rangia clams if they so desire.

The area to be opened consists of approximately 10,700 acres. Proclamation and new prohibited area map will be Exhibit V of this report.

Area I-1


Maple Swamp
NORTH RIVER
Broad Creek
CAMDEN PT.
Jarvisburg
House
Newbern Landing
Powells Point
Sampson Pt
N
Scale
3000 yds.


OCEAN
CURRITUCK
SOUND
SWAMP
RIVER
NORTH

SHORELINE SURVEY DATA

BASIN North River COUNTY Currituck DATE 3-19-19[illegible]

No.	Area	Owner	Tenant	Location	Violation	Date Corrected
1	F-1	[illegible]	[illegible]	SR 1124 off 1153 Grandy white with red shutters	Install septic tank system	
2	"	[illegible]	[illegible] Jones	SR 1225 off [illegible] Grandy [illegible]	[illegible]	

[illegible] - [illegible]
Surveyors

Total Violations 2

Cumulative Total Corrections

EXHIBIT IV

AREA I-1

STATION NOS.	1/12/76	6/24/76	10/18/76	4/10/78	5/7/78	8/22/78	11-5/78	1/11/79	Median 6/24/76
1	9.1 240	43 93	43 150	3.6 1100	39 1100	9.1 43	23 43	23 1100	195
2	9.1 240	23 75	21 43	9.3 460	23 240	23 93	23 23	1100	166
3	3.6 240	21 460	9.1 93	7.3 120	2.0 23	1.1 23	<3 3.6	23 >1100	107
4	<3 240	15 43	43 93	3.0 43	<3 93	<3 43	<3 3.6	23 1100	68
5	<3 240	11 460	43 240	460 460	23 23	<3 9.1	9.1 9.1	15 460	240
6	<3 240	23 43	9.1 39	<3 43	<3 43	<3 23	<3 <3	3.6 1100	43
7	3.6 43	4.1 43	4.1 9.1	9.1 75	<3 15	<3 23	<3 <3	<3 460	33
8	2.6 240	<3 43	4.1 43	<3 7.2	<3 3.6	23 23	<3 3.6	3.0 >1100	33
9	<3 23	<3 9.1	3.6 43	<3 11	<3 23	<3 23	<3 <3	9.3 240	23
10	2.2 23	<3 14		3.6 9.1	<3 3.6	<3 23	<3 <3	4.1 240	19
11	<3 93	<3 9.1		<3 3.6		<3 3.6	<3 <3	9.3 1100	6.3
12				<3 11		<3 3.6	<3 <3		3.6
13	<3 43			<3 <3		<3 15	<3 3.6	7.1 1100	15
14	<3 23	<3 9.1		<3 15		<3 3.6	<3 <3	3 >1100	12
15	<3 15			<3 <3		<3 3.6	<3 3.6	3.6 210	3.6
16		<3 3.6		<3 15		<3 9.1	<3 <3	<3 460	9.1
17	<3 23	<3 9.1		<3 9.1		<3 23	<3 3.6	3.6 1100	16
18	<3 43	<3 3.6		<3 <3	<3 7.3	<3 9.1	<3 <3	3.6 1100	7.3
19	<3 23	<3 3.6		<3 3.6	<3 3.6	<3 3.6	<3 <3	<3 460	3.6
20	2.3 23	21 75	3.6 23	<3 23	<3 <3	7.1 240	23 43	3.7 460	33
21	1.1 1100							15 1100	1100
22	23 1100								1100

North Carolina Department of Natural Resources & Community Development
James B. Hunt, Jr., Governor — Howard N. Lee, Secretary

DIVISION OF MARINE FISHERIES, PO BOX 769, MOREHEAD CITY, N. C. 28557

PROCLAMATION

RE: SHELLFISH POLLUTED AREA

By virtue of the authority vested in me as Secretary of the North Carolina Department of Natural Resources and Community Development, and upon the recommendation of Connell Purvis, Director, Division of Marine Fisheries, and Dr. Hugh H. Tilson, Director, Division of Health Services, North Carolina Department of Human Resources, it is hereby announced that effective at sunrise, Friday, July 20, 1979, the following changes in shellfish harvesting areas will take effect:

No person shall take or attempt to take, any oysters or clams or possess, sell or offer for sale any oysters or clams taken from the following polluted area:

ALBEMARLE SOUND - NORTH RIVER

All waters upstream of a line drawn from a point on the west shore of North River at 36° 14' 06" N - 75° 57' 03" W; thence across the river through ICWW Beacon #159 to a point on the east shore at 36° 14' 50" N - 75° 55' 42" W, to include all tributaries upstream from said line.

NOTES: [1] This proclamation is issued under the authority of G. S. 113-182 and N. C. Marine Fisheries Regulation 15 NCAC 3B .1100.

[2] This action amends Regulation 15 NCAC 3B .1111 (1) (b), and opens approximately 10,700 acres.

[3] Hatched areas on map indicate areas closed to shellfishing.

BY AUTHORITY OF THE SECRETARY OF THE DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT.

BY: Connell Purvis

CONNELL PURVIS, DIRECTOR
DIVISION OF MARINE FISHERIES

July 17, 1979
11:00 A. M.

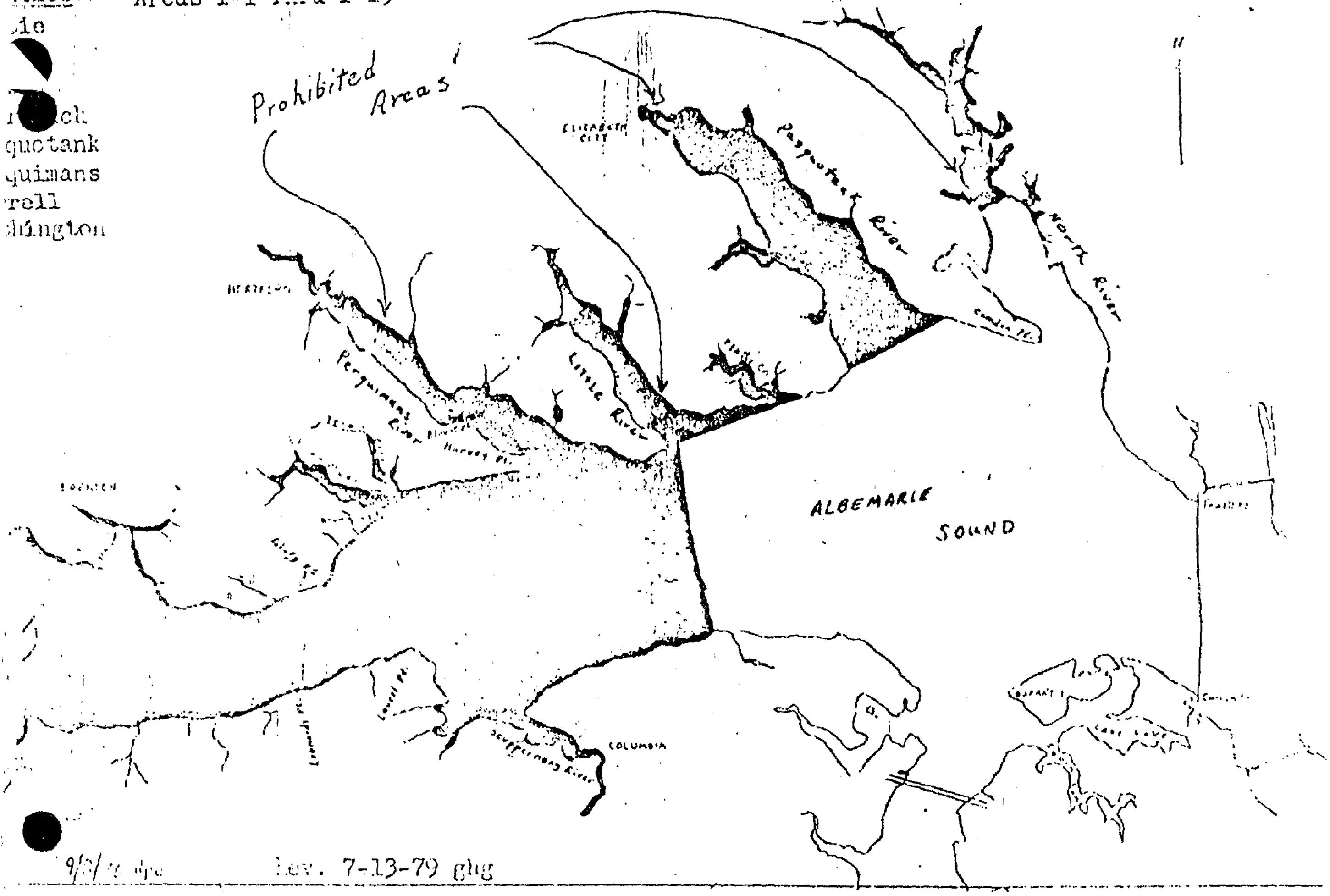
SF-45

/jtg

ALBEMARLE ...

ties: Areas I-1 Thru I-15

...ck
...quotank
...quimans
...rell
...hington



9/3/ ... Rev. 7-13-79 ghg

No person shall take or attempt to take any oysters or clams or possess, sell, or offer for sale any oysters or clams taken from the following areas, at any time:

(b) North River

All waters upstream of a line drawn from a point on the west shore of North River at 36° 14' 06" N - 75° 57' 03" W; thence across the river through ICWW Beacon #159 to a point on the east shore at 36° 14' 50" N - 75° 55' 42" W, to include all tributaries upstream from said line.

(c) Pasquotank River

All waters upstream from a line beginning on the west shore 36° 09' 07" N-76° 03' 34" W on Wade Point; thence to a point on the east shore at 36° 10' 42" N - 75° 59' 38" W.

(d) Little River and Flatty Creek

All waters upstream from a line beginning on Stevenson Point at 36° 06' 15" N - 76° 11' 42" W; thence to a point on the east shore of Flatty Creek at 36° 08' 13" N - 76° 06' 16" W.

(e) Albemarle Sound

All waters upstream from a straight line in Albemarle Sound beginning at a point on Stevenson Point 36° 06' 15" N - 76° 11' 42" W; thence across the Sound to Ship Point at 35° 59' 38" N - 76° 10' 14" W. Includes all tributaries.

APPENDIX F

Public Attitude Questionnaire

Questionnaire of Public Attitude

In order to determine the public attitude on issues indicated to be of interest to the County at the public forum (See pp. 68-71), a questionnaire was developed. A scientific random sample was drawn from the voter registration list in order to obtain a confidence level of 85%. (That is, there is an 85% confidence that the sample reflects the responses of the entire population from the voter list. National polls such as the Harris poll use a much lower confidence level). The persons from the sample were interviewed by telephone by members of the Advisory Committee on Land Use.

The questionnaire was also made available to the general public. The results of the scientific survey are given in this appendix. Only the results of the scientific survey are given, since the results are the only ones which can be given a confidence level. However the only questions where any significant differences of opinion occured were questions 12 and 18. For question 12, the preference regarding alternatives to "package plants" was for the developers to build and maintain them with the scientific sample, whereas the general results indicated a desire for central sewer systems. For question 18, "Should the County attempt to zone lands for conservation and recreation only, the scientific sample results indicated a strong yes, whereas the general response was undecided.

CURRITUCK COUNTY

QUESTIONNAIRE

Although the northern extension of North Carolina's Outer Banks lies very near the major population center of Norfolk, Virginia, Currituck banks has remained largely undeveloped. The reasons for such sparse development of this 23 mile stretch are related to the constant changing nature of the area and lack of easy access. Despite the difficult access, Currituck Banks is developing. The Banks, however, is one of the most complex and sensitive environments, therefore costs to the environment, as well as costs to the government, must be weighed against benefits of access.

The following are some methods of access which could be considered:
A) A corridor through MackayIsland Refuge to the Outer Banks
B) A road from Duck to Corolla
C) A ferry system to provide access directly to the Currituck Banks

1. Do you feel that transportation access to the Currituck Banks is desireable? ( ) Yes ( ) No ( ) No Opinion

2. If YES, which of the above alternatives would you rank as the most desireable? ( ) A ( ) B ( ) C

3. Which would you rank as <u>second</u> most desireable? ( ) A ( ) B ( ) C

4. What other alternatives should be considered? _____

_____

The U.S. Fish and Wildlife Service is considering the purchase of large amounts of land north of Corolla. This would keep the area from further development, protect some natural resources, effectivel stop any access from the north through Currituck Banks, and remove the purchased land from the County tax rolls.

However, this does <u>not</u> necessarily mean that it would result in a net loss of revenue to the County, as revenue sharing or tax money that would <u>not</u> have to be spent on providing services to the area would be issues to be considered.

5. Do you favor the above mentioned purchase? ( ) Yes ( ) No ( ) No Opinion

Currituck County presently has about 45% of its housing stock in mobile homes. Most of the population increase from 1970 is housed in mobile homes. The County presently does not allow mobile home parks, has strict building requirements in effect, and only allows mobile homes in minor subdivisions.

6. Sould the County continue to prohibit mobile home parks?
( ) Yes ( ) No ( ) No Opinion

7. Should the County continue to allow mobile homes only in minor sub-divisions ( ) Yes ( ) No ( ) No Opinion

8. Should the County attempt to prohibit any more mobile homes, other than the ones already here? ( ) Yes ( ) No ( ) No Opinion

9. Should the County adopt even stricter standards regarding mobile homes, such as more tie downs, requiring fastening to foundations etc.? ( ) Yes ( ) No ( ) No Opinion

10. Should there be a regional "fair share" plan under which nearby Virginia localities would change their zoning ordinances to allow more mobile homes, taking some of the pressure to absorb this type of housing from Currituck County? ( ) Yes ( ) No ( ) No Opinion

11. Should the Soldiers and Sailors Relief Act be amended to allow mobile homes owned by non-resident servicemen to be taxed by Currituck County? ( ) Yes ( ) No ( ) No Opinion

Due to the lack of areas where on-lot sewage disposal can be permitted, developers must use "package plants" to accomodate development. Because upkeep is difficult over a long period of time and monitoring is infrequent, these systems can potentially cause problems. The following alternatives could be considered:

A. Maintaining existing procedures(developers or home owners associations responsible for upkeep and maintenance, with minimal county and state monitoring)

B. Requiring completed "package plants" to be "dedicated" to the County when completed, thereby requiring strict County monitoring and maintenance

C. Prohibiting further construction of such facilities and making plans for central sewer systems, around which further dense development must take place

12. Which of the above alternatives would you rank as most desireable?
( ) A ( ) B ( ) C ( ) None of the Above

13. If you selected None of the Above, what alternative would you suggest? _____.

Many areas experiencing rapid growth find that growth occurs along road frontage in a haphazard manner. Sometimes this growth occurs in environmentally sensitive areas, or causes a "using up" of all the valuable spots, thereby preventing access by others. Also, as areas develop, allowing for high density development can allow many areas to be left in open space.

14. Would you like to see Curituck County's future development occur around already developed areas? ( ) Yes ( ) No ( ) No Opinion

15. Should the County zone some areas for high density development such as townhouses, thereby allowing some areas to remain in open space? ( ) Yes ( ) No ( ) No Opinion

16. Should growth in the County be slowed by introducing a "timed development" management tool (allowing only a certain amount of development per year tied closely to County facilities and revenues? ( ) Yes ( ) No ( ) No Opinion

Each year, agricultural land is lost to development. Generally this is because the land is sold off in small lots for homes. Also, due to the natural properties of the land, good farmland is usually good development land.

17. Should the County enact large lot zoning in rural areas in order to prevent small lots being sold off for residential development? ( ) Yes ( ) No ( ) No Opinion

Currituck County has special problems relating to open space and recreation due to lack of access, lack of funds and sites for parks and playgrounds, and the long, narrow formation of the County boundary.

18. Should the County zone some lands which could be used for recreation and conservation only? ( ) Yes ( ) No ( ) No Opinic

19. Which of the following types of recreation do you feel are inadequately provided for in the County?(Place (1)for most inadequate,(2) for second most inadequate, etc.)

( ) A. Swimming	( ) E. Playgrounds	( ) I. Camping Area
( ) B. Picnic Areas	( ) F. Tennis Courts	( ) J. Hunting Area
( ) C. Walking Trails	( ) G. Ball Fields	( ) K. _____
( ) D. Fishing Access	( ) H. Golf Courses	

20. Would you pay an additional 5 cents per $100 of assessed valuati to provide for the recreational type which you listed as most inadequate? ( ) Yes ( ) No

21. Do you favor a County industrial park for the creation of heavy industry in one location? ( ) Yes ( ) No ( ) No Opinion

CURRITUCK COUNTY QUESTIONNAIRE RESULTS

Scientific Sample: (percent)

1.	77% yes		20% no	3%undecided
2.	17 A	29 B	23 C	31 undecided
3.	14 A	17 B	26 C	33 undecided
4.	Not enough response to tabulate			
5.	40 yes		46 no	14 undecided
6.	74 yes		20 no	6 undecided
7.	74 yes		17 no	9 undecided
8.	54 yes		43 no	3 undecided
9.	71 yes		23 no	6 undecided
10.	69 yes		31 no	- undecided
11.	86 yes		14 no	- undecided
12.	49 A	14 B	31 C	6 undecided
13.	Not enough response to tabulate			
14.	74 yes		17 no	9 undecided
15.	57 yes		11 no	32 undecided
16.	80 yes		20 no	- undecided
17.	63 yes		37 no	- undecided
18.	83 yes		14 no	3 undecided
19.	See page 61 for results.			
20.	71 yes		23 no	6 undecided
21.	83 yes		17 no	- undecided

APPENDIX G

Summary

Currituck County
Contract # 4864
Grant Amount $8,100

The Plan Update first describes present conditions. The present population of the County is about 12,000 persons. Unplanned development in the County has contributed to a sprawl development pattern, thereby making services difficult and expensive to provide. The major land use change facing the County is the possibility of the proposed Wildlife Refuge on the Currituck Banks.

The Plan next addresses constraints. One of the greatest constraints to the County is poor soils for on lot sewage disposal. This has caused concern about ground and surface water pollution (especially Currituck Sound).

The County presently does not offer public water and sewer facilities, although a subdivision on the Currituck Banks, Ocean Sand, is provided with such a service. The County is planning to guide growth to Moyock and Grandy, with intentions of establishing a public water and sewer system in the future.

County policy toward alleviating pollution problems lies in revisions to the zoning and subdivision regulations which will reduce mobile homes, generally reduce densities on poor soils, guide growth to suitable soils, and require developers of multi-family units and PUDs to provide sewer and water and open space. The County wishes to continue to promote its rural character and

does not desire rapid growth, energy facilities, or mining.

In the Plan the County has classified most of its land as rural. Areas designated as transition are Moyock and Grandy. Two large trails parks have been classified as developed due to high densities and availability of sewer and water. Areas classified as communities include many crossroad community areas presently existing with minimal services (e.g. church, store). The conservation areas include state and federal conservation areas, the proposed Wildlife Refuge on the Currituck Banks, wetlands, and AEC areas.

On the Currituck Banks, the County desires to support the Proposed U.S. Fish and Wildlife purchase, while allowing development to occur on the Banks south of Corolla (except in AEC areas).

The County supports the State taking of the road from Duck to Corolla, and desires a mid-county access to the Banks.

The CAMA Land Use Plan Update has been endorsed by County government. The draft will undergo public hearing in the fall, and will be submitted to the CRC for approval. The County has not yet revised or instituted new management procedures as a result of the project.