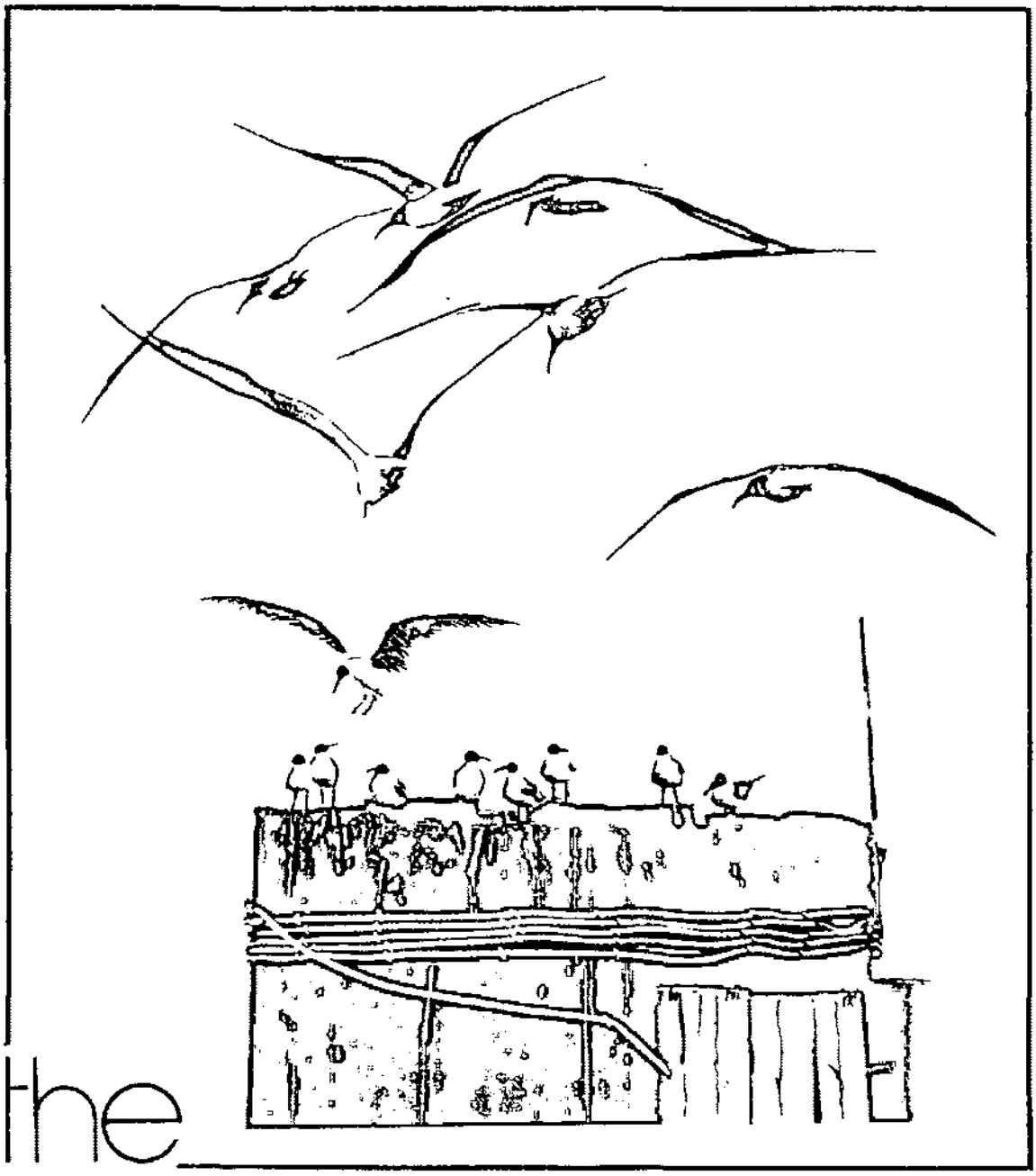


the LADY'S ISLAND PLAN

THE LADY'S ISLAND LAND USE PLAN

An Element of the Beaufort County Comprehensive Plan

By

The Beaufort County Joint Planning Commission

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Adopted by the Joint Planning Commission

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GLOSSARY

AICUZ - Air Installation Compatible Use Zone

BEAUTS - Beaufort Area Urban Transportation Study

BCC - Beaufort County Council

BJCWA - Beaufort-Jasper County Water Authority

DHEC - (South Carolina) Department of Health and Environmental Control

DOD - Department of Defense

DSO - Development Standards Ordinance

FAA - Federal Aviation Administration

FEMA - Federal Emergency Management Agency

GBACP - Greater Beaufort Area Comprehensive Plan

GBACPCAC - Greater Beaufort Area Comprehensive Plan Citizens' Advisory Committee

JPC - Joint Planning Commission

LICAC - Lady's Island Citizens' Advisory Committee

LIDD - Lady's Island Developoment District

LILUP - Lady's Island Land Use Plan

LUI - Land Use Intensity

LUTOM - Land Use Trade Off Model

MCAS - Marine Corps Air Station

NFISP - National Flood Insurance Program

NPDES - National Pollution Discharge Elimination System

SCCC - South Carolina Coastal Council

SCDHPT - South Carolina Department of Highways and Public Transportation

SCWMRD - South Carolina Wildlife and Marine Resources Department

SCWRC - South Carolina Water Resources Commission

SPLASH - Special Program to List Amplitude of Surges from Hurricanes

USACOE - United States Army Corps of Engineers

USFWS - United States Fish and Wildlife Service

EXECUTIVE SUMMARY

1. INTRODUCTION

The planning issues on Lady's Island are essentially growth management issues. There is little doubt that Lady's Island is in the midst of a period of far-reaching and profound change. That Lady's Island will change is not debatable, the principle question is how will Lady's Island change.

The current public debate focuses on the quality of change on Lady's Island. Question such as "What should Lady's Island be like in twenty years?" and "What should Lady's Island look like in twenty years?" are simple to state but difficult to answer.

This document presents the facts of the situation and analyzes them. Then, a set of solutions is presented. The solutions were developed by the Joint Planning Commission Staff and the JPC appointed Lady's Island Citizens' Advisiory Committee.

The plan presents a proposal which is also a point of departure for public discussion and debate. Any plan worth having is ultimately an expression of public interest and will; plans that are not are never implemented.

2. ISSUES

A. LAND USE CONFLICTS AND NEIGHBORHOOD CHARACTER

The highest priority issue is how and in what patterns should currently undeveloped properties be developed. Among the many related sub-issues, several stand out: strip commercial development, commercial development in residential neighborhoods, multi-family development in single-family neighborhoods, the juxtaposition of low quality and high quality housing and the overall preservation of neighborhood character.

B. ENVIRONMENT

The quality of the human environment is related to all of the issues discussed here. Environment here means the natural environment.

The current and potential environmental problems are mostly related to water. Non-point source runoff is one of the single greatest sources of water pollution in the Lowcountry. As development proceeds there will be more non-point source runoff. Preservation of fresh water wetlands will help to control stormwater runoff. Wetlands are also wildlife habitat and, in certain cases, recharge zones for aquifers. Non-point source runoff can affect wetlands as well as open waters.

According to the SC Water Resources Commission, one of the three major aquifer recharge zones in Beaufort County is located in northern Lady's Island. The principal artesian aquifer can be polluted by carelessly sited land-uses in the recharge area.

Some wildlife species are extremely susceptible to disturbance. Others thrive on it. As a general rule more development means less habitat which translates into less wildlife.

The ultimate question posed by this section is what is the public priority of a high-quality natural environment?

C. OPEN SPACE AND RECREATIONAL LANDS

Most of the open space on Lady's Island is open by default. As the population increases, so will the need to preserve open space and provide recreational opportunities to the public.

D. TRANSPORTATION

Adequate vehicular transportation routes are essential for any community, yet more and better roads can encourage more people to live in or travel through a community. To further confound the paradox, carelessly designed highway projects can disrupt the communities they were designed to serve.

To handle current excess demand, Lady's Island needs some limited highway improvements. Widening U.S. Highway 21 from two to five lanes has a deferred (for lack of funds) priority in the current work program of the SC Department of Highways & Public Transporation.

Replacing the Battery Creek Bridge and widening SC 802 /S-280 from the replacement bridge to US 21 will open up a second major route to Lady's Island and should ultimately increase traffic on the island. This project will also increase pressure on the Lady's Island portion of US 21.

From a land use standpoint the challenge here is three-fold:

a. To obtain enough funding for an adequate transportation network.

b. To preserve adequate highway rights-of-way and buffer strips until the new highways can be built or expanded.

c. To control the negative impacts created by major new highway corridors. Some possible negative impacts are increased water pollution from highway runoff, increased noise in residential neighborhoods, spreading strip commercial development, and a proliferation of curb cuts.

E. SIGNAGE

Sign control is of vital concern to the Lady's Island community. Regulations that address this issue are pending before County Council.

F. UTILITIES

A general community sewer system is projected for Lady's Island in five-to-ten years.

Today the density of development is controlled on a de facto basis by the permitting of septic tanks and package waste-water treatment plants by the SC Department of Health and Environmental Control.

The projected community sewer system will remove this prohibition and encourage the development and urbanization of Lady's Island.

In other respects (except for Transportation which is discussed above) Lady's Island will be supplied with the necessary infrastructures.

G. AIRPORTS

Activity originating at the U.S. Marine Corps Air Station and, to a much smaller degree, the Beaufort County Airport ("Frogmore International") has the potential to conflict with the use of land for residential purposes. Airplane noise and accident potential are the two principal symptoms of this land use conflict.

3. TRENDS

An analysis of the available data has yielded the following development trends.

CHANGES IN THE MAKE-UP OF THE HOUSING STOCK

While the overall number of single family homes has increased steadily since 1970, the fraction of housing in single family declines steadily.

Conversely, the overall number of mobile homes and multi-family (condominium and apartment) dwellings has increased in both number and share of housing stock. In 1970, mobile homes made up roughly 12% of the housing stock, in 1980, 22%. Apartments and condominiums have taken a dramatic jump. By the end of 1983, 384 multi-family units had been permitted. As of May 1984 an additional 186 units had been permitted for an increase of 48% in just five months. These figures do not include multi-family units in master planned communities which have not yet received final approval.

There are over 1400 single-family homes on Lady's Island, making them the dominant share of the housing stock. Single family homes will continue to predominate for the foreseeable future. High land values, high interest rates, smaller families and an increase in the number and percent of people in the 60+ age bracket will all contribute to a large future increase in the number of multi-family units.

As the total number of dwellings has grown, the average value of dwellings has also grown. This increase has exceeded the inflation rate. Every indicator points toward Lady's Island as a whole remaining a market for high price home construction.

CONVERSION OF LARGE UNDEVELOPED OR AGRICULTURAL TRACTS INTO PLANNED UNIT DEVELOPMENTS

All or most of the remaining large blocks of non-residential land can be expected to be converted to large-scale residential developments. So far this decade, Gibbs and Cat Island are examples of this trend. For example, Cane Island and Holly Hall are prime candidates for conversion to PUDS by the next century.

DECREASING ACREAGES IN FARM LAND/OPEN SPACE

As development increases farmland, forest and other buildable open space decreases. In the last five years, agricultural acreage in active use has decreased by 41%.

POPULATION CHANGES

The number and structure of the population of Lady's Island is changing quickly. In 1970 the total Island population was 1,995, in 1980 it was 3,120; by 2000 it will be at least 9,000.

As the population has grown, it has also aged, become more affluent and better educated. The proportion of blacks to the total population has declined from 52% in 1970 to 38% in 1980, due to a stable black population and large white in-migration. According to the 1980 Census 21% of Lady's Islanders were aged 60 or above in 1980, up from 10.6% in 1970. Average 1979 income was 11% higher than the County average. The number of Lady's Islanders who have completed college, almost 16%, is also significantly above the County average.

As other demographic trends have changed, employment patterns have also changed. Traditional employment in agriculture, fisheries and forestry has been replaced by work in the provessions, service industries, retail trade and wholsale trade.

In 1984 Lady's Island is a community in transition. The older, land-based community is being surrounded by an urban-oriented affluent community. For the forseeable future Lady's Island will contain a diverse population and economy.

COMMERCIAL LAND USE IS INCREASING

As the following scenario maps show, the quantity of commercial, expecially strip commercial, development can be expected to move along SC 802 towards the McTeer Bridge and north on Sams Point Road. Construction of a "northern" beltway will create a market for strip commercial development in northern Lady's Island.

INCREASED TRAFFIC

As noted above in the "highways" secton, the main auto artery, US 21 is at capacity. More development means more cars and curb cuts, reducing highway capacity.

ENVIRONMENTAL CHANGES

As development changes, certain environmental changes will inevitably follow. In the absence of a central sewer relatively large-scale, high-density developments will require package plants. As development density increases, the opportunities for land or golf-course application will decrease, requiring more direct discharges to area waters under the National Pollution Discharge Elimination System (NPDES). While this system is designed to eliminate pollution, there is an upward limit to the volume of treated effluent any river can absorb without lowering water quality.

The more subtle water pollution problem is non-point source runoff from roads, driveways, lawns, malfunctioning septic tile fields, farm yards and other widely dispersed locations. Non-point source runoff has no single origin, hence the name. It is extremely difficult to control. Obviously, the removal of native flora lets more run-off into area waters. For Lady's Island as a whole this will be the #1 water quality problem of the future.

Finally more people will mean less wildlife habitat, fewer and more cluttered vistas and more noise. It is unlikely that these problems will reach

urban proportions. Like many problems, these depend on who is defining the problem. While perhaps not severe by absolute standards, the environmental changes will be very noticeable by relative standards.

4. PROPOSED SOLUTIONS

The Lady's Island Citizens' Advisory Committee wrote and approved the following goal statement on the future of the Island.

Lady's Island should be "A low density community of mixed residential, agricultrual and undeveloped (open space) type land uses with quality housing for a diversified population. Commercial development is restricted to consumer-oriented businesses catering primarily to the needs of the local population".

The proposed solutions below were formulated and approved by the Committee with the assistance of the JPC staff for the express purpose of meeting this goal. Chapter 3, Recommendations and Implementaion, contains a more complete version of these recommendations.

A. LADY'S ISLAND DEVELOPMENT DISTRICT

Special District Standards should be adopted for the area bounded by Brickyard Creek and the Beaufort River to the East; Lucy Point Creek, Morgan River and Chowan Creek to the West; Coosaw River to the North and the Beaufort River - Chowan Creek confluence to the South. These standards include the following provisions:

1. Adoption of Proposed Ordinances

Application of the proposed special nuisance, density, buffer and setback standards and the proposed revision of the sign ordinance (with the changes suggested below) to Lady's Island alone; assuming that they are not passed for County-wide application by County Council

2. Performance Zoning

A performance-type zoning provision including, but not necessarily limited to, the following conceptual zones:

a. **Neighborhood Conservation** - This district is intended to preserve the character of existing neighborhoods and developments under construction at the time of adoption of the ordinance. It is designed to prevent these neighborhoods from becoming non-conforming under the terms of this ordinance. Permitted uses are residential, outdoor recreational, public service (electric substations, etc.). Land use intensity may be designated. For example, a land use intensity of 30 would be designated NC_{30}. (See 6. Land Use Intensity System below.)

b. **Core Development** - This district is the area presently urbanized. It is the community focal point, the area of high intensity use on which a full range of public and private facilities are concentrated. Permitted uses are residential, commercial and most institutional.

c. **Development Districts** - Are intended to accommodate most of the future growth. It consists of areas where development should logically locate as a consequence of planned public expenditures and associated capital expenditures. This district provides regulations which permit development of a generally suburban character. It provides for planned unit developments, and for necesary commercial and institutional suport to these uses.

The development district is designed to minimize the costs of extending or expanding services. It is a planned, logical accomodation of growth intended to serve areas suitable for development and to avoid unsuitable areas. Unlike a traditional zoning ordinance, this district allows many and varied uses while placing the emphasis on minimizing or buffering any nuisances between uses. Segregation of uses has never provided adequate protection, especially at the boundaries of such districts. This district anticipates the likelihood and desirability of mixing land uses and imposes standards to resolve possible problems and eliminate the negative impacts of juxtaposing unlike land uses.

d. **Estate District** - This district is intended to provide low-density, limited growth residential areas. It is designed to accommodate residential development opportunities for those desiring semi-rural, low density settings and those willing to live in more remote locations and assume the costs of providing many of their own services and amenities. This district complements the development district, in that it houses a specific segment of the population, those who desire estate-type living. This district is not expected to be subject to re-zoning to higher intensities in the future. Permitted uses are agriculture, forestry, residential, outdoor recreation, public service institutional and plant nurseries.

e. **Agricultural District** - This district is intended to protect and preserve areas in agricultural production for continued agricultural and agriculturally-oriented uses. Agriculture is presumed to be the most suitable use of the land in this district. This district is intended not to regulate agricultural uses, but to regulate those uses which threaten agriculture. Permitted uses are agriculture, forestry, certain residential, outdoor recreation, public service, agricultural support, and nurseries.

3. **Commercial Land Use**

Future commercial development should be confined to the properties immediately adjacent to US 21 and SC 802 west.

Future commercial development should be effectively screened on all sides except that facing the principal highway or front. The front setback should be 50 feet. Landscaping and/or planting the front setback is suggested. (DSO 5.2.5 and 5.2.9)

Commercial land uses must group in pre-planned concentrations with a minimum distance between such concentrations. In addition, these

commercial clusters are to be screened and buffered from all other land uses, be located on arterial road, be limited to one access per major arterial road and to be limited to the number and size of signs proposed in the amendments to the County Sign Ordinance.

4. **Aquifer Recharge Zone**

Given that one of the three major aquifer recharge areas in Beaufort County is located on northern Lady's Island and given that the aquifer's waters are very sensitive to pollutants spilled or deposited on the surface, the use of the aquifer recharge zone should be restricted to open space (including parkland), Conservation District, forestry and low density residential.

5. **Agricultural District in the AICUZ**

All active agricultural land within the Air Installation Compatible Use Zone of the Marine Corps Air Station should be placed within the Agricultural District defined in 2. above, Performance Zoning.

6. **Mobile Home Developments**

All future mobile home parks or developments should be limited to certain areas or zones. All future home parks must have a mandatory 50 foot setback, 80% of which must be screened and buffered.

Existing mobile home parks which do not meet these standards can only be replaced by developments which do meet these standards.

All mobile homes, whether in developments, parks, or singlely located, must be tied down and skirted.

7. **Nuisances**

All of the nuisances listed in the proposed DSO amendment (section 5.2.11, March 29, 1984) be extensively regulated on Lady's Island.

8. **Building Height**

The maximum height of buildings should be limited to 50 feet from ground level to ridgepole.

It is now a well established legal precedent that planning and zoning decisions may be based on aesthetic reasons and on the preservation of neighborhood character. The South Carolina planning enabling legislation gives local jurisdictions the right to regulate building height through the use of zoning which is based on a comprehensive plan. Such a plan now exists for Lady's Island, as well as a conceptual zoning ordinance. The zoning ordinance for Lady's Island Development District should include a limitation on building height. (DSO 5.2. 13 c).

9. **Frontage Roads**

The construction of frontage roads is strongly encouraged, especially along US 21 and SC 802 west. Frontage roads are designed to provide access to parcels along major roads while increasing highway safety and limiting congestion by providing limited access to the major roadway.

B. DEVELOPMENT STANDARDS ORDINANCE

Changes to the DSO are recommended in this section which do not fit into the Lady's Island Development District Standards. Eventhough some of these recommendations pertain only to Lady's Island, as a matter of practicality they should be handled within the general framework of the DSO and JPC administrative policies.

1. Major Thoroughfares

Barnwell Road and S-129, the Island Causeway, should be designated "Major Thoroughfares" according to the provisions of the DSO.

2. AICUZ Warning on Plats

All plats located within the boundaries of the Marine Corps Air Station's Air Installation Compatible Use Zone should be stamped by JPC staff with a suitable notice before the plats can be recorded by the Register of Mesne Conveyances. A suitable notice would indicate that the plat is located in the AICUZ and that the Department of Defense holds a navigation and sonic easement on the plat.

3. Overhead Lines

a. Main electric three-phase transmission lines and main trunk telephone lines should be concentrated in central corridors.

b. All future utility line installations and all utility lines construction work involving major repairs and/or replacements should be placed underground on Lady's Island.

c. The JPC and Beaufort County Council should urge the SC Department of Highways and Public Transportation to design bridges to carry utility lines inconspicuously. Under no circumstances should towers or poles be used to bring utility lines to or from Lady's Island. If using highway bridges for utility line crossings is unfeasible, submarine cable crossings should be used.

d. The terms under which a variance for overhead utility lines is granted should be defined and codified. Specific requirements should take the form of an impact statement or a series of questions to be answered by the party seeking the variance. Such statments should include, but are not limited to financial, aesthetic, topographic and social information.

4. Wildlife Habitat

Wildlife habitat of exceptional quality should be mapped and placed within the Conservation District, as defined by the DSO. Beaufort County should encourage the appropriate agencies to make a comprehensive survey of the Island's wildlife. The JPC should consult with the SC Wildlife and Marine Resources Department when defining the areas to be placed in the conservation district. In all cases the protected areas should include an adequate buffer strip to protect the sites and ensure their use as wildlife habitat.

5. Freshwater Wetlands

All freshwater wetlands should be evaluated by an appropriate authority prior to any modification. In this case an appropriate authority is a trained and accredited biologist.

C. POLICY RECOMMENDATIONS

The Citizens' Advisory Committee addressed policy recommendations to multiple agencies. These recommendations are arranged by topic below.

1. Transportation Policy Statements

a. Highway Improvements

Immediate and long-term steps should be taken to improve the highways in order to relieve congestion and improve communications. The JPC and Beaufort County Council should recommend the following improvements to the SC Department of Highways and Public Transportation and also urge the Legislative Delegation to promote these projects.

1) A spot improvement should be made as soon as possible on the intersection of US 21 and SC 802. The medians should be rebuilt to provide adequate visual clearance or a turning light should be installed.

2) The following major highway improvements should be made by the SC Department of Highways and Public Transportation in conjunction with replacing the Battery Creek Bridge: Widen US 21 from the Woods Bridge east to Eddings Point Road and widen SC 802 and S-280 from the west end of the Battery Creek replacement bridge to U.S. 21.

3) A frontage or service road should be contructed in the existing right-of-way along SC 802 west between the McTeer Bridge and US 21. Access to SC 802 west from the frontage road should be limited to two intersections controlled by electric traffic signals.

b. **Northeast Beltway/Brickyard Creek Bridge Proposal from the Beaufort Area Urban Transportation Study**

If and when this route is likely to be built, the following measures should be taken:

1) Design the northeast beltway to be a limited access route.

2) Access points should be limited. Neighborhood traffic should be shunted to the access points via service drives, as needed. Access points will probably be needed at a) Mitchelville (intersection of S-72 and SC 802,c) Seagull Lane and Barnwell Rd. d) S-72 at Brickyard Creek. (Note: In the absence of a highway engineering study these are suggested access points only.)

3) Commercial development should be limited to the immediate vicinity of one or two of the access points. Businesses only of the neighborhood commercial type should be permitted.

4) A 50 foot buffer strip should be preserved along both sides of the right-of-way.

2. Environmental Policy Statements

A. Marine Water Quality

The JPC and the County Council should support any and all changes in the SC Department of Health and Environmental Control's water quality designation to reflect the quality of the water. The Citizen's Advisory Committee endorse any attempts to upgrade the water quality designation of the Beaufort River and Factory Creek from SB-SA.

The Committe does not believe that water quality should be maintained at SB in these streams in order to encourage the concentration of marinas and discharge in one area. Water quality designations in all cases should reflect the actual quality of the water body in question.

3. Miscellaneous Policy Statements

A. Beaufort County Drainage Policy

Beaufort County Council should establish the maintenance of existing government owned and controlled drainage ways and easements as the first priority of the Department of Public Works Drainage Program. Wherever possible existing drainageways should be repaired and/or maintained before tax revenue is spent on the construction of new facilities.

B. Sewer Service

Installation of a community-wide sewer system on Lady's Island should receive a high priority from the implementing agency(ies). However, the land use controls described above must be adopted before the sewer system is constructed. Furthermore, the total monthly fee for sewer tap-ins, front foot assessment and wastewater treatment should not be so high as to cause economic hardship to, or displacement, of lower income groups.

C. Public Open Space

Beaufort County should acquire, improve and maintain a certain minimum amount of public open space, based on the standards outlined in the Beaufort County Open Space and Recreation Plan, 1977-2000. (The standards are three acres of neighborhood park per 1000 residents and three acres of community park per 1000 residents for a total of six acres per 1000 people). As of 1980, Lady's Island needed an additional 5.36 acres of neighborhood parks and 1.36 acres of community parks. These figures are projected to increase to 23.9 and 18.9 acres respectively by the year 2000.

In order to prevent the duplication of facilities and better utilize tax revenue, recreational facilities at public schools should be opened to the general public whenever practicable.

INTRODUCTION

PURPOSE AND SCOPE

The Beaufort County Joint Planning Commission is charged under the authority of South Carolina Act 487 of 1967 to develop a comprehensive plan for Beaufort County and develop the necessary devices to implement its recommendations. The development of a County-wide comprehensive plan is quite an undertaking, and it is not unusual to approach the task by developing plans for certain functional elements of the comprehensive plan (i.e., transportation, open space), or by doing broader plans for geographic area within the County (i.e., City of Beaufort, Port Royal, Lady's Island, St. Helena Island area) or both.

HISTORY

In July of 1982 the Beaufort County Joint Planning Commission directed the staff to prepare a comprehensive plan for the greater Beaufort area (the unincorporated parts of St. Helena, Lady's and Port Royal Islands).

A comprehensive plan provides a long-range development guide for the area to promote the general public health, safety and welfare. There are many elements which affect a community's development, among them public services, and utilities, transportation, natural environments, and industrial development. A comprehensive plan formulates policy recommendations. There are some elements that are beyond the jurisdiction of the Planning Commission as far as implementation of the recommendations.

The draft Greater Beaufort Area Comprehensive Plan (GBACP) was completed in July 1983. This plan did not include specific land use and land development information and recommendations. In effect it was a set of policy guidelines.

The Joint Planning Commission reviewed the GBACP from August through October. The plan was considered and approved but not adopted by the JPC. Acknowledging the lack of a specific land use and development component, the JPC directed the staff to translate the goals and recommendations of the GBACP into concrete and implementable land use recommendations which would form a basis from which to draft amendments to County Ordinances and formulate JPC and County policies.

In October, 1983 and again in February, 1984 the JPC endorsed a three-part motion directing staff to "implement expansion of the districting technique immediately; draft sample land use control measures; and seek assistance from citizens groups already formed" in the preparation of a land use plan for Lady's Island. This plan was structured and its contents dictated by this motion.

In December 1983, one staff planner was assigned to complete the Lady's Island Land Use Plan, and then proceed to produce land use plans for the other major geographic units covered in the GBACP. This plan partially fulfills the objective of producing a comprehensive plan for the greater Beaufort area, which will in turn be a part of the overall Beaufort County Comprehensive Plan.

LEGAL AUTHORITY

As previously mentioned, the legal authority to undertake comprehensive planning in Beaufort County is provided through South Carolina Act 487, and under South Carolina Code 4-17-600. Both of these legal instruments seek to insure that future local ordinances or land use regulations are adopted in

accordance with a locally adopted plan that has considered the physical, social and economic elements of community development and thei mplications of future regulations on those same elements.

PLAN FORMAT

While the Lady's Island Land Use Plan is technically a part of the GBACP and the Beaufort County Comprehensive Plan, it is designed to stand alone as an independent document. There is a certain amount of overlap between the GBACP and the Lady's Island Plan, although in general the Lady's Island Plan concentrates on specific land use issues. The focus of the GBACP is directed towards social and policy issues.

The Lady's Island Land Use Plan is divided into five major sections: 1) an executive summary; 2) the principal planning issues and an abstract of the goals and recommendtions addressing land use issues from the GBACP; 3) a technical document analyzing the environmental and socio-economic land use planning issues; 4) recommendations and implementation actions; and 5) appendices. The executive summary provides a general description of the plans recommendations and ways to implement them. The next Chapter- issues, goals and recommendations- describes these items and lists the relevant recommendations found in the GBACP (the historical base, if you will). The technical analysis describes the current situation, the problems and the trends of the functional components. (For example: population growth, highway system, freshwater wetlands, etc.)

The final Chapter lists the recommendations of the Citizens Advisory Committee and the staff. In addition, techniques to implement the recommendations are discussed at length. Finally, the appendices tabulate the results of the progress the Citizens' Advisory Committee used to formulate its recommendations and display a model amendment to the DSO restricting building heights around the Beaufort County Airport.

A NOTE ON HOW TO READ THIS PLAN

This plan can be read in several ways, however two are suggested. The front-to-back or historical approach takes the reader through the historical basis, then the technical backround before coming to the solutions. An approach for those in a hurry, or those wishing to concentrate on the solutions involves skipping around in this order: 1) executive summary; 2) Chapter 3, the recommendations and implementation which gives more backround on the executive summary; and 3) Chapter 2, the analysis for those seeking technical backround.

CHAPTER ONE

ISSUES, GOALS AND RECOMMENDATIONS





1. ISSUES, GOALS AND RECOMMENDATIONS ADDRESSING LAND USE ISSUES

A. ISSUES

1. LAND USE CONFLICTS AND NEIGHBORHOOD CHARACTER

Some of the more apparent conflicts are:

-Strip Commercial Development
-Other Commercial Development vs. Residential Land Uses
-Multi-Family vs. Single Family Residential
-Industrial vs. Residential
-Mobile/Manufactured Housing vs. Conventional Stick-Built Residential
-Preservation of Neighborhood Character

As in many growing and changing communities in which land use patterns are not well established, conflicts have arisen as to the proper use of real estate. Within such areas different communities', interest groups' and individuals' values are reflected in their perceived notions of the best and highest uses of land. Any given piece of property is a bundle of physical elements, economic potentials, spiritual and cultural values; in practice a given individual, community or interest group tends to perceive a specific facet of a piece of property at any one time. An undeveloped property may simultaneously be an excellent investment, habitat for wildlife, a good home site, potential cropland, a good business site - there are many possibilities. Different communities of interest emphasize different values. Differing values and cultural diversity are virtues of this open society; but not necessarily when they are in conflict at the neighborhood scale. After substantial investments are planned, a community-of-interest naturally tends to protect its perceived high priority values. As different communities grow and fill undeveloped land, conflicts inevitably arise.

Lady's Island is a microcosm of development in the southeastern United States. When population density was low and development slow, conflict was at a minimum. Now that Lady's Island is "discovered" and popular and sizable communities have been established, conflict is aggravated. Among the many ways of easing land use conflicts, government regulation is a common remedy. In the belief that regulating land use conflicts on Lady's Island is a legal, efficient and proper way to mediate these conflicts, the staff of the Joint Planning Commission (JPC) has formulated this plan and the attached draft regulations.

Uncontrolled strip development has been characterized as aesthetically unpleasing, disruptive of traffic patterns and contributing to sprawl.[1] As such, it is seen as the antithesis of many commonly held community values. The general community sentiment calls for sharp limitations on the spread of sprawl and some other options for community development.

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[1] The Costs of Sprawl, U. S. Environmental Protection Agency, Washington, D.C. 1976.

Pocket or other commercial development in residential neighborhoods or in agricultural areas creates conflicts in land values, increases property taxes on adjacent lands and speeds conversion of land use. Such development is likely in rapidly growing areas and along new transportation corridors, such as SC 802 southwest of US 21.

Multi-family housing (apartments, townhouses, condominium, and other higher density development) in close proximity to single family residential neighborhoods may result in a clash of values, life styles, property values, and so on.

Industrial processes, almost by definition, create by-products such as noises, odors, waste, and sights which make them incompatible with almost all residential uses of real property. To some extent they are self-segregating, but only over long periods of time. In the short run a laissez faire approach can only lead to a significant deterioration in property values. As in many growing or changing communities, the impetus for zoning comes from those residents with substantial investments to protect. A question of equity arises when residents whose families may have lived in an area for centuries can only afford or prefer to live in mobile homes. The fundamental conflict of community values can be resolved if both sides realize the concerns of the other: a) mobile homes or other affordable housing has a place somewhere in the community, b) all property owners have a right to have reasonable protection for their investments.

All of the land use conflicts mentioned above will, in time, modify the character of neighborhoods. The neighborhood is the basic building block of the community. Any change to well-established, cohesive neighborhoods should be carefully considered before it is made. This consideration should be one of the primary concerns of long-range planning functions, as it is in this plan.

All of the types of land use controls mentioned elsewhere in this report can be used to regulate types of structures. Additional regulations on site design, setback and buffering may also be in the interest of the community. Proliferating development served almost exclusively by septic tanks can contribute to water pollution. Density of development and water pollution are linked land use issues. Land use regulations can also be designed to address these concerns.

2. AIRPORTS

Activity originating at both the U.S. Marine Corps Air Station and the Beaufort County ("Frogmore International") Airport has the potential to conflict with the use of land for residential purposes. Airplane noise and accident potential are the two principal symptoms of this land use conflict.

3. OPEN SPACE/RECREATIONAL LANDS

One of the predominate characteristics of Lady's Island and Beaufort County is a goodly amount of undeveloped land or open space. Among the many uses of open space are: recreation, absorption of storm water and other non-point source runoff, wildlife habitat, views, buffer strips and greenbelts, and future highway right-of-way expansion. Preservation

of open space above aquifer recharge zones helps to preserve groundwater quality. Open space benefits the community as a whole, yet often only a few individuals provide open space for the community. The community must decide how much, or how little, open space is acceptable, and then share the cost of providing this amenity.

Public recreational lands are a sub-category of open space. The amount of open space or park land available for public use has not increased on Lady's Island since 1977. As the Island's population grows and more de facto "public" open space is closed off, this need should become a critical community priority.

4. ENVIRONMENT

The quality of the environment is related to all of the issues discussed in this section. In these paragraphs a stricter definition applies. 'Environment' in this section means the natural environment; such things as water quality, wetlands, aquifers, wildlife habitat, and so on.

Naturally, as development proceeds, relatively undeveloped areas show more evidence of the presence of people. However, more people do not necessarily automatically mean environmental degradation. If the population of an area triples, as Lady's Island's will between 1980 and 2000, there is the potential for increasing environmental decline.

Non-point source runoff (runoff from a wide area instead of a single source or pipe), especially from paved areas is one of the single greatest sources of water pollution in the Lowcountry. As development proceeds, there will be more non-point source runoff as well as more point source runoff from package plants and other sources.

Wetlands absorb volumes of stormwater, while filtering and cleansing it. They also provide wildlife habitat and recharge zones for aquifers. Saltwater wetlands have received a great deal of attention. The extensive freshwater wetlands in northern Lady's Island have received some official protection under the Beaufort County Development Standards Ordinance (DSO). As yet no accurate and comprehensive survey has been made of freshwater wetlands.

According to preliminary S. C. Water Resources Commission study results, much of northern Lady's Island provides direct drainage to or recharge of the principal artesian aquifer. This aquifer is the primary source of well water in Beaufort County. Aquifer recharge areas provide direct surface-to-water access to the aquifers. The entire aquifer can be very easily polluted by inappropriate or too-dense land uses built in the recharge zone.

The size and stability of wildlife populations is directly related to the amount and quality of habitat. Some species are very susceptible to the slightest disturbance, others thrive on human presence. As a rule of thumb, the more desirable species, terrestrial, aquatic and avian, are the most susceptible to human disturbance. More development means less habitat, hence less wildlife.

What is the value of a high-quality environment? What are the trade offs in preserving an environment of the very highest quality? The issues and trends are clear. Ultimately, the community must provide the answers.

5. TRANSPORTATION

New transporation routes through existing developments can disrupt the physical and social character of the community, unless steps are taken in advance to lessen the disruptions. Over the years several new trans-Lady's Island routes have been discussed. The 1971 Beaufort Area Urban Transportation Study (BEAUTS) mentioned a route across northern Lady's Island and Brickyard Creek to U. S. 21 in the vicinity of Grays Hill. Earlier, a bridge across Chowan Creek opening a second route to St. Helena Island was proposed. To date, none of these proposals has received a priority for further planning or funding from the S. C. Department of Highways and Public Transportation (SCDHPT). The Highway Department constructs projects on a six-year cycle. In the current cycle, widening U. S. 21 from two to five lanes east of the Wood's Memorial Bridge has received the lowest (deferred) priority. Other priority projects having an impact on Lady's Island include replacing the bridge over Battery Creek (high priority) and widening S. C. 802 and S-280 from two to five lanes from the west end of the new Battery Creek Bridge to U.S. 21 in Burton. These traffic improvements will provide an alternative major route to Lady's Island for travelers originating west of the City of Beaufort.

From a land use standpoint the challenge here is three-fold:

a. To obtain enough funding for an adequate transportation network.

b. To preserve adequate highway rights-of-way and buffer strips until the new highways can be built or expanded.

c. To control the negative impacts created by major new highway corridors. Some possible negative impacts are increased water pollution from highway runoff, increased noise in residential neighborhoods, spreading strip commercial development, and a proliferation of curb cuts.

6. SIGNAGE

This issue of vital community concern is strongly tied to land use. Regulations to resolve this question are pending before County Council.

7. UTILITY INFRASTRUCTURE

One of the principal controlling factors on the pace and location of development is the availability of water, electricity and other fuels, sewage treatment, telephones, good roads, schools and other community facilities.

Lady's Island is relatively well supplied with all of these elements of infrastructure, except for a general community sewer system. The electric, telephone and water systems are essentially in place and able to meet projected growth. A new public junior high school is due to open in the Fall of 1984; other efforts are underway to upgrade the quality of all public instruction. Roads have been discussed under transportation above. A community sewer is the only major element of the infrastructure yet to be built. Decisions to be made in the near future regarding the timing and location of a sewer system will have a profound impact on the growth and development of Lady's Island.

Today, Beaufort County exercises no direct control over the density of development. Density is controlled on a de facto basis by the S. C. Department of Health and Environmental Control. DHEC permits septic and package treatment plants which in turn limits the absolute number of dwellings on a given site. A community-wide sewer will remove this density limitation. In poorly drained areas as diverse as Michigan and Florida, the community sewer service area has defined the limits of urban development.

The providers of community sewer treatment facilities in the northern Beaufort County area are the Beaufort-Jasper County Water Authority and the City of Beaufort, either of which may expand sewage collection lines to Lady's Island in the future.

B. P. Barber, the Water Authority's engineering consultant, fully expects parts of Lady's Island to be served by the Frogmore area regional wastewater treatment plant in five to ten years.

Although no one can say just when Lady's Island will be sewered, the sewers will arrive in the near future. A community sewer system will be a tremendous catalyst to growth, both in absolute quantity and site density. This growth will have a strong impact on all other elements of the infrastructure as well as the character of the Lady's Island community.

8. CONCLUSION

These are the most prominent issues recognized today. Tomorrow, other issues will be vying for attention. It is not the role of planners to decide on the relative importance of issues; that is the responsibility of the citizens and their representatives. These issue statements form a starting place from which to consider various solutions. The next Chapter re-states these issues in detail. Chapter 4 provides alternate solutions and means of implementation.

B. GOALS AND RECOMMENDATIONS

This section contains the Goals and Recommendations developed for the Greater Beaufort Area Comprehensive Plan. The Greater Beaufort Area was defined as the unincorporated areas of Port Royal, Lady's Island, St. Helena, Fripp, Harbor, Hunting and other islands in the general vicinity.

This section was compiled for the Greater Beaufort Area Comprehensive Plan by the Citizen's Advisory Committee, 1982; considered and approved but not adopted by the Joint Planning Commission in October, 1983.

These are not the recommendations of the Lady's Island Land Use Plan, however, they should be considered as a point of departure from which this plan's recommendations were developed. The recommendations of this plan generally concur with those below, but go into greater specificity and detail. The recommendations of the Lady's Island Citizens Advisory Committee and the JPC staff can be found in abbreviated form in the Executive Summary and in expanded form in Section 3 below.

The rest of Section B is excerpted directly from the Greater Beaufort Area Comprehensive Plan. Note that since the Greater Beaufort Plan was published, efforts have begun to implement the recommendations asterisked below.

"COMMUNITY AND ECONOMIC DEVELOPMENT GOALS

1. Merge physical, social and economic considerations in planning and community development

Community Objectives

Establish land development regulations that address physical, social, and economic considerations.

Recommendations

2. Investigate land policies, regulations and tax incentive programs that will encourage the preservation of unique and significant farm land

3. Establish land policies, regulations and tax programs that will relieve an artificial tax burden on properties adjacent to development.

4. DSO should be strengthened to guide community growth and protect existing and future neighborhoods by 1) expanding the districting technique, and 2) including criteria identifying impacts of growth from economic, social and physical perspectives.

*5. DSO should be amended to include an airport district including Lady's Island Airport and the MCAS. Noise and accident potential disclosure statements should be required as described in the AICUZ plan.

NATURAL ENVIRONMENT/OPEN SPACE

Goals

Protect environmentally sensitive area. Preserve/maintain the natural landscape and shoreline.

Encourage improvement and development of open space.
Guide growth in an orderly fashion to reduce its impact on the natural environment.

Community Objectives

Establish goals for protecting natural areas.
Identify the areas on map or chart.
Develop regulatory devices to a) protect from development, b) mitigate development impact.
Allocate public funds for the maintenance of public open space.

Recommendations

*1. Strengthen DSO to reduce impact of development on open space and natural environment (including buffers, setbacks, easement).

*2. Update the adopted DSO Conservation Maps to include scenic and recreation areas.

*3. Formulate and adopt a County-wide drainage plan based on the Feasibility Study for Main Drainage Canals, 1970; Southern Beaufort County Canal Study, 1982; Beaufort County Public Works Department proposed County-wide drainage plan.

*4. Adopt site specific drainage standards to reduce the impact of development on the natural environment.

*5. Request S.C. Coastal Council to review and update wetlands maps as identified on the National Wetlands Inventory.

*6. Implement a County-wide recreation and open space plan.

*7. All responsible agencies should update and implement the "201" Plan. (Note: At B.P. Barber's behest B.P. Barber has updated the 201 plan for St. Helena and Lady's Islands.

*8. Request the S.C. Water Resources Commission identify the aquifer recharge areas. (Note: WRC is currently studying salt-water intrusion and aquifer recharge areas in Beaufort County).

UTILITIES

Goals

Coordinate utility extensions.
Ensure that utility extensions are compatible with natural environment and open space goals.

Community Objectives

Establish county-wide goals for utility service

Recommendations

a) Beaufort County should develop long range utility service goals and policies.

b) Beaufort County Council should develop a subcommittee to coordinate utility extensions.

c) Beaufort County should develop and adopt policies to assure that future utility extensions are compatible with the goals of preserving scenic and open space.

d) Beaufort County should request that the S.C. Highway Department design, construct and improve bridges to accommodate utility extensions.

HOUSING AND NEIGHBORHOODS

Goals

Protect residential neighborhoods from industrial and commercial intrusion.
Maintain an adequate supply of safe, decent and sanitary housing stock.
Provide stability and vitality to existing neighborhoods.
Encourage an adequate supply of housing for all income levels.

Community Objectives

Design and adopt regulation device(s) to protect neighborhoods from industrial/commercial intrusion

Design and adopt an incentive program to encourage development of a broad choice of housing.

Recommendations

1) Strengthen DSO to protect residential neighborhoods from industrial and commercial intrusion by expanding the districting technique and by developing appropriate criteria to mitigate potential conflicts.

2) Investigate methods of encouraging low and moderate income housing stock.

3) Implement mobile home standards which would mitigate the intrusion of mobile homes into conventional housing neighborhoods.

4) Adopt goals of Lowcountry Areawide Housing Element:

   a) Adopt land use controls ensuring quality residential development for all income groups.

   b) Implement a housing rehab and preservation program to reduce the number of sub-standard units.

TRANSPORTATION

Goals

Maintain the scenic quality of major thoroughfares.

Community Objectives

Review DSO requirements as to

a) curb cut standards

b) access in relationship to surrounding street system

Reduce the amount of advertising signs on major thoroughfares.

Recommendations

1) For existing streets and roads, more restrictive setbacks and access point standards should be adopted in the Development Standards Ordinance.

2) Beaufort County should implement the Lowcountry Regional Transportation service. Future RTA services should be self-supporting.

*3) The Beaufort County Sign Ordinance 79-13 should be reviewed to assure its adequacy of reducing visual clutter from highway right-of-way.

4) Beaufort County should request that the S.C. Highway Department upgrade SC 280, SC 281, and U.S. 21 (from Lady's Island to Hunting Island) to four lanes.

5) Future highway expansion should endeavor to preserve the natural environment.

6) Beaufort County should improve the scenic quality of SC 802 and U.S. 21 through landscaping the highway right-of-way.

7) Beaufort County should pursue a northern route across Brickyard Creek similar to the proposal in BEAUTS. Citizen input should be sought in order to protect the integrity of established communities along the route.

PARKS/RECREATION

Goals

Provide space for active and passive recreation for a wide range of activies.

Community Objectives

Maintain an adequate level of open space and recreation facilities to meet the population needs.

Recommendations

a) Beaufort County should assist both the private sector and other public bodies in providing adequate beach access for public use.

b) Beaufort County should update and implement the County-wide Open Space and Recreation Plan. (1977)

c) Beaufort County, in conjunction with the S.C. Highway Department, should consider the construction of bicycle paths in the expansion of U.S. Highway 21."

*Implementaion of this recommendation in progress or completed.

CHAPTER TWO

ANALYSIS OF THE CURRENT SITUATION





2. ANALYSIS OF THE CURRENT SITUATION: ENVIRONMENTAL AND SOCIO-ECONOMIC

A. INTRODUCTION AND OVERVIEW

The Lady's Island planing area encompasses approximately 12,000 acres of buildable land located between Port Royal and St. Helena Island, just east of the City of Beaufort and the Town of Port Royal (see Map 1). The area is outlined by the Coosaw River to the north, Brickyard Creek and the Beaufort River to the west, Lucy Point Creek, the Morgan River and Chowan Creek to the east. The confluence of the Beaufort River and Chowan Creek mark the southern boundary of the Lady's Island "archipelago". The principal islands in the planning area in addition to Lady's are Gibbs, Cane, Cat and Distant.

One of the greatest assets of Lady's Island and Beaufort County has been its physical environment. From an ecological standpoint, the edges of different types of environments are the most diverse. No environment on the planet has more species and more life than the edge between the sea and the land. The meeting of sea and land, the rich estuarine environment which gives the area its unique character also strongly influences patterns of human settlement. Tide, wind, weather, insects and poor drainage, among other natural phenomena, will always influence growth and development in Beaufort County.

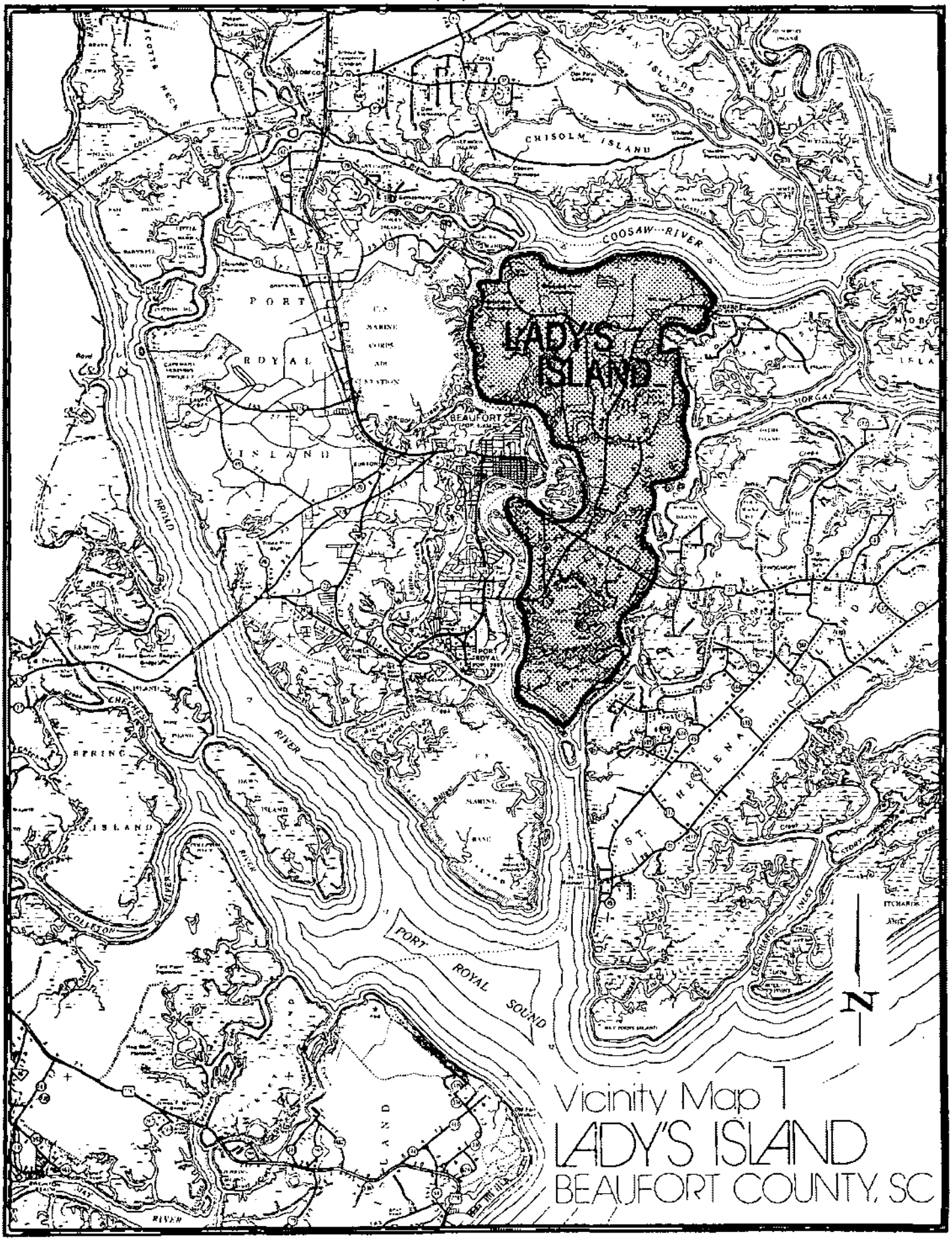
The complexity of the natural environment cannot be adequately explored in any single publication, much less a planning study. Section B reviews a few of the basics which have the greatest impact on development and the quality of life - flood hazard, wetlands, soil, water quality and wildflife.

For information on the environmental topics not mentioned here, please refer to the companion document to this plan - the Greater Beaufort Area Comprehensive Plan.

Section C of this chapter deals with the patterns of human development which must be considered in land use planning. Such things as land use patterns, demographics, economics, services and facilities make up this part, the socio-economic inventory.

The final part of this Chapter, Section D, synthesizes the environmental suitability analysis with the socio-economic data. The results are presented first as a series of projections and trends. The projections and trends define the direction in which Lady's Island is heading in the near (15-20 years) future. Finally several scenario maps show the likely and logical results of the identified trends, given the uninterrupted progression of the trends for the next 15 to 20 years.

The final recommendations of this plan are based on the trends and scenarios. The trends and scenarios are the reasons "why" behind the policy statements and recommendations found in the third and last major section of this plan.



Vicinity Map 1

LADY'S ISLAND

BEAUFORT COUNTY, SC

B. ENVIRONMENTAL SUITABILITY ANALYSIS

1. DESCRIPTION OF THE ENVIRONMENTAL SUITABILITY ANALYSIS

Land use planning is becoming recognized throughout the country as a way to preserve and improve the environment. Traditional land use planning which designates land uses according to "highest and best" economic return has very little potential for environmental protection. A more comprehensive approach must be taken which includes more than economics in the planning process. By comprehensive, we mean a planning process which considers economic, social, and environmental factors, as each location decision is made.

In addition, land use planning must be dynamic to respond to changing human needs and to changing environmental conditions. As the demands of our society change so do our needs for space. During the 1960's people moved to the cities and then to suburbia. Now, more population pressure is being felt in rural areas by industry moving from the cities and by urbanites looking for a different life style. These dynamic changes require some direction from planning agencies. To do this planning, the planner must be ready with the tools to serve these dynamic movements.

This comprehensive and dynamic approach touches on decisions, goals, and objectives of a broad base of the community. No longer will land use planning only involve industrial sites, business prospects and/or traditional zoning. To serve these broader objectives the approach should be one that enables public participation. This may be done by creating a planning tool that is comprehensive, but not at the expense of bombarding the reader with detail that obscures the issues. We have emphasized the dynamic aspect of the approach but, at the same time, recognize the need for a system which uses well-defined guidelines. These guidelines give direction over an extended planning horizon so that people know where they stand and can try to prepare for the future.

The approach we have developed is based on the Land Use Trade Off Model (LUTOM). LUTOM is based on a four-phase research program. The next few paragraphs briefly outline the approach.

In the trade-off model or suitability analysis, the data needed to describe the land use and resources for the area is compiled. These data are displayed on maps. Map overlays show the location of resources including flood zones, wetlands and soils suitable for septic tanks.

These maps are combined or synthesized into one overlay, which is Map 6. Based on all the resource data, the region is divided into units which have similar features. They are called Environmental Resource Units.

The Environmental Resource Unit composite is the first step of the process to determine development patterns and trends. The next chapter describes present policies which are directing development and their economic implications. The type of data needed to show the implications of policy decisions is provided in this section.

The final purpose of this analysis is to determine first, where development is most likely to occur and second where development should occur, given certain assumptions.

Development is most likely to occur where costs are minimized and where market demand is high. This includes the cost of the land, utilities, accessibility, transportation, and access to labor. These are all the costs which generally differ by geographic location, although they will not differ much at a one-island scale.

The second location question is "Where should development occur?" Development should occur where the land is most suitable and the proposed uses are compatible with present use. The process of locating development is based on an analysis of suitability and compatibility.

> Suitability is defined as the degree to which the natural and man-made qualities of a location, as described by the discrete environmental resource unit composite and the trends analysis, are economically, environmentally, and socially suited for a particular land use.
>
> Compability is defined as the degree to which the juxtaposition of two different land uses creates environmental, economic, and social conflicts.

The data presented below will go a long way towards answering questions about the location of development. The final chapter of this report directly addresses the implementation of the goals and recommendations in Chapter 1.

2. COMPONENTS OF THE ENVIRONMENTAL SUITABILITY ANALYSIS

a. **Introduction**

Any prediction of future growth must take certain environmental factors into account. While any constraint to development can be overcome if enough money is invested, some environmental constraints can be translated into constraints to development. The constraints, whether environmental or financial, examined in this section should be viewed as factors which influence development rather than dictate it.

Among the many factors affecting the location of development, three have the greatest impact; flood hazard, water bodies and wetlands, and the suitability of soil types for septic tanks.

The suitability analysis combines these factors onto one map in order to show the areas most likely for development. There is of course no guarantee that development will occur in a highly suitable area; the suitability analysis is instead a tool to guide analysis.

b. **Flood Hazard Zones**

One of the greatest long term influences on human development patterns on Lady's Island is flooding. The most dangerous and destructive flooding is caused by major tropical storms or hurricanes.

The potential for flooding in the planning area due to a hurricane is extensive. If a hurricane came ashore between Edisto and Tybee Islands at high tide, the storm surge alone would cover extensive areas of Beaufort County. With the rain water that accompanies a hurricane, storm sewers would not drain and soils would become saturated, resulting in extensive additional flooding.

Map 2 shows the probability of flooding on Lady's Island per year. The 100% probabilites of the worst average flood are shown for the 100- and 500-year flood events.

With legislation enacted in 1968, 1972 and 1976, the U.S. Congress has established a comprehensive program to reduce the escalating costs of flood damage. In 1968, Congress established the National Flood Insurance program to be administered by the Federal Emergency Management Agency (FEMA).

Under this program, federally-subsized flood insurance is available in communities which participate in the program. Participation is on a community wide, not an individual, basis. The basic elements of the program are:

1) Community adoption of buildings codes requiring elevation of the first livable floor of a habitation to a base flood elevation determined by FEMA. Besides height, or elevation of the structure, these building codes also require that certain construction techniques be followed, such as bracing and sheathing pilings.

2) Community adoption of a plan, called a "floodplain management" plan, consisting of an overall community program of corrective and preventive measures to reduce flood damage.

3) Federally-subsized flood insurance, which can be purchased like any insurance. This insurance is not mandatory. However, it is required of any person who obtains a federally insured mortgage (i.e. VA, FHA) or a mortgage from a federally insured institution.

Beaufort County participates in the National Flood Insurance Program. The basic effects of this program since 1977 have been to require most structures in flood hazard zones to be built to a minimum elevation and most property owners to obtain flood insurance.

The flood insurance rates are based on a series of maps called Flood Hazard Boundary and Flood Insurance Rate Maps. The zones have been derived from computer-generated models of the activities of flood hazards and storm surges along this coast. Currently, the County and municipal governments are using maps based on the Special Program to List Amplitude of Surges from Hurricanes (SPLASH) model. FEMA has recently introduced a new series of insurance rate maps based on the SPLASH model with wave height added. In general, the newer model predicts a greater flood threat for low-lying coastal areas, hence more expensive flood insurance and building practices are required.

Map 2 is based on the August 5, 1984 revised preliminary Flood Insurance Rate Map which is based on the SPLASH plus wave height model. The new Flood Insurance Rate Map is scheduled to go into effect on December 4, 1984. From that day forward the new Map will be used to determine insurance rates and minimum building elevations.

Table 1 below explains the four flood zones, and sub-zones shown on Map 1. The basic rule of thumb is, the velocity (V) zone is the most dangerous, being exposed to direct wave action. The C zone is the safest; A is the 100-year flood zone (the area in which there is a 1% chance of a major flood every year); the B zone is the area between the 100- and 500-year flood zones. The numerals 1-30 in the A and V zones refer to the base flood elevations in feet. For example, in the A zone, the flood has a 1 percent chance of being equalled or exceeded each year and is expected to exceed once on the average during any 100-year period. The risk of having a flood of this magnitude or greater increases when periods longer than 1 year are considered. For example, over a 30-year period, there is a 26 percent chance of experiencing a flood equal to or greater than the 100-year flood.

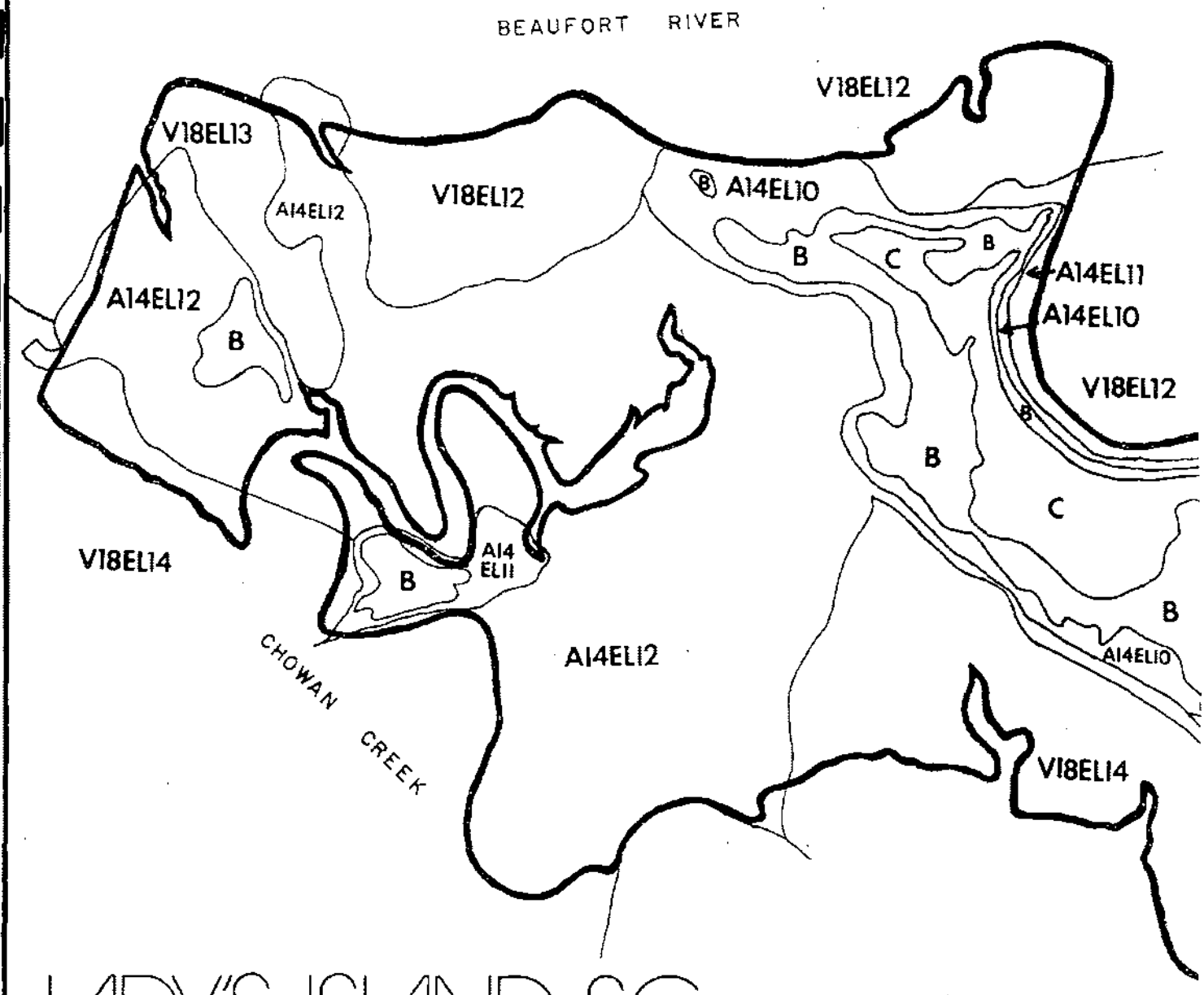
TABLE 1
EXPLANATION OF ZONE DESIGNATIONS*

ZONE	EXPLANATION
V	Areas of 100-year coastal flood with velocity (wave action).
A	Areas of 100-year flood
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood.
C	Areas of minimal flooding.
D	Areas of undetermined, but possible, flood hazards.

*From 1983 series revised Preliminary Flood Insurance Rate Maps.

More information on the Flood Insurance Program is available through the Beaufort County Department of Building Inspections.

The occurrence of flooding is an important, if infrequent, determinant of building patterns. In order to help minimize future costs and risks, the potential for serious flooding has been explicitly considered in the suitability analysis.



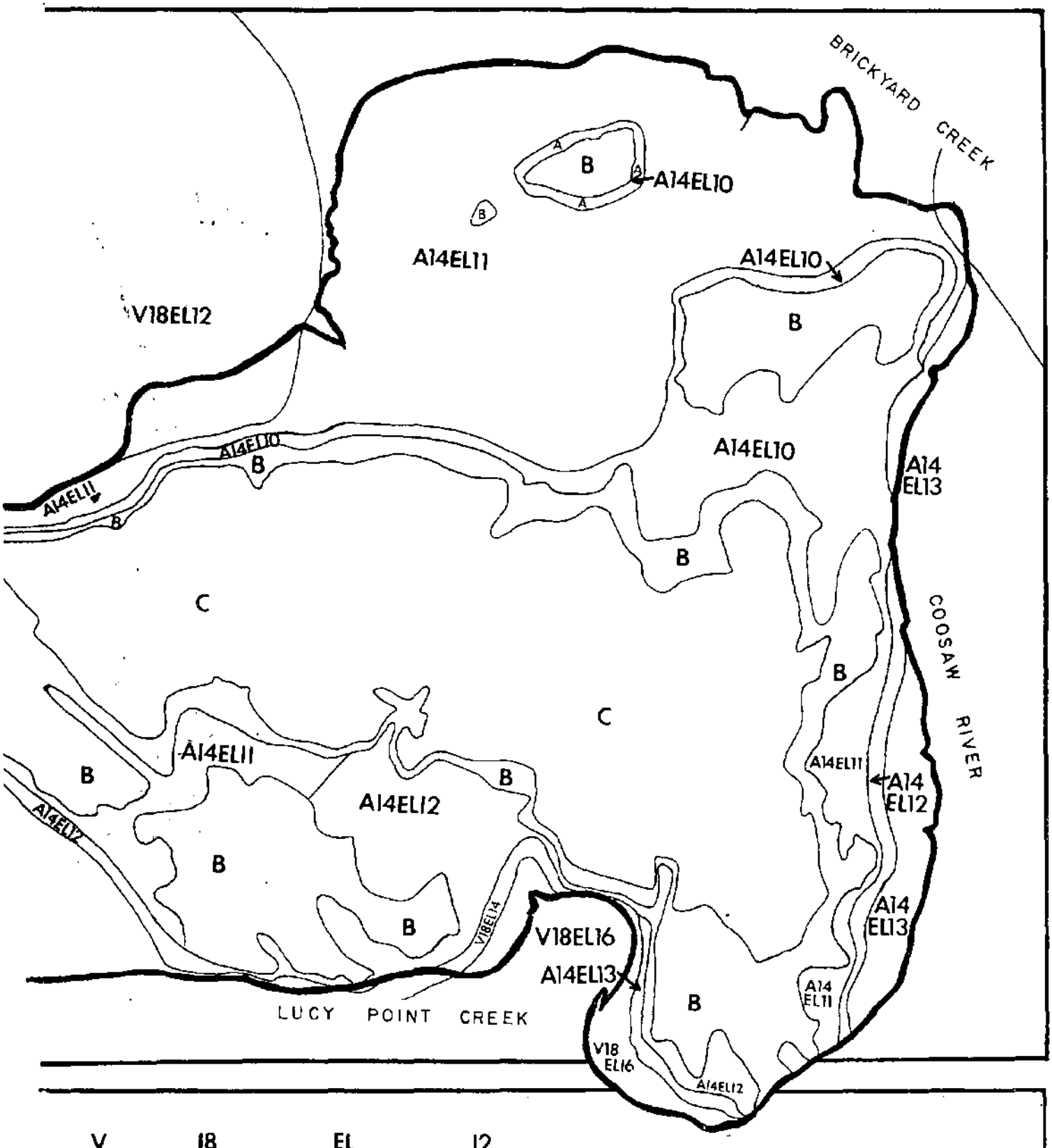
LADY'S ISLAND, S.C.

N

map 2

FLOOD ZONES

ZONES	DESCRIPTION
V	100 year flood with waves greater than or equal to 3'
A	100 year flood
B	Area between 100 and 500 year floods
C	Area of minimal, if any, flooding



V	18	EL	12
FLOOD HAZARD ZONE	FLOOD INSURANCE ZONE	ELEVATION	MINIMUM ELEVATION FIRST INHABITABLE FLOOR

SOURCE: Flood Insurance Rate Maps, produced by Bernard Johnson, Inc. for the Federal Emergency Management Agency, August 5, 1983.

c. **Wetlands**

The presence or absence of water is one of the single greatest factors influencing the patterns of development on the Sea Islands. Waterfront property is very attractive for residential uses because of the views it offers, as well as cooling breezes and recreational opportunities. As noted in the previous section, waterfront property also has some dangers and drawbacks. Storms, floods and high water table may make coastal properties both more expensive to build on initially and more dangerous to live on. Development on Lady's Island, as elsewhere on the coast, also takes an indirect toll on the environment through such things as alteration of wildlife habitat, polluted non-point source runoff from roads, lawns and gardens, a possible ground and surface water contamination.

Wetlands or marshes provide many benefits to human and natural communities. They act as breeding grounds for fish and shellfish, natural purifiers of wastewater, holding areas for flood waters, and important sources of food for wildlife. Acre for acre, salt water wetlands are the most prolific producers of food and fiber (biomass) on the planet.[1]

Map 3 shows the wetlands in and around Lady's Island. The wetlands map is a compilation of the S.C. Coastal Council's 1974-5 Tidal Wetlands Inventory and the U.S. Fish and Wildlife Service's 1977 National Wetlands Inventory. The National Wetlands Inventory identified over 50 types of wetlands and substrates; the Coastal Council identified 5 types.

Both maps were compiled from photos, with a limited amount of field checking. No agency, federal, state or local, uses these wetlands maps for site specific planning purposes. The Charleston office of the U.S. Army Corps of Engineers and/or the S.C. Coastal Council will send trained biologists as requested to mark wetlands in the field.

At the scale of this report, or any mappable scale for that matter, actual identification of all wetlands with any degree of accuracy is very difficult. Map 3 should be taken as a guide, an indicator of possible conflict, a "red flag" map system, rather than a definitive guide to the location of all wetlands on Lady's Island. For these reasons and because of technical problems of readability and volume, Map 3 shows just two types of wetlands: salt water and freshwater. The Coastal Council and National Wetlands Inventory maps on which these are based are available at the offices of the Joint Planning Commission. Infrared air photos showing wetlands are available from: The Lowcounty Council of Governments, Yemassee (1977 flight); U.S. Army Corps of Engineers, Charleston (1977 and 1979 Flights).

Under the Beaufort County Development Standards Ordinance adopted in 1978, all tidal wetlands are in a "Special Conservation

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[1] Fundamentals of Ecology, Eugene P. Odon. W. B. Saunders and Co., 1971, pp. 51.

District". Other wetlands defined as "any natural land-locked bogs, swamps, lakes, ponds, sinks, or low-lying areas determined to be unique or important wildlife habitats, or to possess unique scenic and recreational value" may be designated Conservation District by the JPC. In addition to the general provisions of the D.S.O., the following additional provisions apply to development in the Conservation District:

-"Not more than 5% of any lot or tract shall be covered by buildings, paving or other permanent structure".
-"No more than 15% of any lot shall be altered by landscaping, dredge or fill, or disturbance of natural vegetation".

In April, 1984, the DSO was amended to provide further protection for wetlands:

"1) The use of wetlands for storing and purifying runoff is strongly encouraged. However, care must be taken not to overload their capacity, thereby harming the wetlands and transitional vegetation. Priority wetlands identified on the official Beaufort County Conservation District Maps or the Federal National Wetlands Inventory, Fish and Wildlife Service, U. S. Interior Department, should not be injured by the construction of detention ponds in them or sufficiently near to deprive them of required runoff or to lower their normal water table elevations. Adjacent detention ponds that benefit retention of normal wetland water table elevations are acceptable. If a retention or detention pond is going to be located near a priority wetland, the applicant will provide data showing the impacts will not be detrimental to the wetland.

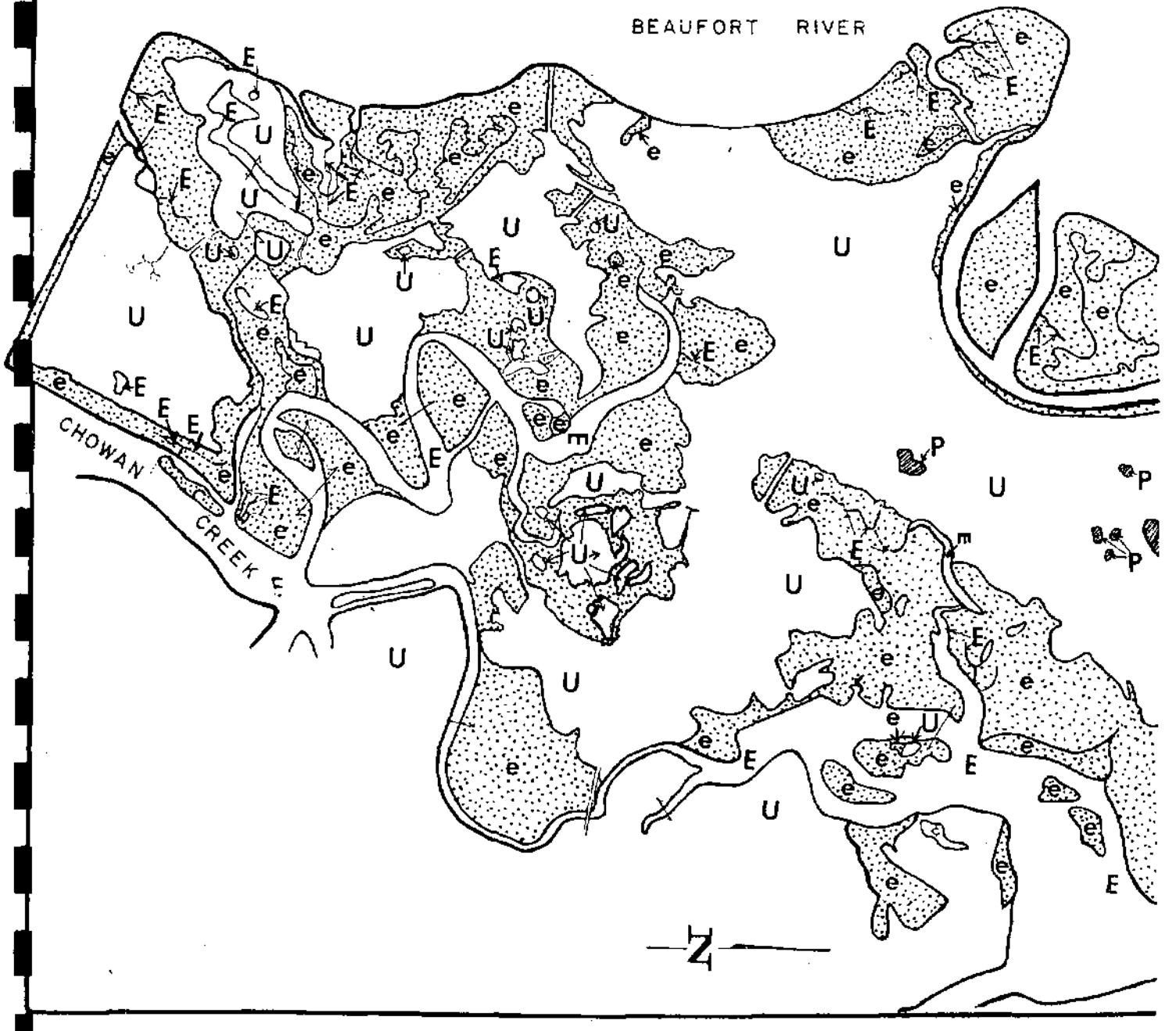
2) The first flush runoff (0.5" - 1.0") from paved streets and parking areas is very detrimental to maintenance of water quality standards. Therefore, filtering of runoff from streets and parking areas through vegetation, grass, gravel, sand or other filter mediums to remove oil, grease, gasoline, particulates and organic matter is required before the runoff enters any manmade or natural waterbody."

and

"4) Vegetative strips shall be retained or created along the banks or edges of all wetlands. The following shall be the minimum setbacks for construction from the edge of all wetlands:

Single family residential - 20 feet
Multi-family residential - 50 feet
Commercial or industrial - 50 feet
Impervious parking areas - 30 feet

A variance may be granted if the specific project design provides for the drainage or channeling of runoff away from natural watercourses, marshes, wetlands, or tidal areas and if such runoff is filtered through a vegetated strip. Vegetative strips shall be retained or created in a natural vegetated or grassed condition to allow for periodic flooding, provide drainage access to the waterbody, and to act as a filter to trap sediment and other contaminants to stormwater runoff."

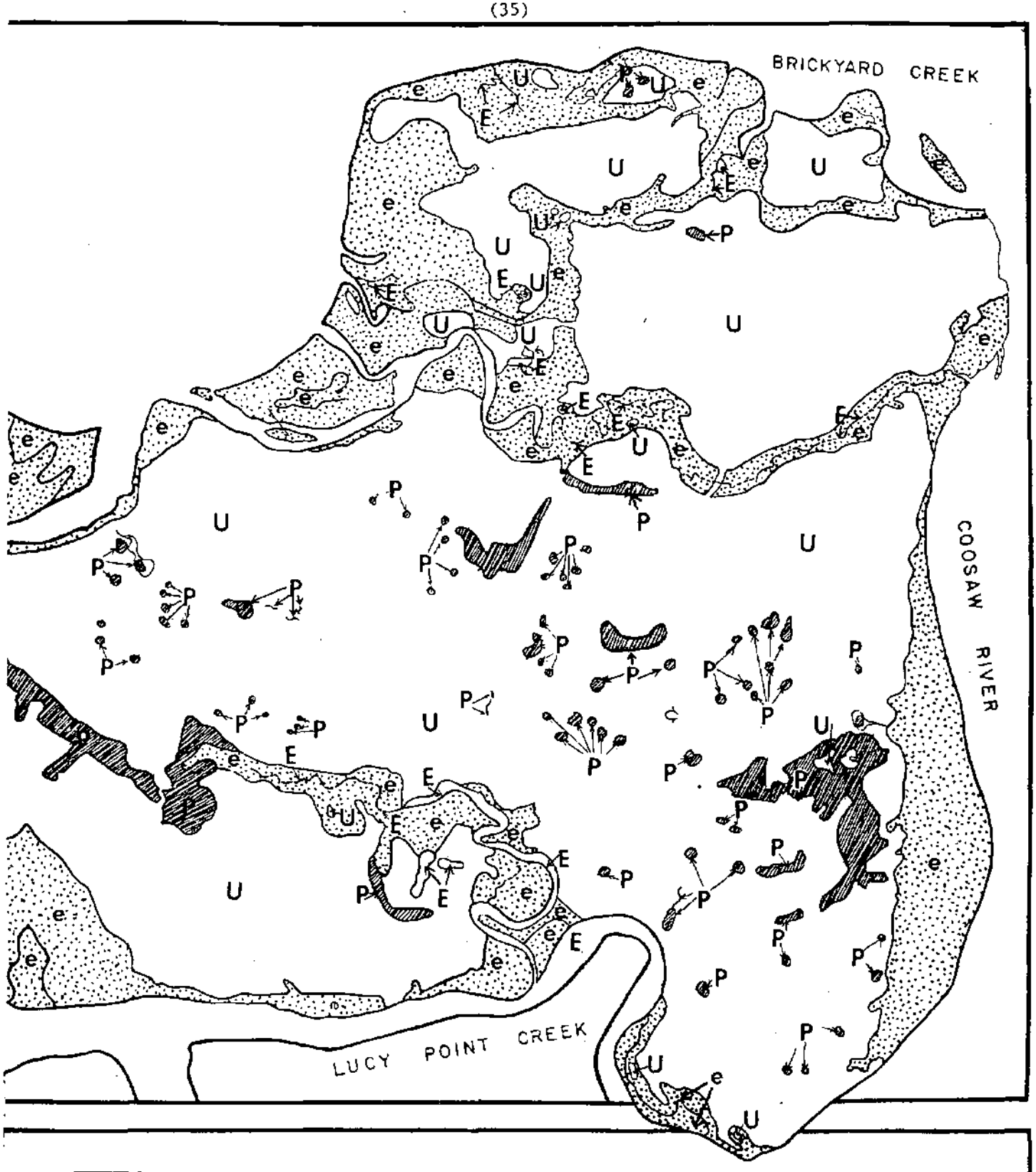


P: Fresh water wetland

U: Upland, dry land

map 3
WETLANDS

SOURCE: S.C. Coastal Council U.S. Fish and Wildlife Wetlands Inventory.


BRICKYARD CREEK
COOSAW RIVER
LUCY POINT CREEK
e Salt water wetland
E Salt water creeks, streams

In addition, development of any kind in most of the wetlands of Beaufort County is further regulated by the U.S. Army Corps of Engineers, the S.C. Coastal Council and the S.C. Department of Health and Environmental Control.

As development of wetlands is intensively regulated and is very expensive in any case, its existence and location is considered to be of prime importance in determining the pattern of development in Lady's Island.

d. **Soil Suitability for Septic Tanks**

In the absence of a central or community wastewater treatment system sewage effluent must be disposed of on site. This report assumes that existing septic system technology will be the standard on Lady's Island for the foreseeable future. Although it is theoretically possible to solve almost any septic or sewage treatment problem with expensive high-tech systems, this study assumes that only standard septic systems will typically be used on Lady's Island.

The effectiveness of any septic system depends on the kind of soil in which it is placed. Soil types or series are determined by the percentage of sand, silt and clay (see Figure 1). In turn, geologic history determines the location and amount of the three principal soil components.

Different soil types have varying capabilities to renovate septic tank effluent. The soil texture is the primary factor which influences its ability to remove undesirable substances. (Texture is defined by the percentage of sand, silt, and clay particles in the soil composition). Six parameters are of particular importance in evaluating the performance of the soil in this vital role. These are pathenogenic purification, nitrogen removal, phosphorus removal, solids removal, and compaction and puddling. Figure 2 illustrates the relationship between soil texture and these parameters. While studying this illustration keep in mind that the soils represent a continuum of particle size with loams possessing equal quantities of silt, sand, and clay. Also see Table 2 for the options available for other conventional on-site waste disposal systems.

TABLE 2
ON-SITE WASTE WATER MANAGEMENT OPTIONS FOR
SPECIFIC LIMITATIONS OR CONSTRAINTS

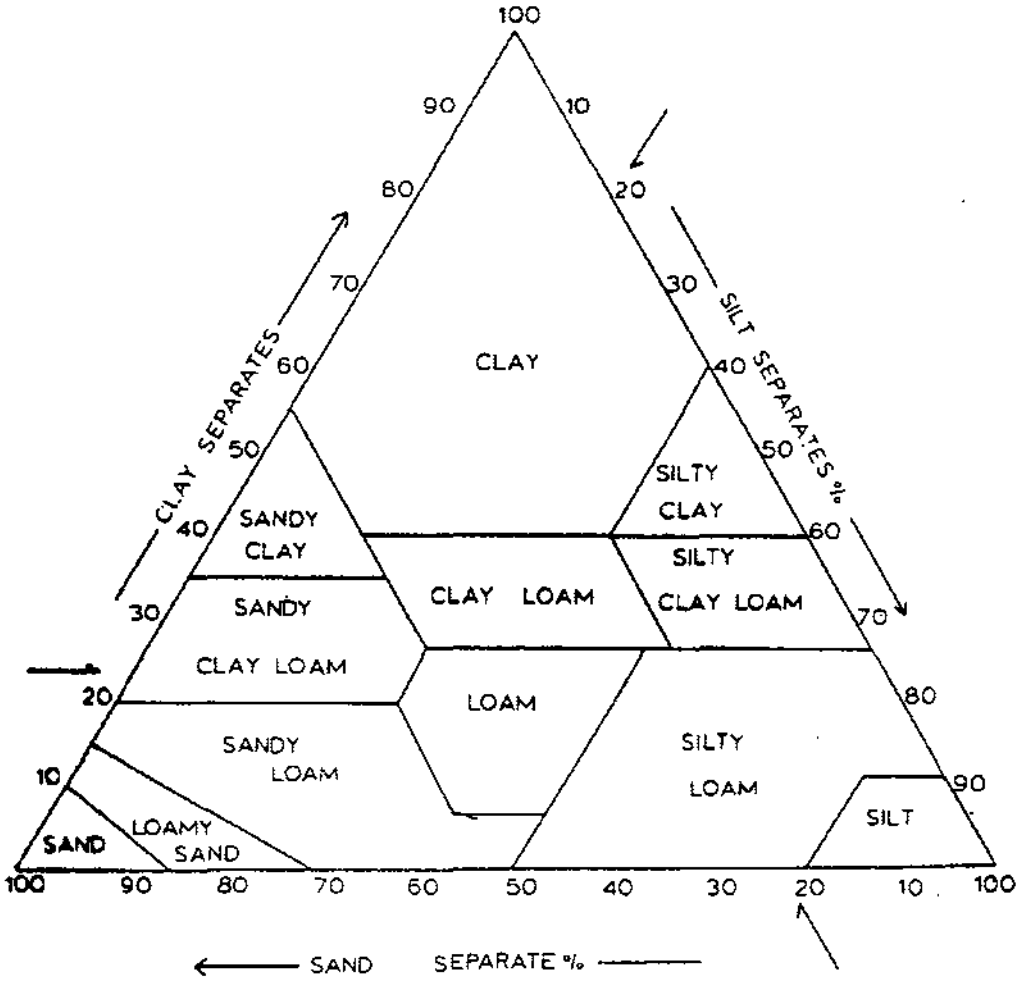
Limitation/Constraint	On-site option
None	Conventional septic tank/soil absorption system
High groundwater or shallow depth to bedrock	Elevated sand mounds Shallow placement system Evapotranspiration system Artificial drainage Buried sand filters

Slowly Permeable soil	Oversized soil absorption system Seepage pits Electro-osmosis Pressure distribution Evapotranspiration system
Hydraulic, organic, or solids overload	Flow reduction Waste stream segregation: Chemical, biological, or incineration toilets Multiple septic tanks or chambers Septic solids retainer Septic tank baffles Large diameter tubing
Grease or scum clogging	Grease trap Septic tank baffles
Clogging of absorption field	Alternating drainfields H_2O_2 treatment Septic tank baffles Multiple septic tanks or chambers Gravity or mechanical dosing
Highly Permable soil	Pressure distribution Oversized soil absorption system
Sloped site	Serial distribution
Subsurface disposal not possible (for example, rock outcrops, floodplains steep slopes)	Discharging options: fixed film reactors, intermittent or recirculating Disinfection options: Sodium or calcium hypochlorite, iodine, ultraviolet light, ozone

Figure 1

SOIL COMPOSITION TRIANGLE

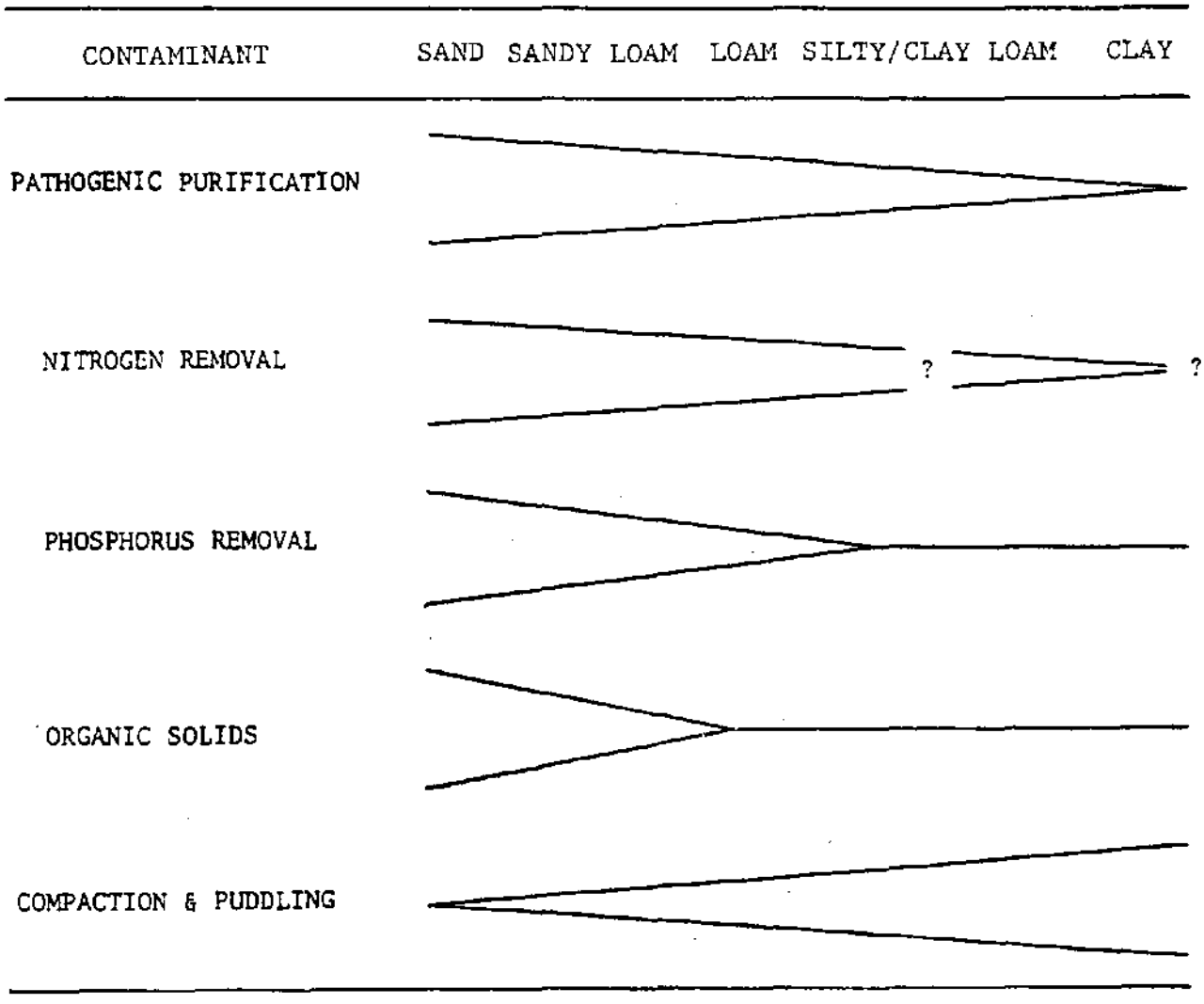
Soil texture classifications are defined by soil particle sizes, their percentage and their distribution. By estimating the percentage of each of the soil types in a soil and by applying this to the graph we can give a soil an approximate texture classification.



Name of Separate	Size (diameter mm.)
Coarse sand	1.5 - .5
Medium sand	.5 - .25
Fine sand	.10- .05
Silt	.05- .002
Clay	below .002

Figure 2

FACTORS OF SOIL TEXTURAL TYPES IN THE RENOVATION OF SEPTIC EFFLUENT*



POTENTIAL DELETERIOUS IMPACTS INCREASE WITH BAND WIDTH

*Table and accompanying text adapted from the Pinelands Comprehensive Plan, 1978.

Pathenogenic Purification

The dispersal of disease-causing organisms via the septic system is an extremely serious threat. The primary biological contaminates existent in septic system effluent are bacteria, viruses, protozoa, and helminth parasites. Some of the more common diseases resulting from these organisms are typhoid fever, bacillary and amoebic dysentary, and infectious hepatitis. The transmission of pathogens is inhibited by the filtering power of the soil and the "clogging zone" (a biotic and abiotic mat at the interface between the soil and effluent). Obviously, the finer soil texture, the more silts and clays, the greater the soils filtering power. Bacterial organisms are often large enough that given an unsaturated soil profile even sand soils will inhibit their spread to five feet from the point of discharge. Viruses, on the other hand, are much smaller and can readily pass through sand soil profiles.

Nitrogen Removal

Nitrogen is of primary importance in the renovation of septic effluent. Excessive concentrations of nitrite in drinking water may lead to a disease referred to as methemoglobinemia which impairs the transportation of oxygen in blood. This disease is a particular threat to children where gastrointestinal upsets can result in the reduction of more common nitrate to nitrite. In addition, excessive nitrogen in streams and lakes can result in an increased rate of eutrophication. Excessive eutrophication can, in turn, manifest itself in unsightly and odoriferous algal blooms and even fish die offs.

Nitrogen in septic effluent is predominately in the form of ammonium. Once in the soil the fate of the nitrogen is dependent on a complex set of chemical, physical, and biological interactions. The formation of nitrites results from the biological activity of two soil bacteria. This process is referred to as nitrification. Nitrogen can become immobilized in the soil system by the process of fixation. Fixation is the physical absorption of nitrogen by bacteria to binding sites on clays and organic matter. Consequently, the greater the concentration of these soil particles the less the threat of nitrite dispersal. Considering the preponderance of sandy soils on Lady's Island the migration of nitrate to drinking water sources is a potential threat. Keep in mind that this discussion is a simplification of very complex processes which are further influenced by other factors such as soil temperature, moisture, and pH.

Phosphorus Removal

The delivery of phosphorus from improperly functioning septic systems is a primary cause of human-generated eutrophication in streams and lakes. The ability of the soil to immobilize phosphorus is dependent on its pH, clay content, and cation exchange capacity. At low pH phosphorus is absorbed onto aluminum and iron in the soil. As the pH increases these two elements become less available for chemical reaction. The acid to near-neutral soils of Lady's Island

combined with the generally low cation exchange capacity of its predominately sandy soils suggest the possibility for the migration of phosphorus to aquatic systems.

Solids Removal

The decomposition of organic solids in aquatic systems results in the depletion of dissolved oxygen. This reduction of oxygen content can, in turn, place a physical stress on fish and other aquatic organisms which may directly or indirectly benefit man. The ability of the soil to obstruct the movement of solids is obviously related to soil particle size. Again, the large particle sizes which characterize the soils on much of Lady's Island are less well suited to perform this filtering function.

Compaction and Puddling

It is, of course, undesirable to have unrenovated effluent standing on the soil surface. This phenomenon is both aesthetically undesirable and a threat to public health. Such situations are related to the permeability and compactibility of the soil. In reference to the textural classes of soils, this threat increases with percentage of clay in the soil. As noted in Table 4 and Map 4 there are no soils with a predominantly clay texture on Lady's Island.

Muck soils, however, are also characterized by slow permeability. These soils are composed primarily of decaying organic matter which has settled to the floor of a wetland. The high organic content of muck soils acts as a sponge slowing the flow of water through the soil, reducing permeability and increasing compactibility. Therefore, the threat of puddling is high on the wetland and inter-tidal soils of Lady's Island.

High Water Table

A water saturated soil profile escalates the threat of pollution for septic systems. Of immediate concern to the property owner is the potential for system backup. An inundated drainage field may ineffectively convey septic effluent from the septic tank to the soil medium. In fact, the hydrostatic pressure of the ground water can impede the movement of septate to a point where the drainage field can no longer relieve the build up in the tank. If the effluent can not move forward it will obviously move back.

A more pervasive and potentially deleterious impact of a high water table is increased effluent dispersal. Ground water can provide a direct and efficient corridor between the septic tank and sources of drinking water and aquatic systems. This increase in lateral and vertical movement by septic effluent via high ground water therefore, is a serious threat to the public health, safety, and welfare.

The S. C. Department of Health and Environmental Control stipulates that septic systems cannot be constructed on property where the ground water table is within six inches of the bottom of

the drainfield. The discussion pertaining to pathogenic purification suggests that this is less than the minimum advisable margin of safety. This is particularly true since water tables fluctuate according to seasonal and annual precipitation patterns. Therefore, ascertaining the minimum depth to water table is not easily accomplished. However, it is known that much of Lady's Island is underlain by a water table less than two feet from the surface. The information presented in Table 3 shows the location of the water table at the time of the U.S. Geological Service Soil Survey in 1980, and also the type of soil. This, unfortunately, is the best available data. Therefore, prior to construction it is necessary for the Environmental Sanitation Office of DHEC to conduct a field investigation of the proposed septic system site.

TABLE 3
DEPTH TO SEASONAL HIGH WATER TABLE

Soil Name and Map Symbol		High Water Table		
		Depth, Feet	Kind	Months
Argent	Ae	0-1.0	Apparent+	Nov. - April
Bertie	Bb	1.5-2.5	Apparent	Dec. - March
Bladen	Bd	0-1.0	Apparent	Nov. - April
Bohicket	BK	+3-0	Apparent	Jan. - Dec.
Borrow Pit	Bp	-	-	-
Chisholm	Cmb	4.0-5.0	Apparent	Jan. - March
Coosaw	Cs	1.0-2.0	Apparent	Dec. - March
Deloss	De	0-1.0	Apparent	Nov. - April
Goldsboro	GoA	2.0-3.0	Apparent	Dec. - March
Murad	Mu	1.5-3.0	Apparent	Jan. - March
Nemours	NeB	1.5-2.5	Apparent	Dec. - March
Polawanna	Po	0-0.5	Apparent	Nov. - April
Ridgeland	Rd	1.5-2.5	Apparent	Dec. - March
Rosedhu	Ro	0-1.0	Apparent	Nov. - June
Santee	Sa	0-1.0	Apparent	Nov. - April
Seabrook	Sk	2.0-4.0	Apparent	Dec. - March
Seewee	Sw	1.0-2.0	Apparent	Nov. - March
Tomotley	To	0-1.0	Apparent	Nov. - March
Wahee	Wa	0-1.0	Apparent	Dec. - March
Wando	Wd	>6.0	-	-
Williman	Wn	0-1.0	Apparent	Nov. - April
Yemassee	Ye	1.0-1.5	Apparent	Dec. - March

+Apparent is defined by the Soil Conservation Service as a thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Source: Soil Survey of Beaufort and Jasper Counties, S.C. Soil Conservation Service, U.S. Department of Agriculture, 1980.

Topography

The slope of the land adds additional complications to septic system locations. When a system is built on a significant slope the effluent, being predominately liquid, naturally flows downhill. This movement can be manifested by the surfacing of insufficiently filtered discharge on the sides or at the base of the slope. Fortunately, this is not much of a problem on Lady's Island. Steep slopes are quite few and of small area.

Soil Series

The soils of Beaufort County are formed from materials that were deposited during the various stages of coastal submersion.[1] During each stage of submersion the formation of new lagoons, marshes and barrier islands promoted sorting and mixing of the coastal deposits. As the sea retreated during the late Pleistocene era, the soil forming processes began to develop modern soils. The soils vary from sand clay mixtures with distinct layers to soils of quartz sand with indistinct horizons.

Several dozen soil types occur on Lady's Island as a result of variations in parent material, topography, and vegation. These types are called soil series. The Soil Conservation Service of the U.S. Department of Agriculture has identified and mapped the local series in a document called the Soil Survey of Beaufort and Jasper Counties, S.C. Each soil series name, as in Table 4, usually includes the geographical locality where the soil was first described and an indication of the texture of the soil; for example, "Coosaw loamy fine sand".

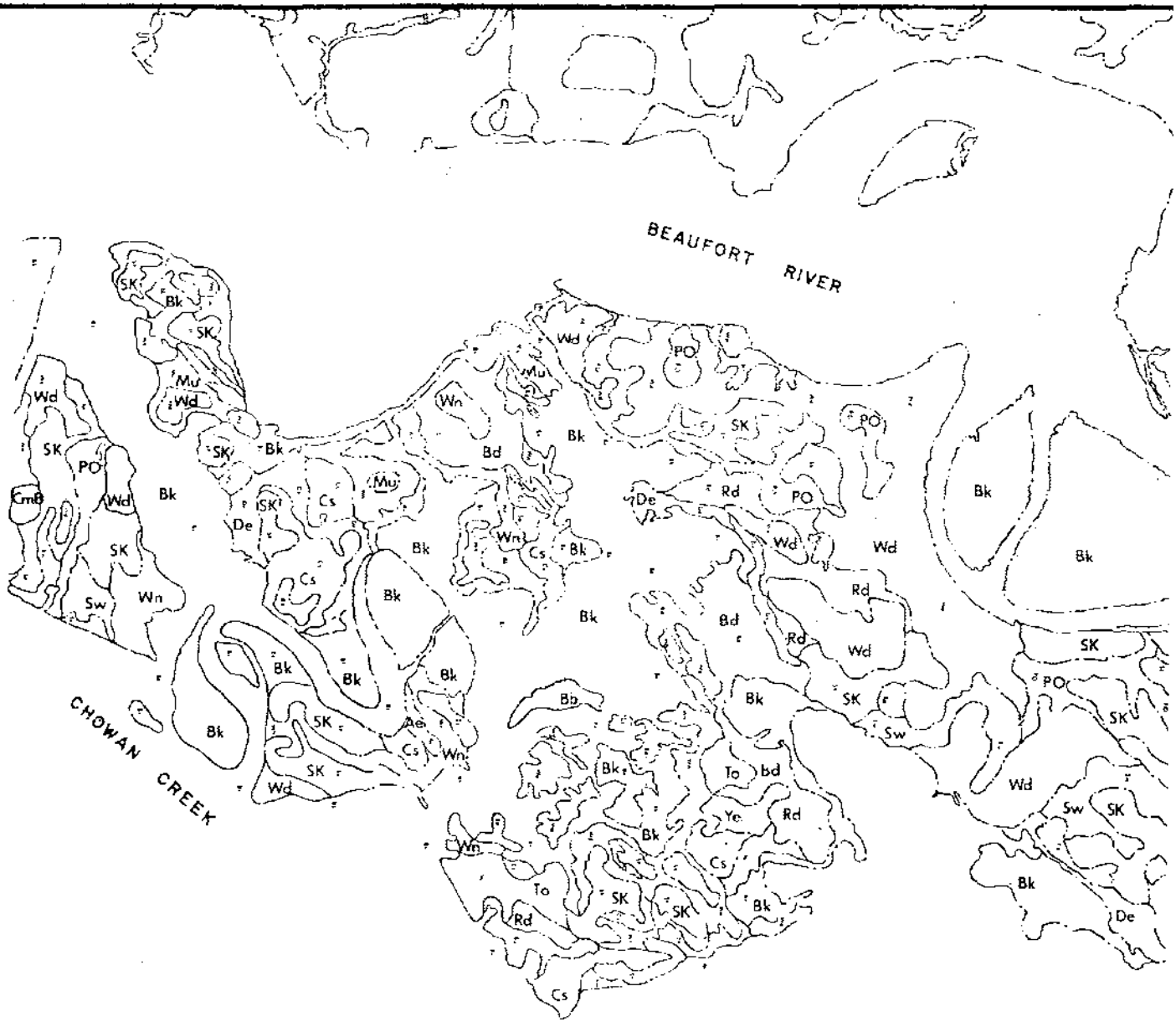
Soil series are sometimes grouped together in "Associations". Associations are groups of soil series located in the same area. Three associations occur on Lady's Island:

Wando-Seabrook-Seewee = excessively, moderately or poorly drained soils that are sand throughout.

Coosaw-Williman-Ridgeland = generally poorly drained soils that have a thick, sandy surface layer and a loamy subsoil; and somewhat poorly drained soils that are sandy throughout.

Bohicket-Capers-Handsboro = very poorly drained mineral and organic soils that are flooded daily or occasionally by saltwater, and adjacent upstream areas that are flooded occasionally by freshwater.

Associations are useful for a broad overview of soil conditions. For a more detailed look the series themselves must be examined, as shown in Map 4. The letters in the polygons on this map refer to the soil series. Table 4 is the key for the soil series. Once a series has been identified, a look at the soil survey discloses a great

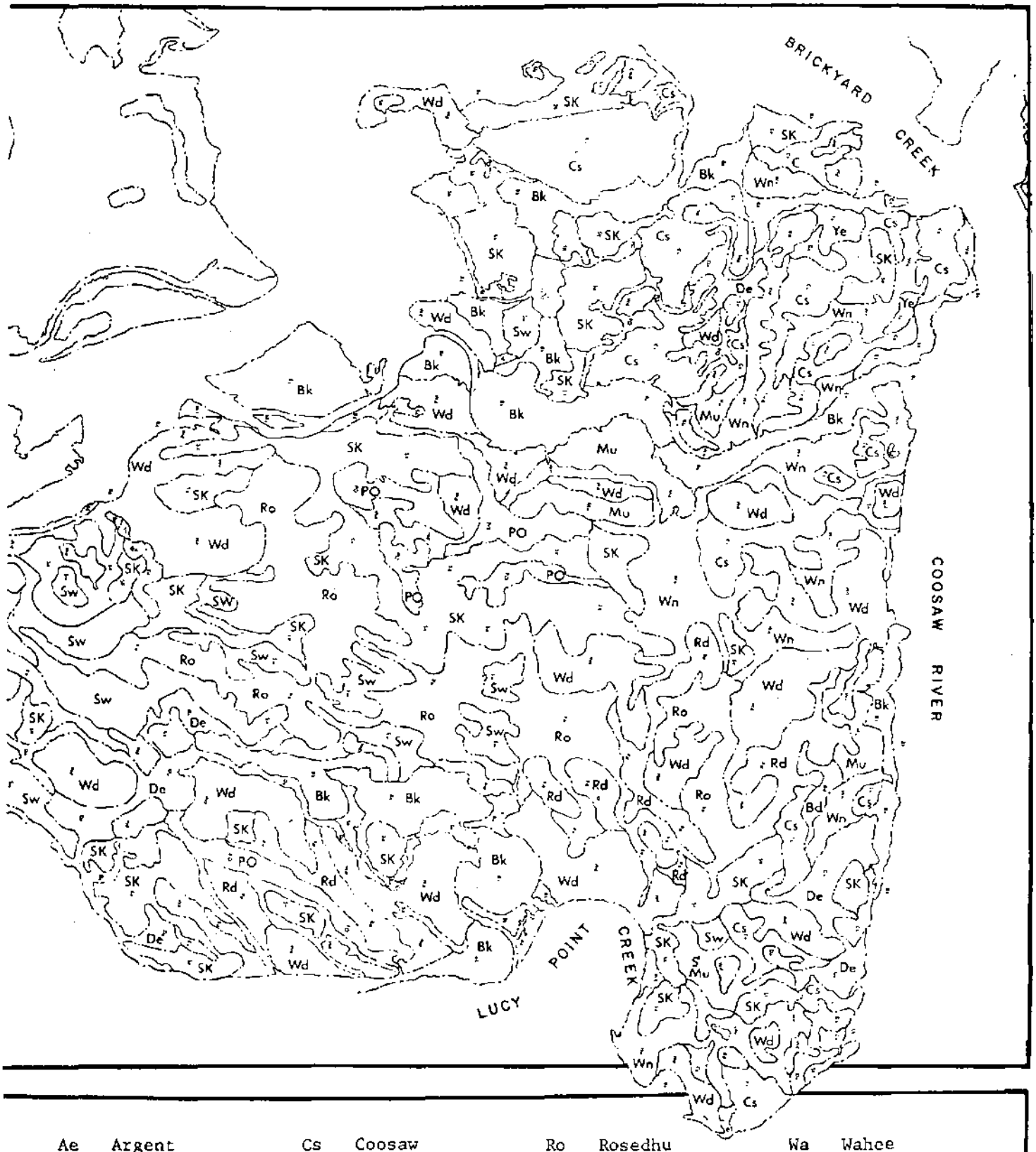


LADY'S ISLAND, S.C.

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map 4
SOIL TYPES

SOURCE: Soil Survey of Beaufort & Jasper Counties, SC, by the Soil Conservation Service, USDA, 1975.



Ae	Argent	Cs	Coosaw	Ro	Rosedhu	Wa	Wahee
Bb	Bertie	De	Deloss	Sa	Santee	Wd	Wando
Bk	Bohicket	Mu	Murad	SK	Seabrook	Wn	Williman
Bp	Borrow Pit	PO	Polawana	Sw	Seewee	Ye	Yemassee
CmB	Chisolm	Rd	Ridgeland	To	Tomotley		

The Environmental Sanitation Office of the S. C. Department of Health and Environmental Control (DHEC) issues septic tank permits. This office uses soil series as a rough guide to septic tank suitability on poorly drained soils.

TABLE 4
THE SOIL SERIES OF LADY'S ISLAND, BEAUFORT COUNTY, SOUTH CAROLINA

SCS SYMBOL	NAME
Ae	Argent fine sandy loam
Bb	Bertie loamy fine sand
Bd	Bladen fine sandy loam
BK	Bohicket Association
Bp	Borrow Pit
CmB	Chisholm loamy fine sand 0 to 6% slopes
Cs	Coosaw loamy fine sand
De	Deloss fine sandy loam
GoA	Goldsboro loamy fine sand, 0 to 2% slopes
Mu	Murad fine sand
Neb	Nemours fine sandy loam 2 to 6% slopes
Po	Polawana loamy fine sand
Rd	Ridgeland fine sand
Ro	Rosedhu fine sand
Sa	Santee fine sand
Sk	Seabrook fine sand
Sw	Seewee fine sand
To	Tomotley loamy fine sand
Wa	Wahee fine sandy loam
Wd	Wando fine sand, 0 to 6% slopes
Wn	Williman loamy fine sand
Ye	Yemassee loamy fine sand

Source: Soil Survey of Beaufort and Jasper Counties, S. C. Soil Conservation Service, U.S. Department of Agriculture, 1980.

TABLE 5
SUITABILITY OF THE SOIL SERIES ON LADY'S ISLAND FOR SEPTIC TANKS

Series That Are Clearly Unsuitable[1]	
Bd	Bladen
BK	Bohicket
Bp	Borrow Pit
Po	Polawana
Ro	Rosedhu
Sa	Santee
To	Tomotley
Wa	Wahee
Wn	Williman
Series That Have Severe Restrictions to Septic Absorption Fields[2]	
Ae	Argent
Bb	Bertie
Cs	Coosaw
De	Deloss
GoA	Goldsboro
Mu	Murad
Rd	Ridgeland
Sk	Seabrook
Sw	Seewee
Ye	Yemassee
Series That Have Moderate Restrictions to Septic Absorption Fields[2]	
CmB	Chisholm
Series That Have Slight Restrictions to Septic Absorption Fields[2]	
Wd	Wando

[1]Interview with Richard Hatfield, Environmental Sanitation Office of the S.C. Department of Health and Environment Control, Beaufort, S.C.

[2]Soil Survey of Beaufort and Jasper Counties, S. C. Soil Conservation Service, U.S. Department of Agriculture, 1980



LADY'S ISLAND, S.C.

map 5

SOIL SUITABILITY For SEPTIC TANKS



SOURCE: Soil Survey of Beaufort & Jasper Counties, SC, Soil Conservation Service, USDA, 1975 and Environmental Sanitation District Director, DHEC, 1984.

Table 5 was compiled from the Soil Survey and an interview with the head of the Beaufort Office of Environmental Sanitation. Environmental Sanitation defined the soils that were clearly unsuitable for septic tanks, the other categories were obtained from the Soil Survey. Environmental Sanitation does not strictly follow the Soil Conservation Service's interpretation of soil restrictions on absorption fields because the Soil Survey is 1) only accurate to four acres and 2) it is based on national norms for septic systems. S.C. law allows the bottom of septic drainfields to be placed only six inches above the water table. Thus, on Lady's Island a supposedly "severe" soil such as Argent is really only moderately restrictive to septic tanks.

Map 5 shows the four catergories of Table 5. In other words, this map shows, in a general way, the areas where septic tanks will and will not work. As DHEC controls the permitting of septic tanks and community package sewage treatment plants, DHEC indirectly controls the density of development. Map 5 shows the pattern of influence one factor, soil suitability for septic tanks, has on development.

3. SYNTHESIS OF THE ENVIRONMENTAL COMPONENTS

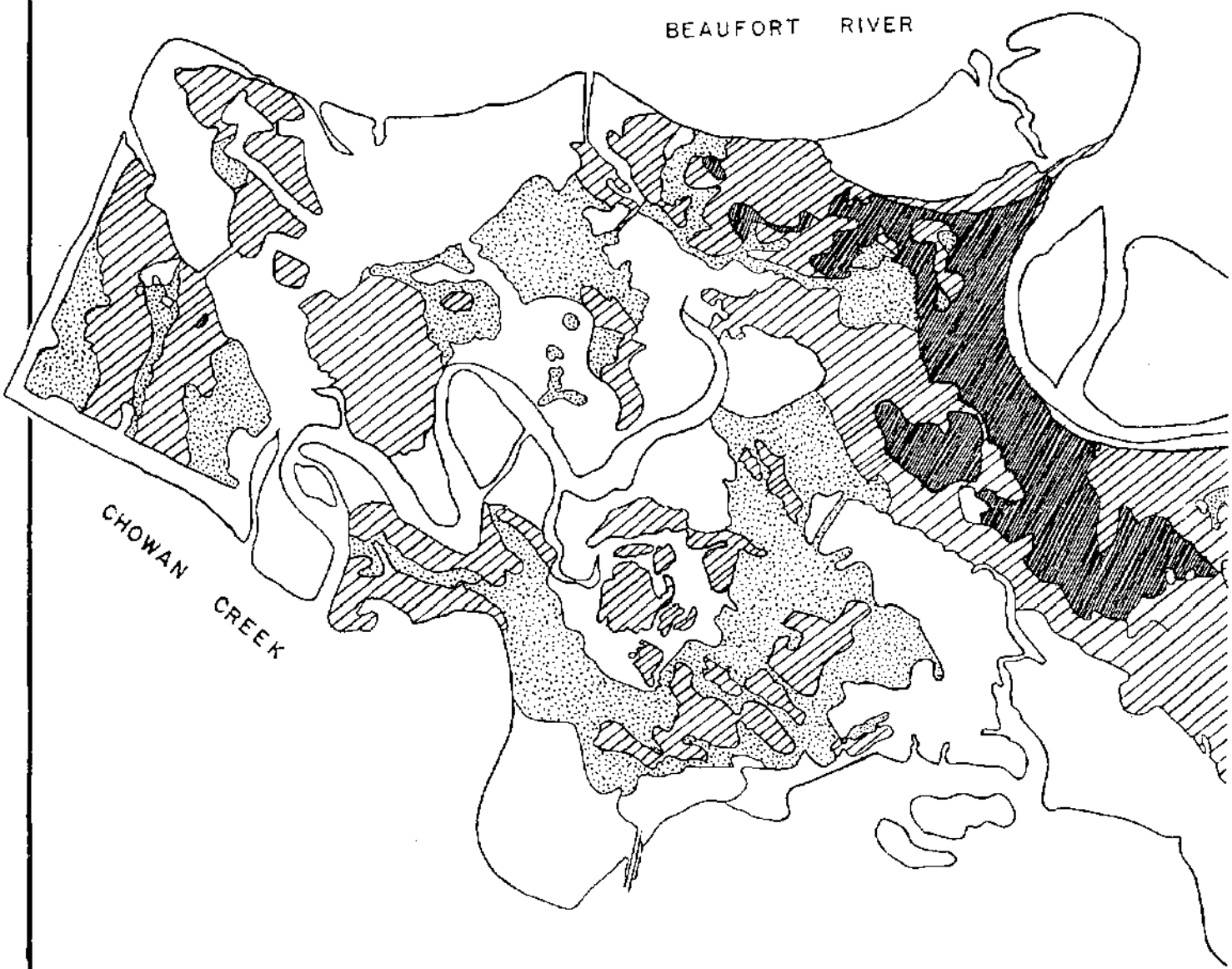
In order to accurately predict the environmental factors that can influence development, the location of flood hazard zones, wetlands and soils suitable for septic systems has been determined. As mentioned in the introduction to this chapter, these three elements have been combined into one map, the Environmental Suitability for Development map, which shows four general categories of environmental resource units. In a general way, Map 6 shows the areas that are suitable or unsuitable for development for environmental reasons.

The criteria examined to makeup this map were discussed at length above. To summarize, they are:

Wetlands	-	Freshwater
	-	Saltwater
Flood Hazard Zones	-	V
	-	A
	-	B
	-	C
Soil Suitability for Septic Tanks	-	Good
	-	Moderate
	-	Mediocre
	-	Not Acceptable

These elements were combined in a three-dimensional matrix to derive the four levels on suitability shown on Map 6. Environmental suitability is a continuum from most to least suitable. For ease of interpretation, the environmental resource units have been lumped into four broad categories: suitable, mostly suitable, mostly unsuitable and unsuitable.

The suitable category, for example, contains the highest land in the safest flood hazard zone having the best soil for septic tanks. The unsuitable category is just the reverse - wetlands in the velocity zone which are completely unacceptable for septic tanks.



LADY'S ISLAND, S.C.

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map 6
ENVIRONMENTAL SUITABILITY for development



Suitable
Mostly suitable
Mostly unsuitable
Unsuitable

SOURCE: The JPC Staff

Please note that at the scale of this report the information presented is not site specific. That is, it should only be used as a general indicator of conditions.

4. OTHER ENVIRONMENTAL CONCERNS

Certain other environmental issues have great importance, but cannot be easily mapped, either because little research has been done to identify them or because it is physically impossible to map them. Aquifer recharge areas are an example of the former and certain endangered species an example of the latter.

Any information on these difficult-to-quantify environmental issues will of course be added if available. Many environmental issues are so inter-connected that solution of one will influence others. As an example, filtration of parking lot runoff reduces nonpoint source pollution, thereby improving water quality, which can encourage marine life. Preserving open space and wildlife habitat aids all plants and animals in the vicinity, not just a single endangered species.

The special and critical environmental concerns identified to date are: a) wildlife habitat, b) aquifer recharge areas, including possible groundwater contamination through sinkholes, and c) wildlife habitat. Issues of aesthetics, as opposed to health and scientific concerns are not addressed in this section. Views, for instance, could be identified and rated by some system. While a valid area of community concern, a system of viewshed management has not been identified as an area of priority concern by the JPC or various citizens' advisory committees for the purposes of this report.

a. Tidal and Marine Waters

The quality of surface water is intimately tied to the quality of life, especially on islands. Surface water is used for recreation and as a source of income by residents and tourist, but the role water and marshes play in the ecological system is critical. The salt and brackish waters in Beaufort County are important for several reasons. They support varied wildlife, help to disperse pollution particulates, and provide recreation resources.

Tidal flows are an important activity. The "flushing" action helps purify the waterways, flushing out collections of pollutants. Through flushing as well as dilution, the waterways of Beaufort County are kept relatively clean.

The mean tide fluctuation over a 19-year period on the Beaufort River is 7.4 feet. The two-week spring tides average 8.7 feet. The daily tidal flow generally presents no problems to Lady's Island residents. The tides in conjunction with hurricanes and tropical storms present extensive potential for damage to the natural environment as well as the built environment.

Water quality is monitored by the S.C. Department of Health and Environmental Control (DHEC). This agency monitors ground water quality as well as surface water quality.

The S.C. Department of Health and Environmental Control (DHEC) has established definitions and criteria for different grades or classes of water quality. The standards of purity and quality are based on an analysis of:

1) The size, depth, surface area covered, volume, direction, rate of flow, stream gradient and temperature of the water;

2) The character of the district bordering such water and its peculiar suitability for any particular uses and with a view to conserving neighboring property encouraging the most appropriate use of the lands bordering on such water for residential, agricultural or recreational purposes;

3) The uses which have been made, are being made or may be made of such waters for transportation, domestic and industrial consumption, irrigation, bathing, fishing and fish culture, fire prevention, sewage disposal or otherwise; and

4) The extent of defilement or fouling of such waters which has already ocurred or resulted from past discharges therein.

On Lady's Island the two primary sources of water pollution are non-point source pollution from urban runoff and point-source pollution from treated effluent discharges and storm sewer discharges. The pollutants that collect in the rivers and streams are monitored. Although a stream may be classified at one level, the actual quality of the water may be at a lower level. The water quality standards below and in Table 6 are quoted from Water Classification Standards System for the State of South Carolina, DHEC, 1983.

Summary of Water Quality Standards

Class SAA	Absolutely pristine. Generally the quality of water in a completely natural state, with no human additives.
Class SA	Suitable for harvesting of shellfish for market consumption and for full-body contact ("fishable/ swimmable").
Class SB	Suitable for full body contact, but not for shellfish harvesting ("swimmable").
Class SC	Suitable for crabbing, commercial fishing only-no swimming or shellfishing.

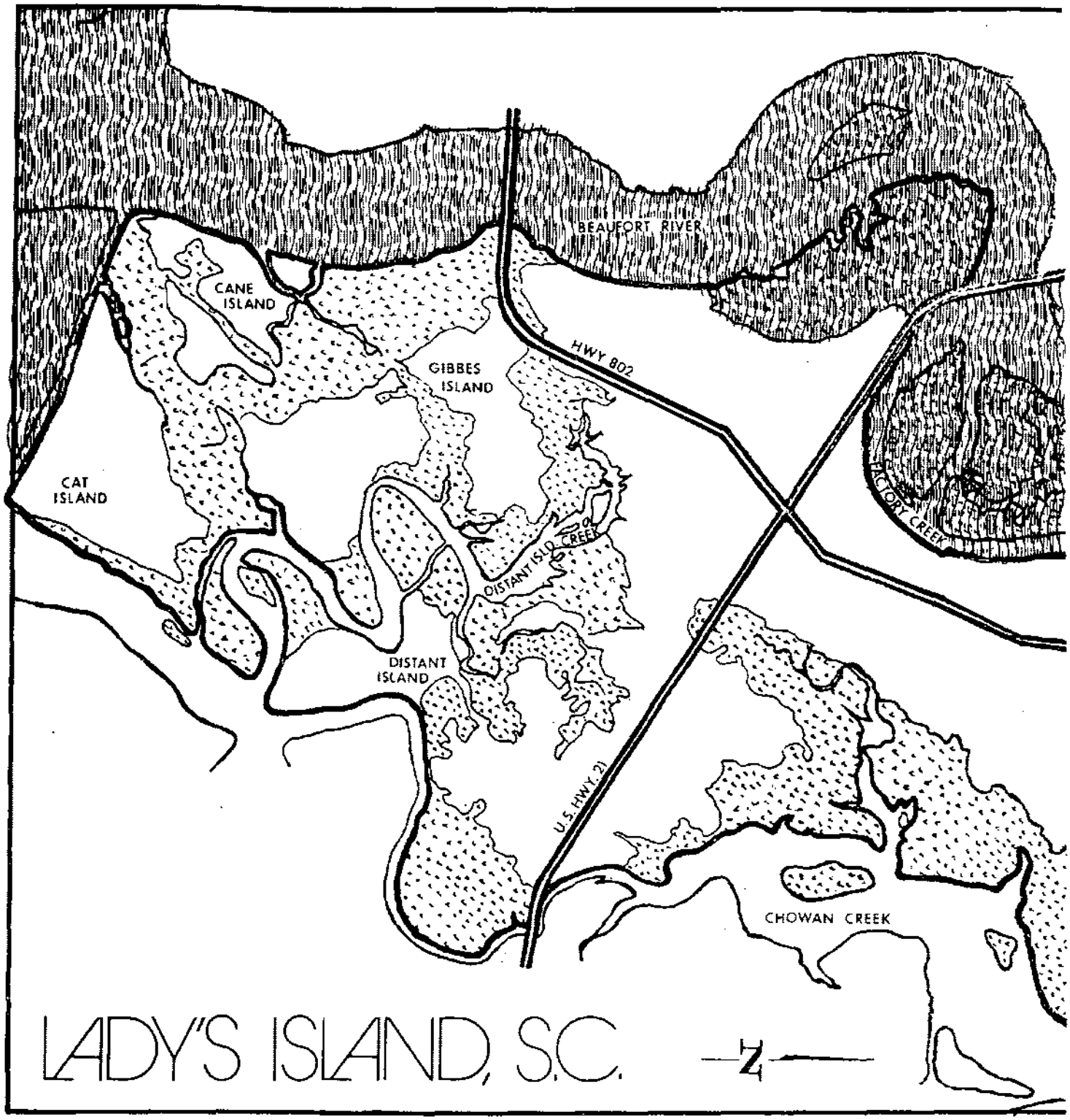
As shown on Map 7, all of the waters around Lady's Island are now rated SA by DHEC, except the Beaufort River which is SB. As of this writing DHEC has not given any waters in South Carolina an SAA rating, although some believe that certain waters in remote locations could be so rated. Table 6 shows a detailed breakdown of the scientific criteria on the four qualities of salt water. The classification scheme for fresh water is very similar.

TABLE 6
WATER QUALITY STANDARDS

CLASS	GARBAGE, CINDERS, ASHES, OILS, SLUDGE, AND OTHER REFUSE	TREATED WASTES THERMAL DISCHARGES TOXIC WASTE, ETC.	DISSOLVED OXYGEN	COLIFORM	pH	TEMPERATURE	TURBIDITY
SAA	None	None	$\geq$ 5 mg./l	$\leq$ MPN total coliform median of 70/100 ml; nor shall >10% of samples exceed an MPN of 230/100 ml.*	Natural Levels Only	Natural Levels Only	Natural Levels Only
SA	None	None alone or in combination to adversely affect the color, odor, sanitary condition of shellfish; or to impair the best usage of the waters	Daily average > 5 mg/l., with a low of 4 mg/l except those due to natural conditions	Same as SAA	6.5 to 8.5 but not >.3 pH units different from natural levels	As prescribed in c. (7) of WCS†	None
SB	None	None alone or in combination to make waters unsafe or unsuitable for primary contact (swimming)	Same as SA	$\leq$ geometric mean of 200 /100 ml. based on 5 consecutive samples during any 30 day period. Nor shall 10% of these samples exceed 400/ 100 ml.	6.5 to 8.5 but not > .5 pH units different from natural levels	Same as SA	None
SC	None	None alone or in combination to be harmful to survival of marine fauna; to adversely affect fish for human consumption to make waters unfit for secondary human contact	$\geq$ 4 mg/l	$\leq$ geometric mean of 1000/100 ml based on 5 consecutive samples during any 30 day period, nor shall more than 20% of samples exceed 2000/ 100 ml.	6.5 to 8.5 not > 1.0 pH units different from natural levels	Same as Sa	None

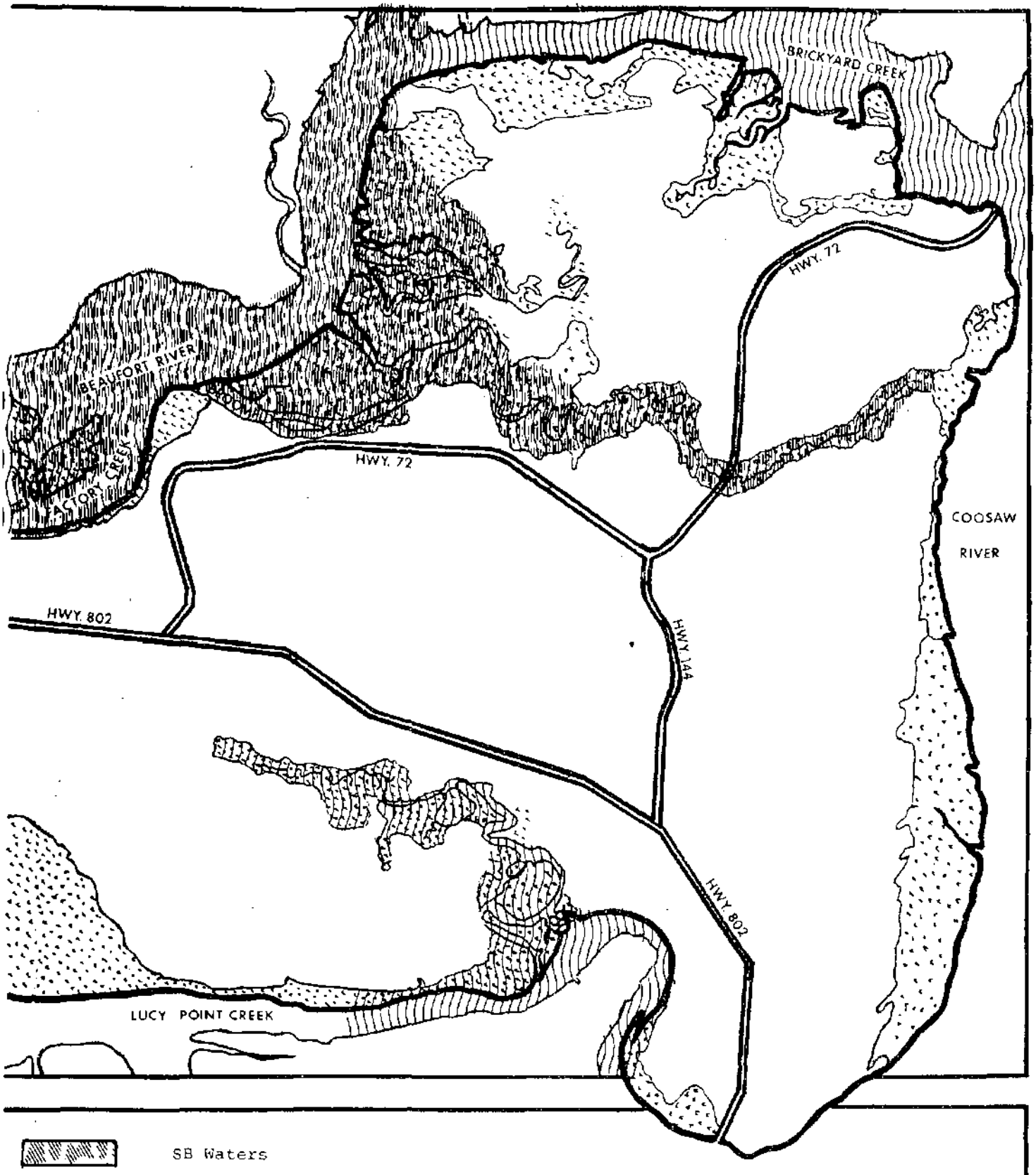
* 5 tube Dilution Method

†Water Classification Standards System for the State of South Carolina, Office of Environmental Quality Control, S.C. Department of Health and Environmental Control, Columbia, S.C., 1983.



map 7

WATER QUALITY



SB Waters

Closed to Shellfish Harvesting

All other waters are class SA and are open to Shellfish Harvesting

SOURCE: The Environmental Quality Control Office of the S.C. Department of Environmental Control, 1984

Closed shellfish beds are an excellent indicator of water quality and also act as a check on DHEC's water classifications system. Closed shellfishing areas around Lady's Island are: all of the Beaufort River, most of Brickyard Creek, the confluence of Chowan Creek and the Beaufort River along the eastern shore of Cat Island, the area around the confluence of Little Lucy and Lucy Point Creeks and Broomfield Creek approximately south of SC 72.

Tidal waters are not explicitly considered in the suitability analysis for two reasons 1) they can't be built on; 2) the effect of non-point source runoff from surrounding developments is measurable, but pinpointing the exact source is difficult. However, good water quality is an important community value which should be carefully considered in the context of development.

b. **Groundwater**

Depending on the location of the water in question, its quality is monitored by either DHEC or the S. C. Water Resources Commission (SCWRC). DHEC monitors bacteria levels and other health standards in groundwater used for human consumption. SCWRC monitors quantity of water used and overall water quality.

In 1979 the Report on Ground-Water Conditions in the Lowcountry Areas, SC, was prepared by SCWRC. The Report recommended that Beaufort County and the Lowcountry region be declared a "capacity use" area in order to monitor water levels and water quality in the Santee Limestone Aquifer (the major source of potable ground water, also known as the Principal Artesian Aquifer). Monitoring is performed to assess the quantity of available water and any salt water contamination. Beaufort County is now part of the capacity use area, and is subject to certain regulations. Wells pumping more than 100,000 gallons per day are subject to construction and reporting criteria.

The upper Santee Limestone Aquifer is the most important source of fresh ground water in the Lowcountry. It ranges in depth from 25 to 100 feet below the surface and produces fresh water under artesian pressure. Over 80 percent of the ground water pumped in the Lowcountry is from this aquifer. The 20 percent balance is supplied from the Black Mingo, Black Creek, Tuscaloosa and Hawthorne-Recent formations. The total thickness of limestone formations in this area is approximately 600 feet.

On Lady's Island there are many residential and irrigation wells. Two users are large enough to belong to the capacity use program. They are Royal Pines Country Club and Pleasant Point Plantation. In 1983 Royal Pines Country Club used 98,193,000 gallons of ground water for golf course irrigation. Figures for other users and years are not yet available. All other users pump less than 100,000 gallons per day. The increasing pace of development is certain to increase the number of high-volume users on the monitoring program.

Maintenance of the Santee Limestone Aquifer system's integrity is important to preserve a large source of potable water. The quality of ground water in the aquifer can be affected by salt water

intrusion. Salt water may leak into the aquifer from above or below. Withdrawing too much water may cause salt water intrusion and contamination.

Ground water is classified by the amount of dissolved mineral constituents, as well as chloride concentration, it contains. The range of water quality is "good" to "unacceptable for human consumption" (250 mg/l chloride or 500 mg/l dissolved solids). According to preliminary results of the SCWRC's detailed ground water survey of Lady's and St. Helena Islands, the test wells show no significant salt water intrusion. Lady's Island ground water is not yet affected by salt water intrusion as are some of the outermost islands such as Fripp.

The SCWRC study further indicates that a significant aquifer recharge zone is located on northern Lady's Island. Results of monitoring test wells indicate a higher-than-expected static water level.

All of the recharge areas for the Santee Limestone Aquifer have not been located. So far as is known today, the other principal recharge areas are on Hilton Head Island and in the vicinity of the Beaufort County Industrial Park and Marine Corps Air Station in Burton.

The mechanics of aquifer recharge are basic. The principal geologic formation underlying Lady's Island is Eocene to Paleocene limestone (about 20 million years old). Water dissolves the limestone into what geologists call a Karst topography. Karst landscapes are characterized as "an irregular topography characterized by sinkholes, caverns and a lack of surface streams in humid regions because an underlying carbonate formation has been riddled with underground drainage channels that capture surface streams".[1] The danger to ground water supplies is obvious: Polluted surface water can easily enter the ground water through the holes and channels in the limestone.[2] Figure 3 shows the mechanics of sinkholes and the ease with which surface water can slip into the aquifer.

Aquifer recharge areas typically include sinkholes and large areas of permeable deposits and contain little or no confining unit. More research is needed to determine the location of sinkholes in the recharge area(s). The most likely location of sinkholes is in the depressions mapped by the U. S. Geological Survey, shown on Map 8. Surface water enters the aquifer generally in recharge areas. The two are not separate entities, but parts of the same general system. Map 9 shows the area of the highest static water level which is the location of the recharge area.

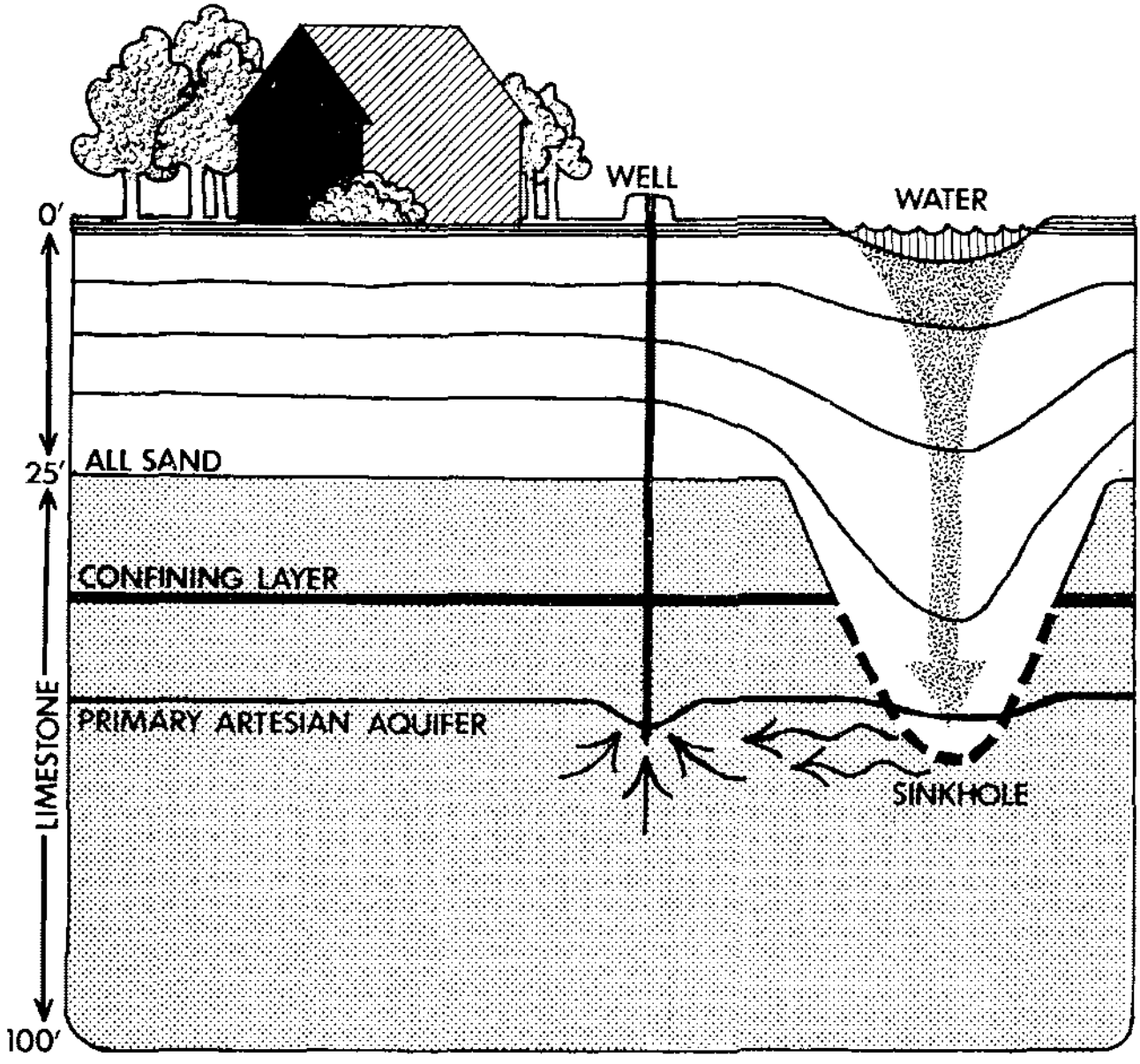
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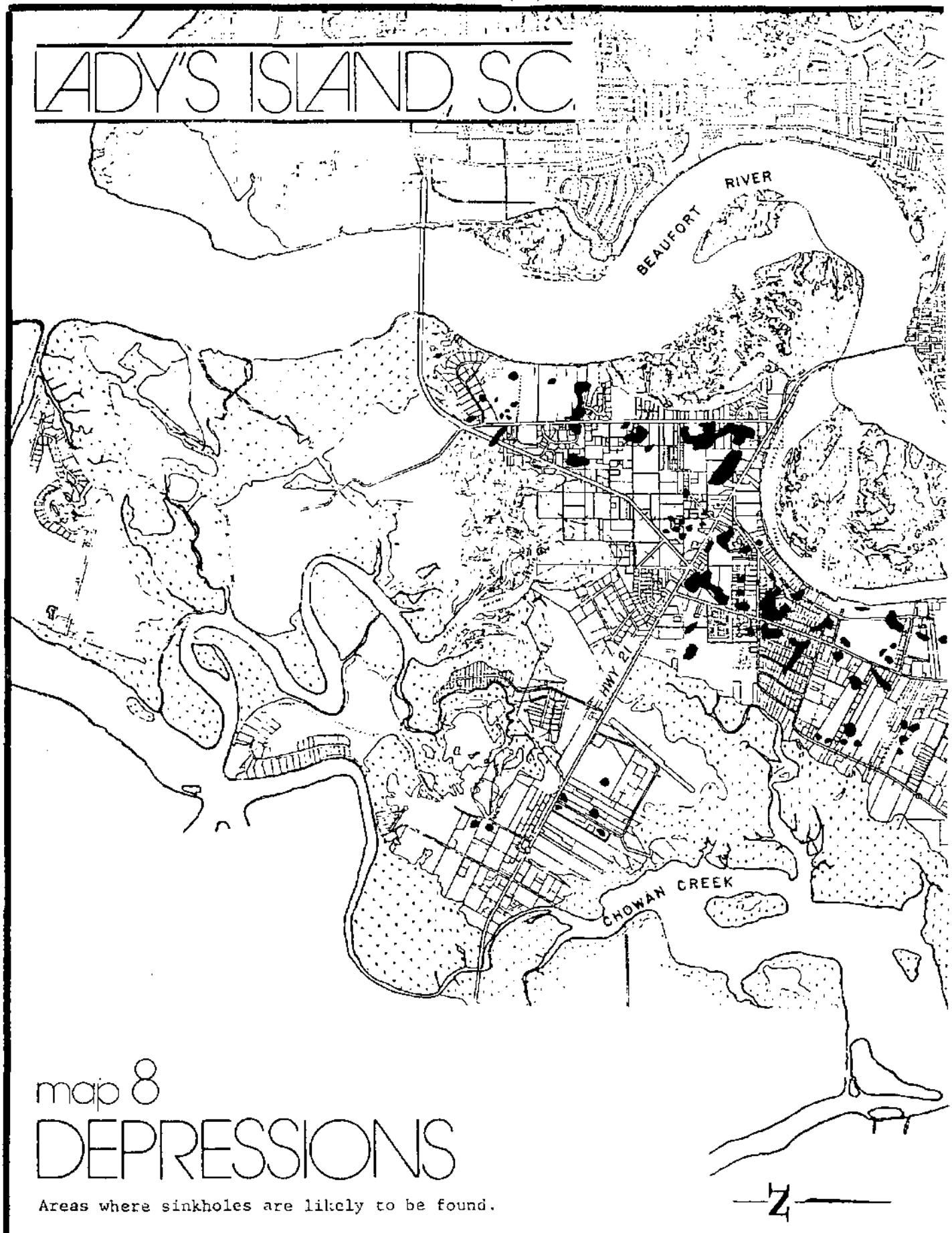
[1]Earth, by F. Press and R. Siever, W. H. Freeman and Co., San Francisco, 1984, p. 913, and
Jeff Hassen and George Siple, Water Resources Commission interviewed April 1984

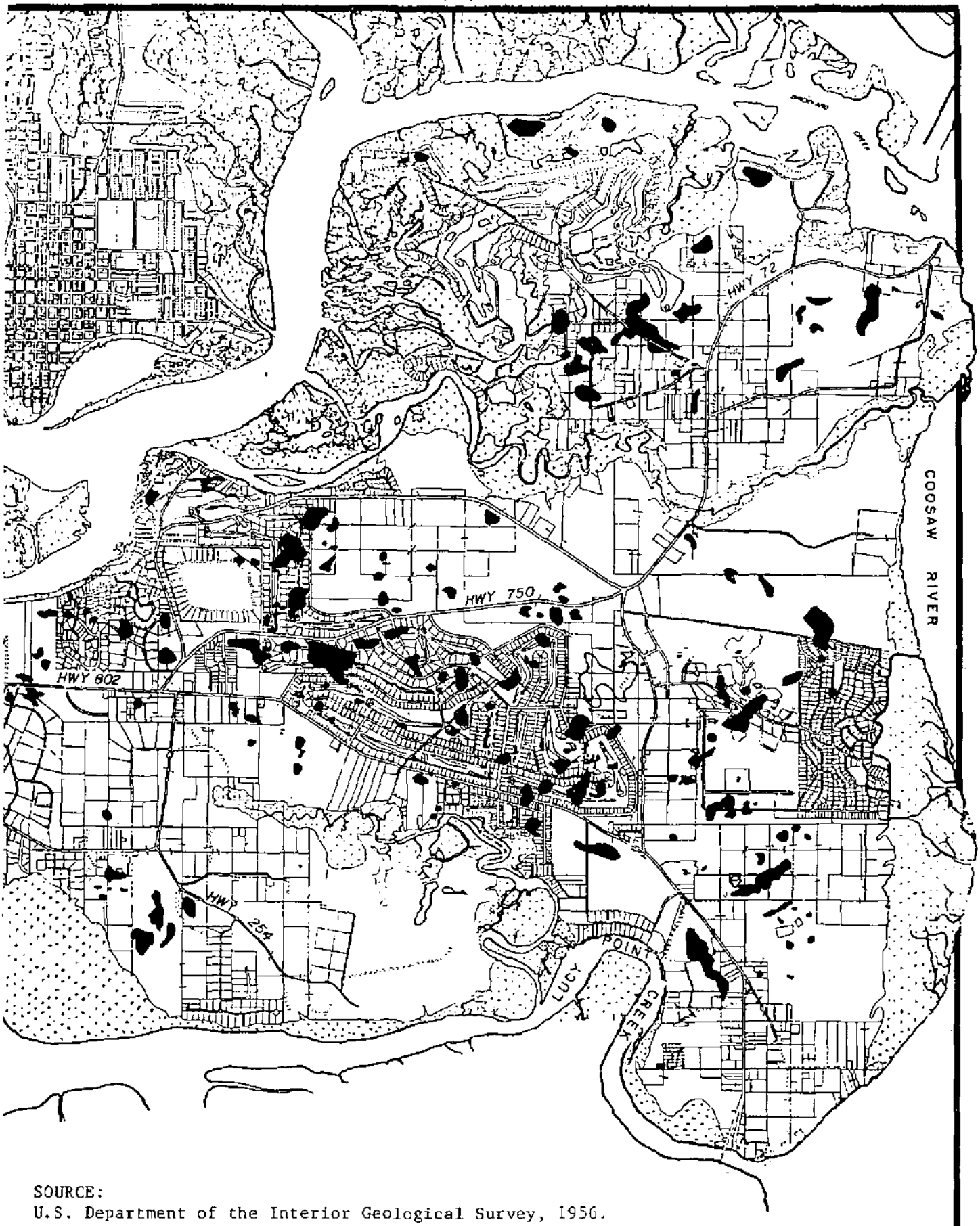
[2]Review of Sinkhole Collapse Problems in a Carbonate Terrane, by B.C. Spigner, S. C. Water Resources Commission, Columbia, S.C. 1978; Land Surface Collapse and Groundwater Problems in Jamestown, Berkeley County, S.C., by B.C. Spigner, S. C. Water Resources Commission, Columbia, S.C. 1978.

Figure 3:

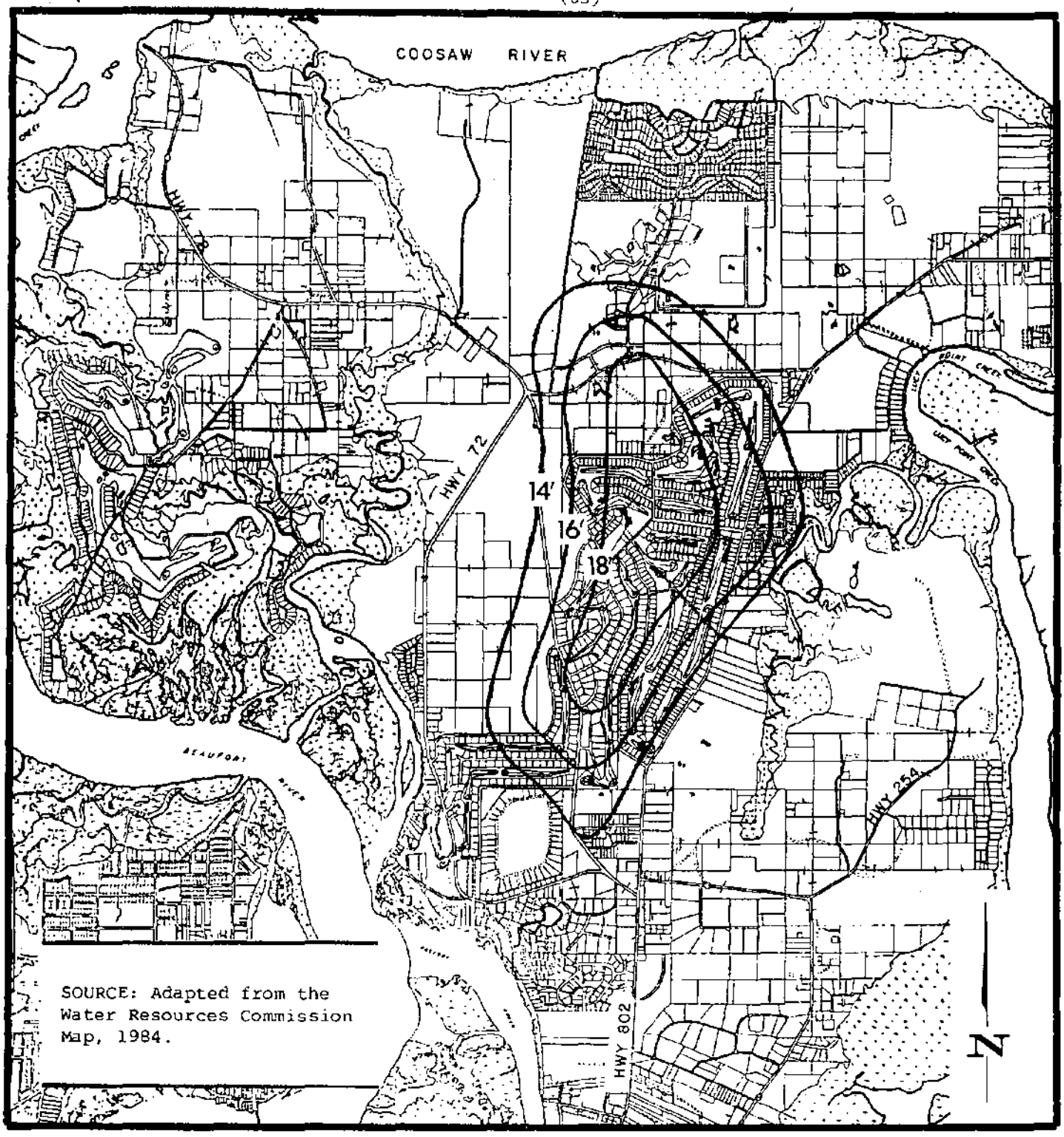
Typical Karst Topography showing a Sinkhole & how the groundwater aquifer may be polluted




LADY'S ISLAND, S.C.
BEAUFORT RIVER
HWY 21
CHOWAN CREEK
map 8
DEPRESSIONS
Areas where sinkholes are likely to be found.
N



SOURCE:
U.S. Department of the Interior Geological Survey, 1956.



LADY'S ISLAND, S.C.

map 9 Aquifer Recharge Zone

—14'— PIEZOMETRIC CONTOUR LINE (Static well water level, in feet)

There is reason for some concern regarding pollution of the aquifer from inappropriate land uses. Such things as pesticides, toxic wastes or human waste (from any source, for example: malfunctioning septic tanks) should not be carelessly disposed of in a recharge zone.

c. **Wildlife Habitat**

Wildlife is important as an indicator of environmental quality and for its aesthetic appeal and reminder of the natural world of which we are a part. Even political symbols echo the strong local identification with wildlife for both economic and aesthetic reasons. For example, the egret is the symbol of the Lowcountry Council of Governments; a leaping fish and a shrimp boat can be found on the Beaufort County seal.

Protection of wildlife and wildlife habitat is recommended in the Greater Beaufort Area Comprehensive Plan. Wildlife preservation is also explicitly mentioned in the Development Standards Ordinance; as part of the definition of a Conservation District, Section 3.2.1 (c) which includes "...any natural land-locked bogs, swamps, lakes, ponds, sinks, or low lying areas determined to be unique or important wildlife habitats or possess unique scenic and recreational value." Special standards which severely limit human disturbances apply to all lands located within conservation districts.

The S.C. Wildlife and Marine Resources Department has identified some important wildlife habitat. Some of this habitat is within known Conservation Districts, some of it is not. By no means all of the important wildlife habitat in the Lady's Island area has been identified - no individual or agency has conducted an island-wide inventory. The following list should not be considered to be in any way definitive:

TABLE 7
LADY'S ISLAND WILDLIFE

Species	Location	Official Status, if Any
American Bald Eagle*	Nests in mature pines at Pleasant Point, feeds in freshwater ponds	State and Federal endangered status
Wood Duck*	Nests in ponds at Marsh Harbour	
Great Egret & Small Egret*	Rookeries-Tax Map 5 Parcels 2&3 (parts only)	
Coral Snake*	Tax Map 5, Parcel #43, 3, 38 Tax Map 6, Parcel #1A (only parts of these parcels involved)	
Snowy Egret, Great Egret, Great Blue Heron Rookery+	Map 11, Parcel 1, SC 254 South of Ashdale Sub-division	
Osprey+	Shore of Beaufort River near Yacht Club	SC threatened species status
Osprey+	Shore of Brickyard Creek, Pleasant Point	SC threatened species status
Osprey+	Wetland west of Wilkins	SC threatened species status

* Identified by Port Royal Office of the S.C. Wildlife and Marine Resources Department.

+ Identified by S.C. Heritage Trust, S.C. Wildlife and Marine Resources Department.

The S.C. Wildlife and Marine Resources Department has never conducted a botanical survey of Lady's Island. The Department has identified some "intermittent wet depressions" and wetlands which "may harbor rare plant species". The Wildlife Department suggests that these wetlands "be provided with a buffer (zone) and protected".

These wetlands are located east of the intersection of SC 254 and Shorts Landing Road, south of S-72 near the Lady's Island Baptist Church and generally within Marsh Hawk and Royal Pines Plantations. For more precise information on the location of these wetlands contact either the JPC or the S.C. Heritage Trust, a division of the Wildlife and Marine Resources Department.

State and federally protected rare, threatened or endangered species occurring on or in the vicinity of Lady's Island for which important habitat has not yet been officially determined are: Eastern Brown Pelican, Ridley Sea Turtle, Atlantic Hawksbill Sea Turtle, Leatherback Sea Turtle, American Alligator, Porpoise and Whales (eight species).

In addition, all of the waters that are not closed are open to recreational and/or commercial shellfishing. Around Lady's Island that means all waters except the Beaufort River, Brickyard Creek, Broomfield Creek, and the area around the confluence of Lucy Point and Little Lucy Creeks are open for shellfishing. The intertidal and estuarine waters around Lady's Island are also important for the propagation of shrimp and fin fish.

All of the areas identified thus far as being of special environmental concern are in some way connected with water. They are by no means the only important areas. All are perceived as being important to human health, economy or aesthetics. The philosophical question of their right to exist regardless of human plans is outside of the scope of this inquiry. In a sense, environmental concerns can only be dealt with by government after they have been measured and quantified by science. Much scientific inquiry needs to be made of the environmental concerns, known and undiscovered. This study seeks merely to point out the current concerns of the government, scientific and general public communities.

C. SOCIO-ECONOMIC INVENTORY

1. EXISTING LAND USES

The current patterns of the utilization of land give a good indication of the character of a community. Historical data on the changes in land use patterns may yield a good indication of the way in which a community will continue to grow and change in the future. Urban land use patterns, especially those which include sewers, water lines and roads are very resistant to change.

The existing land use pattern, as of the Winter of 1983-84, is shown on Map 10. The current pattern is one of a commercial concentration along U.S. 21, "small"-lot single family residential clustered along U.S. 21 within a mile of the highway and larger lot residential dispersed in large scale or individual developments throughout the island. Individual mobile homes are also scattered across Lady's Island, with mobile home developments concentrated within a mile of U.S. 21. Undeveloped land and farmland is concentrated in the northern third of the island.

a. **Historical Sites**

In June, 1979 the Lowcountry Council of Governments published the Historic Resources of the Lowcountry which is an extensive inventory of sites having historical significance in the counties of Beaufort, Colleton, Hampton and Jasper.

Only one site was identified on Lady's Island, The Lady's Island Baptist Church on Brickyard Creek Road. The Resources book describes the church as "...built circa 1855 in the Greek revival style. The two-story frame church has a pedimented portico supported by four square columns. Windows in the four-bay-wide structure are nine over nine lights. A one-story addition was built to the rear of the church around 1925."

The S.C. Department of Archives and History has not "systemically surveyed" the island "for cultural resources and there is the strong possibility that additional archaeological sites (both prehistoric and historic) and significant historic structures may be located on Ladies Island."[1] In addition to the Baptist church, Archives and History has identified six archaeological sites.

Archaeological sites are the greatest untapped source of information about early-colonial and pre-Columbian history in the Lowcountry, but only if they can be excavated by professional archaeogists. As the site is excavated, it is also destroyed, but the information uncovered is recorded scientifically so that it is available for all future historians. Souvenir hunters and other non-professional diggers can accidentally destroy sites of great historical value.

Every effort should be made to preserve archaeological sites until they can be professionaly examined. Unfortunately, there is no public money available for field archaeology.

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[1]Letter from S. C. Department of Archives and History, April 24, 1984.

The Department of Archives and History urges anyone considering developing a site containing an archaeological site to contact them for assistance and advice. The Joint Planning Commission also has information on significant historical and archaeological sites.

b. **Farmland**

As recently as the 1960s, the principal land use of Lady's Island was agriculture. As the population of the island has grown, as the island has become urbanized, the amount of land in agricultural uses has declined precipitously.

The Agricultural Stabilization and Conservation Service of the U.S. Department of Agriculture estimates crop yields and records the acreage in production. In 1978 806.2 acres were registered in active agricultural production. By late 1983, total agricultural acreage declined to 479.6 or below.

The remaining acreage is principally in two large blocks, one in the Brickyard Point/Broomfield Creek area (263.8 acres) and one in the vicinity of Holly Hall and the Warsaw flats (125.5 acres).

As population pressure and real estate taxes increase, the amount of farmland will decrease. The farmland on Lady's Island is held by a relatively few individuals. Thus, the conversion of even one farm to some other use will remove a large fraction of the existing agricultural acreage. If current trends continue there will only be a nominal amount of farmland on Lady's Island in the near future.

2. POPULATION PROJECTIONS AND ECONOMICS

The size and composition of the population of Lady's Island has changed dramatically in this century. Before World War II, the island was almost entirely rural, agricultural and black. Since that time, Lady's Island has become residential, suburban, and a mixture of the relatively affluent and the working class. The most important-to-ask and difficult-to-answer questions of this section are, "What will the population be like in the future?" and "What will the future economic base be?"

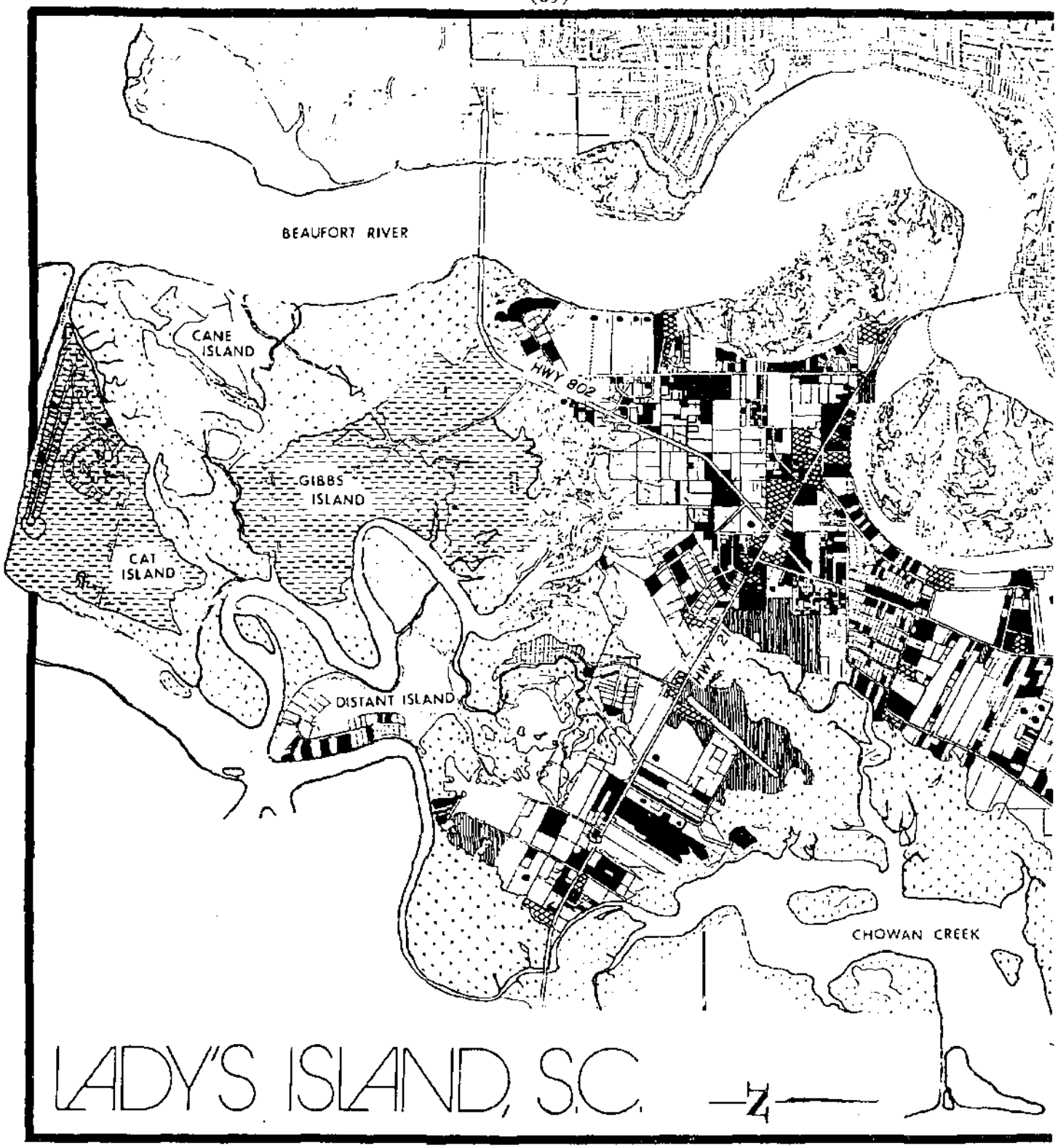
Accurate figures on the population of Lady's Island were not kept until relatively recent times. Before 1970, the U.S. Census Bureau included Lady's Island with the St. Helena Census Division, as Table 8 shows. The St. Helena Division is comprised of St. Helena, Lady's,

Table 8
Population, 1940-1980

	1940	1950	1960	1970	1980
St. Helena Div.	4,266	4,861	6,048	5,718	8,134
Lady's Island	N/A	N/A	N/A	1,995	3,120
St. Helena Island	N/A	N/A	N/A	3,723	5,014

Source: U.S. Census Bureau, Decennial Census

Fripp, Datha and all the other islands east of the Beaufort River. The population of the division grew until the early 1960s, declined slightly by 1970, then increased 42% by 1980.

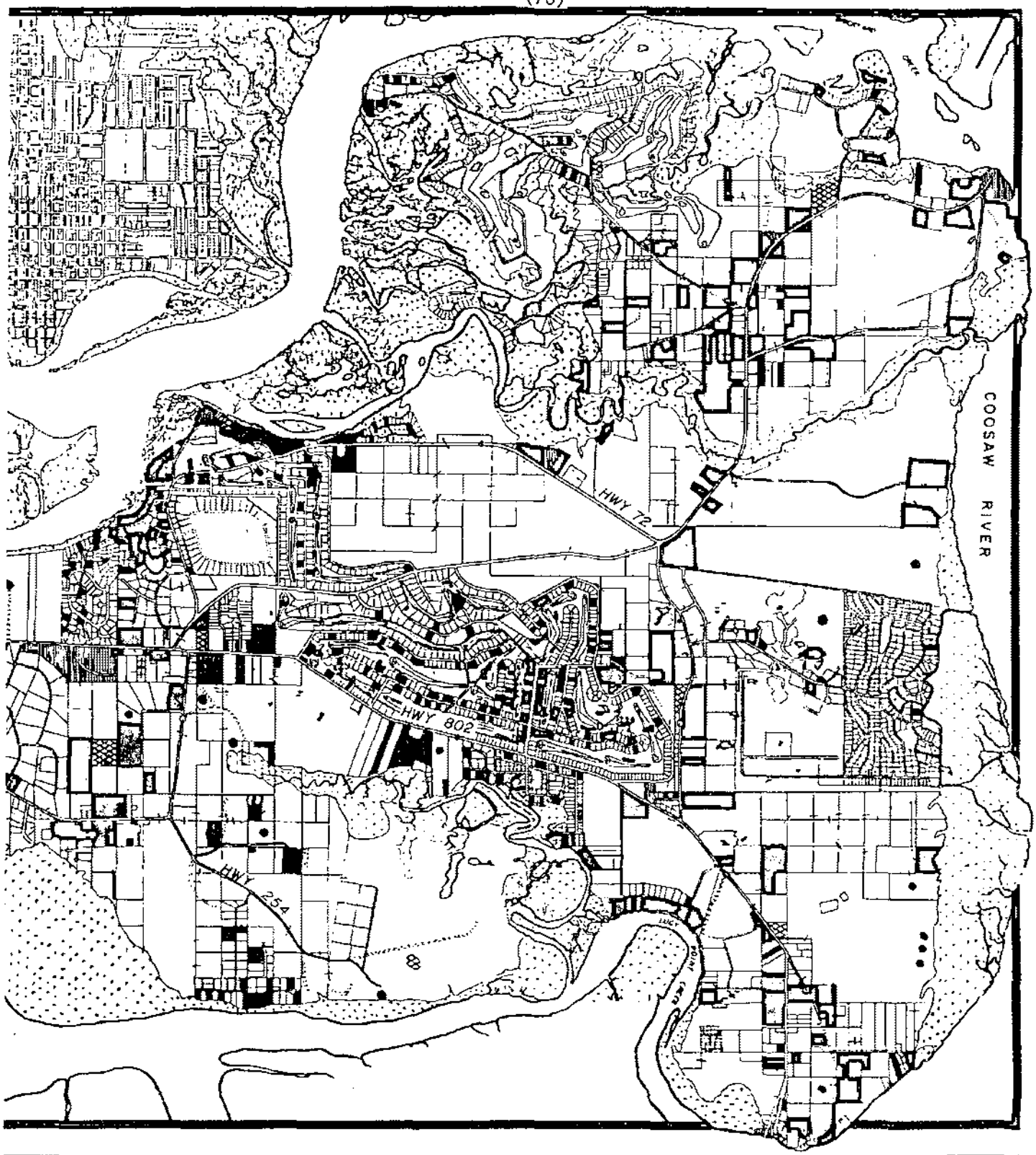


map 10

Current LAND USE

SOURCE: JPC Staff

(70)



P.U.D.s
Planned Unit Developments

COMMERCIAL

RESIDENTIAL
Single & Multi-Family, Mobile Homes

INSTITUTIONAL Schools, Churches
Public or Government Property

TABLE 9
POPULATION CHANGES BY RACE AND RESIDENCE
BEAUFORT COUNTY, 1900 - 1980

YEAR	1900	1910	1920	1930	1940	1950	1960	1970	1980	1982
Total	35,495	30,355	22,269	21,815	22,037	26,993	44,187	51,136	65,364	74,600
White	3,349	3,963	4,801	6,243	7,256	11,472	27,083	33,864	42,554	N/A
Non-White	32,146	26,392	17,468	15,572	14,781	15,521	17,104	17,272	22,910	N/A
Rural	31,378	NA	19,397	19,045	18,840	21,912	37,889	25,479	25,800	N/A
Urban	4,117	NA	2,872	2,770	3,195	4,081	6,298	25,657	39,564	N/A
% Urban	11.6%	NA	12.9%	12.7%	14.5%	18.8%	14.3%	50.2%	60.5%	N/A

Sources: Twentieth Century Changes in South Carolina's Population, 1970 Census, Preliminary Report on Housing, 1980 Census of Population, Current Population Reports Series P-25, all published by the U. S. Census Bureau.

Assuming that the demographics of Lady's Island are roughly comparable to those of the County as a whole in the first half of this century, population patterns have shifted radically. Table 9 details the changes for the County from 1900 on. For the years 1900-1950, no specific Lady's Island figures exist.

The 1980 Census contains a wealth of detail about Lady's Island. While useless for establishing trends, this single census can be used to produce a snapshot of the situation in 1980. The Census Bureau divides Lady's Island into two tracts, called enumeration districts. Unfortunately, the tract boundaries are changed with each decennial census, making geographic comparisons between the 1970 and 1980 Census difficult. Nonetheless, Lady's Island as a whole can be compared between Census (see Table 12), and some information may be gleaned by comparing enumeration district data for 1970 and 1980. Maps 10 and 11 show the enumeration district (ED) boundaries for 1970 and 1980, respectively.

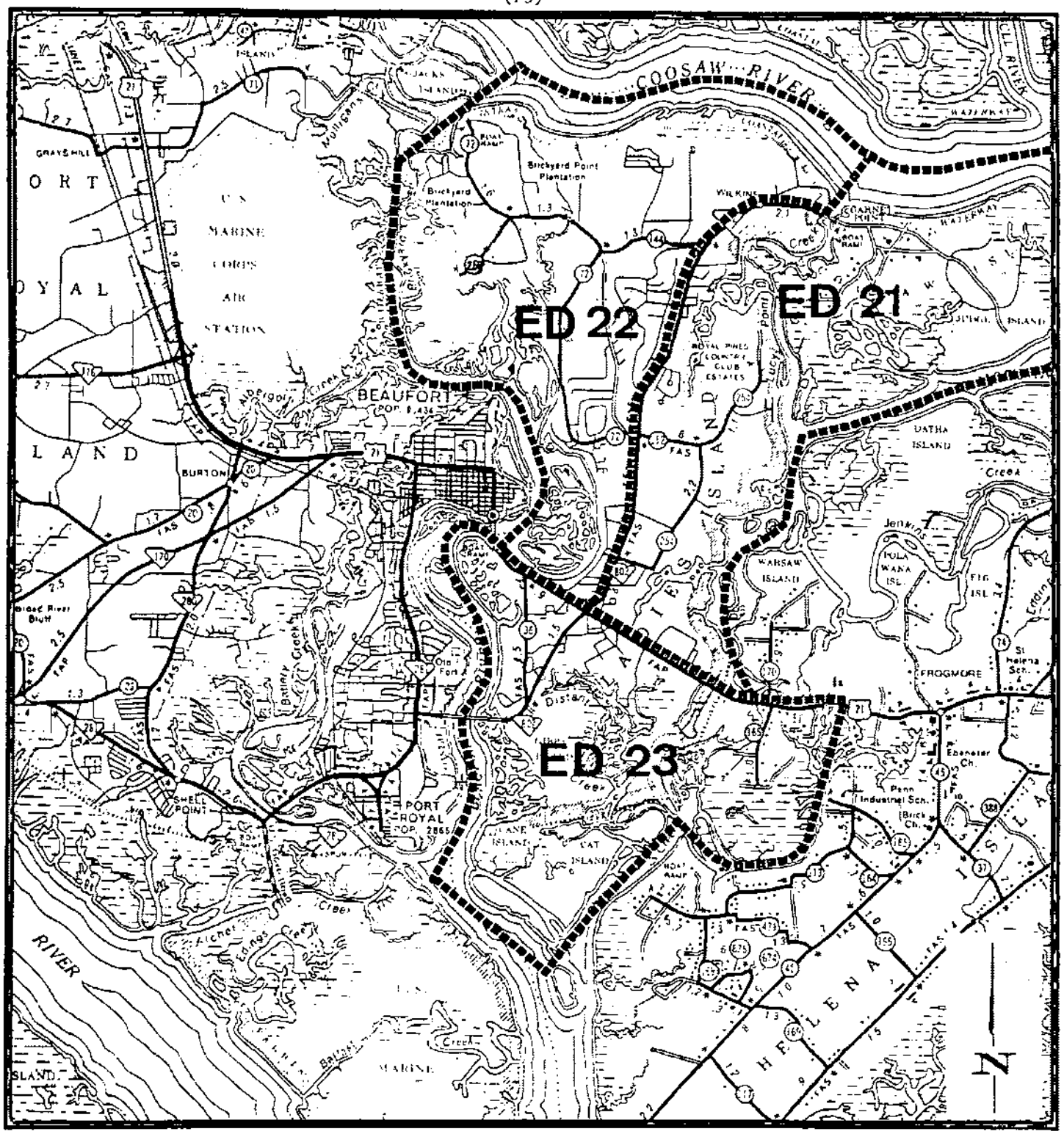
For Lady's Island the 1970 and 1980 Census are somewhat comparable. Different information was gathered in each Census, so some data categories cannot be compared at all. However, population, age, and some information on housing units are directly comparable.

The total population of Lady's Island increased 56% from 1970 to 1980. In 1970 the racial breakdown was 48% white, 52% black. In 1980 the Island's population was 38% black and 62% white. In this racial shift Lady's Island lagged behind Beaufort County as a whole (see Table 9).

The age of the Lady's Island population has also changed over this time period. The percentage of people aged 1 to 21 has decreased, all others have increased. The biggest increase was in the over 59 age bracket, from 10.6 to 21.1% of the population. Once again, the County-wide trend of increasing size of the older segments of the populations is borne out on the smaller scale of Lady's Island. However it is too early to tell how far this trend will progress. There is every reason to believe that Lady's Island will remain a reasonably diverse, mixed-age community for the foreseeable future.

TABLE 10
LADY'S ISLAND CHANGES IN AGE COHORTS BY PERCENT, 1970 TO 1980

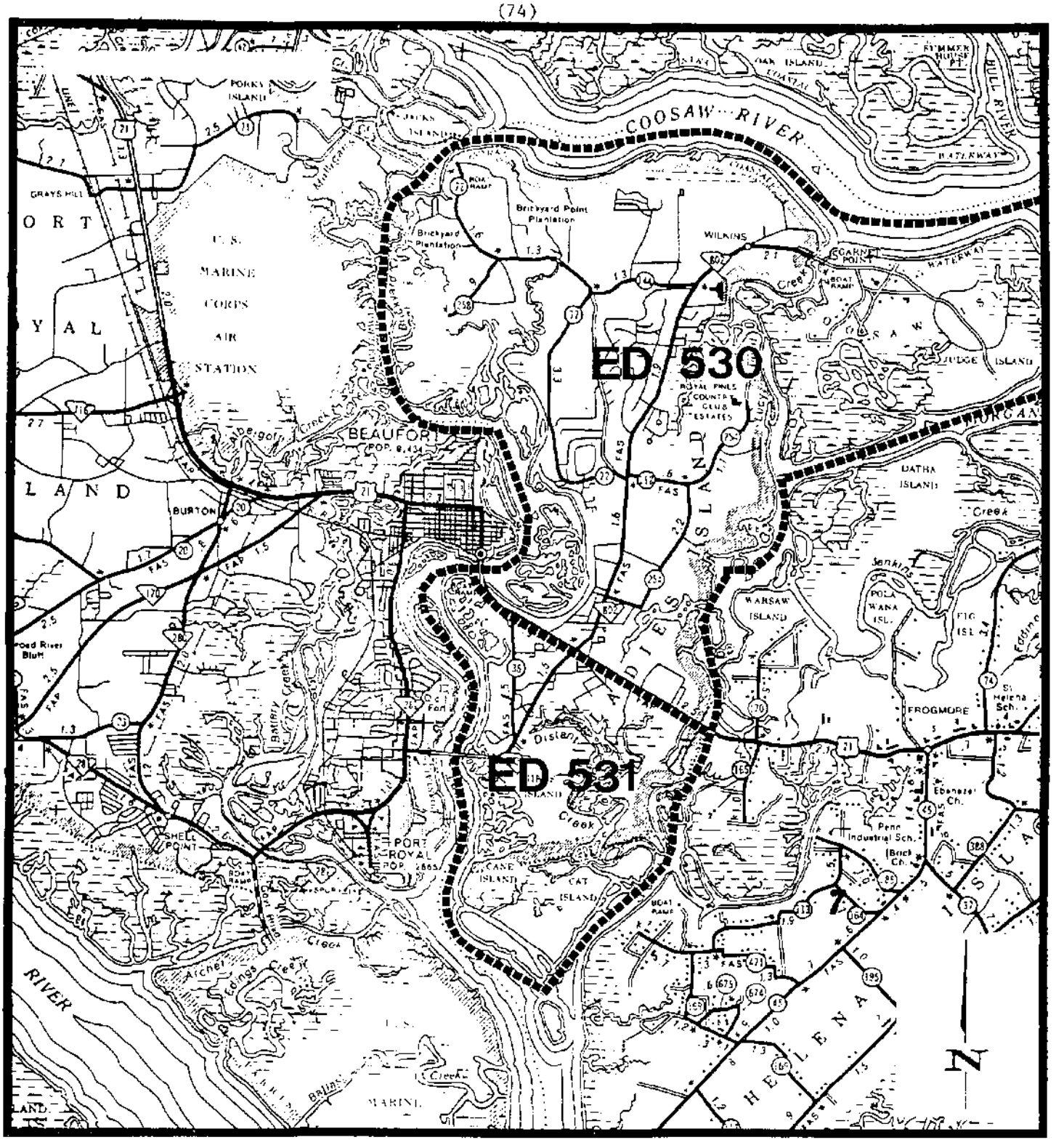
Age In Years	< 5	5-15	16-21	22-59	60+
1970	10.3%	26.0%	13.6%	39.5%	10.6%
1980	7.3	15.8	10.5	45.3	21.1



LADY'S ISLAND, S.C.

map 11

Enumeration Districts 1970



LADY'S ISLAND, S.C.

map 12

Enumeration Districts 1980

Median family income in ED 530 (northern Lady's Island) in 1979 was above $20,000/annum. For Beaufort County as a whole, median family income in 1979 was $17,044. Median family income was not compiled in the 1970 Census. Housing values were compiled, however, and they increased much faster than inflation on Lady's Island. This is probably a reflection of higher than average incomes on the island. See Table 12 for further details.

Table 12 shows the composition of the labor force in 1980. Since the end of World War II there has been a continuing trend toward less fishing and agricultural employment and more professional, retail trades - type employment. In order of decreasing size, in 1980, employment by industry was: professional services, wholesale and retail trade, construction, manufacturing, finance/insurance/real estate, personal/recreation services, business/repair services, agriculture/forestry/fisheries/mining, public administration, communications/public utilities, and transportation. The first two categories, professional services and trade, comprised 43.6% of those employed.

Considering all of these statistics and the trends they point out, the inescapable conclusion is this -- Lady's Island is changing from a poor, black, rural to an affluent, white suburban community. Incomes and housing values have increased; most people work in an office or service business instead of on a farm or fishing; and the population is older. General trends and statements can be deceiving. In 1984 Lady's Island is really two communities -- the older community with the newer community superimposed around it. Lady's Island will probably be a mixture of these two communities for the foreseeable future, not a homogeneous resort or retirement community.

If the general direction of change is clear, the quantity of change is not. Reasonable projections of population growth are needed for any future planning. The number and date of sub-divisions, trailer parks, apartments, condominiums and the like is a good indication of development activity as well as economic activity. Developments which began before the Beaufort County Development Standards Ordinance was enacted in 1978 do not appear in Table 13. This accounts for the large number of "not availables" and "not applicables" in the Year Approved or Built column. Information on the rate of construction in approved sub-divisions is hard to derive. Also, the rate of construction varies drastically from year to year, depending on economic factors controlled by forces outside Beaufort County. The rates in Table 13 are generally for 1982 and 1983. They were obtained from Beaufort County Certificates of Occupancy and various utility companies. Due to the volatile nature of the real estate market, the short life span of marketing figures and the lack of detailed historical records, the construction rates should be used with caution.

The rate and number of developments approved and the number of building permits issued can provide a rough sketch of development activity on Lady's Island. In this case, the figures are uncertain because there is no guarantee that a given subdivision will ever be filled or a house constructed after a building permit is let. According to Table 14, the vast majority of subdividing took place before 1979. Activity reached a lull in 1981. The 1982 figure is an anomaly as it includes all the lots for Cat Island, which received preliminary approval in 1982. Nevertheless, it appears that the pace of development is accelerating. So far during the 1980's 1,423 units have received at least preliminary approval, compared to 2,591 for all the years before 1980.

Table 11 1980 CENSUS DATA FOR LADY'S ISLAND BY ENUMERATION DISTRICT

Enumeration District	Total Population	White	Black	Other	AGE <5	AGE 5-15	AGE 16-21	AGE 22-59	AGE 60+	Total Housing Units	Occupied Year-Round Housing Units	Median Persons/ Occupied Unit +	Median Owner-Occupied Non-Condominium Housing Units +	Median Contract Rent +	Median Owner-Occupied Housing Value +
530	2315	1513	786	14	155	331	226	1045	558	980	883	2.21	$444.	$221	$66,000
531	805	406	397	2	75	163	100	368	99	291	265	2.76	$199.	$155.	$31,500
1980 Total	3120	1919	1183	16	230	494	326	1413	657	1271	1148				
21	573	218	354	0	47	170	71	221	64	195	163	3.51°	NA	$28°	$ 9,575
22*	677*	410	266	0	61	162	96	285	73	244	201	3.37°	NA	$72°	$17,690°
23x	745x	335	410	0	98	190	105	282	75	220	208	3.4°	NA	$66°	$11,798x
1970 Total	1995	963	1032	0	206	522	272	788	212	659	572				

(79)

x ED includes part of Frogmore, which was removed by estimation, however some figures may contain an inherent inaccuracy.
* Includes Coosaw Island. + In 1979. ° Mean, in 1969.

Enumeration District	Median Household Income+	Median Family Income+	Per Capita Income+	Persons Below 125% of Poverty Level	Persons 18 years and older by years of school completed: High School 1-3 years	High School 4+ years	College 1-3 yrs	College 4+ years
530	$18,866	$20,814	$ 8,195	596	466	418	313	469
531	$12,723	$13,571	$ 6,095	292	370	232	71	21
TOTAL				888	836	650	384	490

Source: 1970 and 1980 Census of Population and Housing, U.S. Census Bureau, Washington, D.C.

TABLE 12

EMPLOYED PERSONS (16 YEARS OR GREATER) BY INDUSTRY

1980 CENSUS ENUMERATION DISTRICTS	TYPE OF INDUSTRY										
	Agriculture, Forestry, Fisheries, Mining	Construction	Manufacturing	Trade: Wholesale and Retail	Transportation	Communications, Public Utilities	Finance, Insurance, Real Estate	Business and Repair Services	Personal, Recreation Services	Professional Services	Public Administration
530	52	71	80	175	7	18	56	39	65	171	50
531	10	27	39	55	0	29	29	28	17	61	10
TOTAL	62	98	89	230	7	47	85	67	82	232	60
% of Total+	5.8	9.2	8.4	21.7	0.66	4.4	8.0	6.3	7.7	21.9	5.7

(77)

Source: 1980 Census of Population, U. S. Census Bureau.

+does not sum to 100.00% due to rounding.

TABLE 13

LADY'S ISLAND - SINGLE FAMILY RESIDENTIAL DEVELOPMENTS

NAME	BEAUFORT CO. TAX MAP AND PARCEL NUMBER	TOTAL LOTS/DU	SINGLE FAMILY LOTS	YEAR APPROVED OR BUILT	BUILT TO DATE	ESTIMATED RATE/YEAR[7]
Academy Estates	15:553-76	26	26	1983	3	N/A
Altair	103:337-341	6	6	1979	3	N/A
Ashdale	11A:1-63	62	62	1977	18	5
Attaway	10A:1-113	110	110	N/A	32	N/A
Blue Heron Bluff	15:464-585	23	23	N/A	8	N/A
Bluff Farm	14:41-91	80	80	1976,1983	17	18
Brickyard Farms[1]	72 Acres					
Burckmeyer	17:12-36	16	16	1975	12	N/A
Cat Island including Dolphin Point S/D	21A:1-105	1,127 Total 112 Current		1982 1980	10	N/A
Chowan Creek	18:170A-173 19:35-9	10	10	N/A	8	N/A
Colony Gardens, Country Club Bluff & Quail Run	10:29-168, 227-250	135 by Count		N/A	40	N/A
Coosaw Estates/ Rivers Edge[3]	5A:1-261	200	200	N/A	3	N/A
Deer Run	10A:113-153	49	49	1980	5-6	2
Distant Island	18A:79-106	42	42	N/A	9	4
Gay Oaks	16:16-46	31	31	N/A	2	N/A
Gibbs Island	18:76A	108	N/A	1983	N/A	N/A
Harbor View	14:13-40	28	28	N/A	7	N/A
Hudson	19:13A-E	5	5	N/A	3	N/A
Inlet Plantation	18:178-212	34	34	N/A	3	N/A
Lucy Creek Est.	6:108-14, 129-36	16	16	N/A	2	N/A
Lucy Creek Plant.	6:107, 115-23, 144-50	23	23	N/A	13	N/A
Mark Island	3: 1-16	32	32	1978-81	2	N/A
Marsh Hawk Plant.[2]	5:53-76	21	21	1979	6	N/A

TABLE 13 (Continued)

NAME	BEAUFORT CO. TAX MAP AND PARCEL NUMBER	TOTAL LOTS/DU	SINGLE FAMILY LOTS	YEAR APPROVED OR BUILT	BUILT TO DATE	ESTIMATED RATE/YEAR[7]
Marshview	17:1-26	9	9	N/A	5	N/A
Morgan River Est.	16:63-77	15	15	N/A	0	N/A
Oakland	18A:107-94	87	87	N/A	56	N/A
Oakwood	15:528-50	23	23	N/A	10	N/A
Orangegrove Plant.	18A:2-62B	22	22	N/A	6	N/A
Partridge Woods	10:173-209 278-88	49	49	N/A	7	N/A
Pleasant Pt. PIT.[4]	9:A, B	868 proposed 602 initial	602	N/A 1984	19 S/F Built 2 Underway	5
Red Bluff Est.	4:79-99	33	33	1982	7	N/A
Red Oak Drive	16:47-62	17	17	N/A	N/A	N/A
Rock Springs	6:83B-H	7	7	N/A	6	N/A
Royal Gardens	15:118	8	8	1983	8	8
Royal Pines	10B 1-327 10C 1-139 10D 1-142 10E 1-107	711, 790 LCOG	600	N/A	100	15 S/F
Sandy Acres	16:4-4M	14	14	N/A	2 Houses 1 Trailer	N/A
Sangster Village	15:199-237	42	42	N/A	8 Houses 8 Trailers	N/A
Shammy Creek Ldg.	9C:1-51	49	49	1979	0	N/A
Sherwood Forest	15:275-327 499-506	57	57	N/A	11 Trailers 12 Houses	N/A
Spring Knob	10:210-224	15	15	N/A	4	N/A
Sunrise Bluff[6]	15 92A-460	110 123 LCOG	110 123 LCOG	N/A	25+	10/yr.
Sunset Bluff[6]	15:54-67	113 LCOG	113LCOG	N/A	34	N/A
Yacht Club Est.	17:37-51	14	14	1977	2	N/A

TABLE 13 (Continued)
LADY'S ISLAND CONDOMINIUMS

NAME	TAX MAP NUMBER	TOTAL LOTS/DU	YEAR APPROVED OR BUILT	MULTI-FAMILY UNITS	TO DATE
Marshland Villas	10A	6	1984	6	N/A
Tabby Oaks	15	80		80	(40 Under Construction)
Tideland Village/ Marsh Harbor The Landings	10:288,C,E	184	N/A 1984	184	78
Pleasant Point Plantation	9:A, B	266	1984	266	0

See also Royal Pines and Royal Pines Country Club under Single Family Residential Developments.

LADY'S ISLAND MOBILE HOME PARKS

NAME	TAX MAP NUMBER	TOTAL LOTS/DU	YEAR APPROVED OR BUILT	TO DATE	RATE
Jennings	N/A	N/A	N/A	N/A	N/A
Doanes	N/A	13	1976	N/A	N/A
Oakland Hill Park	N/A	11	1974	N/A	N/A
Wallace	N/A	10	1974	N/A	N/A
J. Reddy	15A:508-527	21	N/A	15	N/A
Pratt	10:51 series	9	N/A	7-10+	N/A
Alston's	N/A	8	1976	N/A	N/A
Birds	N/A	12	1978	N/A	N/A

See also Sandy Acres, Sangster Village, and Sherwood Forest under Single Family Residential developments for mixed use (house and trailer) developments.

1. Exempt from Beaufort County Development Standards Ordinance.
2. Phase one only.
3. Partially superseded by Marsh Hawk Plantation
4. 266 Multi-family units planned
5. 200 Multi-family units planned
6. Conflict on total number units between sources. Source is Beaufort County Tax Assessor's office or the Lowcountry Council of Governments.
7. Rate determined from Beaufort County Certificates of Occupancy and from utility companies.
8. Numbers do not run consecutively, so number of lots is not additive.

Sources: Joint Planning Commissio research into the Beaufort County Tax Assessor's office and the Regional Housing Guide, Lowcountry Council of Governments, Yemassee, S. C., 1980.

TABLE 14
SUBDIVISION ACTIVITY BY TYPE, LADY'S ISLAND

Lots/units created	1983	1982	1981	1980	1979 & Before
Single Family	182	1,160	32	49	2,591
Mobile/ Manufactured Housing	0	0	0	0	140
Multi-Family/ Condominium	40	0	0	0	384

TABLE 15
BUILDING PERMIT ACTIVITY BY TYPE, LADY'S ISLAND

	1984+	1983°	1982°	1981	1980	1979	1978	1977
Single Family	27	113°	70°	55	40	41	52	56
Multi-* Family	1	-	-	-	-	6	6	14
Commercial	3	5	7	-	-	-	-	-

*Multi-family building permits may contain multiple dwelling units.
+January through April only.
°Residential not broken out by single & multi-family. All residential included under single family.

Building permits for single family dwellings were issued at the average rate of 49 per year for the years 1977 through 1981, as shown in Table 15. In 1982 the number increased to 70; in 1983 to 113. It is too early to tell if this is a temporary surge in activity or the beginning of a trend. However, the increase in building permits corresponds to the increase in subdivision activity, and may be a reflection of that increase.

Another trend shown in Table 13 under multi-family, but not in Tables 15 or 14 is the increasing number of multi-family developments, especially condominiums. The nation-wide trend toward second homes requiring less maintenance is just beginning to reach Lady's Island. As Table 13 shows, only 78 condominiums received development permits on Lady's Island before 1983. In the first half of 1984 alone 192 condos received at least preliminary development approval. The masterplans for Cat and Gibbs Islands indicate that some multi-family units will also be built there. In the near future increasing numbers of condos and multi-family units will be built, making this the fastest growing segment on the housing market in percentages, if not in total numbers.

Another good indicator of future growth is the overall level of economic activity. An analysis of economic trends compared to a base year gives a general indication of the rate of economic expansion. Unfortunately, historic information on economic indicators is generally not available for an area as small as Lady's Island. The smallest typical unit of economic analysis is all the islands east of the

Beaufort River, including Lady's, St. Helena, Hunting, Fripp, Datha, Harbor, Cat, Gibbs and so on. The information that is available usually does not date before 1980. The economic trends examined for this analysis were: number of water customers, number of residential building permits, membership of the Lady's Island Elementary School, and the number of lots or dwellings units created in new subdivisions or planned unit developments.

TABLE 16
ECONOMIC FACTORS RELATED TO THE BASE YEAR, 1980

Year	Number of Lots or Dwelling Units Created	Relation to Base Year
1980	49	100
1981	32	65
1982*	1,160	2,367 (67)
1983	182	471

Year	Lady's Island Elementary School Pupils	Relation to Base Year
1980	417	100
1981	413	99
1982	392	94
1983	384	92

Year	Residential Building Permits	Relation to Base Year
1980	57	100
1981	79	138
1982	100	175
1983	161	283

Year	Residential Water Customers	Relation to Base Year
1980	934	100
1981	976	104
1982	1,021	109
1983	1,125	120
1984	1,134	121

Year	Commercial Water Customers	Relation to Base Year
1980	30	100
1981	35	116
1982	35	116
1983	55	183
1984	59	197

*Includes 1,127 for the Cat Island development. Without this development the index figures is 67.

Sources: Beaufort County Building Inspection Department, Beaufort-Jasper County Water Authority, City of Beaufort Water Department, Beaufort County Board of Education.

The index or "relation to the base year of 1980" figures were then plotted on semi-logarithmic graph paper in order to present the trends as relatively straight lines. The level of economic activity is a very useful check on the projected rates of population growth.

One significant anomaly "distorts" this data. In 1982 the Cat Island development received preliminary approval for 1127 units. Compared to the base year activity of 49 building permits or an index of 100, this gave an adjusted index figure of 2367. If more data were available, say back to 1970, the line would be much smoother. However, in the period for which data is available only one major development was permitted, making the "composite economic activity line" much more jagged than it otherwise would be.

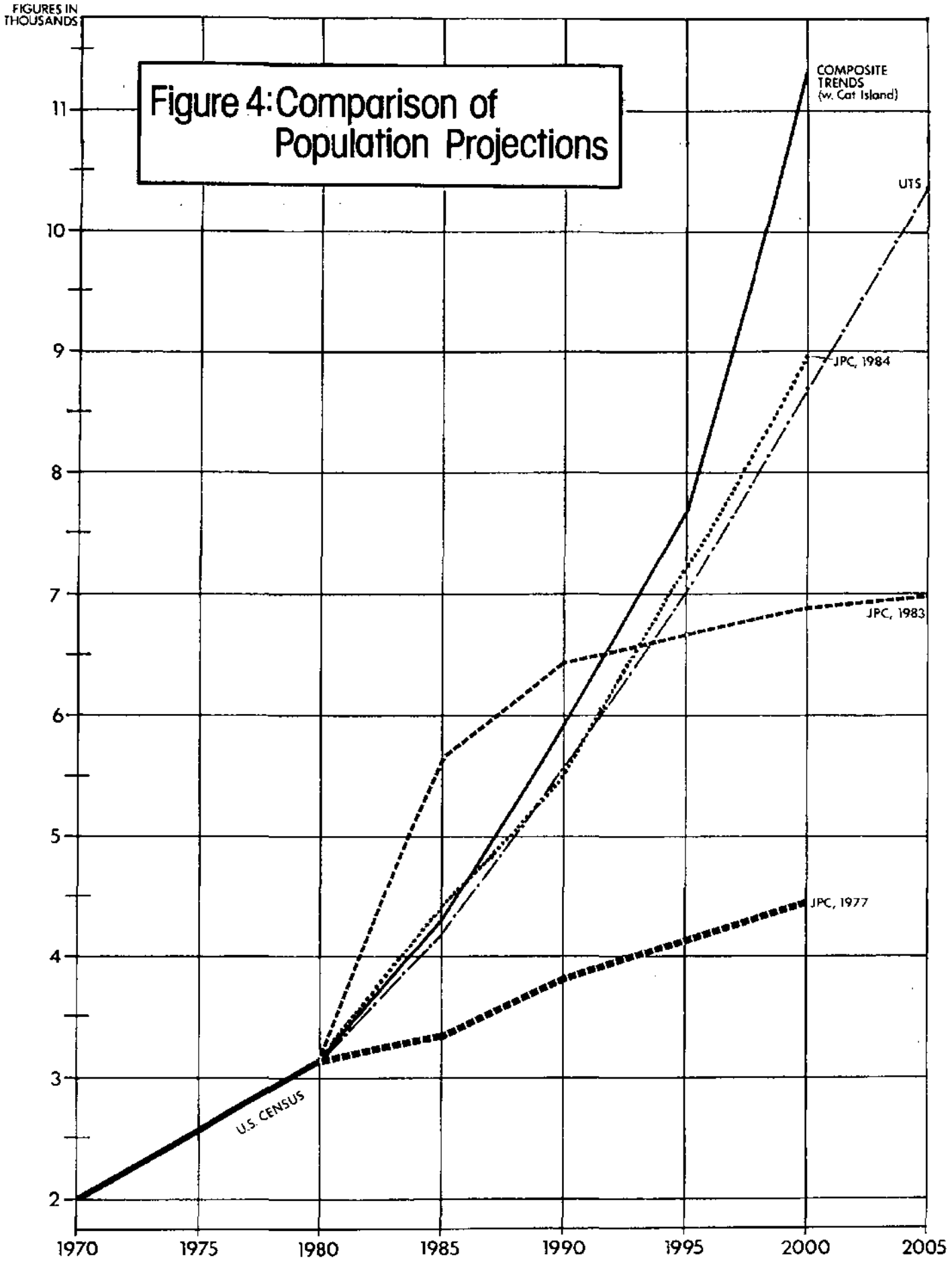
A composite, or average of the economic trends line was created, one including the Cat Island development and one excluding it. As this line was very jagged, a line connecting the mean of the plotted points was created so that it could be compared with the population trends plotted in Figure 4. Figure 4 summarizes all the available population projections made for Lady's Island covering the period 1970 through 2005. For the purposes of this planning study, the "JPC 1984" projection will be used as the most likely prediction of future population growth. The "JPC 1984" projection is in very close agreement with the "composite telephone system projection". The "JPC 1984" projection is:

Year	1980	1985	1990	1995	2000
Population	3120	4422	5480	7196	8968

This projection assumes that the island will continue to grow much as it has in the past decade, with no major changes to the constraints on development. The availability of utilities was not assumed to be a restriction to development. This projection was derived from an analysis of growth rates, building activity and the rates of "in-migration".

Figure 4 contains two projections which differ markedly from the other three. These are the "JPC 1977" and "JPC 1983" projections. These two projections are very different because they are based on completely different sets of assumptions. The "JPC 1977" projection, which shows a population of 4,438 in the year 2000, is based on the 1970 Census and the growth rates of the nineteen-sixties. The "JPC 1983" projection, from the Greater Beaufort Area Comprehensive Plan, shows a year 2000 population of 6,846. This set of projections assumed that the amount of "buildable-saleable" real estate is very limited and that population density would remain very low. These assumptions were explicit in the goals and recommendations of the GBACP, but are not supported by current trends, growth rates or levels of economic activity. The engineering consulting firm of B.P. Barber adopted these projections for the sewer service feasibility study made for the Beaufort-Jasper County Water Authority (1983-1984 Beaufort County 201 Plan Update for Lady's Island/ St. Helena Island). As the other three projections shown in Figure 4 are in close agreement, it seems very likely that, given current trends, the population of Lady's Island will roughly triple from 1980 to 2000.

The population of Lady's Island is changing in both size and composition. The population is shifting from rural, mostly black, to


FIGURES IN THOUSANDS
Figure 4: Comparison of Population Projections
COMPOSITE TRENDS (w. Cat Island)
UTS
JPC, 1984
JPC, 1983
JPC, 1977
U.S. CENSUS
11
10
9
8
7
6
5
4
3
2
1970
1975
1980
1985
1990
1995
2000
2005

suburban, mostly white, and relatively affluent. The economic indicators for Lady's Island all point to an increasing rate of growth. Given current projections, the rate of population increase is still increasing, as well as the population as a whole. Projections past 15 years are tenuous at best. If population growth continues at anything like the current pace, Lady's Island could well bear a strong resemblance to other recently urbanized communities in the Lowcountry, such as James Island near Charleston.

3. INFRASTRUCTURE INVENTORY

"Infrastructure" is a popular bit of jargon. The dictionary defines infrastructure as "a substructure or underlying foundation; especially the basic installations and facilities on which the continuance and growth of a community depend, as roads, schools, power plants, transportation and communication systems, etc". Planning has traditionally focused on the physical aspects of infrastructure development: roads, bridges, sewers, power plants and so on. Such things as the design of communications technology or school curricula are also an essential part of a community's infrastructure. However, such relative intangibles are outside the purview of this study.

The Greater Beaufort Area Comprehensive Plan (the predecessor to this document) discusses the institutional arrangements and policies of the various companies and institutions which provide the infrastructure for Lady's Island. This section will only describe the electrical, sewage, transportation, water and recreation systems as they affect the growth and development of Lady's Island.

a. **Electric System**

Electric service is provided to Lady's Island by the South Carolina Electric and Gas Company. S.C.E & G. has various power plants utilizing various fuels located around its service area. These plants are tied together by a grid of transmission lines. Its closest plant is the coal-fired station at Canadys on the Edisto River in Colleton County.

As of April 1, 1984, S.C. Electric & Gas reported 1,864 active accounts on Lady's Island. Of these, 200 are estimated to be pumps and commercial accounts, leaving approximately 1,660 residential meters.

Two parallel transmission corridors bring the electricity to the County. One corridor contains a 115 KV transmission line and runs roughly adjacent to U.S. 21. Slightly west of this first corridor, a second corridor comes into the area. This second transmission corridor contains two 46 KV and one 115 KV lines. All transmission lines eventually tie into a major generating facility in Burton. From this station, transmission lines carry power to the Shell Point area, City of Beaufort, Town of Port Royal, Lady's Island and St. Helena Island.

Lady's Island is served by two transmission submarine cables. One 46 KV cable passes under the Beaufort River from the Pigeon Point area, while a second 46 KV cable passes under the Beaufort River near the new McTeer Bridge. This arrangement provides a loop service to the Lady's Island area.

In the past when one of these cables has failed the other cable has been able to carry the load until a temporary line was built across the McTeer Bridge. The failed cable was returned to operation about six months later when special cable and equipment was delivered. Neither the quality nor reliability of service suffered during that period.

As electric load on the Islands increases, an additional reliable transmission line must be installed. S.C. Electric & Gas is in the process of reviewing plans to upgrade service to the Lady's Island and St. Helena Island area. Many individuals and groups have expressed public concern over the construction of future overhead transmission lines across the Beaufort River. The concern centers around the scenic environment that would be affected by the erection of overhead lines and support towers. S.C.E. & G. is concerned about the reliability and repairability of a new subnarine cable versus an overhead type river crossing. No formal plans have been submitted to or reviewed by local public agencies.

b. **Water System**

Residents of Lady's Island receive water from one of two sources. The first and most common method within the planning area is through a community water system. The Beaufort-Jasper County Water Authority is the largest supplier of potable community water within the County. The Authority provides wholesale service to the City of Beaufort, Town of Port Royal, U. S. Naval Hospital, Parris Island Marine Recruiting Depot, Marine Corps Air Station, Fripp Island PSD, and several small industries. Retail service is provided to residents of St. Helena and Lady's Island and portions of the north Burton area. As of May 1, 1984, the Water Authority served 623 customers on Lady's Island, supplying 48,084,100 gallons between June 1983 and June 1984.

Portions of Lady's Island, principally along the U.S.#21 corridor, are served through the City of Beaufort's water system. As of April 1, 1984, the City served 58 business customers and 441 residential customers on Lady's Island. During 1983 the City supplied these accounts with a total of approximately 17,900,500 gallons. As of May 1984 there was a grand total of approximately 1,102 residential and 59 commercial water accounts on Lady's Island, out of approximately 54,000 customers on the entire water system in Beaufort County.

The Water Authority receives the bulk of its fresh water from the Savannah River via a canal owned and operated by the Authority. The existing plant has a capacity of eight million gallons per day (MGD). Existing water demand through the system averages 5.5-6 MGD. The South Carolina Department of Health and Environmental Control's criterion for establishing minimum design capacity for a water plant is 1.5 times the average daily demand. In other words, the plant's average daily demand must not exceed 2/3 of its capacity. With an average daily demand of 5.5-6 MGD, the design capacity required for the plant would range from 8.25 to 9.0 MGD exceeding the existing 8.0 MGD capacity. However, construction is currently underway to double the capacity of the plant to 16 MGD. This construction should be completed by June 1985. This expansion will enable the plant to meet projected demands for the next 20 years.

In addition to the canal water source, the BJCWA and the City of Beaufort each have 5 emergency wells which can be activated during the dry summer months when the tourist population peaks.

Several residents rely totally on individual wells for household or agricultural supplies. The quality and volume of water from individual wells varies greatly owing to their well's depth and location. It has been estimated that throughout Beaufort County approximately 25 MGD of groundwater is pumped for residential, industrial and agricultural purposes. Groundwater used for human consumption must meet South Carolina Department of Health and Environmental Control standards for quality and delivery system design.

c. **Wastewater Treatment and Disposal Systems**

The treatment and disposal of wastewater in Beaufort County is accomplished by several methods under the auspices of monitoring agencies. Each of the systems must receive a permit prior to operation and must maintain established standards.

Monitoring/Permitting Agencies

The permitting and monitoring agency in Beaufort County is the South Carolina Department of Health and Environmental Control (DHEC), although the Federal "watch dog", Environmental Protection Agency (EPA) can supercede DHEC authority. EPA assures the State's compliance with the Federal standards and DHEC is responsible for assuring the standards are upheld as systems are implemented.

Within DHEC are two branches that, in addition to other duties, are responsible for the permitting and monitoring of the sanitary sewer systems: Environmental Quality Control and Environmental Sanitation. Environmental Quality Control (EQC) is responsible for the permitting and monitoring of package systems that use land (surface) application for the disposal of the treated effluent. EQC is responsible for permitting community (central) wastewater treatment systems including package plants and community septic systems. Individual septic systems in developments over 40 lots are also under the authority of EQC. Package plants and centralized treatment plants can be under the administration of a private, public, or quasi-public agency. "Package plants" are on-site treatment facilities generally with above ground disposal of treated effluent. All package plants on Lady's Island are run by private operators.

The wastewater treatment facilities on Lady's Island are:

Pleasant Point Plantation - A 100,000 gallon per day (GPD) tertiary treatment system with chlorination and a sand filter. Treated effluent is sprayed on the golf course.

Lady's Island Elementary School - A 12,000 GPD tertiary treatment system. Effluent is sprayed on school property.

Marsh Harbor - A 75,000 GPD secondary treatment system, currently used at 11 to 50% of capacity. Sewage is discharged to the Beaufort River.

Lady's Island Junior High School - A secondary treatment system consisting of an aerated lagoon discharging to a low-pressure tile field. Capacity is 24,000 GPD. This system will start operation in late August 1984.

Lucy Creek Farms - A non-discharge facility. System designed to be a closed loop - from hen houses to a pond. Waste should ultimately be applied to fields, however no fields are currently available.

Explanation of Treatment Levels:

Primary - Septic Tanks
Secondary - Process includes 1) aeration, 2) clarification, 3) chlorination
Tertiary - Process includes all Secondary treatment plus 4) filtration.

Two sites for the disposal of septate (the contents of septic tanks) are also located on Lady's Island. While not strictly wastewater treatment facilities, these sites do handle the ultimate disposal of human waste. One is located on Marks Island, the other on S-254 (Shorts Landing Road).

The Environmental Sanitation Office is responsible for individual septic tank systems for residences, restaurants, mobile home parks, campgrounds, motels, hotels, schools, institutions, groceries and convenience stores. Environmental Sanitation can generally permit residential subdivisions having up to forty individual septic systems.

All septic systems are permitted on a case-by-case basis. Environmental Sanitation takes soil borings from the proposed site of a septic system in order to estimate the actual maximum height of the seasonal high water table. The level of the seasonal high water table and the type of potable water system determine the minimum required lot size and the type of septic system. There are no hard and fast guidelines for permitting septic systems, there are instead S.C. State Implementation Guidelines. These guidelines are used as a general guide, a rule of thumb for the state as a whole. Briefly summarized, the guidelines are:

Depth to Seasonal High Water Table	Type of Water System	Type of Septic System	Minimum Lot Size In Square Feet	Number of Lots in Development
> 36"	community	conventional	12,500 to 14,000	2 to 40
> 20"- 24"	community	modified (shallow placement)	One half acre 21,780	2 to 40
≥6"- 12"	community	modified, in sandy or sandy/ loam soils (ultra-shallow placement)	One acre 43,560	2 to 40
≥ 6"to > 36"	individual well	Any	0.69 acre 30,000	2 to 40

Whether or not these state guidelines are perfectly suitable for conditions in Beaufort County is a question of some controversy. Improperly placed or malfunctioning septic systems may contribute to water pollution and can be a threat to public health.

Under the current provisions of the Beaufort County Development Standards Ordinance, the density of development is not mentioned. Thus, the Environmental Sanitation office of DHEC is the sole density regulating public agency in the County.

In the absence of a community sewer, development cannot occur unless the soil is suitable for septic tanks. Most soils that are not periodically covered with water are at least theoretically suitable for septic tanks. Map 4 shows the soil suitability for septic tanks.

The Beaufort-Jasper County Water Authority has been authorized by the State of South Carolina to provide centralized sewer treatment system in the unincorporated areas of Beaufort County, including Lady's Island. For various reasons, the BJCWA was unable to provide any sewer service until 1984. Before the BJCWA became actively involved in sewers, the City of Beaufort began to extend sewer lines into unincorporated areas to the City of Beaufort. The City has not yet extended any sewer lines to Lady's Island. Now the Water Authority is committed to providing a regional sewer systems in the Shell Point and Frogmore areas. As part of its Frogmore/Datha Island Regional sewer plan, the Water Authority's consultant, B.P. Barber and Associates, has prepared preliminary cost and engineering estimates for the extension of sewer service to Lady's Island.

Today Lady's Island is between two growing sewer systems, one or both of which could provide service. The BJCWA has formed an advisory committee of City, County and State officials to advise it on future sewer expansions. At present neither the City or the Water Authority have firm plans to extend sewer service to Lady's Island.

The Water Authority has entered into an agreement with S.C. Alcoa, Inc. to provide sewer service to Alcoa's development on Datha Island. Alcoa is funding this regional sewer plant as an alternative to building and operating its own package treatment plant. Beaufort County Council is loaning the Water Authority up to $350,000.00 for the plant so that it can be designed and built to be easily expanded as the demand for treatment grows.

Initial capacity will be 600,000 gallons/day, of which Alcoa will use 362,000 gallons/day. This will leave 238,000 gallons/day available to anyone willing to pay for collection lines, operation and maintenance of the waste water treatment plant and $3.50/gallon for capacity. This unused capacity could be purchased by a private concern or the County could obtain grants to extend sewer collection lines.

Under B.P. Barber's scenario, lines from the Frognore plant will be extended to Lady's Island in five to ten years, probably in

conjunction with a major development which could partially defray the costs of a major sewer collector.

All users will have to provide space for land disposal (spraying) of the treated effluent. The Frogmore wastewater treatment plant will not discharge any effluent into area waters. B.P. Barber also assumes that such a system would eventually pick up the effluent from existing package plants on Lady's Island, thus eliminating several Beaufort River outfalls.

The City of Beaufort could provide a sewer service to Lady's Island via the McTeer Bridge. It is the policy of the City to annex all areas to which it directly provides sewer service. The City's wastewater treatment plant discharges directly to the Beaufort River. As the River has limited capacity to assimilate effluent (even treated effluent), there is some limit to the quantity of additional wastewater DHEC will allow in the river.

It is a reasonable certainty that some entity will provide sewer service to Lady's Island in the next decade. The most likely candidates are the BJCWA or the City of Beaufort, although a public service district or private utility is not out of the question. Regardless of who provides sewers, it will have a profound impact on growth and development on Lady's Island. The density of development is now controlled on an ad hoc basis by DHEC, through the permitting of septic tanks. In the presence of a sewer, with the absence of any political control on density, there will be no limit to the density of development on Lady's Island. Without an established policy high density growth will very likely occur in a random fashion. High density growth is neither intrinsically bad or intrinsically good, however it will irrevocably alter the character of Lady's Island.

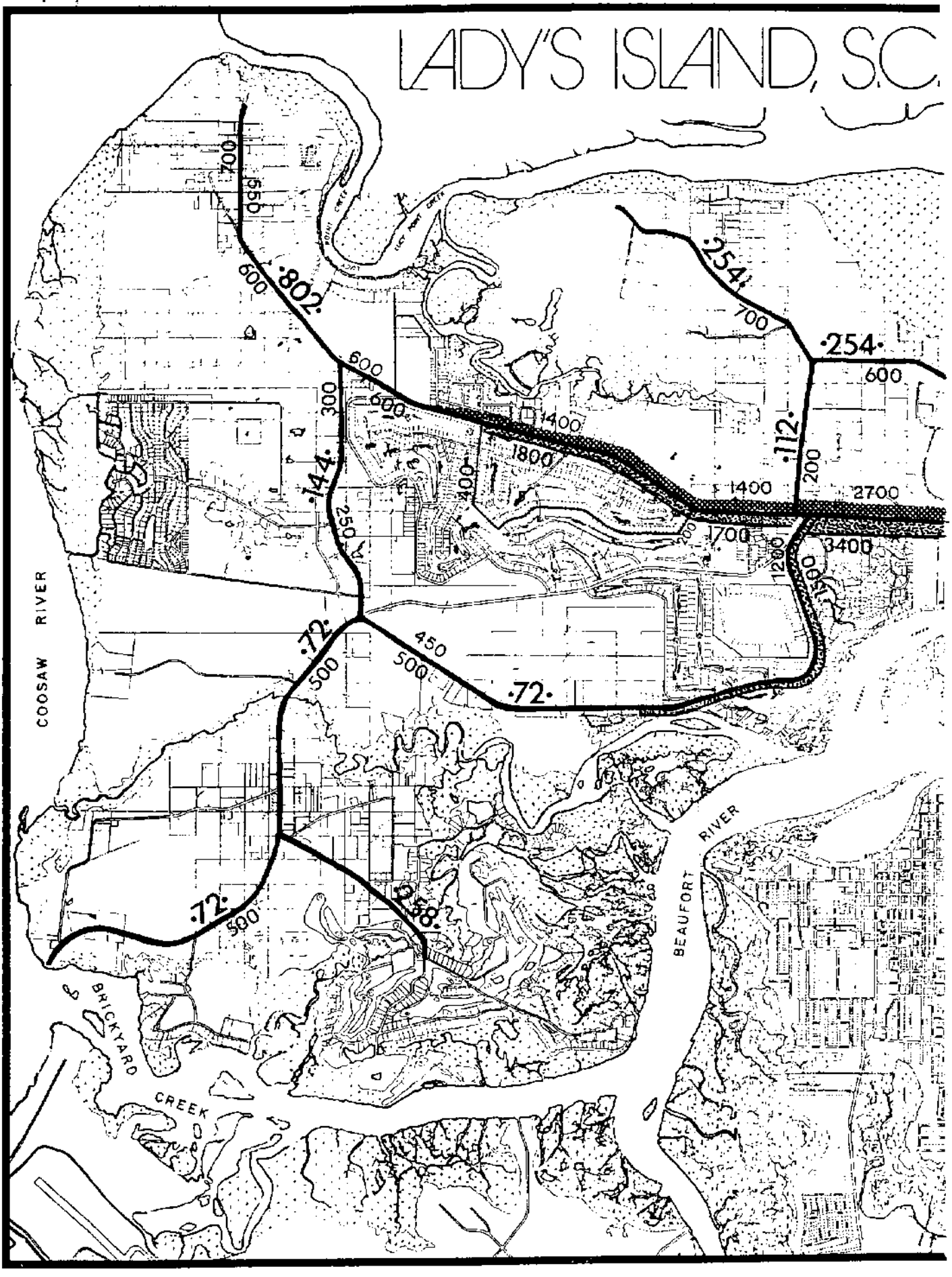
d. Transportation Systems

Transportation facilities include more elements than are generally recognized. Private automobile is the largest and most common mode used on Lady's Island. In addition, there are air, bicycle, water and public transportation systems. These various modes combine to make up the Island's overall transportation system. In terms of popularity, the auto mode is absolutely predominant. Therefore this report will concentrate on the bridge and highway system. The local airports are important, not for the number of people that use them, but rather for the impacts they have on the local community. A description of each mode follows.

Highway

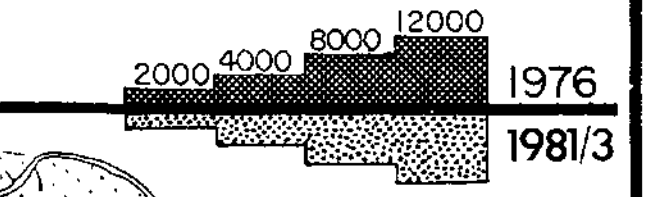
Private automobile transportation represents the largest and most common mode used within the County. This method almost exclusively relies on a well designed and maintained highway system to operate properly. There is a variety of streets, roads, and highways on Lady's Island, each designed to carry different volumes of traffic.

On Lady's Island the principal highways are (arranged in hierarchical order by capacity):


LADY'S ISLAND, S.C.
COOSAW RIVER
BEAUFORT RIVER
BRICKYARD CREEK
.802.
.254.
.254.
.112.
.144.
.72.
.72.
.72.
.58.
700
550
600
600
600
300
600
1400
1800
400
250
1400
200
2700
1700
1200
3400
1500
450
500
500
500

Highway & Traffic Survey

map 13



24-HOUR
WEEKDAY TRAFFIC VOLUMES
(Note: Volumes less than 1000 not shown by band)
·21· = Highway Numbers

SOURCE: S.C. Dept. of Highways and Public Transportation in cooperation with the U.S. Dept. of Transportation Federal Highway Administration.

U.S. 21, a U.S. Numbered Highway,
S.C. 802, a S.C. Primary Highway,
S 36, a S.C. Secondary Highway, as are all the others
S 72
S 112
S 144
S 254
S 258

U.S. Highway 21, S.C. 802, S-72 and S-144 are designated as major thoroughfares by Beaufort County. Under Beaufort County Ordinance the following provisions apply to "major thoroughfares":

*No structures except signs may be erected closer than 50 feet to the right-of-way line.
*No structures higher than three feet are allowed in the "intersection vision setback" of 40 feet from the corner of the intersection.
*Access is limited to one curb cut every 500 feet, except where a lot of record would be rendered unusable by the strict application of the law. This provision is designed to reduce traffic congestion and the danger from multiple curb cuts.

By far U.S. 21 and S.C. 802 carry the largest volumes of automobile traffic. U.S. 21 is the only north-south connector in northern Beaufort County, originating on Hunting Island and passing through Harbor, St. Helena, Lady's, and Port Royal Islands and continuing inland to Yemassee. This highway carries tourist traffic through Beaufort to Harbor and Hunting Islands as well as Fripp Island via a private road connector. The bulk of the traffic carried on U.S. 21 from Lady's Island is business and shopping traffic ending in the City of Beaufort or Burton. S.C. 802 is the major east-west route on Lady's Island. It continues across the McTeer Bridge, through Port Royal to Parris Island and Shell Point.

The S.C. Department of Highways and Public Transportation (SCHPT) is the primary road and bridge building institution in this area. As part of their ongoing planning and construction process, the Department periodically studies traffic volumes and conducts long range planning studies. Traffic volumes have been calculated every three to five years, in 1976, 1981 and 1983. The last comprehensive transportation study dates to 1971 - the Beaufort Area Transportation Study (BEAUTS).

Map 13 shows the Lady's Island highway system and traffic counts. Even with the addition of the McTeer Bridge from Port Royal to the Island traffic has increased markedly on the Woods Memorial Bridge. Total traffic from Port Royal Island to Lady's Island increased by 55% from 1976 to 1981. That total traffic leaving Lady's for St. Helena Island decreased slightly during that five year period is probably a statistical anomaly. Outside of U.S. 21 and S.C. 802 traffic increased slightly during this same period.

The Harbor, Hunting, and Fripp Island area combines residential and resort activities, and is a destination point for many tourist and local residents.

U.S. 21 is the only highway access to this area and receives a moderate amount of travel. Unfortunately, this highway must also support the needs of the farming industry on St. Helena Island. This combination of through traffic to Harbor, Hunting and Fripp Islands, combined with local farm traffic, creates an incompatible mix of automobiles, trucks and farm equipment which can also be found on Lady's Island. Future expansion of those resort/residential developments, combined with newly developing area, will aggravate exisiting problems. According to the highway departments 1981 traffic flow survey (see Map 13) traffic on U.S. 21 during June (the month of peak usage) exceeded 11,100 vehicles per weekday, or more than 1,000 vehicles/day higher than the SCDHPT's capacity standard.

June is also the peak month for truck traffic on U.S. 21. According to the Clemson University Extension Service, the farming industry on St. Helena and Lady's Islands generated traffic of 500 semi-trucks and 1500 5-10 ton longbed trucks.[1]

U.S. Highway 21 from the Wood's Bridge to the intersection of Sam's Point Road is rapidly transforming to a commercial zone. The increasing traffic volumes noted above combined with more turning patterns are creating a hazardous environment.

The SCDHPT develops and funds highway projects on a six-year cycle. Widening U.S. Highway 21 south of the City of Beaufort has the lowest priority (deferred for lack of funds) in the current funding cycle, which will last until 1989. However, preliminary engineering studies for this widening will be conducted. According to the Planning Section of the SCHD limited "traffic engineering improvements" will be on-going, although none are currently scheduled. This means that the Highway Department may build some turn lanes on U.S. 21 if the SCDHPT perceives a need.

As for the future, traffic congestion on U.S. 21 and parts of S.C. 802 can be expected to increase. Two highway improvements are currently scheduled which will have a major impact on Lady's Island. The replacement of the Battery Creek Bridge in 1985-86 should push more traffic into the Lady's Island bottle neck. A companion project to the Battery Creek Bridge replacement will open up a second major route to Lady's Island. Expanding S. C. 802 and S-280 to five lanes from U. S. 21 east to the foot of the replacement bridge has received a "deferred" priority in the current funding cycle. Projects having any priority, even "deferred", are much more likely to be built than any others. Continued development in the Frogmore-Fripp area should also significantly increase trans-Lady's Island traffic.

As far as long-range transportation planning is concerned, technically the 1971 Beaufort Area Transportation Study (BEAUTS) is still in effect. The SCDHPT still uses the BEAUTS as an advisory document, although it is under no legal compulsion to implement it. The deferred projects mentioned will probably be constructed before anything mentioned in the BEAUTS.

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[1]Figures represent an average of 1981 and 1982 traffic for the month of June.

BEAUTS recommended that two "beltways" be built around Beaufort to relieve congestion on U. S. 21, the Southwest Beltway and the Northeast Beltway. BEAUTS describes the Northeast Beltway this way:

"This beltway, along with the Southwest beltway, completes a circumferential route around Beaufort. The anticipated 1990 traffic volumes vary from 3,500 to 8,000 vehicles per day. The section from U.S. 21 (north of Gray's Hill) to S.C. 802 will be on a new location, except for a 1.6 mile section along existing Road 72. This section should initially be a 24-foot roadway with 10-foot shoulders and a high level fixed span bridge over Brickyard Creek (Intracoastal Waterway).

The final portion of the Northeast beltway continues along S.C 802 and then on new location to U.S. 21. This section should have a 52 foot curb and gutter section."

To date the McTeer Bridge and the S.C. 802 extension south of U.S. 21 comprise the only section the beltways ever constructed. The remainder of the Southwest Beltway will probably never be built, especially in light of the Battery Creek replacement bridge and attendant road widenings. The 1990 traffic projections in the BEAUTS were exceed by 1981 on U.S. 21 and the Woods Bridge. Population growth has also exceeded the projections in the BEAUTS. As Lady's and St. Helena Islands continue to develop, the need for relief will also increase. The Northeast beltway is still the "official policy" for the Beaufort area. The planning section of th SCDHPT maintains that the Brickyard Creek Bridge will not be built "for at least ten years."

The highway department considers the road from S.C. 802 across Gibbs and Cane to Cat Islands to be potentially important part of the State highway system. If justified by increased population pressure, this route could be developed as an alternative route to St. Helena Island by a bridge over Chowan Creek to Capers Island. There are currently no plans to design or build such a bridge in the foreseeable future.

The picture of future traffic patterns should now be clearer. The increase in traffic and traffic congestion should accelerate in the foreseeable future. The SCDHPT is controlled by a board of appointed commissioners. The Highway Department Commissioners have the final authority for setting priorities for highway and bridge construction.

The solution to traffic circulation problems on Lady's Island has the potential to create other problems. Major population centers in northern Lady's Island, or major traffic flows on a "Northeast Beltway" will encourage strip commercial development to creep up S.C. 802. At a certain level of demand there will be great market pressure to provide commercial and service opportunities in northern Lady's Island. Certain policies are suggested in the implementation section at the end of this plan to encourage the grouping, or clustering of commercial uses as an alternative to strip commerical development scattered throughout the Island.

2. Airports

Lady's Island and the greater Beaufort area are locally served by two airports, one publicly owned and one military. The Marine Corps Air Station in Burton is used solely for military traffic. The Beaufort County Airport (also known as "Frogmore International") on U. S. 21, Lady's Island, is the only public airport in Beaufort County north of the Broad River. These airports are probably more important from the standpoint of the impacts they have on surrounding land uses than as traffic generators or social amenities. The noise caused by the airplanes that use these facilities, especially the Marine Corps Air Station, has a profound and widespread impact on the potential land uses in their vicinity.

Marine Corps Air Station

The Department of Defense has recognized the need to mitigate the impacts of the operation of its aircraft on the community at large. In order to do this, the Defense Department has developed a document to assess the impacts of its operations. This document, the Air Installation Compatible Use Zone Study (AICUZ) is described in the following quotation.

> "Military air stations attract developent to the surrounding area in response to the need for services for military personnel, their dependents and civilian employees. In the absence of compatible land use controls encroachment will normally occur. The land surrounding the air station will be subjected to high noise levels and aircraft accident potential. Aircraft noise often exceeds levels compatible with some land uses and impacts a large area of real estate due to the performance characteristics of jet aircraft. To eliminate the conflicts arising from lack of adequate land use planning, local governments, the air station command and the local populace must take positive, coordinated action to ensure that future land use will be compatible with all activities. In order to protect the mission of air installations as well as the welfare of surrounding communities, the Department of Defense has established the Air Installation Compatible Use Zone (AICUZ) program.
>
> "The Secretary of the Navy is required to develop and implement a plan to study all Naval and Marine Corps air installations and to develop an AICUZ for each installation. This study was initiated at Marine Corps Air Station, Beaufort, for the purposes of recommending an AICUZ Plan, including methods for implementation, as set forth in "Department of Defense Instruction No. 4165.57, of 30 July, 1976, Subject: 'Air Installations Compatible Use Zones'.
>
> "The AICUZ is a concept of identifying compatible land use around the air station. The purpose is to guide compatible development through cooperation with local jurisdictions in order to minimize public exposure to aircraft noise and accidents while at the same time maintaining the operational

capability of the station. By defining multiple compatible use zones, the range of acceptable land uses is maximized. The results of the AICUZ and the recommendations for achieving compatible land use are submitted to the local jurisdictions for consideration as a planning guideline in development or amending land use controls."

Parts of Lady's Island are included in the Marine Corps Air Station's Compatible Use Zone Plan. These areas shown on Map 14 include parts of Pleasant Point Plantation and most of the Brickyard Point area west of Broomfield Creek. Parts of this area are in both the high noise and high accident potention zones. The AICUZ plan recognizes this situation and defines the problem in the quotation below. Area D is the northwest corner of Lady's Island, which is the area shown on Map 14.

"Area D is located on Lady's Island east of the air station. It consists of land area impacted by noise and part of the accident potential zones relating to runway 22. The AICUZ zones are APZ-II-CNR 3, APZ-II-CNR 2, CNR 3 and CNR 2. Residential development such as is occurring in portions of Area D is felt to be incompatible with the surrounding exposure environment.

"Area D, in general, due to development trends in the Beaufort area and to its natural beauty, has high potential for urban residential-planned-unit development. Such potential would be increased further by construction of the proposed belt highway linking Lady's Island to Brickyard Point to U. S. 21 north of the air station.

"It should be noted that portions of Area D, about 1,000 acres, are below the 100-year flood elevation. This will present little deterrent to development; however, since the land area is high enough to permit first floor elevations to be above the 100-year flood elevation by use of normal construction practices. Incompatible development is likely to occur in Area D."

"Four AICUZ zones that apply to Lady's Island delineate the different levels of aircraft noise and danger of aircraft accidents. "The Composite Noise Ratio" system gives an indication of expected subjective effects of aircraft noise on a community. The component variables of CNR are the maximum perceived noise level and number of occurrences of each type of aircraft and operation. The perceived noise level is a numerical rating of the noise developed specifically for judging the relative acceptability of aircraft sound.

"The perceived noise levels are adjusted by taking into consideration the frequency of occurrence (aircraft operations per day) and the time of occurrence (day or night) to arrive at the Composite Noise Rating (CNR). The CNR then can be related to expected community reaction. The following chart indicates the expected reaction of residents within the respective CNR Zones:

CNR Zone	CNR Values (PNdB)	Estimated Response
2	100 to 115	Individuals may complain, perhaps vigorously. Concerted group action is possible.
3	Greater than 115	Individual reaction would include repeated, vigorous complaints. Concerted group action might be expected.

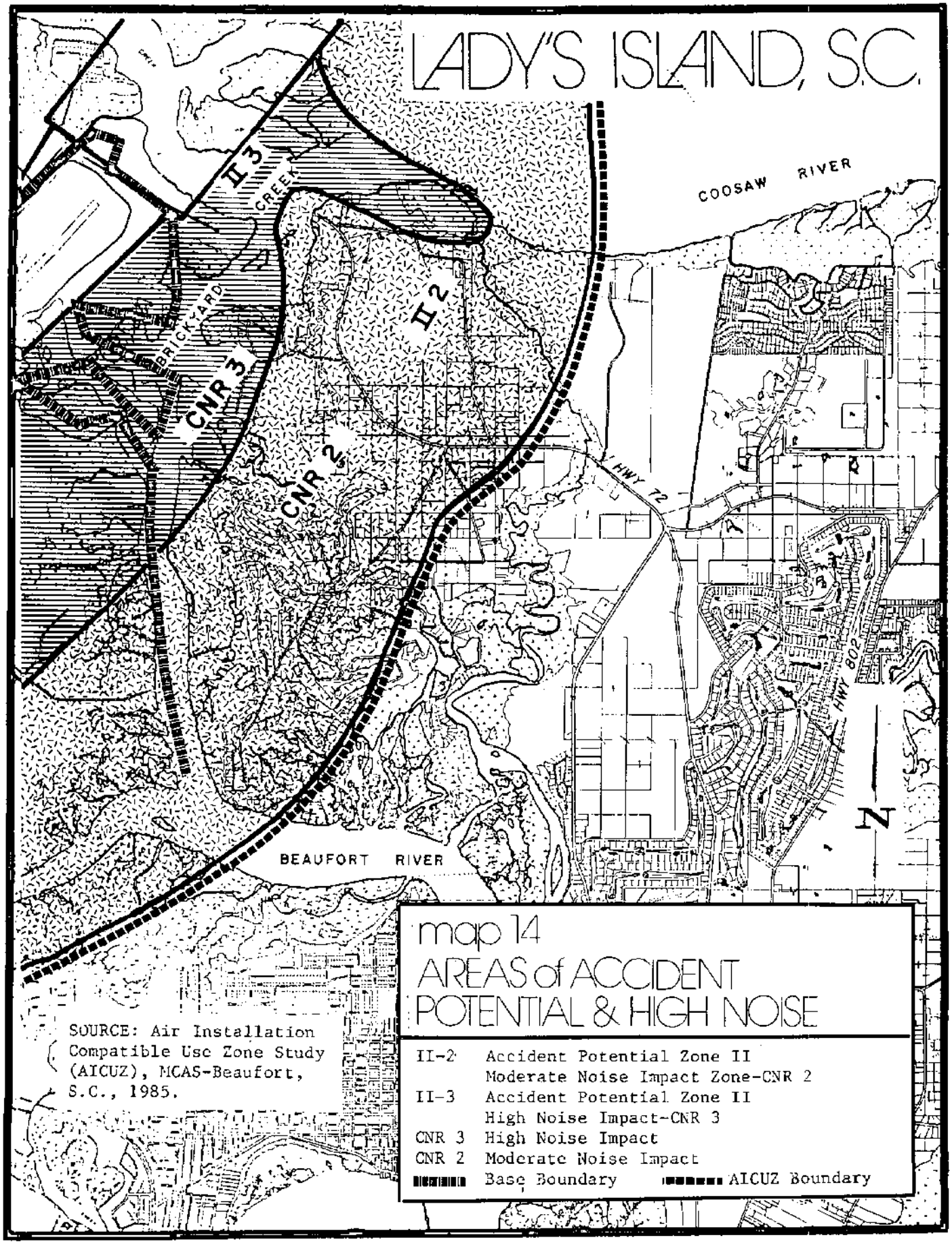
"The CNR contours defining these zones were developed by the Acoustical Research Department of Tracor, Inc., Austin, Texas (Document No. T76-AU-9520U)."

The other two zones, APZ II-CNR 2 and APZ II-CNR 3, combine noise ratings with "Accident Potential Zones". Accident Potential Zone II (APZ II) "is the least critical, but still possesses some potential for accidents".

According to the Defense Department's contractor the authors of the AICUZ Study, Burns & McDowell, residential and institutional land uses are clearly unacceptable in these four zones on Lady's Island. Commercial and recreational uses are judged to be clearly-to-normally unacceptable. The only clearly acceptable recommended land uses are wetlands, forestry, open space and agriculture. Also included in the AICUZ study is a rating of the compatibility of future development with the four zones. In general, the Defense Department's recommendation is that northwestern Lady's Island be reserved for forestry, wetlands, open space, fishing, agriculture, and some industrial or recreational uses. The AICUZ strongly recommends that no new residential or institutional uses be permitted in the area shown on Map 14.

Overflights by military aircraft and the noise they generate also has a legal side. On January 1, 1975, the Defense Department (DOD) took an "avigation and sonic easement" covering the entire Pleasant Point Plantation property. Webster's defines avigation as "the navigation of airplanes". In 1981 the U. S. Court of Claims established that this easement does in fact exist. Although the avigation and sonic easement was established in 1975, it has never been recorded in the real estate deeds.

In October, 1976 then owners of Pleasant Point Plantation Cloide Branning and the Morgan Guaranty Trust Co., filed suit against the DOD claiming a wrongful taking of their Pleasant Point properties due to the high number of flights damaging the properties. The Court of Claims agreed that there was a taking in 1980. On appeal by the DOD in 1981, the decision of the Court of Claims was upheld. Another trial was held in 1984 to establish the actual amount of damages. The decision of the Court with regard to the award of damages has not been announced at this writing.


LADY'S ISLAND, S.C.
COOSAW RIVER
BEAUFORT RIVER
BRICKYARD CREEK
II 3
II 2
CNR 3
CNR 2
HWY 72
HWY 802
N
map 14
AREAS of ACCIDENT POTENTIAL & HIGH NOISE
II-2 Accident Potential Zone II
Moderate Noise Impact Zone-CNR 2
II-3 Accident Potential Zone II
High Noise Impact-CNR 3
CNR 3 High Noise Impact
CNR 2 Moderate Noise Impact
Base Boundary
AICUZ Boundary
SOURCE: Air Installation Compatible Use Zone Study (AICUZ), MCAS-Beaufort, S.C., 1985.

Although the final outcome of the continuing litigation are not yet clear, several legal precedents have been established. The DOD does hold an avigation and sonic easement on Pleasant Point Plantation. This easement has a monetary value. This value has not yet been established.

The impact of the Marine Corps aerial activity has substantially affected the development of the northwest corner of Lady's Island (Map 14) and will continue to do so for the foreseeable future. At the present time only approximately 21 homes have been built on the 602 single family lots of Pleasant Point Plantation. The original developer of Pleasant Point went bankrupt; the current owner is trying to sell the property. The Defense Department's use of the skies over Lady's Island has evidently slowed the rate of development by decreasing the value of the property due primarily to the impacts of high noise caused by jet aircraft.

Beaufort County Airport

The Beaufort County Airport, owned and operated by Beaufort County, is located approximately 2.5 miles south of the City of Beaufort along the north (east) side of U.S. 21 on Lady's Island. The airport property is contiguous to the marshes of Bird Island Creek. The total site currently occupies 84.3 acres, 51.2 acres of which is airport infrastructure. An additional 12 acres were acquired in 1983 in order to continue the phased expansion program.

The 3,430 foot runway services only small private aircraft. Fourteen aircraft were based at the airport in 1974, only one of which had more than one engine. During a two week survey conducted by the County's airport planning consultant, Wilbur Smith and Associates[1], 398 operations (one operation = one take-off or landing) were counted, for an annual total of 6,470 take-offs. Future forecasts by Wilbur Smith call for 28,500 "operations" by 1984 and 51,100 operations by 1994, assuming that facilities keep up with demand.

The airport's operating schedule is from dawn to dusk with assistance from the MCAS and Savannah Metro Airport, as necessary. The current terminal facilities include a privately-owned open-sided hangar, an administration building, and limited parking. Beaufort County has applied for a $1 million Federal Aviation Administration (FAA) grant for the expansion of the airport.

Of this amount, $700,000 has been received for the construction of a new access road, fuel farm, T-hangar tie downs, paved parking lot and aprons, and a terminal. Airport expansion began in the Spring of 1984 and is scheduled to be completed by 1986.

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[1] Airport Master Plan Study, Beaufort County Airport, Beaufort, SC, Wilbur Smith and Associates, Columbia, SC, May, 1978.

Long-range plans call for the lengthening of the runway to 4,700 feet and relocation of U. S. 21 to the southwest. This expansion will not take place in the foreseeable future.

The FAA grant is contingent upon certain actions by Beaufort County, one of which is the addition of a "Special Airport District Standard" to the County's Development Standards Ordinance to limit the height of structures in the vicinity of the airport. Another possible concern is aircraft-caused noise annoying surrounding residential land uses. Fortunately, noise conflicts should not be a problem at this airport. According to Wilbur Smith and Associates the "Noise Exposure Forecast", (NEF) will be 20 at most. This means that "few activities will be affected by aircraft sounds, although building designs for sound sensitive activities such as auditoriums, churches, schools, hospitals and theaters should consider sound control in areas closest to the airport. Some complaints may occur". The only high land within the NEF 20 zone is south of U.S. 21, between the airport and the headwaters of Distant Island Creek. This land is either currently undeveloped or used for commercial purposes. It is highly unlikely that aircraft noise will become a community concern unless this area is developed residentially.

The intrusion of tall structures into the approaches of the airport is a problem of much greater potential magnitude than aircraft noise. The FAA Advisory Circular #150/5190-4 suggests the prohibition of any device interfering with the transmission of navigation signals and structures greater than 150 feet above the airport elevation (14.0 feet) within a certain distance from the runway. Appendix I contains a draft proposed amendment to the OSO creating an Airport District on Lady's Island. Please note the accompanying illustration which delineates the area included in the Airport District.

3. Miscellaneous

Beaufort County is fortunate to be traversed by the Intracoastal Waterway. The Beaufort section of the Intracoastal Waterway lies within the authority of the Department of the Army, Corps of Engineers, Charleston, South Carolina District. In 1980, more than 1.4 million tons of cargo passed through this District. The Intracoastal Waterway not only serves as a major shipping artery within the Beaufort region, but also helps strengthen this area as a water-oriented community.

Two marinas located on Lady's Island also provide services to boating traffic moving up and down the Intracoastal Waterway. Traffic using the facilities at Beaufort are primarily charter- or recreation-oriented.

Bicycling is a popular recreational activity on Lady's Island. In the absence of established bike paths, bicycling will probably not become a well integrated part of the local transportation network. There are currently no plans by any agency to construct bike paths or designate bike lanes on the existing roadways of Lady's Island.

e. **Recreation/Open Space**

Large portions of Lady's Island are undeveloped, yet the vast majority of this open space is de facto. Beaufort County holds the only permanent, public open space on the Island. The Beaufort County Open Land Trust, Inc. holds a few small parcels for the protection of views.

The Beaufort County property is held by two separate agencies - the Board of Education and the Recreation Department. The Board of Educatin controls two substantial properties - 20 acres on which the Lady's Island Elementary School is situated and 42 acres at the Junior High School. Eight of the 20 acres at the Elementary School are designated community park open to the public. Both school buildings may be used by community groups per arrangement with the respective principals.

The Recreation Department administers three boat landings comprising a total of four acres, one three acre park called Broomfield, and two fishing platforms suspended from bridges. The Recreation Department administers a total of 15 acres on Lady's Island.

Numerous private recreational facilities exist or are planned for the Island. Royal Pines Country Club has two 18-hole golf courses and a swimming pool, Pleasant Point Plantation has a golf course, Beaufort Academy has a three acre playground and a gymnasium, and the Beaufort Yacht and Sailing Club has a swimming pool, dock, picnic area and other amenities. Two private commericial marinas can be found on the Island, one on U.S. 21 near the Wood's Bridge and one on S-72 contiguous to Marsh Harbor condominiums. The developers of Cat Island and Gibbs Island have planned to include golf courses in their developments. Finally, the Open Land Trust owns five small parcels totalling less than four acres. The Open land Trust property is privately owned, but its function is to protect views which can be enjoyed by the public at large.

Lady's Island seems to be well provided with private recreation. Public recreation facilities are anther matter entirely. The Beaufort County Open Space and Recreation Plan 1977-2000 estimated the acreages needed based on the current and projected population growth. Population growth has exceeded the projections used in the recreation plan, so the need for increased public recreation acreage is even greater. The acreage needs estimated in the 1977 recreation plan were:

Neighborhood Parks Standards (3 acres/1000 people)		Community Parks Standard (3 acres/1000 people)	
Existing Supply		Existing Supply	
Public	3.0	Public	8.0
Existing 1977 Needs	5.6	Existing 1977 Needs	+ .68
Estimated 1985 Needs	7.0	Estimated 1985 Needs	2.0
Estimated 2000 Needs	10.3	Estimated 2000 Needs	5.3

+ Indicates excess existing acreage.
All figures are in acres.

The 1985 and 2000 estimated needs take into account the 1977 existing supply and assume no attrition of this acreage.

Using the Recreation plans methodology* and plugging in the most recent population figures for Lady's Island, the current acreage needs are:

* Total needs = (population in thousands) (standards in acres/1000)-supply.

Neighborhood Parks		Community Parks	
Existing Supply		Existing Public	
Public	3.0	Needs	8.0
Existing 1980 Needs	5.36	Existing 1980 Needs	1.36
Estimated 1990 Needs	13.44	Estimated 1990 Needs	8.44
Estimated 2000 Needs	23.9	Estimated 2000 Needs	18.9

Needs are defined as acres needed in addition to the existing supply.

Neighborhood parks are the smallest recreation facilities both in size and number of people served. They serve local recreational needs and are oriented toward local residents. Neighborhood parks should be easily accessible - at most one mile from the residence. Functions of the neighborhood park are:

-To provide active and passive recreational facilities for a population of 1,000 to 3,000 with the emphasis directed to the younger population.
-To serve as an environmental amenity for the immediate neighborhood.

Community parks serve several neighborhoods with additional recreational activities for all ages. These activities may require larger areas than are offered in neighborhood facilities or provide services required of a larger pool of people. Community parks should contain facilities for active play and areas of scenic value oriented towards passive recreation. Functions of the community park are:

-To provide large active recreation areas serving up to 10,000 people of all age groups.
-To provide recreation centers for community activities such as swimming pools, tennis courts, and field games.
-To provide open space for the community's passive recreational needs.

For the near time private recreation is well provided for on Lady's Island. Public recreation facilities, especially for the very young, are sorely lacking. The situation will probably get worse before it gets better because there are no plans pending to acquire additional aceage. Much of the de facto open space now available for casual, unauthorized use or views will become unavailable as the Island's population grows. As time goes by the lack of facilities become both more apparent and more acute.

f. **Education**

The Beaufort County Board of Education operates two facilites on Lady's Island - a Junior High and an Elementary School. The Elementary School has a 1983-84 enrollment of 384, down from 469 in 1974. The Junior High will open its doors for the first time to 950 students on August 23, 1984. This school is designed to have a peak capacity of 1,200 students.

Opening of the Junior High will be a strong impetus to residential development within a one half to one mile radius. Schools, especially new schools, are a strong magnet for young families considering the purchase of real estate. The population projections and land use scenarios found elsewhere in this plan explicitly consider the impact of the school opening on future growth and development.

g. **Drainage**

Historically, drainage has been handled by the private sector. A multiplicity of government agencies deal with different aspects of drainage. For example, the S. C. Coastal Council regulates salt water wetlands but the U. S. Army Corps of Engineers regulates wetlands adjacent to navigable waterways and their dredging and filling. Inland, the S. C. Department of Highways and Beaufort County Public Works Department have constructed limited drainage systems to keep the public roads clear.

In April 1984, the County adopted a comprehensive drainage amendment to the DSO and an overall drainage plan. In addition to encouraging the preservation of fresh water wetlands (see 2.B.2.b. Wetlands above), this amendment defines specific site development standards to provide for the detention and control of runoff as an intrinsic part of the development process. Refer to the DSO for the specific requirments.

The drainage program is designed and administered by the County's Public Works Department. The approach to drainage problems contains five steps: 1) problem identification, 2) obtaining easements, 3) engineering design, 4) seting priorities, and 5) scheduling work. The County has been divided into six districts - Lady's Island and St. Helena Island comprise District 2. An initial five year program has been devised, including a total funding commitment of $1.4 million. Of that sum, $250,000 will be spent in fiscal year 1984-85.

Comprehensive drainage management is a new County undertaking. The perceived and potential problems are enormous. The price tag to implement the 1970 Feasibility Study for Main Drainage Canals, Beaufort County, S.C. is six to seven million 1984 dollars and 37 years! Given the enormity of the problem, the current policy of the Public Works Department is to complete major canal projects vital to upstream drainage. As drainage systems are developed preventive maintenance will be an integral part of the program.

Tentative priorities have been set for Phase I, the first five year program. As of this writing, only one project is planned for

District 2, in the Seaside area of St. Helena Island. Please refer to the County Engineer or the Public Works Department for further details on the drainage program.

D. SYNTHESIS OF PROJECTIONS, IDENTIFIED TRENDS AND INVENTORY DATA

Having read the plan to this point, several very important questions remain; "What does it all mean?" and "What (if anything) should be done?" This section will answer the former question and the remainder of this document will answer the latter.

There is no question that Lady's Island is growing and changing. The types of development and growth should be quantified before an assessment of their relative desirability is made.

The rate of future growth has already been projected. The rate of growth established in the population projections section above was applied to other areas of development in order to estimate development trends in the future.

1. SUMMARY OF TRENDS

An analysis of the available data has yielded the following development trends.

Changes in the Make-up of the Housing Stock

While the overall number of single family homes has increased steadily since 1970, the fraction of housing in single family declines steadily.

Conversely, the overall number of mobile homes and multi-family (condominium and apartment) dwellings has increased in both number and share of housing stock. In 1970 mobile homes made up roughly 12% of the housing stock, in 1980 22%, in 1984 20%. Apartments and condominiums have taken a dramatic jump. By the end of 1983, 384 multi-family units had been permitted. As of May, 1984 an additional 186 units had been permitted for an increase of 48% in just five months. These figures do not include multi-family units in master planned communities which have not yet received final approval.

There are over 1400 single-family homes on Lady's Island, making them the dominant share of the housing stock. Single family homes will continue to predominate for the foreseeable future. High land values, high interest rates, smaller families and an increase in the number and percent of people in the 60+ age bracket will all contribute to a large future increase in the number of multi-family units.

As the total number of dwellings has grown, the average value of dwellings has also grown. This increase has exceeded the inflation rate. Every indicator points toward Lady's Island as a whole remaining a market for high price home construction.

Conversion of Large Undeveloped or Agricultural Developments Into Planned Unit Developments

All or most of the remaining large blocks of non-residential land can be expected to be converted to large-scale residential developments.

So far in this decade Gibbs and Cat Island are examples of this trend. For example, Cane Island and Holly Hall are prime candidates for conversion to PUDS by the next century.

Decreasing Acreages in Farm Land/Open Space

As development increases farmland, forest and other buildable open space decreases. In the last five years, agricultural acreage in active use has decreased by 41%.

Commercial Land Use is Increasing

As the following scenario maps show, the quantity of commercial, especially strip commercial, development can be expected to move along SC 802 towards the McTeer Bridge and north on Sams Point Road. Construction of a "northern" beltway will create a market for strip commerical development in northern Lady's Island.

Increased Traffic

As noted above in the "highways" section, the main auto artery, U.S. 21 is at capacity. More development means more cars and curb cuts, reducing highway capacity.

Environmental Changes

As development changes, certain environmental changes will inevitably follow. In the absence of a central sewer relatively large-scale, high-density developments will require package plants. As development density increases, the opportunities for land or golf-course application of treated effluent will decrease, requiring more direct discharges to area waters under the National Pollution Discharge Elimination System (NPDES). While this system is designed to eliminate pollution, there is an upward limit to the volume of treated effluent any river can absorb without lowering water quality.

The more subtle water pollution problem is non-point source run-off from roads, driveways, lawns, malfunctioning septic tile fields, farm yards and other widely dispersed locations. Non-point source runoff has no single orgin, hence the name. It is extremely difficult to control. Obviously, the removal of native flora lets more run-off into area waters. For Lady's Island as a whole this will be the #1 water quality problem of the future.

Finally more people will mean less wildlife habitat, as well as fewer and more cluttered vistas and more noise. It is unlikely that these problems will reach urban proportions. Like many problems, these depend on who is defining the problem. While perhaps not severe by absolute standards, the environmental changes will be very noticeable by relative standards.

Population Changes

The population is changing rapidly in terms of almost every variable: Numbers, age, race, education, income and place of employment. Prior to 1970 Lady's Island was a rural black, land-based community. It is rapidly becoming a suburban, mixed-race service-and business-oriented community.

The overall population will continue to grow dramatically. In 1980 the total population of Lady's Island was 1,995, by 1980 it reached 3,120. Given current trends, this plan conservatively estimates an Island population of 9,000 to 2000.

As the population has grown it has becom older, better educated and more affluent than the County average. The number of Island residents aged sixty or older has doubled from 1970 to 1980 - from 10.6% to over 21%. In 1979 median family income on Lady's Island was 11% higher than the County average. Over 43% of employed residents work in either the professions, services, retail or wholesale trades. Sixteen percent of the 1980 population completed college.

In 1970 the racial breakdown was 48% white, 52% black. Due to significant in-migration of whites in the seventies and a stable black population, by 1980 Lady's Island was 62% white and 38% black.

Lady's Island is changing in ways similar to most of Beaufort County. Incomes and housing values have increased; most people work in an office or service business; and the population is older and better educated. General trends and blanket statements can obscure reality. In 1984 Lady's Island is comprised of an older land-based community with a new, urbanized community built up around it. For the forseeable future Lady's Island will be a diverse community, not a homogeneous resort or retirement community.

2. SCENARIOS OF FUTURE LAND USE

Given the trends outlined above, several scenarios of the future growth and development of Lady's Island were generated. These scenarios are based on the current land use map (Map 10).

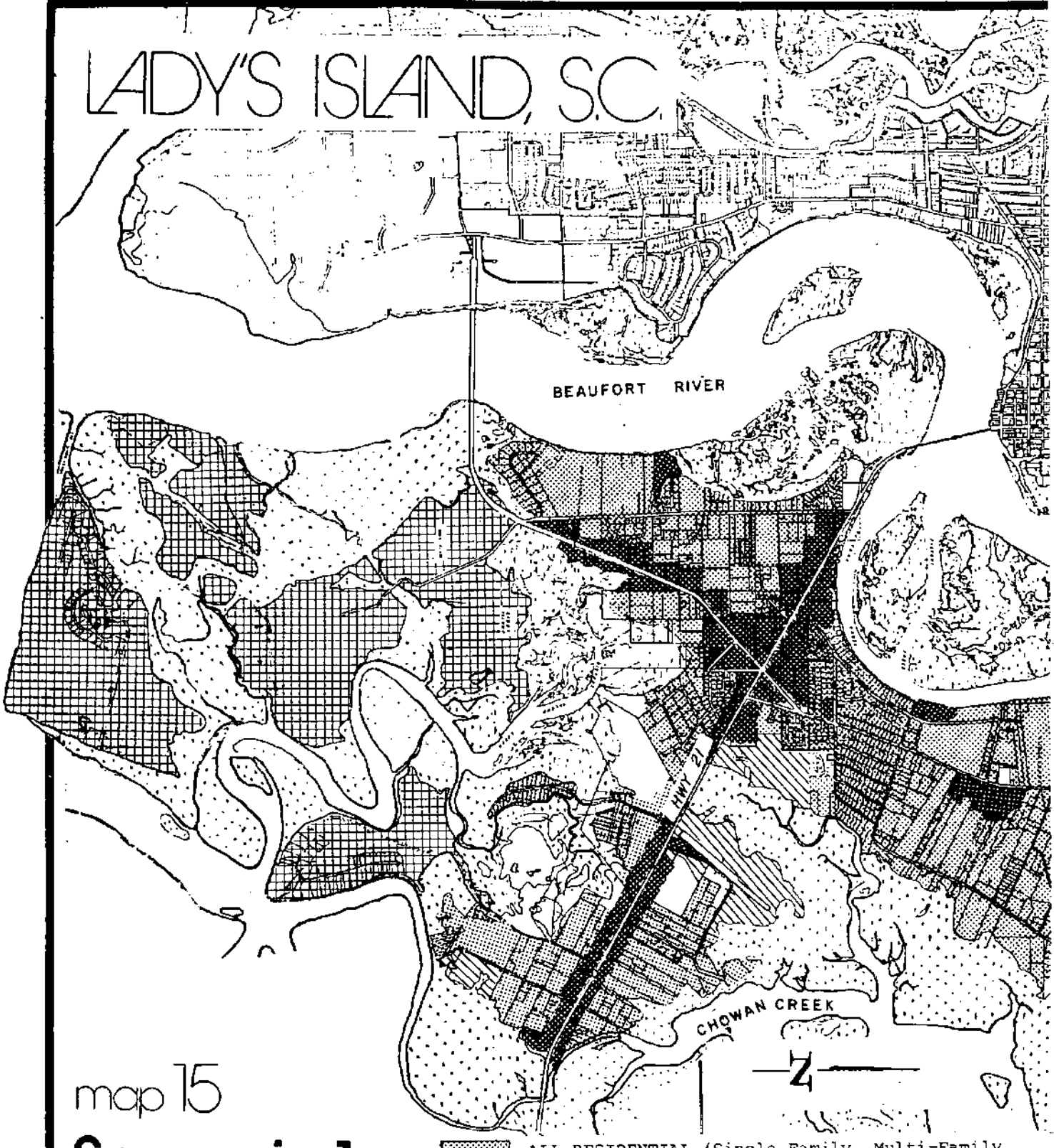
Scenario I (Map 15) presents a future "worst case". This scenario assumes that current development trends will continue to accelerate for the foreseeable future. Further assumptions are a major highway connector across Brickyard Creek to U.S. 21 in the vicinity of Gray's Hill, stimulating residential and strip commerical development in northern Lady's Island. The availability of full access to sewers and other utilities was assumed. Institutional controls on strip commercial development were assumed to be non-existent. As the most desirable residential property, all property with a potential view of water or marsh was assumed to be developed. The largest pieces of undeveloped property in 1984 are shown as major PUDs. There could and probably will be others.

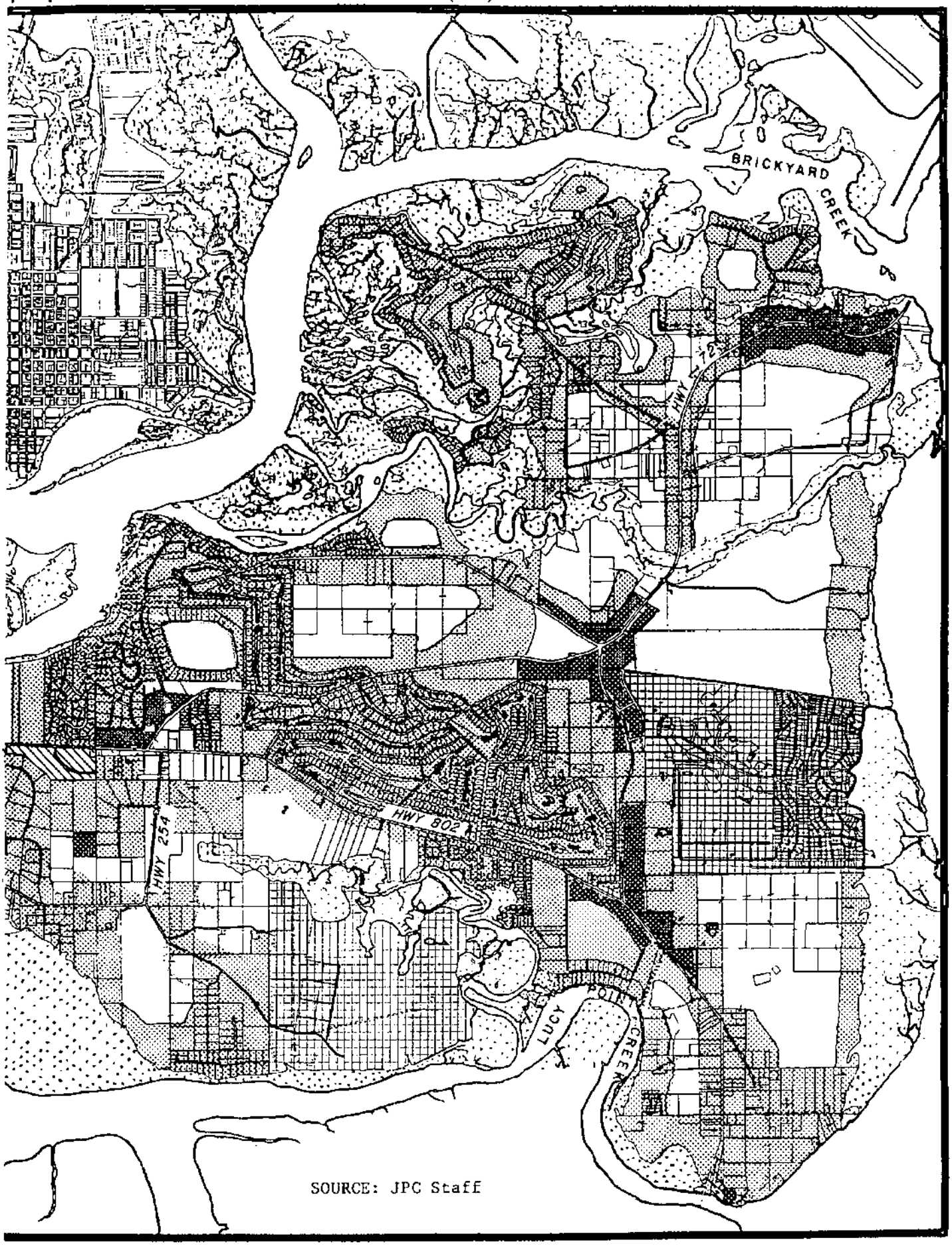
In all of these scenarios all residential development is shown as a single pattern. No attempt was made to predict the placement of single family vs. multi-family vs mobile home development. Furthermore, future private open space or farmland (if any) is not explicitly shown. Predictions about the development future of small individual parcels are very tenuous at best, hence the ommission of the category "agriculture/open space".

Scenario II (Map 16) shows essentially the same conditions as Scenario I, with the following important differences: 1) no bridge across Brickyard Creek, reducing the volume of development in northern Lady's Island, 2) major developments (PUDs) are assumed to have package

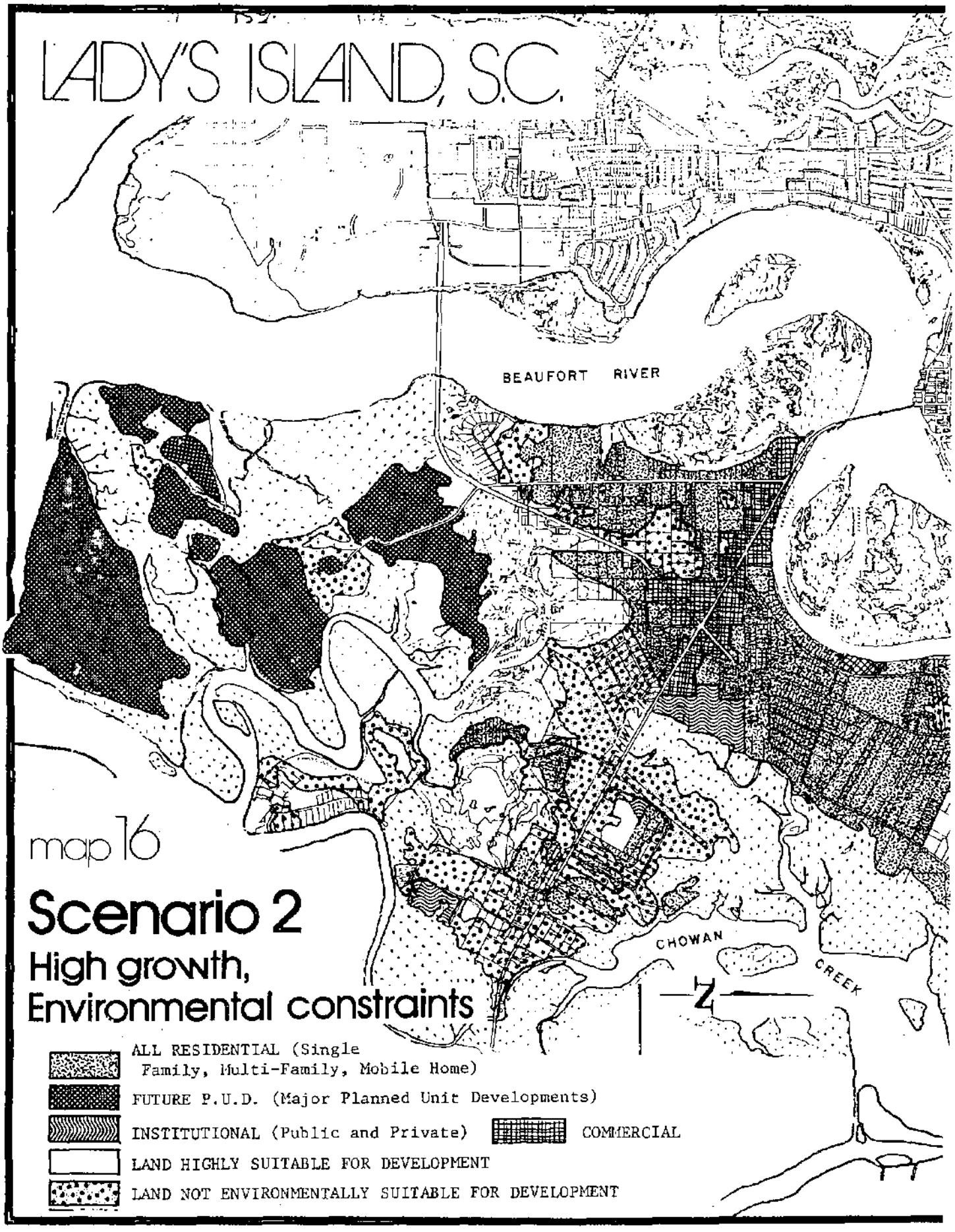
plants or sewers, hence development is shown in areas not environmentally suitable for development due to restrictions on septic tanks, and 3) the institutionalization of the environmental suitability analysis model found in Section 2.B. This means that development is limited to the land most environmentally suitable for development, by County Ordinance. No other political controls were assumed to be present; for example no controls on strip commercial development.

One final caveat - these scenarios are just that. They attempt only to portray what might be, not what will be. Development inevitably looks different when completed than when first contemplated. Put another way, hindsight is always more accurate then foresight. However, the proper use of these scenarios is to carry current trends to a conclusion, not to predict the future in close detail.

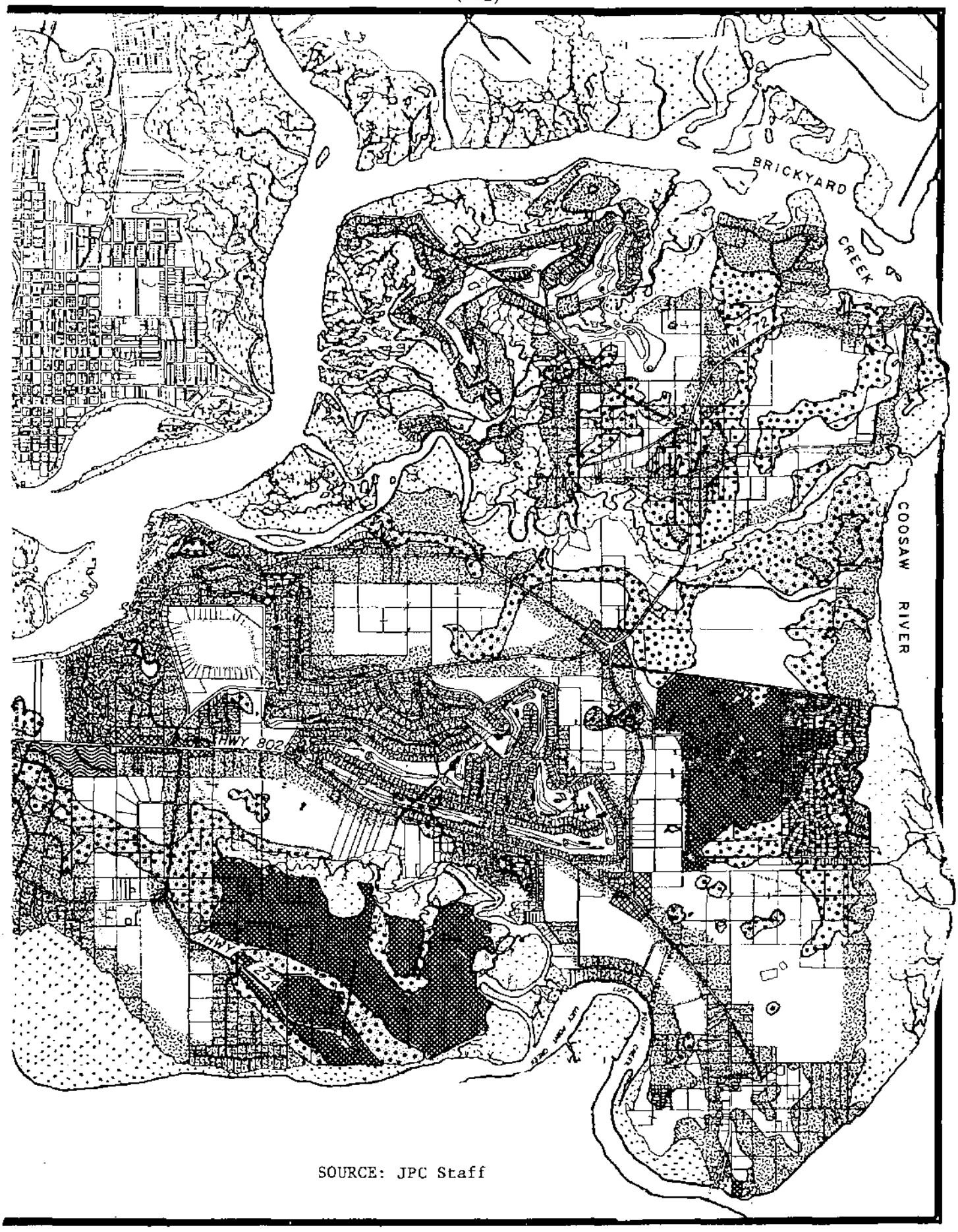

LADY'S ISLAND, S.C.
BEAUFORT RIVER
HWY 21
CHOWAN CREEK
N
map 15
Scenario 1
High growth,
No constraints
ALL RESIDENTIAL (Single Family, Multi-Family, Mobile Home)
INSTITUTIONAL (Public and Private)
FUTURE/CURRENT P.U.D.s (Major Planned Unit Developments)
COMMERCIAL



SOURCE: JPC Staff


LADY'S ISLAND, S.C.
BEAUFORT RIVER
CHOWAN CREEK
map 16
Scenario 2
High growth,
Environmental constraints
ALL RESIDENTIAL (Single Family, Multi-Family, Mobile Home)
FUTURE P.U.D. (Major Planned Unit Developments)
INSTITUTIONAL (Public and Private)
COMMERCIAL
LAND HIGHLY SUITABLE FOR DEVELOPMENT
LAND NOT ENVIRONMENTALLY SUITABLE FOR DEVELOPMENT

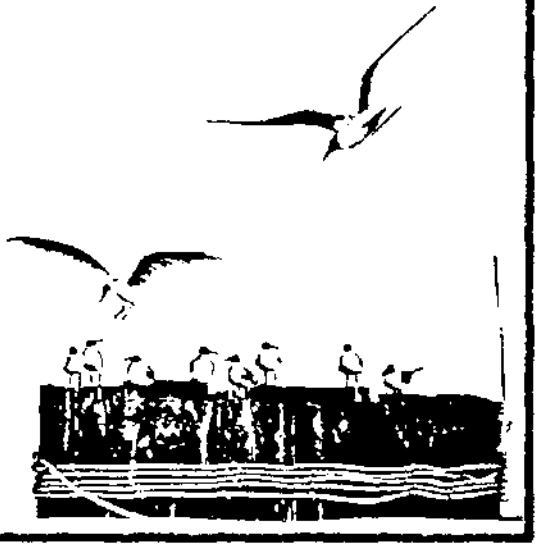
(112)



SOURCE: JPC Staff

CHAPTER THREE

RECOMMENDATIONS AND IMPLEMENTATION



CHAPTER 3. RECOMMENDATIONS AND IMPLEMENTATIONS

I. INTRODUCTION

This section contains the recommended solutions to the issues, problems and goals discussed in previous sections. The recommendations are generally organized by implementation device. For example, the recommendations which comprise the proposed Lady's Island Development District Standards are grouped together; those dealing with other Beaufort County agencies or the utilities are found elsewhere.

Under the general headings a number of recommendations, called policy statements, can be found. Attribution is given for each policy statement, either to the Lady's Island Citizens' Advisory Committee or to the Joint Planning Commission staff or both. The policy statements which the Citizens' Committee approved are underlined. When appropriate, a JPC staff Commentary follows selected policy statements. All of the policy statements below were unanimously approved by the members of the Lady's Island Citizens' Advisory Committee present at meetings on July 17 and 24.

All policy statements and Recommendations in this plan, unless otherwise stated, are based on the following assumptions:

1) All recommendations which could become Beaufort County ordinance assume a "grandfather clause" for existing uses and uses receiving permites by the effective date of the ordinance.

2) All recommendations which suggest new legal standards for construction, design, density, performance zoning and so on are meant to apply only to new construction or the replacement of non-conforming uses which are to be more than 50% rebuilt or have been more than 50% destroyed. (A non-conforming use is one which does not comply to the current ordinance, but is permitted under a "grandfather clause").

II. GOAL

The Lady's Island Citizens' Advisory Committee wrote and unanimously approved the following general goal to which they directed their efforts. The policy statements following the goal are designed to support and implement it. The goal defines the type of community the Committee would like Lady's Island to become.

> A low density community of mixed residential, agricultural and undeveloped (open space) type land uses with quality housing for a diversified population. Commercial development is restricted to consumer-oriented businesses catering primarily to the needs of the local population.

III. LADY'S ISLAND DEVELOPMENT DISTRICT STANDARDS

Note: The Joint Planning Comission unanimously approved all of the following recommendations on October 15 or November 5, 1984.

POLICY STATEMENT #1: LADY'S ISLAND DEVELOPMENT DISTRICT

Lady's Island Citizens' Advisory Committee and JPC staff recommend:

An amendment to the Development Standards Ordinance be adopted to create a Lady's Island Development District. The provisions of this amendment will apply only to Lady's, Gibbs, Cat, Cane Islands and other adjacent islands or the area bounded by Brickyard Creek and the Beaufort River to the East, the Coosaw River to the North, Lucy Point, Morgan River and Chowan Creeks to the East and the Beaufort River and Chowan Creek to the South.

POLICY STATEMENT #2: PERFORMANCE ZONING

Lady's Island Citizen's Advisory Committee and JPC staff recommend:

The Lady's Island Development District include performance zoning provisions to regulate the use of land. This zoning resolution divides all the land and water areas of Lady's Island into zoning districts. The purpose and intent of the zoning districts are defined as follows:

Neighborhood Conservation - This district is intended to preserve the character of existing neighborhoods and developments under construction at the time of adoption of the ordinance. It is designed to prevent these neighborhoods from becoming non-conforming under the terms of this ordinance. Permitted uses are residential, outdoor recreational and public service (electric substations, fire stations, etc.). Land Use Intensities may be designated. For example, a land use intensity of 30 would be designated NC_{30}. A Land Use Intensity system is proposed instead of regulating density (see Policy Statement #4).

Core Development - This district is the area presently urbanized. It is the community focal point, the area of high intensity use on which a full range of public and private facilities are concentrated. Permitted uses are residential, commercial and most institutional.

Development Districts - These are intended to accommodate most of the future growth. They consist of areas where development should logically locate as a consequence of planned public expenditures and associated capital expenditures. This district provides for planned unit developments, and for necessary commercial and institutional support to these uses.

The development district is designed to minimize the costs of extending or expanding services. It is a planned, logical accommodation of growth intended to serve areas suitable for development and to avoid unsuitable areas. Unlike a traditional zoning ordinance, this district allows many and varied uses while placing the emphasis on minimizing or buffering any nuisances between uses. Segregation of uses has never provided adequate protection, especially at the boundaries of such districts. This district anticipates the likelihood and desirability of mixing land uses and imposes standards to resolve possible problems and eliminate the negative impacts of juxtaposing unlike land uses.

Estate District - This district is intended to provide low-density, limited growth, residential areas. It is designed to accommodate residential development opportunities for those desiring semi-rural, low density settings and those willing to live in more remote locations and assume the costs of providing many of their own services and amenities.

This district is not expected to be subject to re-zoning to higher intensities in the future. Permitted uses are agriculture, forestry, residential, outdoor recreation, public service institutional and plant nurseries.

Agricultural District - This district is intended to protect and preserve areas in agricultural production for continued agricultural and agriculturally-oriented uses. Agriculture is presumed to be the most suitable use of the land in this district. This district is intended not to regulate agricultural uses, but to regulate those uses which threaten agriculture. Permitted uses are agriculture, forestry, certain residential, outdoor recreation, public service, agricultural support, and nurseries. (Only Beaufort County Council can change zoning of a particular parcel of property.)

Commentary: Control of land use, protection of property values and some degree of certainty about adjacent land uses have prompted intense public interest in land use controls for Lady's Island. Traditional zoning was recognized as being too restrictive and inappropriate for a rural but quickly developing area such as Lady's Island. The concept of performance zoning is proposed because it can exclude undesirable land uses from certain areas, while at the same time encouraging good design and accommodating growth rationally. It is designed to function in conjunction with, and not supplant, the existing DSO. Performance zoning has been adopted by Dorchester County and the City of West Columbia, among others, so it is certainly legal under the planning enabling legislation of South Carolina.

This performance zoning concept is developed further below. The following sections discuss excluded uses and density controls, among other provisions.

POLICY STATEMENT #3. COMMERCIAL DISTRICTS

Lady's Island Citizens' Advisory Committee and JPC staff recommend:

That the Lady's Island Development District include provisions to regulate commercial development in the Development and Core Development Districts to the effect that commercial uses (especially auto-oriented uses, including fast-food and drive-in restaurants) group in pre-planned concentrations with a minimum distance between such concentrations. In addition, these commercial clusters are to be screened and buffered from all other land uses, be located on arterial roads, be limited to one access per major arterial road and to be limited to the number and size of signs proposed in the revision of the County Sign Ordinance.

Commercial expansion should be limited to several areas, specifically along U.S. 21 and along S.C. 802 West of U.S. 21 to the McTeer Bridge.

The buffer and set back provisions are those described in the proposed Site Design and Density Standards (Section 5.2.9 March 28, 1984).

POLICY STATEMENT #4: AQUIFER RECHARGE ZONES

Lady's Island Citizens' Advisory Committee and JPC staff recommend:

Given that one of the three major aquifer recharge areas in Beaufort County is located on northern Lady's Island and given that the aquifer's waters are very sensitive to pollutants spilled or deposited on the surface, the use of the aquifer recharge zone should be restricted to open space (including park land), Conservation District, forestry and low density residential.

POLICY STATEMENT #5: AGRICULTURAL DISTRICT IN THE AICUZ

Lady's Island Citizens' Advisory Committee and JPC staff recommend:

All active agricultural land within the Air Installation Compatible Use Zone of the Marine Corps Air Station should be placed with the Agricultural District defined in Policy Statement #2.

POLICY STATEMENT #6: MOBILE HOME PARKS AND/OR DEVELOPMENTS

All mobile home developments or parks permitted after Lady's Island Development District (LIDD) Standards become a Beaufort County Ordinance should be limited to certain zoning district. Any future mobile home developments/parks must have a mandatory 50 foot setback, 80% of which should be buffered and/or screened.

Mobile home developments/parks which are made non-conforming by enacting the LIDD Standards must comply with those standards if they are rebuilt or reconstructed for any reason on a large scale (greater than 50%). (For example, if five of the trailers in an eleven-trailer mobile home park were destroyed, the "grandfather clause" would remain intact. If the sixth trailer were also destroyed, the LIDD Standards would apply).

All mobile homes erected on a permanent home sige after the LIDD Standards become Beaufort County Ordinance must be tied down and skirted. This recommendation applies to all mobile homes, whether in developments, parks or singly located. In the 'V' flood zone skirting must be 'breakaway' per Beaufort County Building Inspections Department regulations.

POLICY STATEMENT #7: NUISANCES

Lady's Island Citizens' Advisory Committee recommend:
That these uses are to be strictly controlled on Lady's Island so that they will not have a negative impact on adjacent, neighboring properties or property owners.

1) Such uses as create a risk of fire, explosion, noise, radiation, injury, damage or other physical detriment to any person, structure or plant growth beyond the boundaries of the premises on which such use is located.

2) Racing tracks for automobiles, motorcycles, grand prix midget racers, go-carts and similar activities.

3) Commercial amusement parks, Ferris wheels, roller coasters, water slides, carnival rides and carnival-like activities except those non-profit organizations, agricultural or institutional fairs, displays and games in place and operated at special times of the year for thirty (30) days or less.

4) Commercial wild animal parks, alligator farms and other animal displays and use activities requiring admission for entry; provided, however, that this provision shall not apply to a marine ecology center or aquarium, animal protection shelter, kennels, dog or horse training facilities, boarding and riding stables or similar educational facilities, provided they do not create a nuisance beyond the property boundary.

5) Truck and automobile junkyards, salvage material yards, open yard storage of contractors' materials, supplies and equipment, solid waste landfill areas and depositories for nuclear waste, chemicals or other industrial or agricultural wastes.

6) Any use causing or resulting in the emission of toxic or corrosive gases, radiation, interference with television or radio reception, or other physical or electronic disturbance perceptible beyond the boundaries of the premises on which such use is conducted.

7) Any light or source illumination, either interior or exterior, that casts distrubing rays or creates glare so as to constitute a nuisance or creates a hazard by impairing vehicular driver vision.

8) Such facilities, installations or activities which result in the production or discharge of smoke or other air contaminates as dark or darker in shade than as designated as No. 2 on the Latest Edition Ringlemann Chart as published by the United States Bureau of Mines for a period or periods aggregating more than three (3) minutes in any one hour.

9) Such facilities, installation or activities which result in the production or discharge of offensive odors exceeding the standards established by Table III (Odor Threshold) in Chapter 5 of Manufacturing Chemists Assoc., Inc.'s "Air Pollution Abatement Manual", Latest Edition.

10) Such facilities, installations or activities which result in the production of noise levels in excess of 55 dBa measured at the property line.

POLICY STATEMENT #8: HEIGHT LIMITATIONS

Lady's Island Citizens' Advisory Committee and JPC staff recommend:

That the height of all buildings on Lady's Island be limited to fifty feet maximum from the ground to the ridgepole.

Commentary: Restrictions on the height of building are one of the oldest forms of land use control in the United States. By 1909 the US Supreme Court had already confirmed that the City of Boston could regulate the height of buildings in Welch vs. Swasey.

In more recent times the Supreme Court has upheld the validity of regulations on bulk, density and height as being a legitimate exercise of the police power. All such regulations must be based on "reasonable" criteria. In recent years the Supreme Court has agreed that aesthetics and the preservation of neighborhood character are indeed legitimate reasons. See Berman vs. Parker, Belle Terre vs. Borass, Reid vs. Architect Board of Review and Benjamin vs. City of Columbus, among many others.

The South Carolina planning enabling legislation also gives legally constituted planning bodies the authority to regulate height, bulk and density through the provisions of a zoning ordinance. It is suggested that the height limitation be an integral part of the performance zoning provision of the Lady's Island Development District.

Act 487 also gives communities the authority to enact specific ordinances for sub-parts of their jurisdictions, as long as a comprehensive plan has been completed. Dorchester and Lexington counties have both done this, incorporating performance zoning with development standards or traditional zoning.

The Citizens' Committee unanimously recommends a height limitation to preserve the neighborhood and residential, semi-rural character of Lady's Island.

POLICY STATEMENT #9: FRONTAGE ROADS

On November 5, 1984, the Joint Planning Commission unanimously approved the addition of this policy statement to the plan.

The construction and use of frontage roads paralleling Lady's Island's major roadways is strongly encouraged wherever practicable. For example, US 21 and SC 802 west are Lady's Island's two most traveled and hence "major" roadways. A frontage road is an access road to properties located along a major roadway. It is designed to limit access points to the major roadway to increase safety and lessen congestion.

IV. DEVELOPMENT STANDARDS ORDINANCE

Certain changes to the DSO are recommended in this section which do not necessarily fit into the Development District Standards. Even though some of these recommendations pertain only to Lady's Island, as a matter of practicality they can be handled within the general framework of the DSO and its attendant administrative policies.

POLICY STATEMENT #10: MAJOR THOROUGHFARES

Lady's Island Citizens' Advisory Committee and JPC staff recommend:

That Barnwell Road, and the "Island Causeway" from SC 802 to Cat Island (S-129) be designated major thoroughfares according the provisions of the Beaufort County Developments County Development Standards Ordinance.

POLICY STATEMENT #11: AIR INSTALLATION CAMPATIBLE USE ZONE WARNING ON PLATS

Air Installation Campatible Use Zone (AICUZ) - these areas exposed to noise, as well as areas subject to accidents from aircraft operations.

Lady's Island Citizens' Advisory Committee recommends:

"All plats of real estate located within the boundaries of the AICUZ on Lady's Island must be stamped by the JPC staff with a suitable notice before the plat can be recorded by the Register of Mesne Conveyances. A suitable notice would indicate that the property is in the AICUZ and that the Department of Defense holds an avigation and sonic easement on said property.

POLICY STATEMENT #12: WILDLIFE HABITAT

Lady's Island Citizens' Advisory Committee and JPC staff recommend:

Wildlife habitat of exceptional quality should be mapped and placed within the Conservation District, as defined by the DSO. Examples of such habitat are Heron rookeries, Bald Eagle nest sites and habitat necessary to the survival of species identified by the state or federal governments as endangered and/or threatened.

Wildlife deserving this protection is not limited to the examples cited here; this recommendation applies to all avian, aquatic and terrestrial wildlife.

Beaufort County should encourage the appropriate agencies to make a comprehensive survey of the Island's wildlife. The JPC should consult with the SC Wildlife & Marine Resources Department when defining the areas to be placed within the Conservation District.

In all cases the protected areas should include an adequate buffer strip to protect the sites and ensure their use as wildlife habitat.

POLICY STATEMENT #13: FRESHWATER WETLANDS

Lady's Island Citizens Advisory Committee and JPC staff recommend:

That all freshwater wetlands be evaluated by an appropriate authority prior to any modification. An appropriate authority in this case is a trained biologist.

Commentary: Trained biologists already in the governments employ may be available through the Charleston District offices of the S. C. Wildlife and Marine Resources Department and/or the U.S. Army Corps of Engineers "404" program. Under certain circumstances qualified private biologist may also be used.

V. POLICY RECOMMENDATIONS

The Citizens' Advisory Committee addressed policy recommendations to Beaufort County Council as well as several State of South Carolina agencies. These recommendations are arranged by topic below, instead of by the agency they are addressed to because, in most cases, they are addressed to multiple agencies.

A. TRANSPORTATION POLICY STATEMENTS

POLICY STATEMENT #14: PRIORITY OF FUTURE HIGHWAY IMPROVEMENTS

Lady's Island Citizens' Advisory Committee recommends:

That immediate and long term steps be taken to improve the highways to relieve congestion and improve communications. Three types of improvements are listed below, differing considerably in scope - spot improvements, major improvements and a design change.

All of the following recommendations have a high priority, however the Committee recommends that relatively small and simple projects which improve traffic safety should be enacted first.

1) The intersection of US 21 and SC 802 should be improved for reasons of safety and convenience. Either the medians should be redesigned and rebuilt to provide adequate visual clearance or a turning light should be installed.

2) In order of priority (from most to least important) the following highway improvements are necessary to relieve congestion and improve communications:

a) Widen US 21 from the Woods Memorial Bridge east at least to Eddings Point Road.
b) Widen SC 802 and S-280 from the west end of the Battery Creek replacement bridge to US 21 in Burton.

These two projects are in the current six-year program of the S C. Department of Highways and Public Transportation, but they have received the lowest priority (deferred for lack of funds). This Committee recommends that JPC and Beaufort County Council request the Legislative Delegation to continue to promote the funding of these two projects to the S.C. Highway Commission.

3) The existing five lane right-of-way which now includes SC 802 West (from U.S. 21 to the McTeer Bridge) should be utilized for a frontage road. This frontage or service road should be designed to carry local traffic and traffic to and from the businesses which will inevitably locate along SC 802 West. Access to SC 802 West should be limited to two points, controlled by traffic lights. The timely installation of this service drive will help to prevent the repetition of the congested and dangerous traffic patterns occurring, for example, along US 21 in Burton.

POLICY STATEMENT #15: NORTHEAST BELTWAY/BRICKHARD CREEK BRIDGE PROPOSED IN THE BEAUFORT AREA URBAN TRANSPORTATION STUDY (1971)

Lady's Island Citizens' Advisory Committee and JPC staff recommend:

If and when serious consideration is given to constructing the Northeast Beltway and Brickyard Creek Bridge the following measures should be taken:

1) Design the Northeast Beltway to be a limited access route.

2) Access points should be limited. Neighborhood traffic should be shunted to the access points via service drives, as needed. Access points will probably be needed at A) Mitchellville (intersection of S-72, S-144, Barnwell Road), B) the intersection of S-72 and SC 802, C) Seagull Lane and Barnwell Road, D) S-72 at Brickyard Creek. (Note: in the absence of a highway engineering study these are suggested access points only.)

3) Commercial development should be limited to the immediate vicinty of one or two of the access points. The only businesses permitted should be of the neighborhood commercial type.

4) A 50-foot buffer strip should be preserved along both sides of the right-of way.

B. ENVIRONMENTAL POLICY STATEMENTS

POLICY STATEMENT #16: MARINE WATER QUALITY

Lady's Island Citizens' Advisory Committee recommends:

That the JPC and Beaufort County Council support any and all changes in the SC Department of Health & Environmental Control's water quality designations which change a given designation to reflect the actual quality of the water. This Committee endorses the upgrade of the Beaufort River and Factory Creek from SB to SA. The Committee does not believe that water quality should be maintained at SB in the above-mentioned streams, since it encourages the concentration of marinas and discharges in those areas. Water quality designations in all cases should reflect the actual quality of the water body in question.

C. MISCELLANEOUS POLICY STATEMENTS ON COUNTY POLICIES

POLICY STATEMENT #17: BEAUFORT COUNTY DRAINAGE POLICY

Lady's Island Citizens' Advisory Committee recommends:

That Beaufort County Council establish the maintenance of existing government owned and controlled drainage ways and easements as the first priority of the Department of Public Works Drainage Program. Wherever possible existing drainageways should be repaired and/or maintained before tax revenue is spent on the construction of new facilities.

POLICY STATEMENT #18: SEWER SERVICE

Lady's Island Citizens' Advisory Committee and JPC staff recommend:

Installation of a community-wide sewer system on Lady's Island should receive a high priority from the implementing agency(ies).

POLICY STATEMENT #19: PUBLIC OPEN SPACE

Lady's Island Citizens' Advisory Committee and JPC staff recommend:

That Beaufort County acquire, improve and maintain a certain minimum amount of public open space, based on the standards outlined in the Beaufort County Open Space and Recreation Plan, 1977-2000. (The standards are three acres of neighborhood park per 1000 residents and three acres of community park per 1000 residents for a total of six acres per 1000 people.) As of 1980, Lady's Island needed an additional 5.36 acres of neighborhood parks and 1.36 acres of community parks. These figures are projected to increase to 23.9 and 18.9 acres respectively by the year 2000.

In order to prevent the duplication of facilities and better utilize tax revenue, recreational facilities at public schools should be open to the general public whenever practicable.

APPENDIX I

PROPOSED AMENDMENTS TO
THE DEVELOPMENT STANDARDS ORDINANCE

August 7, 1979
Revised June 12, 1984

1. AMEND ARTICLE III SECTION 3.1 BY ADDING:

3.1.4 AIRPORT DISTRICT. For the purpose of protecting future development from the effects of aircraft noise and to prevent obstructions to air navigation, the Airport District is established.

2. AMEND SECTION 3.2 BY ADDING:

3.2.4 AIRPORT DISTRICT. The special Airport District of Beaufort County consists of that area designated on an official Airport District Map and specifically defined as:

(a) Those areas within a CNR greater than 100.
(b) Those areas within a NEF greater than 30.
(c) Those areas within the approach zone of an airport, as defined in 3. below under 4.3.4.3. Height limitations

3. AMEND ARTICLE IV BY ADDING:

4.3.4 AIRPORT DISTRICT. The standards prescribed in this section shall apply to all building or development in the Airport District.

4.3.4.1 NOISE ABATEMENT MATERIALS. All construction of residential development within the the Airport District shall be constructed with special noise abatement materials to reduce the impact of aircraft noise.

4.3.4.2. DEVELOPMENT DENSITY. All residential development within the Airport District shall be at a density of no greater than one dwelling unit per acre.

4.3.4.3 AIRPORT DISTRICT ZONES. In order to carry out the provisions of this Ordinance, there are hereby created certain zones which inclue all of the land lying beneath the approach surfaces, transitional surfaces, horizontal surfaces, and conical surfaces as they apply to the Beaufort County Airport. Such zones are shown on the Beaufort County Airport Approach and Vicinity Plan consisting of one sheet, which is attached to this Ordinance and made a part hereof. An area located in more than one of the following zones is considered to be only in the zone with the more restrictive height limitation. The various zones are hereby established as follows:

(a) Utility Runway Visual Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 250 feet wide. The approach zone expands outward uniformly to a width of 1,250 feet at a horizontal distance of 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

(b) Runway Larger Than Utility Visual Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 1,500 feet at a horizontal distance of 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

(c) Runway Larger Than Utility With a Visibility Minimum Greater Than 3/4 Mile Nonprecision Instrument Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 3,500 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

(d) Runway Larger Than Utility With a Visibility Minimum As Low As 3/4 Mile Nonprecision Instrument Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The aproach zone expands outward uniformly to a width of 4,000 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

(e) Precision Instrument Runway Approach Zone - The inner edge of the approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 16,000 feet at horizontal distance of 50,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

(f) Transitional Zone - The transitional zones are the areas beneath the transitional surfaces.

(g) Horizontal Zone - The horizontal zone is established by swinging arcs of 5,000 feet radii for all runways designated utility or visual and 10,000 feet for all others from the center of each runway and connecting the adjacent arcs by drawing lines tangent to those arcs. The horizontal zone does not include the approach and transitional zones.

(h) Conical Zone - The conical zone is established as the area that commences at the periphery of the horizontal zone and extends outward therefrom a horizontal distance of 4,000 feet.

4.3.4.4: AIRPORT DISTRICT HEIGHT LIMITATIONS

Except as otherwise provided in this Ordinance, no structure shall be erected, altered, or maintained, and no tree shall be allowed to grow in any zone created by this Ordinance to a height in excess of the applicable height herein established for such zone. Such applicable height limitations are hereby established for each of the zones in question as follows:

(a) Utility Runway Visual Approach Zone - Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

in the eyes of pilots using the airport, impair visibility in the vicinity of the airport, create bird strike hazards, or otherwise in any way endanger or interfere with the landing, takeoff, or maneuvering of aircraft intending to use the airport.

4.3.4.6 NONCONFORMING USES

(a) Regulations Not Retroactive - The regulations prescribed in this Ordinance shall not be construed to require the removal, lowering, or other change or alteration of any structure or tree not conforming to the regulations as of the effective date of this Ordinance, or otherwise interfere with the continuance of a nonconforming use. Nothing contained herein shall require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to the effective date of this Ordinance, and is diligently prosecuted.

(b) Marking and Lighting - Notwithstanding the preceding provision of this Section, the owner of any existing nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance thereon of such markers and lights as shall be deemed necessary by the County manager to indicate to the operators of aircraft in the vicinity of the airport the presence of such airport obstruciton. Such markers and lights shall be installed, operated, and maintained at the expense of the County of Beaufort.

4.3.4.7 DEVELOPMENT EXCEPT FROM AIRPPORT DISTRICT PERMIT

(a) Future Uses - Except as specifically provided in a, b, and c hereunder, no material change shall be made in the use of land, no structure shall be erected or otherwise established, and no tree shall be planted in any zone hereby created unless a permit therefor shall have been applied for and granted. Each application permit is desired, with sufficient particularity to permit it to be determined whether the resulting use, structure, or tree would conform to the regulations herein prescribed. If such determination is in the affirmative, the permit shall be granted. No permit for a use inconsistent with the provisions of this ordinance shall be granted unless a variance has been approved in accordance with Section 4.3.4.7.

(1) In the area lying within the limits of the horizontal zone and conical zone, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when because of terrain, land contour, or topographic features, such tree or structure would extend above the height limits prescribed for such zones.

(2) In areas lying within the limits of the approach zones but at a horizontal distance of not less than 4,200 feet from each end of the runway, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when such tree or structure would extend above the height limit prescribed for such approach zones.

(3) In the areas lying within the limits of the transition zones beyond the perimeter of the horizontal zone, no permit shall be

required for any tree or structure less than seventy-five feet of vertical height above the ground, except when such tree or structure, because of terrain, land contour, or topographic features, would extend above the height limit prescribed for such transition zones.

Nothing contained in any of the foregoing exceptions shall be contrued as permitting or intending to permit any construction, or alteration of any structure, or growth of any tree in excess of any of the height limits established by this Ordinance except as set forth in Section 4.3.4.4.

(b) Existing Uses - No permit shall be granted that would allow the establishment or creation of an obstruction or permit nonconforming use, structure, or tree to become a greater hazard to air navigation, than it was on the effective date of this Ordinance or any amendments thereto or than it is when the application for a permit is made. Except as indicated, all applications for such a permit shall be granted.

(c) Nonconforming Uses Abandoned or Destroyed - Whenver the DSO Administrator determines that a nonconforming tree or structure has been abandoned or more than 80 percent torn down, physically deteriorated, or decayed, no permit shall be granted that would allow such structure or tree to exceed the applicable height limit or otherwise deviate from the ordinance regulations.

(d) Variances - Any person desiring to erect or increase the height of any structure, or permit the growth of any tree, or use property, not in accordnce with the regulations prescribed in this Ordinance, may apply to the Joint Planning Commission for a variance from such regulations The application for variance shall be accompanied by a determination form the Federal Aviaton Administration as to the effect of the proposal on the operation of air navigation facilities and the safe, efficient use of navigable airspace. Such variance shall be allowed where it is duly found that a literal application or enforcement of of the regulations will result in unnecesary hardship and relief granted, will not be contrary to the public interest, will not create a hazard to air navigation, will do substantial justice, and will be in accordance with the spirit of this Ordinance. Additionally, no application for variance to the requirements of this Ordinance may be considered by the Joint Planning Commission unless a copy of the application has been furnished to the Airport Manager for advice as to the aeronautical effects of the variance. If the Airport Manager does not respond to the application within 30 days after receipt, the Joint Planning Commission may act on its own to grant or deny said application.

(e) Obstruction Marking and Lighting - Any permit or variance granted may, if such action is deemed advisable to effectuate the purpose of this Ordinance and be reasonable in the circumstances, be so conditioned as to require the owner of the structure or tree in question to install, operate, and maintain, at the owner's expense, such markings and lights as may be necessary. If deemed proper by the County Council this condition may be modified to require the owner to permit the County of Beaufort, at its own expense, to install operate, and maintain the necessary markings and lights.

4. AMENDMENTS TO ARTICLE X: DEFINITIONS AND TERMS

Section 10.2

AIRPORT - Beaufort County Airport, U.S. Highway 21, Lady's Island

AIRPORT ELEVATION - The highest point of an airport's usable landing area measured in feet from sea level.

APPROACH SURFACE - A surface longitudinally centered on the extended runway centerline, extending outward and upward from the end of the primary surface and at the same slope as the approach zone height limitation slope set forth in Section 4.3.4.3 of this Ordinance. In plan the perimeter of the approach surface coincides with the perimeter of the approach zone.

APPROACH, TRANSITIONAL, HORIZONTAL, AND CONICAL ZONES - These zones are set forth in Section 4.3.4.3 of this Ordinance.

CONICAL SURFACE - A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

HAZARD TO AIR NAVIGATION - An obstruction determined to have a substantial adverse effect on the safe and efficient utilization of the navigable airspace.

HEIGHT - For the purpose of determining the height limits in all zones set forth in this Ordinance and shown on the zoning map, the datum shall be mean sea level elevation unless otherwise specified.

HORIZONTAL SURFACE - A horizontal plane 150 feet above the established airport elevation, the perimeter of which in plan coincides with the perimeter of the horizontal zone.

LARGER THAN UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of greater than 12,500 pounds maximum gross weight and jet powered aircraft.

NONCONFORMING USE - Any pre-existing structure, object of natural growth, or use of land which is inconsistent with the provisions of this Ordinance or an amendment thereto.

NONPRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigatin equipment, for which a straight-in nonprecision instrument approach procedure has been approved or planned.

OBSTRUCTION - Any structure, growth, or other object, including a mobile object, which exceeds a limiting height set forth in Section 4.3.4.4 of this Ordinance.

PRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in nonprecision instrument approach procedure has been approved or planned.

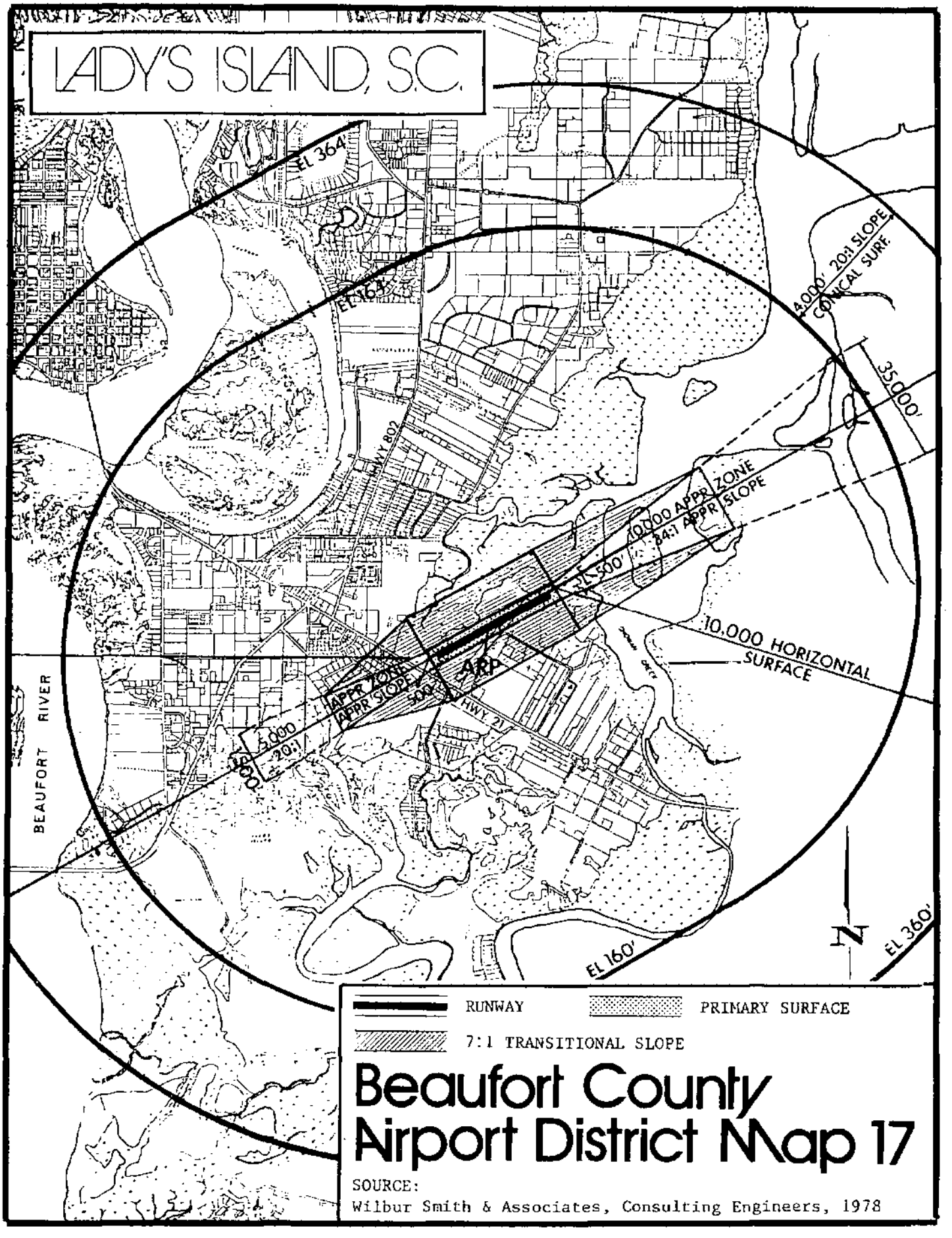
PRIMARY SURFACE - A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; for military runways or when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The width of the primary surface is set forth in Section 4.3.4. of this Ordinance. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

RUNWAY - A defined area on an airport prepared for landing and take-off of aircraft along its length.

TRANSITIONAL SURFACES - These surfaces extend outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven (7) feet horizontally for each foot vertically from the sides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces. Transitional surfaces for those portions of the precision approach surfaces, which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at 90 degree angles to the extended runway centerline.

UTILITY RUNWAY - A runway that is contructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

VISUAL RUNWAY - a runway intended solely for the operation of aircraft using visual approach procedures.



Beaufort County Airport District Map 17

SOURCE:
Wilbur Smith & Associates, Consulting Engineers, 1978