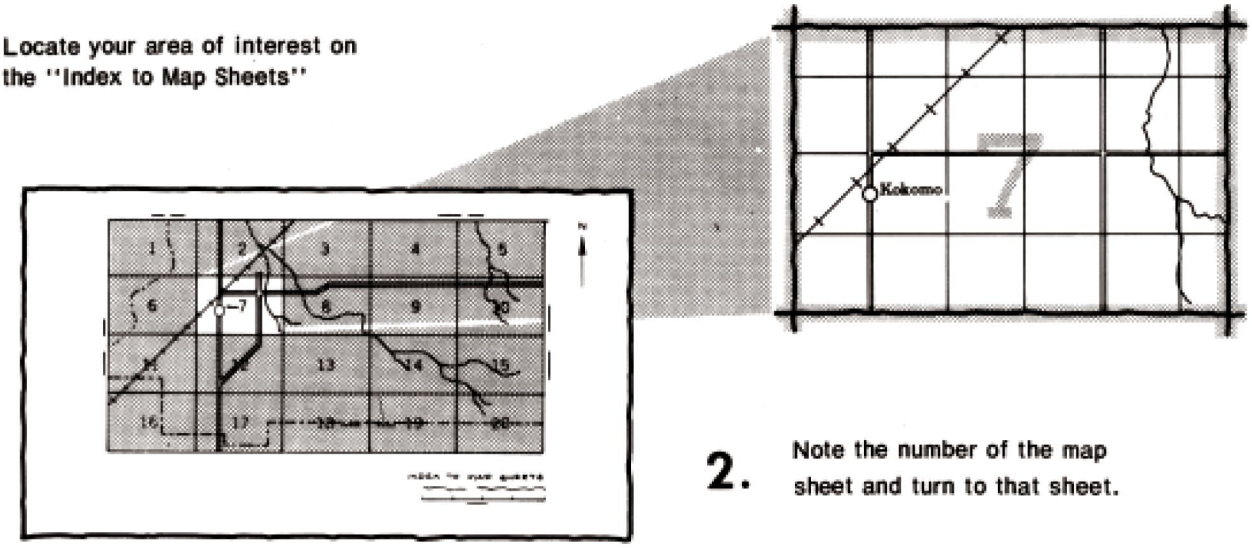
SOIL SURVEY OF
Berkeley County, South Carolina

United States Department of Agriculture
Soil Conservation Service and Forest Service
In cooperation with
South Carolina Land Resources Conservation Commission
and
South Carolina Agricultural Experiment Station

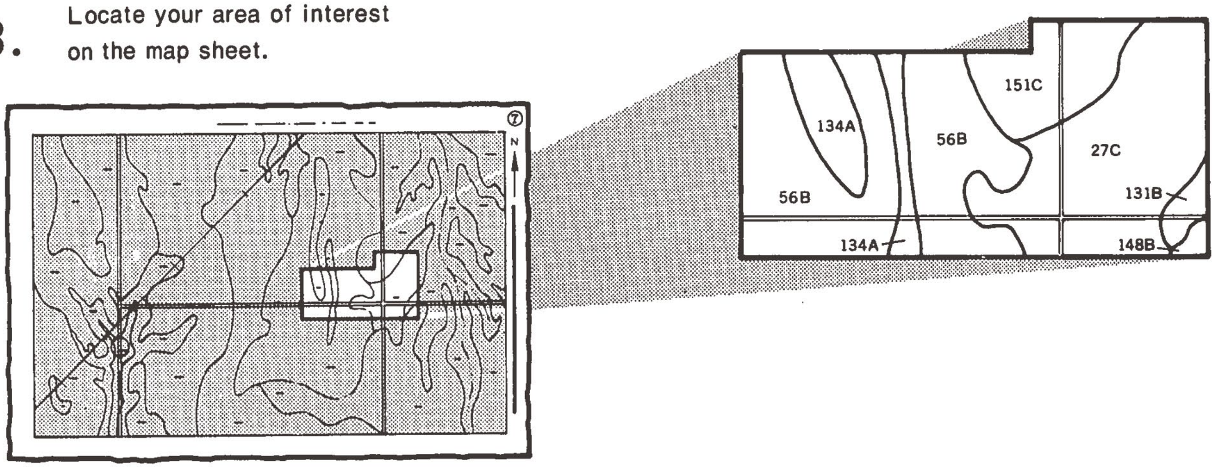
HOW TO USE

1. Locate your area of interest on the "Index to Map Sheets"

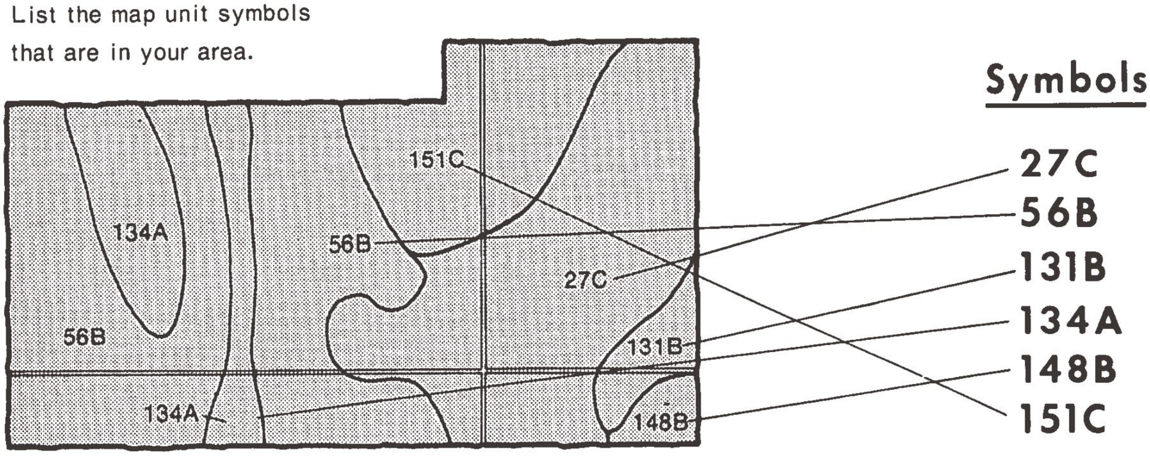


2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.

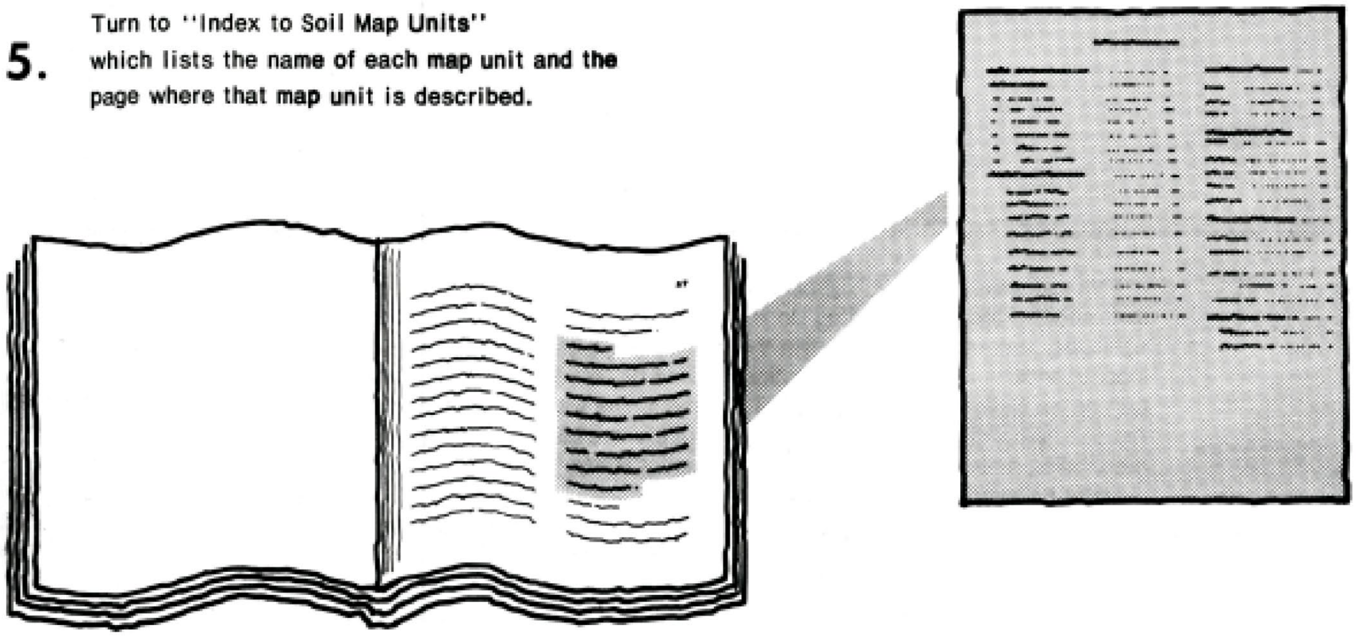


4. List the map unit symbols that are in your area.

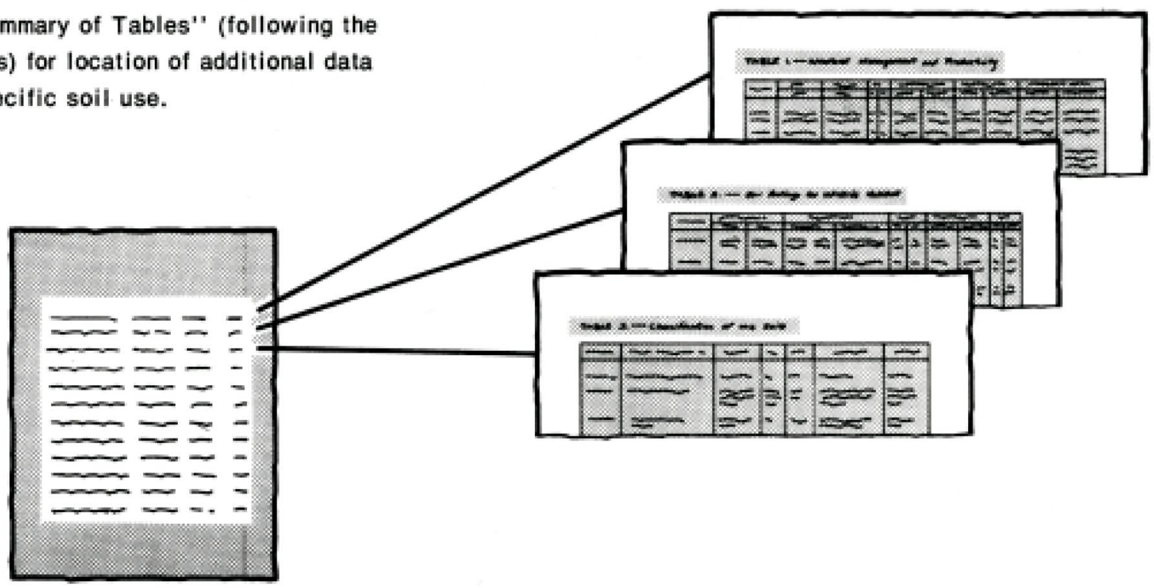


THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in the period 1965-73. Soil names and descriptions were approved in 1974. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1974. This survey was made cooperatively by the Soil Conservation Service and Forest Service, the South Carolina Land Resources Conservation Commission, and the South Carolina Agricultural Experiment Station. It is part of the technical assistance furnished to the Berkeley Soil and Water Conservation District.

Soil maps in this survey may be copied without permission, but any enlargement of these maps could cause misunderstanding of the detail of mapping and result in erroneous interpretations. Enlarged maps do not show small areas of contrasting soils that could have been shown at a larger mapping scale.

Cover picture: Live oak lined road to plantation headquarters on Duplin fine sandy loam, 0 to 2 percent slopes.

Contents

Issued January 1980

Index to Soil Mapping Units

Summary of Tables

Summary of Tables—Continued

Foreword

The Soil Survey of Berkeley County contains much information useful in any land-planning program. Of prime importance are the predictions of soil behavior for selected land uses. Also highlighted are limitations or hazards that are inherent in the soil, improvements needed to overcome these limitations, and the impact that selected land uses will have on the environment.

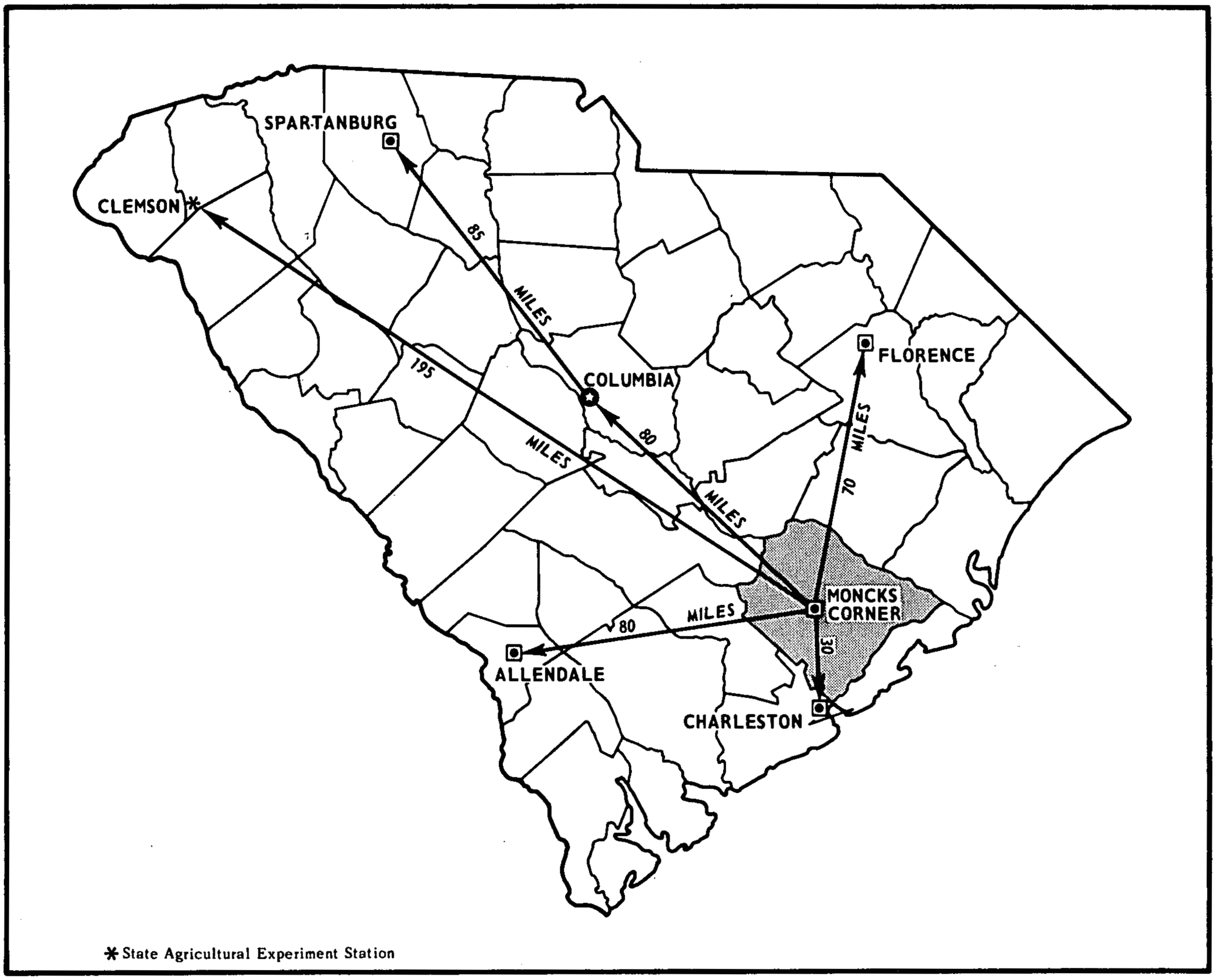
This soil survey has been prepared for many different users. Farmers, ranchers, foresters, and agronomists can use it to determine the potential of the soil and the management practices required for food and fiber production. Planners, community officials, engineers, developers, builders, and homebuyers can use it to plan land use, select sites for construction, develop soil resources, or identify any special practices that may be needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the soil survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur even within short distances. Soils may be seasonally wet or subject to flooding. They may be shallow to bedrock. They may be too unstable to be used as a foundation for buildings or roads. Very clayey or wet soils are poorly suited to septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map; the location of each kind of soil is shown on detailed soil maps. Each kind of soil in the survey area is described, and much information is given about each soil for specific uses. Additional information or assistance in using this publication can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

This soil survey can be useful in the conservation, development, and productive use of soil, water, and other resources.

George E. Huey
State Conservationist
Soil Conservation Service



Location of Berkeley County in South Carolina.

SOIL SURVEY OF BERKELEY COUNTY, SOUTH CAROLINA

By Bobby M. Long, Soil Conservation Service

Soils surveyed by Bobby M. Long, G. Wade Hurt, and George V. Long, Soil Conservation Service, and Theodore R. Love and Louis E. Andrews, Forest Service

United States Department of Agriculture, Soil Conservation Service and Forest Service, in cooperation with South Carolina Land Resources Conservation Commission and South Carolina Agricultural Experiment Station

BERKELEY COUNTY is in the southeastern part of South Carolina on the Atlantic Coastal Plain (see map on facing page). The county has a total area of about 775,000 acres, or 1,211 square miles. This acreage includes Lake Moultrie, about 60,800 acres; the part of Lake Marion in Berkeley County, about 10,200 acres; and other smaller water areas, about 7,775 acres. The county seat is Moncks Corner, the second largest town in the county.

Berkeley County was created in 1882 from the Charleston District, with Mt. Pleasant as the county seat. In 1895 a section of Berkeley County bordering the coast was added to Charleston County, and the county seat was moved to Moncks Corner.

Most of the county consists of broad areas of nearly level to gently sloping, dominantly loamy and clayey soils. The soils on the flood plains of the rivers and smaller streams are subject to frequent flooding. The major soils in the county are in the Meggett, Goldsboro, Bonneau, Craven, Wahee, Duplin, Bethera, and Tawcaw series. Ninety-five percent of the soils in Berkeley County have excess water in the profile. A small part of the acreage has been artifically drained by ditches and tile.

About 8 percent of the county is used for cultivated crops, 2 percent for pasture, 83 percent for woodland, and 7 percent for urban and other nonfarm uses. The principal crops are corn and soybeans, but a few acres are in cotton and tobacco. Forest products are a major source of income.

How this survey was made

Soil scientists made this survey to learn what kinds of soil are in the survey area, where they are, and how they can be used. The soil scientists went into the area knowing they likely would locate many soils they already knew something about and perhaps identify some they had never seen before. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; the kinds of rock; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material, which has been changed very little by leaching or by the action of plant roots.

The soil scientists recorded the characteristics of the profiles they studied, and they compared those profiles with others in counties nearby and in places more distant. Thus, through correlation, they classified and named the soils according to nationwide, uniform procedures.

After a guide for classifying and naming the soils was worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, roads, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from aerial photographs.

The areas shown on a soil map are called soil mapping units. Some mapping units are made up of one kind of soil, others are made up of two or more kinds of soil, and a few have little or no soil material at all. Mapping units are discussed in the section "Descriptions of the soils."

While a soil survey is in progress, samples of soils are taken as needed for laboratory measurements and for engineering tests. The soils are field tested, and interpretations of their behavior are modified as necessary during the course of the survey. New interpretations are added to meet local needs, mainly through field observations of different kinds of soil in different uses under different levels of management. Also, data are assembled from other sources, such as test results, records, field experience, and information available from state and local specialists. For example, data on crop yields under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it is readily useful to different groups of users, among them farmers, managers of woodland, engineers, planners, developers and builders, homebuyers, and those seeking recreation.

General soil map

The general soil map at the back of this publication shows, in color, the soil associations in the county. Each soil association is a unique natural landscape. An association typically consists of one or more major soils and some minor soils. It is named for the major soils. The kinds of soil in one association can occur in other soil associations but in a different pattern.

The map provides a broad perspective of the soils and landscapes in the survey area. It provides a basis for comparing the potential of large areas for general kinds of land use. Areas that are generally suitable for certain kinds of farming or other land uses can be identified on the map. Likewise, areas of soils having properties that are distinctly unfavorable for certain land uses can be located.

Because of its small scale, the map does not show the kind of soil at a specific site. Thus, it is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure; the kinds of soils in any one soil association differ from place to place in slope, depth, stoniness, drainage, or other characteristics that affect their management.

The general soil map in this survey does not precisely join the map in the Soil Survey of Charleston County, published in 1971, because of recent refinements in the classification of the soils. Also, this map was made with a greater emphasis on landscapes, so as to better reflect the potential of the soils for broad-scale planning.

The soil associations in Berkeley County have been grouped into four general kinds of landscape for broad interpretative purposes. The broad groups and their included soil associations are described on the following pages.

Dominantly strongly acid, nearly level to gently sloping soils on ridges and upper slopes

These associations are on broad stream divides. The soils are dominantly strongly acid and moderately well drained. Slopes generally are long and smooth, but a few are short and have sharp breaks. Branching drainageways are throughout these associations. Most of these soils have a sandy surface layer and a bright-colored, mottled subsoil.

1. Cainhoy-Pickney association

Somewhat excessively drained and very poorly drained soils that are sandy throughout

This association consists of nearly level to gently sloping, somewhat excessively drained soils on broad and narrow ridges and very poorly drained soils in small depressional areas. It is characterized by low ridges that parallel the coast and is located east of Huger along the county line between Charleston and Berkeley Counties.

This association makes up about 2 percent of the county. The Cainhoy soils make up about 60 percent of this association, the Pickney soils about 30 percent, and minor soils about 10 percent.

The Cainhoy soils are somewhat excessively drained and have a dark grayish brown fine sand surface layer underlain by yellowish brown fine sand. They occupy the highest positions in the association. Pickney soils are very poorly drained, have a thick black loamy fine sand surface layer underlain by dark gray fine sand, and occur in low wet areas.

Minor soils in this association are in the Chipley, Echaw, Witherbee, and Leon series. Chipley and Echaw soils are moderately well drained and occur at lower elevations than Cainhoy soils. Witherbee soils are somewhat poorly drained, and Leon soils are poorly drained. Both of these soils occur on intermediate positions.

Most of the acreage in this association is in woodland. Less than 5 percent is cultivated or is in pasture. The Cainhoy and Pickney soils are not productive; therefore, the supply of natural food for wildlife is limited. Except for a few natural ponds, there are no pond sites in this association.

This association is moderately suited to dwellings with onsite sewage disposal, industrial sites, or recreational uses.

2. Bonneau-Norfolk-Pantego association

Moderately well drained and well drained soils that have a sandy surface layer and a loamy subsoil, and very poorly drained soils that are loamy throughout

This association consists of nearly level to gently sloping, well drained and moderately well drained soils on broad ridges and of very poorly drained soils in drainageways and depressions on lower elevations. It is dissected by small streams, some of which originate within its boundaries. The ridges are along the drainageways and small streams. Toward the drainageways ridges have narrow sloping sides that are parallel to the flood plains of small streams. This association is located north and west of Lake Moultrie.

This association makes up about 4 percent of the county. The Bonneau soils make up about 43 percent of the association, the Norfolk soils about 33 percent, the Pantego soils about 15 percent, and minor soils the remaining 9 percent.

The moderately well drained Bonneau soils and the well drained Norfolk soils occupy the highest positions in the association. Bonneau soils have a loamy sand surface layer and subsurface layer about 22 inches thick and a brownish yellow sandy clay loam subsoil that is mottled with gray and yellowish brown in the lower part. Norfolk soils have a dark grayish brown loamy sand surface layer and a yellowish brown sandy clay loam subsoil. Pantego soils are very poorly drained and occur in depressions and drainageways. They commonly have a black fine sandy loam surface layer and a gray sandy clay loam subsoil with yellow, red, and brown mottles.

Minor soils in this association are in the Duplin, Lynchburg, Rains, and Coxville series. The moderately well drained Duplin soils and the somewhat poorly drained Lynchburg soils occur at intermediate elevations. The poorly drained Rains and Coxville soils occur in oval depressions known as Carolina Bays and in low-lying flat areas.

This is an area of intensive farming, with about 50 percent of the acreage in cultivation. Almost all areas of the well drained and moderately well drained soils and a large acreage of the somewhat poorly drained soils are cultivated. Most areas of the poorly drained soils are in woodland. Farms are mainly owner operated and range in size from 25 to 200 acres. General-type farming is predominant. Cotton, corn, soybeans, and a few acreas of tobacco are the main crops. The acreage not cultivated is in woodland.

Food and cover are well distributed for quail and rabbits, which are numerous. Fall and winter habitat for doves is good. There are some sites suitable for dam-type ponds or lakes. Some of these are suitable for fishing if managed properly.

Most of the soils in this association are suited to dwellings with onsite sewage disposal, industrial sites, or recreational uses. The very poorly drained soils are poorly suited to these uses.

3. Goldsboro-Lynchburg-Rains association

Moderately well drained soils that have a sandy surface layer and a loamy subsoil, and somewhat poorly drained and poorly drained soils that are loamy throughout

This association consists of moderately well drained soils on broad ridges, somewhat poorly drained soils in broad flat areas, and poorly drained soils in depressions at lower elevations. The soils are nearly level. It is dissected by many small streams, some of which originate within its boundary. The higher ridges are along drainageways and small streams. Away from the drainageways, the topography slopes down to depressional areas that are about midway between the drainageways. Nearer the drainageways the ridges have narrow sloping sides that are parallel to the flood plains of the small streams. Areas of poorly drained to very poorly drained soils along the small streams vary in width from a few hundred feet to several hundred feet. Areas of this association are located throughout the county.

This association makes up 28 percent of the county. Goldsboro soils make up about 32 percent of the association, Lynchburg soils about 11 percent, Rains soils about 10 percent, and minor soils the remaining 47 percent.

The Goldsboro soils are moderately well drained and occupy the better drained positions in the association. They have a very dark grayish brown loamy sand surface layer and a yellowish brown sandy clay loam subsoil that has gray mottles below a depth of 24 inches. Lynchburg soils are somewhat poorly drained and occur at intermediate elevations. They have a black fine sandy loam surface layer and a yellowish brown and gray sandy clay loam subsoil. Rains soils are poorly drained and occur in low, flat or depressional, wet areas. They have a black fine sandy loam surface layer and a dominantly gray sandy clay loam subsoil.

Minor soils in this association are in the Norfolk, Bonneau, Ocilla, Coxville, Byars, and Pantego series. The well drained Norfolk soils and the moderately well drained Bonneau soils occupy the highest positions in the association. The somewhat poorly drained Ocilla soils occur on intermediate positions. The poorly drained Coxville soils and the very poorly drained Byars and Pantego soils occur at the lowest elevations in the association, commonly along streams or in low, wet, flat areas.

The soils of this association are productive if they are drained and adequately fertilized. About 15 percent of the acreage in this association is cultivated. The remainder is in woodland. Most of the farms are owner-operated, and the average size ranges from 25 to 75 acres. General-type farming is predominant, and the principal crops are corn and soybeans and a small acreage of tobacco and cotton. Most of the acreage not cultivated is in woodland.

The better drained soils are well suited to the development of habitat for quail. Cover is well distributed, and there is a moderate amount of natural food. Only a few sites are available for dam-type ponds or lakes.

Most of the soils in this association are moderately suited to poorly suited for dwellings that have onsite sewage disposal, industrial sites, or recreational uses.

4. Wahee-Duplin-Lenoir association

Somewhat poorly drained and moderately well drained soils that have a loamy surface layer and a clayey subsoil

This association consists of nearly level, somewhat poorly drained soils in broad areas and nearly level to gently sloping, moderately well drained soils on broad low ridges. It is dissected by many small streams, some of which originate within its boundary. This association is located east of the Summerville Scarp.

This association makes up about 26 percent of the county. The Wahee soils make up about 25 percent of the association, Duplin soils about 23 percent, Lenoir soils about 11 percent, and minor soils the remaining 41 percent.

The Wahee and Lenoir soils occupy broad, flat, somewhat poorly drained areas below the moderately well drained Duplin soils. Wahee soils have a very dark gray loam surface layer and a gray silty clay subsoil with brown, yellow, and red mottles. Duplin soils have a grayish brown fine sandy loam surface layer and a yellowish brown clay subsoil that is mottled with gray in the lower part. Lenoir soils have a black fine sandy loam surface layer and a gray clay subsoil with brown and yellow mottles.

Minor soils in this association are in the Caroline, Craven, Rains, Bethera, and Meggett series. Caroline soils are well drained and occupy the highest positions in the association. Craven soils are moderately well drained and occur on positions similar to those of Duplin soils. The poorly drained Rains, Bethera, and Meggett soils occur on the lowest elevations in the association, commonly along streams or in low flat areas.

Most of the acreage in this association is in woodland. A large part of this association is in Francis Marion National Forest. Less than 5 percent is cultivated or is in pasture. These soils are productive if they are adequately drained and fertilized. Farms generally are less than 50 acres in size. General-type farming is carried on by the owner or by tenant operators. Corn, soybeans, and pasture grasses are the principal crops.

This association provides favorable habitat for deer and turkey. It is well suited to quail because food patches have been planted throughout the area. Both food and cover are ample for rabbits, which are numerous. There are some desirable sites that can be developed to provide habitat for ducks.

Most of the soils in this association are poorly suited for dwellings with onsite sewage disposal, industrial sites, or recreational uses.

5. Chipley-Echaw-Pickney association

Moderately well drained and very poorly drained soils that are sandy throughout

This association consists of nearly level soils on long, narrow to broad ridges in areas roughly parallel with the coastline. This association is located in the southeastern portion of the county.

This association makes up about 6 percent of the county. The Chipley soils make up about 30 percent of this association, Echaw soils about 20 percent, Pickney soils about 16 percent, and minor soils the remaining 34 percent.

The Chipley and Echaw soils are moderately well drained and occupy the highest positions in the association. Chipley soils have a black fine sand surface layer and a yellowish brown fine sand subsoil with gray mottles. Echaw soils have a very dark brown loamy sand surface layer and a loamy sand subsurface layer that is yellowish brown in the upper part and dominantly light brownish gray in the lower part. About 40 inches from the surface there is a slightly brittle dark brown sand horizon about 10 inches thick over loose sand. Pickney soils are very poorly drained and occur on the lowest positions in the association. They have a thick black loamy fine sand surface layer over dark gray fine sand.

Minor soils in this associaton are in the Lynchburg, Rains, Leon, and Pamlico series. The somewhat poorly drained Lynchburg soils and the poorly drained Rains and Leon soils occur at intermediate elevations. The very poorly drained Pamlico soils occupy positions similar to those of the Pickney soils.

Most of the acreage in this association is in woodland. Less than 1 percent is cultivated or in pasture. The Chipley and Echaw soils are productive under a high level of management. Pickney soils are not productive; therefore, the supply of natural food for wildlife is limited. Except for a few natural ponds, there are no suitable sites for ponds in this association.

Most of the soils in this association are poorly suited for dwellings that have onsite sewage disposal, industrial sites, or recreational uses.

Dominantly strongly acid, nearly level soils on lower slopes and low-lying flats

These soil associations are on broad low flats and in low-lying areas. Most of the soils have restricted drainage. Slopes are dominantly less than 1 percent. Drainage patterns are poorly defined, and some areas are ponded. These soils generally have a sandy or loamy surface layer and subsoil dominated by grayish colors or containing many grayish mottles.

6. Rains-Pantego association

Poorly drained and very poorly drained soils that are loamy throughout

This association consists of broad areas of nearly level and depressional soils. It is west of the Summerville Scarp in the Mesquite Bay and Black Tom Bay area. The drainage pattern in this area generally is poorly developed.

This association makes up about 3 percent of the county. The Rains soils make up about 42 percent of the association, Pantego soils about 28 percent, and minor soils the remaining 30 percent.

The Rains soils are poorly drained and occupy low, flat, depressional areas. They have a black fine sandy loam surface layer and gray sandy clay loam subsoil with brown and yellow mottles. Pantego soils are very poorly drained and occur at the lowest elevations in this association. They have a black fine sandy loam surface layer and a dominantly gray sandy clay loam subsoil.

Minor soils in this association are in the Goldsboro, Lynchburg, and Meggett series. The moderately well drained Goldsboro soils and the somewhat poorly drained Lynchburg soils occupy the highest positions in this association. The poorly drained Meggett soils occupy the same positions in this association as the Rains soils.

Most of the acreage in this association is in woodland. The soils in this association have a high water table, but they are productive if they are adequately drained and fertilized. Less than 1 percent of the acreage is cultivated or in pasture. Most of this association is owned by corporations or individuals engaged in production of pulpwood, sawtimber, and veneer. Most of this association has been cleared and planted to pine trees.

This association provides favorable habitat for deer. The quail population would greatly increase if food patches were planted throughout the area. Both food and cover are ample for rabbits.

Because of a seasonal high water table, most of this association is poorly suited for dwellings with onsite sewage disposal, industrial sites, or recreational uses.

7. Bethera-Bayboro-Pantego association

Poorly drained and very poorly drained soils that have a loamy surface layer and a clayey subsoil, and very poorly drained soils that are loamy throughout

This association consists of broad areas of nearly level to depressional soils. This association is east of Moncks Corner, and most of the area is in Hellhole and Walleye Bays. The drainage pattern in this area generally is poorly developed.

This association makes up about 6 percent of the county. The Bethera soils make up about 35 percent of this association, Bayboro soils about 22 percent, Pantego soils about 20 percent, and minor soils the remaining 23 percent.

The Bethera soils are poorly drained and occupy low, flat, depressional areas. Bethera soils have a very dark gray and dark gray loam surface layer and a gray clay subsoil with brown and red mottles. Bayboro and Pantego soils are very poorly drained and occur at the lowest elevations in the association. Bayboro soils have a black loam surface layer and a dominantly gray clay subsoil. Pantego soils have a black fine sandy loam surface layer and a dominantly gray sandy clay loam subsoil.

Minor soils in this association are in the Craven, Wahee, Meggett, Lenoir, and Pamlico series. The moderately well drained Craven soils and the somewhat poorly drained Wahee and Lenoir soils occupy the highest positions in the association. The poorly drained Meggett soils occupy similar positions in this association to the Bethera soils. The very poorly drained Pamlico soils occur on the lowest positions along with Bayboro and Pantego soils.

Most of the acreage in this association is in woodland. Less than 1 percent is cultivated or in pasture. This association has a high water table, but with adequate drainage these soils are suited to timber.

This association provides favorable habitat for deer. The quail population would greatly increase if food patches were planted throughout the area. Both food and cover are ample for all small game.

Because of a seasonal high water table and slow permeability, most of this association is poorly suited for dwellings with onsite sewage disposal, industrial sites, or recreational uses.

8. Byars-Coxville association

Very poorly drained and poorly drained soils that have a loamy surface layer and a clayey subsoil

This association consists of broad areas of nearly level to depressional soils. It is west of Moncks Corner, and most of the area is in Ferguson Bay. The major drainage pattern in this area generally is poorly developed.

This association makes up about 2 percent of the county. The Byars soils make up about 43 percent of this association, Coxville soils about 37 percent, and minor soils the remaining 20 percent.

The Byars soils are very poorly drained and occur on the lowest positions in flat areas, drainageways, and oval depressions known as Carolina Bays. Byars soils have a black loam surface layer and a dark gray clay subsoil. Coxville soils are poorly drained and occupy depressional areas. Coxville soils commonly have a very dark gray fine sandy loam surface layer and a dominantly gray sandy clay subsoil.

Minor soils in this association are in the Goldsboro, Lynchburg, Lenoir, and Ocilla series. The moderately well drained Goldsboro soils and the somewhat poorly drained Lynchburg, Lenoir, and Ocilla soils occupy the highest positions in the association.

Most of the acreage in this association is in woodland. Less than 1 percent is cultivated or is in pasture. The soils in this association have a high water table, but with adequate drainage they are suited to timber. Most of this association has been cleared and planted to pine trees.

This association provides favorable habitat for deer. The quail population would greatly increase if food patches were planted throughout the area. Both food and cover are ample for rabbits.

Because of a seasonal high water table and slow permeability, most of this association is poorly suited for dwellings with onsite sewage disposal, industrial sites, or recreational uses.

Dominantly medium acid, nearly level soils on flood plains

These soil associations are on flood plains of rivers. The soils are somewhat poorly drained to very poorly drained. Drainage patterns are very poorly defined. These soils are frequently flooded, and some have water over the surface most of the time.

9. Tawcaw-Chastain association

Somewhat poorly drained and poorly drained soils that have a loamy surface layer and a clayey subsoil

This association consists of nearly level soils on the flood plains of the Santee River at the northern edge of the county. These soils formed in recent alluvium washed from the Piedmont and Coastal Plain uplands.

This association makes up about 6 percent of the county. Tawcaw soils make up about 80 percent of the association, Chastain soils about 12 percent, and minor soils the remaining 8 percent.

Tawcaw soils are somewhat poorly drained and occur on the higher positions in the association. They have a dark brown clay loam surface layer and a brown clay loam subsoil with gray mottles. Chastain soils are poorly drained and occur on the lowest positions in the association. They have a dark gray silty clay loam surface layer and a gray silty clay subsoil.

Minor soils occur in narrow strips along the Santee River, and they are better drained than Tawcaw soils.

This association is frequently flooded. Consequently, it is not suited to either cultivated crops or pasture. The entire acreage is in hardwoods. Some of the acreage is owned by general farm operators and hunting clubs, but most of the acreage is owned by commercial producers of pulpwood, sawtimber, and veneer.

This association provides excellent habitat for deer and fairly good habitat for squirrels. Some wild turkeys are in this area. Sites for woodland duck ponds are numerous, but water control measures are necessary for their management.

Because of frequent flooding, this association is unsuited for dwellings with onsite sewage disposal, industrial sites, or recreational uses.

Dominantly nonacid, nearly level soils on low-lying flats and in drainageways and marsh areas

These soil associations are in broad and narrow, low-lying drainageways and marsh areas. The soils are poorly drained to very poorly drained. Drainage patterns are well defined. Marsh areas are dissected by meandering drainageways and are flooded by tidewater. These soils generally have a loamy surface layer and dominantly have grayish colors below the surface layer.

10. Meggett association

Poorly drained soils that have a loamy surface layer and a clayey subsoil

This association consists of broad and narrow, low-lying drainageways and depressions throughout the county. The drainage patterns are well defined.

This association makes up about 13 percent of the county. The Meggett soils make up about 75 percent of this association, and minor soils the remaining 25 percent.

The Meggett soils are poorly drained and occur in low flat areas and in drainageways. They have a dark gray loam surface layer and a gray clay subsoil that is mottled with shades of brown, yellow, and red.

Minor soils in this association are in the Lenoir, Wahee, Santee, Bethera, Coxville, Byars, and Bayboro series. The somewhat poorly drained Lenoir and Wahee soils occupy the highest positions in the association. The poorly drained Bethera and Coxville soils occupy similar positions to the Meggett soils. The very poorly drained Byars and Bayboro soils occur on the lowest positions along with the Santee soils.

Most of this association is in woodland that consists of hardwoods and pine. Because of the high content of calcium and phosphorus below the surface layer, this association is well suited for production of hardwood. Suitability of pine is excellent to poor, depending upon the water regime at any given site; with water management, however, pine is well suited. In past years, large areas were used for rice production. A small acreage has been drained and cleared and is used for pasture.

This association provides favorable habitat for deer and all small game. Sites for woodland duck and fishing ponds are numerous, but water control measures are necessary for their management.

Because of wetness and slow permeability this association is unsuited for dwellings with onsite sewage disposal, industrial sites, or recreational uses.

11. Bohicket-Capers association

Very poorly drained soils that have a loamy surface layer and a clayey subsoil

This association consists of broad, nearly level areas that are intricately dissected by meandering drainageways and flooded by tidewater. Most of the area is near mean sea level, but elevation ranges from about 5 feet above sea level to 3 feet below.

This association makes up about 4 percent of the county. The Bohicket soils make up 52 percent of this association, Capers soils about 16 percent, and minor soils the remaining 32 percent.

The Bohicket soils are very poorly drained and occur on tidal flats between the ocean and uplands and along tidal streams. Bohicket soils are flooded with water to a depth of 6 to 36 inches twice daily. Bohicket soils, if allowed to air-dry for a period of 30 days or more, become extremely acid. They have a dark gray silty clay loam surface layer and a very dark gray silty clay subsoil. Capers soils are very poorly drained and occur inland on the upper end of drainageways. These soils, like Bohicket soils, become extremely acid if allowed to air-dry. They have a dark gray loam surface layer and a greenish gray clay subsoil with olive mottles.

Minor in this association are the Meggett and Santee soils; Aquic Udifluvents; and Udorthents. The poorly drained Meggett soils and the very poorly drained Santee soils usually occur as small islands that occupy the highest positions in the association. Aquic Udifluvents and Udorthents consist largely of fill material from dredging operations adjacent to the Cooper and Wando Rivers.

Most of the acreage in this association is in marshgrass and is not suited to cultivated crops, improved pasture, or trees. This association is mainly suitable for natural recreational uses such as fishing and hunting. A few scattered areas where the surface is firm can be used for pasture.

This association provides excellent habitat for waterfowl. Sites for duck and fish ponds are numerous, but water control measures are necessary for their management.

Because of frequent flooding by tidal water, this association is unsuited for dwellings, sewage disposal, industrial sites, or recreational uses other than fishing and hunting.

Descriptions of the soils

This section describes each soil series in detail and then, briefly, each mapping unit in that series. Unless stated otherwise, what is stated about the soil series holds true for the mapping units in that series. Thus, to get full information about any one mapping unit, it is necessary to read both the description of the mapping unit and the description of the soil series to which it belongs.

The descriptions together with the soil maps can be useful in determining the potential of a soil and in managing it for food and fiber production; in planning land use and developing soil resources; and in enhancing, protecting, and preserving the environment. More information for each soil is given in the section "Use and management of the soils."

The mapping units on the detailed soil maps represent an area on the landscape made up mostly of the soil or soils for which the unit is named. Most of the delineations shown on the detailed soil map are phases of soil series.

Soils that have profiles that are almost alike make up a *soil series*. A soil profile is the sequence of horizons, or layers, from the surface down to rock or other underlying material. Except for allowable differences in texture of the surface layer or of the underlying substratum, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement in the profile. A soil series commonly is named for a town or geographic feature near the place where a soil of that series was first observed and mapped.

The soil profile is an important part of the description of each soil series. The profile of each series is described twice. The first description is brief and in terms familiar to a layman. The second is more detailed and is for those who need to make thorough and precise studies of soils. Color terms are for moist soil unless otherwise indicated.

Soils of one series can differ in texture of the surface layer or the underlying substratum and in slope, erosion, stoniness, salinity, wetness, or other characteristic that affects the use of the soils. On the basis of such differences, a soil series is divided into phases. The name of a *soil phase* commonly indicates a feature that affects use or management. For example, Meggett loam is one of the phases within the Meggett series.

Some mapping units are made up of two or more dominant kinds of soil. Two such kinds of mapping units are shown on the soil map of this survey area: soil complexes and associations.

A *soil complex* consists of areas of two or more soils that are so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area of a complex includes some of each of the two or more dominant soils, and the pattern and proportion are somewhat similar in all areas. Chipley-Echaw complex is an example.

A *soil association* is made up of soils that are geographically associated and are shown as one unit on the map because it is not practical to separate them. A soil association has considerable regularity in geographic pattern and in the kinds of soil that are a part of it. The extent of the soils can differ appreciably from one delineation to another; nevertheless, interpretations can be made for use and management of the soils. Capers association is an example.

Most mapping units include small, scattered areas of soils other than those that appear in the name of the mapping unit. Some of these soils have properties that differ substantially from those of the dominant soil or soils and thus could significantly affect use and management of the mapping unit. These soils are described in the description of each mapping unit. Some of the more unusual or strongly contrasting soils that are included are identified by a special symbol on the soil map.

Most mapped areas include places that have little or no soil material and support little or no vegetation. Such places are called *miscellaneous areas*; they are delineated on the soil map and given descriptive names. Borrow pits is an example. Some of these areas are too small to be delineated and are identified by a special symbol on the soil map.

Not all mapping units are members of a soil series. Aquic Udifluvents, for example, do not belong to a soil series; nevertheless, they are listed in alphabetic order along with the soil series.

The acreage and proportionate extent of each mapping unit are given in table 1, and additional information on properties, limitations, capabilities, and potentials for many soil uses is given for each kind of soil in other tables in this survey. (See "Summary of Tables.") Many of the terms used in describing soils are defined in the Glossary, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (*7*).

Aquic Udifluvents

These soils are nearly level, deep, and somewhat poorly drained. They formed in mildly alkaline or moderately alkaline fine material that was pumped in from the Wando and Cooper Rivers.

No one profile represents this mapping unit, but one of the more common ones has a surface layer of very dark grayish brown silt loam about 5 inches thick. The underlying material extends to a depth of more than 65 inches. In sequence from the top, the upper 11 inches is very dark grayish brown clay, the next 13 inches is mottled dark grayish brown clay, the next 29 inches is mottled black clay, and the lower 7 inches is mottled dark greenish gray and greenish gray silty clay.

Aquic Udifluvents have slow permeability. Surface runoff is very slow, and available water capacity is high.

A profile of Aquic Udifluvents, about 25 miles south of Moncks Corner on Secondary State Highway 33 and 0.6 mile east of the Cooper River:

Ap—0 to 5 inches, very dark grayish brown (10YR 3/2) silt loam; weak fine prismatic and angular blocky structure; friable; moderately alkaline, pH 8.0; abrupt smooth boundary.

C1g—5 to 16 inches, very dark grayish brown (10YR 3/2) clay; few fine distinct reddish brown mottles; massive; firm; moderately alkaline, pH 8.0; clear smooth boundary.

C2g—16 to 29 inches, dark grayish brown (2.5Y 4/2) clay; common medium distinct black (N 2/0) mottles and few fine distinct strong brown mottles; massive; firm; moderately alkaline, pH 8.4; gradual irregular boundary.

C3g—29 to 40 inches, black (N 2/0) clay; common fine distinct dark grayish brown (2.5Y 4/2) mottles; massive; firm, sticky and plastic; moderately alkaline, pH 8.4; gradual irregular boundary.

C4g—40 to 58 inches, black (N 2/0) clay; common fine distinct olive gray (5Y 4/2) mottles; massive; firm, sticky and plastic; moderately alkaline, pH 8.4; clear wavy boundary.

C5g—58 to 65 inches, mottled dark greenish gray (5GY 4/1) and greenish gray (5GY 5/1) silty clay; massive; firm, sticky and plastic; moderately alkaline, pH 8.4.

The profile is mildly alkaline or moderately alkaline throughout.

The A horizon is 3 to 5 inches thick. It is silt loam or silty clay loam. Organic matter content ranges from 15 to 20 percent.

The C horizon is silty clay or clay.

AU—Aquic Udifluvents. These soils formed in material pumped out of the Cooper and Wando Rivers.

Most of the acreage of these soils is in cultivation. The principal crops are soybeans, corn, wheat, bahiagrass, and Coastal bermudagrass.

These soils can be cultivated only within a narrow range of moisture content.

Row crops can be grown each year, but drainage and other conservation practices are necessary to maintain good tilth and yields. Much of the acreage of these soils is subject to occasional or frequent flooding. Open-ditch drainage is the most common method of removing excess water from these soils. Natural fertility is high, and response to fertilizer is good. Capability unit IIIw-3; woodland group 2w8.

Bayboro series

The soils of the Bayboro series are nearly level, deep, and very poorly drained. They formed in clayey Coastal Plain sediment.

In a typical profile the surface layer is black loam about 10 inches thick. The next layer extends to a depth of more than 60 inches. In sequence from the top, the upper 12 inches is dark gray, firm, plastic clay loam; the next 13 inches is mottled, gray, firm, plastic clay; the next 7 inches is mottled, dark gray, firm, plastic clay; and the lower 18 inches is mottled gray, dark gray, and brownish yellow, firm, plastic clay.

Bayboro soils occur with Pantego, Bethera, Meggett, Craven, Duplin, Goldsboro, Lenoir, Lynchburg, Wahee, and Rains soils. Bayboro soils have a finer textured subsoil than Pantego soils. The other associated soils have a black or very dark gray surface layer less than 10 inches, and they are better drained than Bayboro soils.

Permeability is slow. Surface runoff is very slow, and available water capacity is high.

Typical profile of Bayboro loam, approximately 20 miles southeast of Moncks Corner, 0.6 mile east of S. C. Highway 41 on Northampton road, approximately 230 yards north of road:

A1—0 to 10 inches, black (N 2/0) loam; weak fine granular structure; friable; many fine and medium roots; very strongly acid, pH 4.8; clear smooth boundary.

B1g—10 to 22 inches, dark gray (10YR 4/1) clay loam; few fine faint brownish yellow mottles; weak medium subangular blocky structure; firm, sticky and plastic; patchy faint clay films on faces of peds; common fine and medium roots; tongues and streaks of black organic matter from A horizon; very strongly acid, pH 4.8; gradual smooth boundary.

B21tg—22 to 35 inches, gray (10YR 5/1) clay; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm, sticky and plastic; patchy faint clay films on faces of peds; few medium roots; very strongly acid, pH 5.0; gradual smooth boundary.

B22tg—35 to 42 inches, dark gray (10YR 4/1) clay; many medium distinct yellowish brown (10YR 5/8) and brown (10YR 3/3) mottles; moderate coarse subangular blocky structure; firm, sticky and plastic; patchy faint clay films on faces of peds; very strongly acid, pH 5.0; gradual smooth boundary.

B3g—42 to 60 inches, mottled dark gray (10YR 4/1), gray (10YR 5/1), and brownish yellow (10YR 6/8) clay; weak medium subangular blocky structure; firm, sticky and plastic; very strongly acid, pH 5.0.

The solum is more than 60 inches thick. The profile is strongly acid or very strongly acid throughout.

The A horizon ranges from 9 to 14 inches in thickness. It is very dark gray or black.

The B1 horizon, where present, is 3 to 12 inches thick. It is dark grayish brown, gray, dark gray, or very dark gray. The B2t horizon is 19 inches to more than 45 inches thick. It is dark gray, gray, light gray, or very dark gray and has few to many mottles in various shades of brown, yellow, and red. The texture is clay or clay loam. The B3 horizon is light gray, grayish brown, gray, or dark gray clay or sandy clay 3 to 26 inches in thickness. It commonly is mottled with brownish yellow, yellowish red, strong brown, and very dark reddish brown.

Ba—Bayboro loam. This soil is in nearly level and slightly depressional areas east of the Summerville Scarp.

Included with this soil in mapping are small areas of Pickney, Pantego, Rains, Bethera, Meggett, and Santee soils. Also included are a few areas that have a fine sandy loam surface layer.

Most of the acreage of this soil is in woodland. A few areas are in pasture and cultivated crops. Principal cultivated crops are corn and soybeans. Much of this soil is subject to occasional or frequent flooding.

Extensive surface drainage systems are necessary when this soil is used for crops or pasture. The water table is at or near the surface about 6 months yearly. Capability units VIw-1, undrained, and IIIw-2, drained; woodland group 2w9.

Bethera series

The soils of the Bethera series are nearly level, deep, and poorly drained. They formed in clayey Coastal Plain sediment.

In a typical profile the surface layer is very dark gray and dark gray loam about 4 inches thick. The subsurface layer is gray loam about 3 inches thick. The next layer is mottled, gray, firm, plastic clay about 61 inches thick. The underlying material, to a depth of more than 94 inches, is mottled, light brownish gray, gray, and light gray clay.

Bethera soils occur with Bayboro, Santee, Pantego, Rains, Lenoir, Wahee, and Meggett soils. Bethera soils are better drained than Bayboro, Santee, and Pantego soils. Bethera soils have a finer textured subsoil than Rains soils. Bethera soils are more poorly drained than Lenoir and Wahee soils. Bethera soils have a more acid subsoil than Meggett soils.

Bethera soils have slow or moderately slow permeability. Surface runoff is slow, and available water capacity is high.

Typical profile of Bethera loam, about 13 miles northeast of Moncks Corner, 3.7 miles southeast of Macedonia on South Carolina Secondary Highway 48, 100 feet northeast of highway:

A11—0 to 2 inches, very dark gray (10YR 3/1) loam; moderate fine granular structure; friable; many fine and medium roots; extremely acid, pH 4.3; abrupt wavy boundary.

A12—2 to 4 inches, dark gray (10YR 4/1) loam; weak fine granular structure; friable; many fine and medium roots; few fine pores; extremely acid, pH 4.4; abrupt wavy boundary.

A2—4 to 7 inches, gray (10YR 5/1) loam; weak fine granular structure; friable; many fine roots; many fine pores; very strongly acid, pH 4.6; abrupt wavy boundary.

B1g—7 to 10 inches, grayish brown (10YR 5/2) clay loam; few fine faint gray mottles and common fine distinct brownish yellow mottles; weak fine angular blocky structure; firm, sticky and plastic; patchy faint clay films on faces of peds; few fine roots; few fine pores; very strongly acid, pH 4.6; clear wavy boundary.

B22tg—10 to 41 inches, gray (10YR 5/1) clay; common medium distinct brownish yellow (10YR 6/6) mottles and common medium prominent red (2.5YR 5/8) mottles; moderate fine angular blocky structure; firm, sticky and plastic; patchy distinct clay films on faces of peds; few fine roots; few fine pores; very strongly acid, pH 4.7; abrupt irregular boundary.

B22tg—41 to 68 inches, gray (10YR 5/1) clay; many medium distinct brownish yellow (10YR 6/8) mottles; moderate fine angular blocky structure; firm, sticky and plastic; patchy distinct clay films on faces of peds; few fine roots; few fine pores; very strongly acid, pH 4.6; gradual wavy boundary.

Cg—68 to 94 inches, mottled light brownish gray (2.5Y 6/2), gray (5Y 6/1), and light gray (10YR 7/1) clay; massive; firm, sticky and plastic; extremely acid, pH 4.3; clear smooth boundary.

The solum is 60 inches to more than 80 inches thick. The profile is strongly acid to extremely acid throughout.

The A horizon is 3 to 15 inches thick. The A1 horizon is 3 to 8 inches thick. It is very dark gray, dark gray, black, or very dark grayish brown. The A2 horizon, where present, is 3 to 9 inches thick. It is dark gray, gray, light brownish gray, or light gray.

The B1 horizon, where present, is 3 to 8 inches thick. It is gray or grayish brown and has few to many mottles in various shades of brown and yellow. It is sandy clay or clay loam. The B2t horizon is 37 to 58 inches thick. It is light gray, grayish brown, light brownish gray, gray, or dark gray and has common to many mottles in various shades of yellow, brown, and red. It is clay, sandy clay, or clay loam. The B3 horizon, where present, is 11 to 30 inches thick. It is gray, light gray, or grayish brown and has few to many mottles in various shades of brown, yellow, and red. It is sandy clay loam or sandy clay.

The C horizon is light gray, gray, grayish brown, light brownish gray, greenish gray, or light greenish gray sandy clay loam, sandy clay, or clay.

Be—Bethera loam. This soil is on broad, low flats and in depressional areas east of the Summerville Scarp.

Included with this soil in mapping are small areas of Bayboro, Pantego, Rains, Wahee, and Lenoir soils and some areas of soils that have a fine sandy loam or clay loam surface layer. Also included are a few small areas where clay content decreases by 20 percent or more within 60 inches of the surface.

Most of the acreage of this soil is in woodland. A small percentage is in row crops or pasture grasses. The principal crops are soybeans, corn, pasture, hay, and small grain.

Surface drainage systems are necessary if this soil is used for cropland or pasture. Much of the acreage of this soil is subject to occasional or frequent flooding. The water table is at or near the surface for 3 to 5 months in most years. Capability units IIIw-2, drained, and IVw-2, undrained; woodland group 2w9.

Bohicket series

The soils of the Bohicket series are deep and very poorly drained. They formed in clayey marine sediment on level tidal flats.

In a typical profile the surface layer is dark gray silty clay loam about 16 inches thick. The underlying material extends to a depth of more than 60 inches. The upper 10 inches is very dark gray silty clay loam, the next 10 inches is very dark gray silty clay, and the lower 24 inches is dark brown silty clay that has very dark gray mottles.

Bohicket soils occur with Capers, Meggett, Santee, and Chastain soils. Bohicket and Capers soils contain sulfur, which is not present in the other soils. Bohicket soils are flooded twice daily to a depth of 6 to 36 inches, but Capers soils are not.

Bohicket soils have very slow permeability. Surface runoff is ponded, and available water capacity is high.

Typical profile of Bohicket silty clay loam in an area of Bohicket association, 6,700 feet southeast of Bushy Park Dam and 300 feet east of the Cooper River:

O1—4 inches to 0, partially decomposed live and dead roots.

A1g—0 to 16 inches, dark gray (5Y 4/1) silty clay loam; massive; strong fine angular blocky structure when dry; sticky; many medium and large pithy fibrous roots constituting 60 percent of mass, by volume; when squeezed, flows easily between fingers and leaves small amount of residue in hand; slightly acid, pH 6.4; gradual wavy boundary.

C1g—16 to 26 inches, very dark gray (10YR 3/1) silty clay loam; massive; sticky; many medium and large pithy fibrous roots constituting 40 percent of mass, by volume; when squeezed, flows easily between fingers and leaves small amount of residue in hand; neutral, pH 7.0; gradual wavy boundary.

C2g—26 to 36 inches, very dark gray (10YR 3/1) silty clay; massive; sticky; many fine and medium pithy fibrous roots constituting 30 percent of mass, by volume; when squeezed, flows easily between fingers and leaves small amount of residue in hand; neutral, pH 7.1; gradual wavy boundary.

C3g—36 to 60 inches, dark brown (7.5YR 3/2) silty clay; common coarse faint very dark gray (10YR 3/1) mottles; massive; sticky; many medium and large pithy fibrous roots constituting 75 percent of mass, by volume; when squeezed, flows easily between fingers and leaves small amount of residue in hand; mildly alkaline, pH 7.8.

This profile is slightly acid to moderately alkaline throughout. Pale yellow sulphur compounds are common on the surface of peds after air-drying for 30 days or more, and after this time the soil is extremely acid. The N value within the upper 40 inches of the surface is 1 or more.

The A horizon is dark gray or very dark gray. The A horizon has many, fine to large, pithy, fibrous roots that constitute 30 to 60 percent of the mass, by volume.

The C horizon is dark gray, very dark gray, very dark grayish brown, or dark brown silty clay or silty clay loam. Many, medium and large, pithy, fibrous roots constitute 30 to 90 percent of the mass by volume.

BH—Bohicket association. These soils are on nearly level tidal flats near the Atlantic Ocean and adjacent to Wando and Cooper Rivers. The soils were mapped at a lower intensity than were those of most other units in this survey area.

Included with this association in mapping are a few small, irregularly shaped islands of Capers, Meggett, and Santee soils; Udifluvents; and Udorthents.

Bohicket soils are very unstable and have low bearing strength. These soils are flooded twice daily and are covered by 6 to 36 inches of saltwater at high tide.

All of the acreage of these soils is in marsh vegetation consisting of smooth cordgrass, needlegrass, and big cordgrass. Capability unit VIIIw-l; not placed in woodland group.

Bonneau series

The soils of the Bonneau series are nearly level to gently sloping, deep, and moderately well drained. They formed in loamy Coastal Plain sediment.

In a typical profile the surface layer is very dark grayish brown loamy sand about 3 inches thick. The subsurface layer is light yellowish brown loamy sand about 19 inches thick. The next layer extends to a depth of more than 74 inches. In sequence from the top, the upper 5 inches is brownish yellow, very friable sandy loam; the next 13 inches is brownish yellow, friable sandy clay loam; the next 10 inches is yellowish brown, friable sandy clay loam that has gray and dark yellowish brown mottles; and the lower 24 inches is mottled light gray and yellowish brown, friable sandy clay loam.

Bonneau soils occur with Lucy, Ocilla, Norfolk, Goldsboro, Caroline, and Cainhoy soils. Bonneau soils are better drained than Ocilla soils. Bonneau soils have a thicker surface layer than Norfolk, Goldsboro, and Caroline soils. Bonneau soils have a finer textured B horizon than Cainhoy soils.

Permeability is rapid in the surface layer and subsurface layer and moderate in the subsoil. Surface runoff is slow, and available water capacity is low.

Typical profile of Bonneau loamy sand, 0 to 2 percent slopes, about 3.5 miles east of Bonneau and 100 feet south of State Secondary Highway 447:

A1—0 to 3 inches, very dark grayish brown (2.5Y 3/2) loamy sand; weak fine granular structure; very friable; many fine and medium roots; very strongly acid, pH 4.5; abrupt wavy boundary.

A21—3 to 7 inches, light yellowish brown (2.5Y 6/4) loamy sand; common fine faint very dark grayish brown mottles; weak fine granular structure; very friable; many fine and medium roots; very strongly acid, pH 5.0; abrupt wavy boundary.

A22—7 to 22 inches, light yellowish brown (2.5Y 6/4) loamy sand; weak fine granular structure; very friable; common fine and medium roots; strongly acid, pH 5.2; abrupt wavy boundary.

B21t—22 to 27 inches, brownish yellow (10YR 6/6) sandy loam; weak coarse subangular blocky structure; very friable; sand grains coated and bridged; few fine roots; strongly acid, pH 5.2; clear wavy boundary.

B22t—27 to 40 inches, brownish yellow (10YR 6/6) sandy clay loam; common medium faint yellowish brown (10YR 5/6) mottles; weak coarse subangular blocky structure; friable; sand grains coated and bridged; few fine roots; very strongly acid, pH 5.0; clear wavy boundary.

B23t—40 to 50 inches, yellowish brown (10YR 5/8) sandy clay loam; many medium distinct gray (10YR 6/1) mottles and common medium faint dark yellowish brown (10YR 4/4) mottles; weak coarse subangular blocky structure; friable; sand grains coated and bridged; few fine roots with few white sand grains in old root holes; very strongly acid, pH 4.9; clear wavy boundary.

B24t—50 to 74 inches, mottled light gray (10YR 6/1) and yellowish brown (10YR 5/8) sandy clay loam; weak coarse subangular blocky structure; friable; sand grains coated and bridged; very strongly acid, pH 4.8.

The solum ranges from 60 inches to more than 80 inches in thickness. The profile is strongly acid or very strongly acid throughout.

The A horizon is 21 to 37 inches thick. The A1 or Ap horizon is 3 to 9 inches thick and is very dark grayish brown, dark grayish brown, very dark gray, dark gray, grayish brown, very dark brown, dark brown, or olive brown. The A2 horizon is 13 to 31 inches thick and is light yellowish brown, yellowish brown, brownish yellow, pale yellow, olive yellow, light olive brown, or pale brown.

The B1 horizon, where present, is 3 to 9 inches thick. It is light yellowish brown or yellowish brown fine sandy loam or sandy loam. The B2t horizon is 20 inches to more than 50 inches thick. The upper part of the B2t horizon commonly is sandy clay loam, but in places it is sandy loam and fine sandy loam. It is brownish yellow, yellowish brown, light yellowish brown, yellow, light olive brown, or strong brown. The lower part of the B2t horizon commonly is sandy clay loam, but in places it is sandy loam and sandy clay. It has the same matrix colors as the upper part of the B2t horizon and is commonly mottled with shades of gray, brown, red, and yellow. Mottles that have chroma of 2 or less occur between depths of 30 and 60 inches.

BoA—Bonneau loamy sand, 0 to 2 percent slopes. This nearly level soil occurs on broad ridges. It has the profile described as representative for the series.

Included with this soil in mapping are small areas of Lucy, Norfolk, Cainhoy, Goldsboro, Ocilla, and Chipley soils; some areas that have a combined surface layer and subsurface layer more than 40 inches thick; and areas that have more than 35 percent clay in the upper 20 inches of the subsoil. There are a few included areas that have slopes of 2 to 6 percent.Also included are some areas of soils in which the clay content decreases by more than 20 percent within 60 inches of the surface and some areas that have a loamy fine sand and fine sand surface layer and subsurface layer.

About 60 percent of the acreage of this soil is in woodland. The remainder is under cultivation or in pasture. The principal crops are cotton, corn, soybeans, bahiagrass, and Coastal bermudagrass.

Soil blowing is a hazard and maintaining organic matter is a concern when this soil is used for row crops. Wind stripcropping, cover crops, and crop rotations that include very frequent crops of perennial grasses and legumes are needed to control erosion and replenish organic matter.

Rye has proved to be excellent for wind stripcropping systems and as a cover crop where cultivated crops are grown. Because they leach rapidly, fertilizers and lime are more efficiently used on this soil if they are applied frequently but in smaller amounts. Capability unit IIs-6; woodland group 2s2.

BoB—Bonneau loamy sand, 2 to 6 percent slopes. This gently sloping soil is on broad ridges and on narrow slopes parallel to streams and drainageways.

Included with this soil in mapping are small areas of Lucy, Cainhoy, and Norfolk soils; a few small areas of soils that have slopes of more than 6 percent or slopes of less than 2 percent; and some areas that have sandy surface and subsurface layers more than 40 inches thick and have more than 35 percent clay in the upper 20 inches of the subsoil. Also included are some areas of soils in which the clay content decreases by more than 20 percent within 60 inches of the surface and some areas that have a loamy fine sand and fine sand surface layer and subsurface layer.

Most of the acreage of this soil is in woodland, and the remainder is in row crops and pasture grasses. Principal crops are corn, soybeans, bahiagrass, and Coastal bermudagrass. Conservation practices that aid in controlling erosion should be used if this soil is planted to row crops for a long period of time.

Because of leaching, fertilizer and lime are more efficiently used on this soil if they are applied frequently but in smaller amounts. Bahiagrass or Coastal bermudagrass in rotation with row crops is excellent for maintaining organic matter content and good tilth and providing protection from soil blowing. Soil blowing can also be reduced by alternating close-growing and clean-tilled crops in strips at right angles to the prevailing winds. Rye is excellent to use in these close-growing strips. Capability unit IIs-6; woodland group 2s2.

Borrow pits

Bp—Borrow pits. These miscellaneous areas consist of open excavations in areas where the surface layer and subsoil have been removed. The larger pits in Berkeley County are in the vicinity of Interstate 26. Many smaller pits are near roads, streams, and creeks. They commonly occupy the higher positions.

The material in these pits is commonly loamy or clayey and is low in organic matter and fertility. Pits commonly have nearly level floors, are 8 to 15 feet deep, and occupy 10 to 50 acres.

The areas that have no plant cover should be planted to trees. Loblolly pine is fairly well suited in pits that have drainage outlets.

Fish pond construction is limited by soil texture and availability of water. Capability unit VIIs-2; not assigned to woodland group.

Byars series

The soils of the Byars series are nearly level, deep, and very poorly drained. They formed in clayey Coastal Plain sediment.

In a typical profile the surface layer is black loam about 5 inches thick. The next layer is about 59 inches thick. The upper 11 inches is black, friable clay loam; the next 24 inches is dark gray, firm clay; and the lower 24 inches is mottled, dark gray, firm clay. The underlying material to a depth of 100 inches is mottled, light olive gray clay.

Byars soils occur with Coxville, Lenoir, Duplin, Lynchburg, Rains, and Pantego soils. Byars soils are more poorly drained than all of the associated soils except Pantego soils. Byars soils have a finer textured subsoil than Pantego soils.

Byars soils have slow permeability. Surface runoff is very slow to ponded, and available water capacity is high.

Typical profile of Byars loam; 6 miles southwest of Moncks Corner; from the intersections of State Secondary Highways 291 and 16, 4,350 feet southwest on State Secondary Highway 16; 450 feet north of road:

A1—0 to 5 inches, black (N 2/0) loam; weak fine granular structure; very friable; many fine and medium roots; very strongly acid, pH 4.5; clear smooth boundary.

B1g—5 to 16 inches, black (10YR 2/1) clay loam; weak fine subangular blocky structure; friable; many fine and medium roots; very strongly acid; pH 4.5; clear smooth boundary.

B21tg—16 to 26 inches, dark gray (10YR 4/1) clay; moderate medium subangular blocky structure; firm; patchy faint clay films on faces of peds; common fine and medium roots; very strongly acid, pH 4.8; clear smooth boundary.

B22tg—26 to 40 inches, dark gray (10YR 4/1) clay; few fine faint dark yellowish brown and light gray mottles; moderate medium subangular blocky structure; firm; patchy faint clay films on faces of peds; very strongly acid, pH 5.0; clear smooth boundary.

B23tg—40 to 56 inches, dark gray (10YR 4/1) clay; many coarse distinct strong brown (7.5YR 5/6) mottles; few coarse faint light gray (10YR 7/1) mottles, and few medium faint dark yellowish brown (10YR 3/4) mottles; moderate medium subangular blocky structure; firm; patchy faint clay films on faces of peds; few fine roots; strongly acid, pH 5.2; clear smooth boundary.

B3g—56 to 64 inches, mottled dark gray (10YR 4/1), strong brown (7.5YR 5/6), and light gray (5Y 7/2) clay; weak medium subangular blocky structure; firm; few fine roots; strongly acid, pH 5.2; clear smooth boundary.

C1g—64 to 84 inches, light olive gray (5Y 6/2) clay; few coarse faint greenish gray (5G 6/1) mottles, many coarse distinct dark gray (10YR 4/1) mottles, and few fine prominent strong brown mottles; massive; firm; few fine flakes of mica; strongly acid, pH 5.2; clear smooth boundary.

C2g—84 to 100 inches, light olive gray (5Y 6/2) clay; few coarse prominent brown (7.5YR 5/4) mottles and many coarse distinct dark gray (10YR 4/1) mottles; massive; firm; pockets and lenses of sandy clay material; few fine flakes of mica; strongly acid, pH 5.2.

The solum is more than 60 inches thick. The profile is strongly acid to extremely acid throughout except where the surface has been limed.

The A1 horizon is 5 to 16 inches thick.

The B1 horizon is 4 to 11 inches thick and is black, very dark gray, or dark gray. The B2t horizon is 32 inches to more than 51 inches thick. It is dark gray or gray and has few to many mottles in various shades of brown, yellow, and red. The B3 horizon, where present, is 8 to 14 inches thick. It is light gray, gray, or dark gray and has few to many mottles in various shades of brown and gray. Texture is sandy clay or clay.

By—Byars loam. This soil is in nearly level to slightly depressional areas west of the Summerville Scarp.

Included with this soil in mapping are small areas of Pantego, Rains, and Coxville soils. Also included are a few areas of soils that have a thick black surface layer and subsoil.

Most of the acreage of this soil is in woodland. A few areas are in pasture and cultivated crops. Principal cultivated crops are corn and soybeans.

Much of this soil is subject to occasional to frequent flooding. Extensive surface drainage systems are necessary when this soil is used for crops or pasture. The water table is at or near the surface about 6 months yearly. Capability units IIIw-2, drained, and VIw-1, undrained; woodland group 2w9.

Cainhoy series

The soils of the Cainhoy series are nearly level and gently sloping, deep, and somewhat excessively drained. They formed in sandy Coastal Plain sediment.

In a typical profile fine sand extends to a depth of more than 130 inches. The surface layer is dark grayish brown and about 5 inches thick. The next layer is about 125 inches thick. In sequence from the top, the upper 7 inches is yellowish brown, the next 31 inches is brownish yellow, the next 12 inches is yellow, the next 26 inches is light gray, the next 29 inches is light brownish gray, and the lower 20 inches is black.

Cainhoy soils occur with Chipley, Echaw, Pickney, and Witherbee soils. Cainhoy soils are better drained than all of these soils.

Cainhoy soils have rapid permeability. Surface runoff is slow, and available water capacity is low.

Typical profile of Cainhoy fine sand, 0 to 6 percent slopes, approximately 25 miles southeast of Moncks Corner, 6.0 miles southwest of Cainhoy on State Secondary Highway 33, 100 feet north of highway:

A1—0 to 5 inches, dark grayish brown (10YR 4/2) fine sand; single grained; loose; many fine and medium roots; salt and pepper appearance because of white sand grains; slightly acid, pH 6.2; abrupt smooth boundary.

B21—5 to 12 inches, yellowish brown (10YR 5/6) fine sand; single grained; loose; common fine and medium roots; slightly acid, pH 6.2; clear smooth boundary.

B22—12 to 43 inches, brownish yellow (10YR 6/6) fine sand; single grained; loose; common fine roots; medium acid, pH 6.0; clear smooth boundary.

B23—43 to 55 inches, yellow (10YR 7/6) fine sand; few fine faint very pale brown mottles; single grained; loose; few fine roots; medium acid, pH 6.0; clear wavy boundary.

A'21—55 to 65 inches, light gray (10YR 7/2) fine sand; few fine faint yellow mottles; single grained; loose; slightly acid, pH 6.4; gradual wavy boundary.

A'22—65 to 81 inches, light gray (10YR 7/2) fine sand; few medium distinct yellowish brown (10YR 5/6) mottles; single grained; loose; medium acid, pH 6.0; gradual irregular boundary.

A'23—81 to 110 inches, light brownish gray (10YR 6/2) fine sand; single grained; loose; medium acid, pH 5.8; clear smooth boundary.

B'2h—110 to 130 inches, black (5YR 2/1) fine sand; single grained; weakly cemented, loose when crushed; medium acid, pH 5.8.

The profile is strongly acid to slightly acid throughout.

The A horizon is brown, dark gray, gray, very dark grayish brown, dark grayish brown, dark brown, olive brown, or dark yellowish brown and is 3 to 9 inches thick.

The B2 horizon is strong brown, yellowish brown, light yellowish brown, light olive brown, pale brown, very pale brown, brownish yellow, yellow, pale yellow, olive yellow, or pale olive and is 45 to 75 inches thick.

The A'2 horizon is gray, light gray, light brownish gray, grayish brown, or dark grayish brown and is 4 to 55 inches thick.

The B'2h horizon occurs at a depth of more than 80 inches and is black or dark brown.

CaB—Cainhoy fine sand, 0 to 6 percent slopes. This nearly level to gently sloping soil occurs on broad and narrow ridges.

Included with this soil in mapping are small areas of Chipley, Echaw, Lucy, Bonneau, and Norfolk soils; small slight depressions of wet soils, which are shown on the map by wet spot symbols; and a few areas of soils that have slopes of more than 6 percent. Also included are a few areas of soils that have a loamy fine sand surface layer and subsurface layer; a few areas of soils that have a sandy loam subsoil between depths of 40 and 90 inches; and a few areas of soils that have no gray or light gray horizon within 80 inches of the surface.

Most of the acreage of this soil is in woodland. The remainder is under cultivation or in pasture. The principal crops are small grain, bahiagrass, and Coastal bermudagrass. Fertilizer and lime are lost rapidly by leaching.

Soil blowing is a hazard and maintaining organic matter content and fertility is a concern when this soil is used for row crops. It is also droughty. Wind stripcropping, cover crops, and crop rotation are among the conservation practices necessary for controlling erosion and maintaining organic matter content. Fertilizers and lime are most efficiently used on this soil if they are applied frequently but in smaller amounts. Capability unit IVs-1; woodland group 3s2.

Capers series

The soils of the Capers series are deep and very poorly drained. They formed in clayey marine sediment on level tidal flats.

In a typical profile the surface layer is about 10 inches of loam. The upper 4 inches is dark gray, and the lower 6 inches is dark greenish gray. The underlying material extends to a depth of more than 80 inches. In sequence from the top, the upper 32 inches is mottled bluish gray, greenish gray, and light olive brown clay; the next 23 inches is greenish gray clay; and the lower 15 inches is greenish gray sandy clay.

Capers soils occur with Meggett, Santee, Chastain, and Bohicket soils. Capers soils have a high sulfur content, but none of the associated soils except Bohicket are high in sulfur. Capers soils have a profile that is less variable in texture and contains fewer fibrous roots than Bohicket soils, and they are not covered by seawater twice daily to a depth of 6 to 36 inches as are Bohicket soils.

Capers soils have very slow permeability. Surface runoff is ponded, and available water capacity is high.

Typical profile of Capers loam in an area of Capers association on Daniel Island, 1.3 miles southeast of intersection of State Secondary Highways 33 and 119, 300 feet south of Sanders Creek:

A11—0 to 4 inches, dark gray (5Y 4/1) loam; massive; many fine and medium marshgrass roots constituting 35 percent of mass, by volume; when squeezed, flows easily between fingers and leaves residue in hand; neutral, pH 7.0; gradual wavy boundary.

A12—4 to 10 inches, dark greenish gray (5BG 4/1) loam; massive; slightly sticky; common fine roots; when squeezed, flows between fingers with some difficulty; neutral, pH 7.0; gradual smooth boundary.

C1g—10 to 42 inches, mottled bluish gray (5B 6/1), greenish gray (5BG 6/1), and light olive brown (2.5Y 5/6) clay; massive; slightly sticky; few fine roots; when squeezed, flows between fingers with some difficulty; mildly alkaline, pH 7.8; clear smooth boundary.

C2g—42 to 65 inches, greenish gray (5BG 5/1) clay; with pockets of sandier material on faces of peds; common fine prominent olive mottles; massive; firm; does not flow between fingers when squeezed; mildly alkaline, pH 7.8; gradual wavy boundary.

C3g—65 to 80 inches, greenish gray (5BG 5/1) sandy clay; few fine prominent olive mottles; massive; friable; does not flow between fingers when squeezed; few mica flakes; mildly alkaline, pH 7.8.

The profile is neutral or mildly alkaline throughout. These soils are firm marsh that lacks an N value of less than 1 within the upper 40 inches.

The A horizon is dark gray or dark greenish gray and is 6 to 10 inches thick. Texture of A horizon is loam or silty clay loam.

The C horizon is greenish gray, dark greenish gray, black, or mottled bluish gray, greenish gray, and light olive brown clay, sandy clay, or silty clay. The lower part of the C horizon in some profiles is greenish gray sandy clay loam material that contains soft marine shells.

CP—Capers association. These soils are on nearly level tidal flats that extend inland along the Wando and Cooper Rivers. This association was mapped at a lower intensity than were most other units in this survey area.

Included with this association in mapping are a few, small, irregularly shaped islands of Santee and Meggett soils. Also included are a few, long, narrow areas of Bohicket soils.

All of the acreage of these soils is in marshgrasses. Because of their salt and sulphur content, Capers soils are not suited for cultivation. They can be used for range pasture. They provide natural habitat for wildlife.

If these soils are drained or air-dried for a period of 30 days, they become extremely acid and plants die. Capability unit VIIIw-2; not placed in a woodland group.

Caroline series

The soils of the Caroline series are nearly level to gently sloping, deep, and well drained. They formed in clayey Coastal Plain sediment.

In a typical profile the surface layer is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is yellowish brown fine sandy loam about 12 inches thick. The next layer, to a depth of 82 inches, is red, firm clay in the upper part and yellowish red, friable sandy clay loam in the lower part.

Caroline soils are associated with Norfolk, Lucy, Craven, Duplin, Wahee, and Lenoir soils. Caroline soils have a finer textured subsoil than Norfolk soils. Caroline soils have a thinner A horizon than Lucy soils. Caroline soils are better drained than Craven, Duplin, Wahee, and Lenoir soils.

Caroline soils have moderately slow permeability. Surface runoff is medium, and available water capacity is high.

Typical profile of Caroline fine sandy loam, 2 to 6 percent slopes; from Alvin Post Office, 1,750 feet southeast on S. C. Highway 45 and 0.25 mile north on woods road; 70 feet west of road:

A1—0 to 4 inches, dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots, slightly acid, pH 6.3; clear smooth boundary.

A21—4 to 8 inches, yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; medium acid, pH 5.8; clear smooth boundary.

A22—8 to 16 inches, yellowish brown (10YR 5/6) fine sandy loam; few medium distinct yellowish red (5YR 4/6) mottles; weak fine granular structure; very friable; many fine roots; medium acid, pH 5.6; abrupt smooth boundary.

B1—16 to 19 inches, yellowish red (5YR 5/8) sandy clay loam; few fine faint strong brown mottles; weak fine subangular blocky structure; friable; common fine roots; strongly acid, pH 5.4; clear wavy boundary.

B21t—19 to 32 inches, red (2.5YR 4/6) clay; few coarse distinct reddish yellow (7.5YR 6/8) mottles; moderate medium angular blocky structure; firm; thin patchy clay films on faces of peds; common fine roots; few mica flakes; very strongly acid, pH 5.0; gradual smooth boundary.

B22t—32 to 55 inches, red (2.5YR 4/6) clay; common coarse distinct reddish yellow (7.5YR 6/8) mottles; moderate medium subangular blocky structure; firm; thin patchy clay films on faces of peds; few fine roots; few mica flakes; very strongly acid, pH 4.6; gradual smooth boundary.

B3—55 to 82 inches, yellowish red (5YR 5/8) sandy clay loam; common medium distinct strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; friable; common mica flakes; very strongly acid, pH 4.5.

The solum ranges from 55 inches to more than 80 inches in thickness. The A horizon is slightly acid to strongly acid, and the B horizon is strongly acid or very strongly acid.

The A horizon is 10 to 17 inches thick. The Ap horizon, where present, is 2 to 11 inches thick. It is very dark gray, very dark grayish brown, dark grayish brown, dark brown, dark gray, or yellowish brown. The A2 horizon, where present, is 5 to 14 inches thick. It is light yellowish brown or yellowish brown.

The B1 horizon, where present, is 3 to 5 inches thick and is yellowish red, yellowish brown, or strong brown. The B2t horizon is 19 to 44 inches thick. It is red, yellowish red, reddish yellow, strong brown, or yellowish brown. Texture of the B2t horizon is commonly clay but in places is sandy clay. The lower part of the B2t horizon commonly is mottled in various shades of brown, red, and yellow, but in places it is gray. The B3 horizon, where present, is commonly sandy clay loam and sandy loam, but in places it is sandy clay. It ranges from 4 to 28 inches in thickness. It commonly is yellowish red or red and has mottles in various shades of gray, brown, and yellow.

These soils have more than 20 percent clay decrease at a depth of about 55 inches but are otherwise similar to Caroline soils mapped in other survey areas. This difference does not affect use and management of these soils.

CoA—Caroline fine sandy loam, 0 to 2 percent slopes. This nearly level soil occurs in long narrow strips along streams and rivers.

Included with this soil in mapping are small areas of Norfolk, Lucy, Craven, Duplin, Lenoir, and Wahee soils; some long narrow areas of Caroline fine sandy loam, 2 to 6 percent slopes, adjacent to drainageways; and some small, wet, depressional areas less than 2 acres in size, which are shown on the map by wet spot symbols. Also included are areas of soils that have a very fine sandy loam and loamy fine sand surface layer; some areas of soils that have a sandy clay loam subsoil; and a few areas of soils that have a combined surface layer and subsoil less than 55 inches thick.

Most of the acreage of this soil is in cultivation. The principal crops are soybeans, corn, small grain, bahiagrass, and Coastal bermudagrass.

Tilth is generally good. Row crops can be grown each year. This soil is easily tilled over a wide range of moisture content. Capability unit I-2; woodland group 2o1.

CoB—Caroline fine sandy loam, 2 to 6 percent slopes. This gently sloping soil occurs on narrow ridges and slopes parallel to streams and drainageways. It has the profile described as representative of the series.

Included in this soil in mapping are small areas of Norfolk, Lucy, and Duplin soils; a few small areas of soils that have slopes of less than 2 percent or more than 6 percent; and small wet areas, which are shown on the map by wet spot symbols. Also included are areas of soils that have a loamy sand and loamy fine sand surface layer; areas of soils that have sandy underlying material; and a few areas of soils that have a surface layer and subsoil less than 55 inches thick combined.

Most of the acreage of this soil is in cultivation. The principal crops are soybeans, corn, small grain, bahiagrass, and Coastal bermudagrass.

Erosion is the chief hazard on this soil. Because of the slope, which causes an increased rate of runoff and a greater hazard of erosion, contour cultivation and other conservation measures are essential. Crop residue kept on or near the surface increases infiltration and reduces erosion. Keeping this soil in close-growing crops at least half of the time helps to control erosion. Capability unit IIe-2; woodland group 2o1.

Chastain series

The soils of the Chastain series are nearly level and poorly drained. They formed in clayey alluvial Coastal Plain sediment.

In a typical profile the surface layer is mottled dark gray silty clay loam about 7 inches thick. The next layer extends to a depth of 51 inches. In sequence from the top, the upper 4 inches is greenish gray silty clay loam, the next 8 inches is gray silty clay, the next 12 inches is dark gray silty clay loam, and the lower 20 inches is dark gray silty clay. The underlying material to a depth of 80 inches is dark gray silty clay.

Chastain soils occur with Santee, Meggett, Tawcaw, Capers, Pantego, Bayboro, and Bohicket soils. Chastain soils are more acid than Santee and Meggett soils, and they are more poorly drained than Tawcaw soils. Chastain soils have less sulphur and salt than Capers and Bohicket soils. Chastain soils have more silt than Pantego and Bayboro soils.

Chastain soils have slow permeability. Surface runoff is very slow, and available water capacity is medium.

Typical profile of Chastain silty clay loam in an area of Chastain association, frequently flooded; from intersection of Echaw Road (State Secondary Highway 857) and county line (Wambaw Creek), 300 yards north on Echaw Road and 100 yards east:

A1—0 to 7 inches, dark gray (5Y 4/1) silty clay loam; few fine prominent yellowish red mottles, common medium prominent strong brown (7.5YR 5/6) mottles, and few fine distinct dark yellowish brown mottles; weak medium subangular blocky structure; slightly sticky and plastic; many fine and large roots; strongly acid, pH 5.2; abrupt smooth boundary.

B21g—7 to 11 inches, greenish gray (5GY 6/1) silty clay loam; few medium prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; sticky and plastic; many fine and large roots; strongly acid, pH 5.4; clear smooth boundary.

B22g—11 to 19 inches, gray (5Y 5/1) silty clay; few medium distinct dark brown (7.5YR 3/2) mottles; weak fine subangular blocky structure; sticky and plastic; many fine and large roots; strongly acid, pH 5.1; clear smooth boundary.

B23g—19 to 31 inches, dark gray (5Y 4/1) silty clay loam; weak fine subangular blocky structure; sticky and plastic; many fine and large roots; strongly acid, pH 5.1; clear smooth boundary.

B3g—31 to 51 inches, dark gray (5Y 4/1) silty clay; weak fine subangular blocky structure; sticky and plastic; common medium and large partially decomposed roots; few mica flakes; very strongly acid, pH 5.0; clear wavy boundary.

Cg—51 to 80 inches, dark gray (5Y 4/1) silty clay; massive; sticky and plastic; few medium and large partially decomposed roots; common mica flakes; very strongly acid, pH 5.0.

The solum ranges from 40 to 55 inches in thickness. The profile is strongly acid or very strongly acid throughout after air-drying for about 30 days.

The A horizon is 4 to 11 inches thick. It is dark grayish brown, very dark grayish brown, dark gray, gray, or grayish brown.

The B2 horizon is 24 to 49 inches thick. It is light gray, gray, dark gray, greenish gray, grayish brown, or dark grayish brown silty clay loam, silty clay, clay loam, or clay. The B3 horizon, where present, is 10 to 20 inches thick. It is dark gray or gray silty clay or silty clay loam.

The C horizon is light gray, gray, dark gray, or grayish brown silty clay loam, clay, or silty clay.

CS—Chastain association, frequently flooded. These soils are on the alluvial flood plain of the Santee River. They were mapped at a lower intensity than were most other soils in this survey area.

Included with this association in mapping are some areas of Santee, Bayboro, Pantego, Meggett, and Tawcaw soils. Also included are areas of soils that have a surface layer of silty clay, clay loam, or silt loam.

All of the acreage of these soils is in hardwoods. Because they are frequently flooded, the Chastain soils are not suited to either cultivated crops or pasture.

When these soils are drained or air-dried for a period of 30 days or more, they become more acid. These soils are better suited to timber production than to most other uses. Capability unit VIIw-3; woodland group 2w9.

Chipley series

The soils of the Chipley series are nearly level, deep, and moderately well drained. They formed in sandy Coastal Plain sediment.

In a typical profile the surface layer is black fine sand about 4 inches thick. The underlying material is fine sand to a depth of more than 80 inches. In sequence from the top, the upper 29 inches is yellowish brown, the next 24 inches is light brownish gray, the next 8 inches is light gray, and the lower 15 inches is light brownish gray.

Chipley soils occur with Cainhoy, Lynchburg, Pickney, Witherbee, and Echaw soils. Chipley soils are more poorly drained than Cainhoy soils. Chipley soils have a coarser textured subsoil than Lynchburg soils. Chipley soils are better drained than Pickney and Witherbee soils. Chipley soils do not have a Bh horizon as do Echaw soils.

Chipley soils have rapid permeability. Surface runoff is slow, and available water capacity is low.

Typical profile of Chipley fine sand in an area of Chipley-Echaw complex, 100 yards west of Berkeley and Charleston County line on State Secondary Highway 133 and 100 feet south of road:

A1—0 to 4 inches, black (10YR 2/1) fine sand; single grained; loose; many fine roots; common white sand grains; very strongly acid, pH 4.6; clear smooth boundary.

C1—4 to 33 inches, yellowish brown (10YR 5/4) fine sand; few fine faint pale brown and strong brown mottles; single grained; loose; common fine roots; very strongly acid, pH 4.9; clear smooth boundary.

C2g—33 to 57 inches, light brownish gray (10YR 6/2) fine sand; single grained; loose; few fine roots; medium acid, pH 5.8; gradual irregular boundary.

C3g—57 to 65 inches, light gray (10YR 7/1) fine sand; single grained; loose; few fine roots; medium acid, pH 5.8; clear smooth boundary.

C4g—65 to 80 inches, light brownish gray (10YR 6/2) fine sand; common medium faint light gray (10YR 7/1) mottles; single grained; loose; medium acid, pH 5.8.

This profile is very strongly acid to medium acid throughout.

The A horizon is 3 to 13 inches thick. It is dark gray, grayish brown, very dark gray, very dark brown, gray, black, very dark grayish brown, or dark grayish brown.

The C horizon is light yellowish brown, yellowish brown, pale yellow, brownish yellow, brown, or pale brown in the upper part and dark gray, gray, light brownish gray, light gray, or grayish brown in the lower part.

Ct—Chipley-Echaw complex. These soils occur in broad areas adjacent to low wet areas. These soils are so intermingled that it is not practical to map them separately at the scale used. Approximately 60 to 65 percent of this complex is Chipley soils, and 35 to 40 percent is Echaw soils. The Echaw soils are in irregularly shaped areas that occur at random throughout the complex.

Included with this complex in mapping are some areas of Witherbee, Leon, and Lynchburg soils. Also included are small, wet, depressional areas, which are shown on the map by wet spot symbols. There are also areas of soils that have sandy loam, sandy clay loam, and sandy clay in the lower part.

Most areas of these soils are in woodland. Pasture grass is the major crop in most of the remaining areas, but a few areas are planted to soybeans and truck crops. Bahiagrass is suitable for pasture.

For pasture and row crops to be productive, intensive conservation practices must be applied because of excessive leaching and a high water table. These soils are low in available water capacity, natural fertility, and organic matter content. Capability unit IIIs-3; Chipley soils in woodland group 2s2, and Echaw soils in woodland group 3w2.

Coxville series

The soils of the Coxville series are nearly level, deep, and poorly drained. They formed in clayey Coastal Plain sediment.

In a typical profile the surface layer is fine sandy loam about 8 inches thick; the upper 5 inches is black, and the lower 3 inches is very dark gray. The next layer extends to a depth of more than 69 inches. In sequence from the top, the upper 5 inches is grayish brown, friable clay loam; the next 17 inches is mottled gray, firm sandy clay; and the lower 39 inches is mottled gray, firm clay.

Coxville soils occur with Byars, Pantego, Rains, Lenoir, Lynchburg, and Meggett soils. Coxville soils are better drained than Byars and Pantego soils. Coxville soils have a finer textured subsoil than Rains soils. Coxville soils are more poorly drained than Lenoir and Lynchburg soils. Coxville soils have a more acid subsoil than Meggett soils.

Coxville soils have moderately slow permeability. Surface runoff is slow to ponded, and available water capacity is high.

Typical profile of Coxville fine sandy loam, about 15 miles northwest of Moncks Corner in Ferguson Bay, 1.1 miles east of county line road and 25 feet north of old woods road:

A11—0 to 5 inches, black (10YR 2/1) fine sandy loam; weak fine granular structure; friable; common fine and medium roots; very strongly acid, pH 4.6; clear smooth boundary.

A12—5 to 8 inches, very dark gray (10YR 3/1) fine sandy loam; weak fine granular structure; friable; common fine and medium roots; very strongly acid, pH 4.6; abrupt smooth boundary.

B1g—8 to 13 inches, grayish brown (10YR 5/2) clay loam; few fine distinct yellowish brown mottles; weak fine subangular blocky structure; friable; few fine and medium roots; very strongly acid, pH 4.6; clear smooth boundary.

B21tg—13 to 30 inches, gray (10YR 6/1) sandy clay; common fine distinct yellowish brown mottles; weak fine subangular blocky structure; firm; thin patchy clay films on faces of peds; few fine roots; very strongly acid, pH 4.7; clear wavy boundary.

B22tg—30 to 39 inches, gray (10YR 6/1) clay; common medium distinct yellowish brown (10YR 5/4) mottles and common fine distinct strong brown mottles; weak medium subangular blocky structure; firm; thin patchy clay films on faces of peds; few fine roots; very strongly acid; pH 4.7; clear wavy boundary.

B23tg—39 to 64 inches, gray (10YR 5/1) clay; few fine distinct yellowish brown and brown mottles and few fine faint gray and light brownish gray mottles; weak coarse subangular blocky structure; firm; thin patchy clay films on faces of peds; very strongly acid, pH 4.6; clear wavy boundary.

B24tg—64 to 69 inches, gray (10YR 5/1) clay; few fine distinct yellowish brown and brown mottles and few fine faint gray, light brownish gray, and light gray mottles; moderate coarse subangular blocky structure; firm; very strongly acid, pH 4.7.

The solum ranges from 61 to 76 inches in thickness. The profile is strongly acid or very strongly acid throughout unless limed.

The A1 horizon is 4 to 12 inches thick. It is black, very dark gray, dark gray, or very dark grayish brown. Where the A1 horizon is black, very dark gray, or very dark grayish brown, it is less than 10 inches thick. The A2 horizon, where present, is about 8 inches thick. It is gray or grayish brown.

The B1 horizon, where present, is 4 to 8 inches thick. It is dark gray or grayish brown sandy clay loam or clay loam. The B2t horizon is 44 inches to more than 60 inches thick. It is dark gray, gray, or light gray sandy clay or clay that has common to many mottles in various shades of gray, brown, red, and yellow.

Cu—Coxville fine sandy loam. This soil is on broad flats and in slightly depressional areas west of the Summerville Scarp.

Included with this soil in mapping are small areas of Byars, Pantego, Rains, and Lenoir soils. Also included are some areas of soils that have a loam surface layer and subsurface layer.

Most of the acreage of this soil is in woodland. A small percentage is in row crops or pasture grasses.

This soil can be cultivated only within a narrow range of moisture content, but it can be cropped intensively when adequate drainage is provided. Returning crop residue and using rotations that include frequent sod crops are necessary to maintain good tilth and productivity. Capability units IIIw-2, drained, and IVw-2, undrained; woodland group 2w9.

Craven series

The soils of the Craven series are nearly level to gently sloping, deep, and moderately well drained. They formed in clayey Coastal Plain sediment.

In a typical profile the surface layer is dark gray loam about 2 inches thick. The subsurface layer is pale brown silt loam about 5 inches thick. The next layer is firm clay 48 inches thick. In sequence from the top, the upper 4 inches is light yellowish brown; the next 7 inches is yellowish brown and has red mottles; the next 10 inches is pale brown and has strong brown, red, and gray mottles; the next 10 inches is mottled yellowish brown, red, and grayish brown; and the lower 17 inches is grayish brown. The underlying material is mottled light gray, gray, yellowish brown, brownish yellow, and red clay to a depth of more than 78 inches.

Craven soils occur with Caroline, Norfolk, Goldsboro, Lenoir, Wahee, Lynchburg, and Bethera soils. Craven soils are more poorly drained than Caroline and Norfolk soils. They have a finer textured subsoil than Goldsboro soils. Craven soils are better drained than Lenoir, Wahee, Lynchburg, and Bethera soils.

Craven soils have slow or very slow permeability. Surface runoff is medium, and available water capacity is medium.

Typical profile of Craven loam, 0 to 2 percent slopes; from intersection of S. C. Highway 41 and S. C. Highway 402 near Huger, 3.3 miles north on Highway 41 and 100 yards east on Lottie Road; 50 feet north of road:

A1—0 to 2 inches, dark gray (10YR 4/1) loam; weak fine granular structure; very friable; many fine and medium roots; very strongly acid, pH 4.5; abrupt smooth boundary.

A2—2 to 7 inches, pale brown (10YR 6/3) silt loam; weak fine granular structure; very friable; many fine and medium roots; very strongly acid, pH 4.7; clear smooth boundary.

B21t—7 to 11 inches, light yellowish brown (10YR 6/4) clay; few fine distinct yellowish red mottles; moderate fine subangular blocky structure; firm; broken faint clay films on faces of peds; common fine and medium roots; few fine pores; very strongly acid, pH 4.7; gradual smooth boundary.

B22t—11 to 18 inches, yellowish brown (10YR 5/4) clay; common fine prominent red mottles; strong medium subangular blocky structure; firm patchy faint clay films on faces of peds; fine and medium roots; common fine pores; occasional organic stains on peds and in pores; very strongly acid, pH 4.9; gradual smooth boundary.

B23t—18 to 28 inches, pale brown (10YR 6/3) clay; few pockets of sand; common medium distinct strong brown (7.5YR 5/6) and red (10R 4/6) mottles and few fine faint gray mottles; moderate medium subangular blocky structure; firm; complete prominent clay films on faces of peds; few fine and medium roots; common fine pores; very strongly acid, pH 4.8; abrupt wavy boundary.

B24t—28 to 38 inches, mottled yellowish brown (10YR 5/8), red (10R 4/6), and grayish brown (10YR 5/2) clay; weak medium subangular blocky structure; firm; patchy faint clay films on faces of peds; few fine and medium roots; few fine pores; very strongly acid, pH 4.8; gradual wavy boundary.

B25tg—38 to 55 inches, grayish brown (10YR 5/2) clay; few fine prominent dusky red and brownish yellow mottles; weak fine subangular blocky structure; firm; patchy faint clay films on faces of peds; very strongly acid, pH 4.6; gradual wavy boundary.

C1g—55 to 66 inches, mottled light gray (10YR 6/1), yellowish brown (10YR 5/6), dark red (10R 3/6), and dusky red (10R 3/4) clay; massive; firm; very strongly acid, pH 4.5; diffuse wavy boundary.

C2g—66 to 78 inches, mottled light gray (10YR 6/1), yellowish brown (10YR 5/6), brownish yellow (10YR 6/6), and red (2.5YR 4/6) clay; massive; firm; very strongly acid, pH 4.5.

The solum ranges from 49 to 59 inches in thickness. The profile is very strongly acid or strongly acid throughout except where limed.

The A horizon is 3 to 15 inches thick. In the plow layer, or upper 5 to 9 inches, the A horizon is dark gray, very dark gray, very dark grayish brown, or grayish brown. The A2 horizon, where present, is 5 to 10 inches thick. It is pale brown, light yellowish brown, yellowish brown, or light gray silt loam or loam.

The B1 horizon, where present, is 3 to 5 inches thick. It is light yellowish brown or yellowish brown clay loam or sandy clay loam. The B2t horizon is 24 to 48 inches thick. It is commonly clay, but it is silty clay loam or silty clay in places. The upper part of the B2t horizon is brownish yellow, light yellowish brown, yellowish brown, strong brown, brown, or pale brown and has few to many mottles in various shades of gray, red, yellow, and brown. The lower part of the B2t horizon is dominantly gray and has common to many mottles of red, yellow, and brown, or it is dominantly yellow or brown and has common to many mottles of gray and red. The B3 horizon, where present, is 12 to 17 inches thick. It is clay or sandy clay. It is dominantly gray and has common to many mottles in various shades of red, yellow, and brown.

The C horizon is commonly mottled in shades of gray, yellow, brown, and red. It is sandy clay, clay, clay loam, or sandy clay loam.

CvA—Craven loam, 0 to 2 percent slopes. This nearly level soil occurs on broad ridges. It has the profile described as representative for the series.

Included with this soil in mapping are small areas of Caroline, Duplin, Wahee, and Lenoir soils; small wet depressional areas, which are shown on the map by wet spot symbols; some areas of soils that have a fine sandy loam and sandy loam surface layers; and some areas of soils that have a surface layer and subsoil more than 60 inches thick combined. Also included are some areas of Craven loam, 2 to 6 percent slopes, and some areas of soils that have an extremely acid layer.

Most of the acreage of this soil is in woodland. The remainder is in cultivation. A few scattered ponds are located on this soil (fig. 1). The principal crops are corn, soybeans, small grain, and pasture grasses.

The tilth of this soil is fair. This soil can be tilled only within a narrow range of moisture content. Row crops can be grown each year, but drainage and other conservation practices are necessary to improve tilth and yields. Capability unit IIw-5; woodland group 3w2.

CvB—Craven loam, 2 to 6 percent slopes. This gently sloping soil is on broad ridges and narrow slopes along streams and drainageways.

Included with this soil in mapping are small areas of Caroline and Duplin soils; a few small areas of soils that have slopes of less than 2 percent or more than 6 percent; and small, wet, depressional areas, which are shown on the map by wet spot symbols. Also included are some areas of soils that have a fine sandy loam surface layer, some areas that have a neutral subsoil and underlying material, and some areas of soils that have extremely acid layers.

Most of the acreage of this soil is in woodland. The remainder is in pasture and row crops. Principal crops on this soil are bahiagrass, Coastal bermudagrass, corn, and soybeans.

Erosion is the chief hazard on this soil. Cropping systems that include sod crops and grassed waterways help to control erosion. Crop residue kept on or near the surface increases infiltration and reduces erosion. Capability unit IIIe-3; woodland group 3w2.

Duplin series

The soils of the Duplin series are nearly level to gently sloping, deep, and moderately well drained. They formed in clayey Coastal Plain sediment.

In a typical profile the surface layer is grayish brown fine sandy loam about 6 inches thick. The next layer extends to a depth of more than 80 inches. In sequence from the top, the upper 17 inches is yellowish brown, firm clay loam; the next 30 inches is yellowish brown, firm clay that has red and gray mottles; and the lower 27 inches is brownish yellow, firm clay that has gray and red mottles.

Duplin soils occur with Norfolk, Caroline, Craven, Wahee, Lenoir, Coxville, and Bayboro soils. Duplin soils are more poorly drained than Norfolk and Caroline soils. Duplin soils have a thicker solum than Craven soils. Duplin soils are better drained than Wahee, Lenoir, Coxville, and Bayboro soils.

Duplin soils have moderately slow permeability. Surface runoff is slow, and available water capacity is high.

Typical profile of Duplin fine sandy loam, 0 to 2 percent slopes; from intersection of road to Oakland Club and S. C. Highway 45, 1,950 feet north on dirt road; 100 feet west of road:

Ap—0 to 6 inches, grayish brown (10YR 5/2) fine sandy loam; weak fine granular structure; very friable; many fine roots; neutral, pH 6.8; abrupt smooth boundary.

B21t—6 to 16 inches, yellowish brown (10YR 5/6) clay loam; few fine faint pale brown mottles and few fine distinct strong brown mottles; weak medium subangular blocky structure; firm; few patchy faint clay films on faces of peds; common fine roots; strongly acid, pH 5.5; clear smooth boundary.

B22t—16 to 23 inches, yellowish brown (10YR 5/6) clay loam; few fine prominent red mottles; weak medium subangular blocky structure; firm; patchy faint clay films on faces of peds; few fine roots; very strongly acid, pH 4.9; clear smooth boundary.

B23t—23 to 41 inches, yellowish brown (10YR 5/6) clay; few medium prominent red (2.5YR 4/6) mottles and few fine distinct gray mottles; weak medium subangular blocky structure; firm; patchy faint clay films on faces of peds; few fine roots; very strongly acid, pH 4.8; clear smooth boundary.

B24t—41 to 53 inches, yellowish brown (10YR 5/4) clay; few medium distinct yellowish red (5YR 5/8) mottles, few medium prominent red (2.5YR 5/6) mottles, and few medium faint gray (10YR 6/1) mottles; weak medium subangular blocky structure; firm; patchy faint clay films on faces of peds; very strongly acid, pH 4.7; clear smooth boundary.

B25t—53 to 67 inches, brownish yellow (10YR 6/6) clay; few medium distinct gray (10YR 6/1) mottles and few medium prominent red (2.5YR 4/6) mottles; weak coarse subangular blocky structure; firm; patchy faint clay films on faces of peds; very strongly acid, pH 4.5; clear wavy boundary.

B3—67 to 80 inches, brownish yellow (10YR 6/6) clay; common coarse distinct light gray (10YR 7/1) mottles and few medium prominent dark red (10R 3/6) mottles; weak coarse subangular blocky structure; firm; very strongly acid, pH 4.5.

The solum is more than 75 inches thick. The A horizon is strongly acid to neutral, and the Bt horizon is very strongly acid or strongly acid.

The A horizon is 6 to 16 inches thick. In the plow layer, or upper 2 to 10 inches, the A horizon is very dark grayish brown, brown, dark grayish brown, light brownish gray, grayish brown, very dark gray, or dark gray. The A2 horizon, where present, is 4 to 14 inches thick. It is light yellowish brown, grayish brown, yellowish brown, pale brown, or very pale brown fine sandy loam or sandy loam.

The B1 horizon, where present, is 3 to 5 inches thick. It is light yellowish brown, light olive brown, or yellowish brown clay loam or sandy clay loam. The B2t horizon is 31 inches to more than 60 inches thick. It commonly is sandy clay or clay loam, but in places it is clay. The upper part of the B2t horizon is yellowish brown, brown, light olive brown, or light yellowish brown and has no mottles to common mottles in various shades of gray, red, yellow, and brown. Mottles that have chroma of 2 or less are within 30 inches of the surface. The lower part of the B2t horizon is dominantly gray and has few to many mottles in various shades of brown, red, and yellow; it is mottled gray, red, yellow, and brown, or it is dominantly brownish and has gray and red mottles. The B3 horizon, where present, is 5 to 19 inches thick. It is gray, light gray, brownish yellow, or grayish brown clay or sandy clay.

DuA—Duplin fine sandy loam, 0 to 2 percent slopes. This nearly level soil is on broad ridges. It has the profile described as representative for the series.

Included with this soil in mapping are small areas of Caroline, Norfolk, Craven, Goldsboro, Lenoir, and Lynchburg soils; some areas of Duplin fine sandy loam, 2 to 6 percent slopes, adjacent to drainageways; and a few areas of soils that have a clay decrease of more than 20 percent from its maximum within 60 inches of the surface. Also included are some small wet areas less than 2 acres in size, which are shown on the map by wet spot symbols; areas of soils that have a loamy fine sand and very fine sandy loam surface and subsurface layer; and a few areas of soils that have sandy clay loam in the upper part of the subsoil.

Most of the acreage of this soil is in woodland. The remainder is in cultivation. The principal crops are cotton, corn, soybeans, small grain, and pasture grasses.

Row crops can be grown each year, but drainage by use of open ditches or tile drains, or both, and other conservation practices may be necessary to improve tilth and increase yields. Capability unit IIw-5; woodland group 2w8.

DuB—Duplin fine sandy loam, 2 to 6 percent slopes. This gently sloping soil is on broad ridges and narrow slopes along streams and drainageways.

Included with this soil in mapping are small areas of Craven, Caroline, and Norfolk soils; some areas of Duplin fine sandy loam, 0 to 2 percent slopes; and some areas of a Duplin fine sandy loam that has slopes of more than 6 percent. Also included are some small wet areas less than 2 acres in size, which are shown on the map by wet spot symbols; areas of soils that have a loamy fine sand and very fine sandy loam surface layer and subsurface layer; and some areas of soils that have sandy clay loam in the upper part of the subsoil.

Most of the acreage of this soil is in woodland. The rest is in pasture and row crops. The principal crops are bahiagrass, Coastal bermudagrass, corn, and soybeans.

Erosion is the chief hazard on this soil. Conservation practices such as grassed waterways and cropping systems that include grasses help to control erosion. Crop residue kept on or near the surface increases infiltration and reduces erosion. Capability unit IIe-3; woodland group 2w8.

Echaw series

The soils of the Echaw series are nearly level, deep and moderately well drained. They formed in sandy Coastal Plain sediment.

In a typical profile the surface layer is very dark brown loamy sand about 5 inches thick. The subsurface layer is loamy sand about 35 inches thick; the upper 22 inches is yellowish brown, and the lower 13 inches is light brownish gray and has yellowish brown mottles. The next layer is dark brown, very friable to slightly brittle sand about 10 inches thick. The underlying material to a depth of 65 inches is mottled light brownish gray and brown loamy sand.

Echaw soils occur with Cainhoy, Lynchburg, Pickney, Witherbee, and Chipley soils. Echaw soils are more poorly drained than Cainhoy soils. Echaw soils have a coarser textured subsoil than Lynchburg soils. Echaw soils are better drained than Pickney and Witherbee soils. Echaw soils have a Bh horizon, which Chipley soils do not have.

Echaw soils have rapid permeability. Surface runoff is slow, and available water capacity is low.

These soils were mapped in a complex with Chipley soils.

Typical profile of an Echaw loamy sand in an area of Chipley-Echaw complex; from Seaboard Coastline Railroad crossing of South Carolina Highway 402, 1.4 miles north on South Carolina Highway 402; 75 feet west of Highway 402:

A1—0 to 5 inches, very dark brown (10YR 2/2) loamy sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid, pH 5.2; clear smooth boundary.

A21—5 to 21 inches, yellowish brown (10YR 5/6) loamy sand; single grained; loose; many fine and medium roots; sand grains coated; very strongly acid, pH 5.0; gradual smooth boundary.

A22—21 to 27 inches, yellowish brown (10YR 5/6) loamy sand; common medium faint pale brown (10YR 6/3) mottles; single grained; loose; very friable; few fine roots; sand grains coated; very strongly acid, pH 4.8; clear smooth boundary.

A23—27 to 40 inches, light brownish gray (2.5Y 6/2) loamy sand; many fine distinct yellowish brown mottles; weak fine granular structure; very friable; few fine roots; sand grains coated; very strongly acid, pH 4.8; clear smooth boundary.

Bh—40 to 50 inches, dark brown (7.5YR 3/2) sand; common fine faint brown, dark reddish brown, and dark brown bodies; weak fine subangular blocky structure parting to weak fine granular; very friable; slightly brittle in darker portions; few fine roots; few fine and medium pores; sand grains coated; strongly acid, pH 5.2; clear smooth boundary.

Cg—50 to 65 inches, mottled light brownish gray (10YR 6/2) and brown (7.5YR 5/2) loamy sand; single grained; loose; medium acid, pH 5.8.

The solum ranges from 45 inches to more than 60 inches in thickness. The profile is very strongly acid to medium acid throughout.

The A1 horizon is 2 to 9 inches thick. It is black, very dark brown, very dark gray, very dark grayish brown, dark gray, or dark grayish brown loamy sand, loamy fine sand, or fine sand. The A2 horizon is 23 to 46 inches thick. It is loamy sand, loamy fine sand, or fine sand. The upper part of the A2 horizon is brown, dark yellowish brown, yellowish brown, light yellowish brown, pale brown, light olive brown, brownish yellow, or pale yellow. The lower part of the A2 horizon has the same colors as the upper part and has few to many gray mottles, or it is gray, grayish brown, light brownish gray, or light gray and has higher chroma mottles.

The Bh horizon is at a depth of 32 to 48 inches. It commonly is 6 inches to more than 30 inches thick. It is dark brown, dark reddish brown, black, very dark brown, reddish brown, dark reddish gray, or very dark grayish brown sand, loamy fine sand, fine sand, or loamy sand.

The C horizon is loamy fine sand, loamy sand, fine sand, or sand.

Goldsboro series

The soils of the Goldsboro series are nearly level, deep, and moderately well drained. They formed in loamy Coastal Plain sediment.

In a typical profile the surface layer is very dark grayish brown loamy sand about 7 inches thick. The subsurface layer is light yellowish brown loamy sand about 7 inches thick. The next layer is friable sandy clay loam and extends to a depth of more than 75 inches. In sequence from the top, the upper 10 inches is yellowish brown, the next 11 inches is yellowish brown with gray mottles, the next 28 inches is mottled light gray, and the lower 12 inches is mottled with shades of brown, gray, and red.

The Goldsboro soils occur with Duplin, Craven, Lenoir, Norfolk, Caroline, Bonneau, Ocilla, Lynchburg, and Rains soils. Goldsboro soils have a coarser textured subsoil than Duplin, Craven, and Lenoir soils. Goldsboro soils are more poorly drained than Norfolk and Caroline soils. Goldsboro soils have a thinner A horizon than Bonneau and Ocilla soils. Goldsboro soils are better drained than Lynchburg and Rains soils.

Goldsboro soils have moderate permeability. Surface runoff is slow, and available water capacity is medium.

Typical profile of Goldsboro loamy sand, 0 to 2 percent slopes; from intersection of S. C. Highway 6 and U. S. Highway 17A, 1.0 mile west on Highway 6, 1,320 feet north on State Secondary Highway 510, and 500 feet west on unmarked road; 50 feet south of road:

A1—0 to 7 inches, very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; many fine and medium roots; very strongly acid, pH 4.7; abrupt smooth boundary.

A2—7 to 14 inches, light yellowish brown (2.5Y 6/4) loamy sand; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; pH 4.8; clear smooth boundary.

B21t—14 to 24 inches, yellowish brown (10YR 5/6) sandy clay loam; few fine and medium distinct yellowish red (5YR 4/8) mottles; weak fine subangular blocky structure; friable; sand grains coated and bridged; many fine and medium roots; very strongly acid, pH 4.9; clear smooth boundary.

B22t—24 to 35 inches, yellowish brown (10YR 5/6) sandy clay loam; many coarse distinct gray (10YR 6/1) mottles, few medium prominent red (2.5YR 4/8) mottles, and few fine distinct yellowish red and strong brown mottles; moderate medium subangular blocky structure; friable; sand grains coated and bridged; common fine roots; very strongly acid, pH 4.7; clear smooth boundary.

B23tg—35 to 57 inches, light gray (10YR 6/1) sandy clay loam; few coarse prominent yellowish red (5YR 4/6) mottles, common coarse prominent strong brown (7.5YR 5/6) mottles, and few medium distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged; few fine roots; very strongly acid, pH 4.7; clear smooth boundary.

B31g—57 to 63 inches, light gray (10YR 7/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/8) mottles, few medium prominent red (2.5YR 5/8) mottles, and few fine prominent strong brown mottles; weak fine subangular structure; friable; few fine roots; few flakes of mica; very strongly acid, pH 4.8; clear smooth boundary.

B32g—63 to 75 inches, mottled strong brown (7.5YR 5/6), light gray (10YR 7/1), yellowish red (5YR 5/8), yellowish brown (10YR 5/8), and light yellowish brown (2.5Y 6/4) sandy clay loam; weak fine subangular blocky structure; friable; few fine roots; few flakes of mica; very strongly acid, pH 4.8.

The solum ranges from 60 inches to more than 80 inches in thickness. The profile is very strongly acid or strongly acid throughout except where limed.

The A horizon ranges from 9 to 19 inches in thickness. The upper 3 to 9 inches is black, very dark grayish brown, very dark gray, grayish brown, or dark grayish brown. The A2 horizon, where present, is 3 to 12 inches thick. It is light yellowish brown, olive yellow, light olive brown, or brown.

The B1 horizon, where present, is 3 to 12 inches thick. It is yellowish brown, olive yellow, or light olive brown sandy loam or fine sandy loam. The B2t horizon is 30 inches to more than 60 inches thick. It is commonly sandy clay loam, but in places it is sandy loam. The upper part of the B2t horizon is yellowish brown, brown, light olive brown, light yellowish brown, olive yellow, or brownish yellow and has few to many mottles in various shades of red, yellow, brown, and gray. Mottles that have a chroma of 2 or less occur in the B2t horizon within 30 inches of the surface. The lower part of the B2t horizon has dominantly gray colors and common to many mottles of red, yellow, and brown, it has common to many gray mottles within brown and yellow matrices, or it has a matrix that is mottled red, gray, brown, and yellow. The B3 horizon, where present, is 6 inches to 20 inches thick. It is dominantly gray and has common to many mottles in various shades of red, yellow, and brown. It is sandy loam, fine sandy loam, or sandy clay loam.

GoA—Goldsboro loamy sand, 0 to 2 percent slopes. This nearly level soil occurs on broad flats throughout the county.

Included in this soil in mapping are small areas of Norfolk, Bonneau, Ocilla, Lynchburg, Duplin, and Lenoir soils; small, wet areas less than 2 acres in size, which are shown on the map by wet spot symbols; and areas of soils that have a fine sandy loam and loamy fine sand surface layer. Also included are some areas of soils that have a medium acid subsoil and some areas of soils that have a surface layer and subsoil less than 60 inches thick combined.

About 40 percent of the acreage of this soil is in woodland (fig. 2). The remainder is in row crops and pasture. Tilth is generally good.

The principal crops are soybeans, cotton, corn, tobacco, small grain, and pasture grasses. Row crops can be grown each year, but drainage by surface ditches, open ditches, or tile drains, or a combination, and other conservation practices may be necessary to improve tilth and yields. Capability unit IIw-2; woodland group 2w8.

Lenoir series

The soils of the Lenoir series are nearly level, deep, and somewhat poorly drained. They formed in clayey Coastal Plain sediment.

In a typical profile the surface layer is about 7 inches thick; the upper 4 inches is black fine sandy loam, and the lower 3 inches is dark gray very fine sandy loam. The next layer extends to a depth of more than 80 inches. In sequence from the top, the upper 8 inches is light yellowish brown, friable very fine sandy loam that has light brownish gray mottles; the next 7 inches is mottled, light brownish gray, firm clay loam; the next 30 inches is mottled, gray, firm clay; and the lower 28 inches is mottled, gray, firm clay loam.

Lenoir soils occur with Caroline, Bayboro, Byars, Coxville, Pantego, Rains, Bethera, Norfolk, Goldsboro, Ocilla, Lynchburg, Craven, and Wahee soils. Lenoir soils are more poorly drained than Caroline, Norfolk, Goldsboro, and Craven soils. Lenoir soils are better drained than Bayboro, Byars, Coxville, Pantego, Rains, and Bethera soils. Lenoir soils have a finer textured subsoil than Norfolk, Goldsboro, Ocilla, and Lynchburg soils and have a thicker subsoil than Craven and Wahee soils.

Lenoir soils have slow permeability. Surface runoff is slow, and available water capacity is medium.

Typical profile of Lenoir fine sandy loam on Medway Plantation, approximately 7,800 feet east of U. S. Highway 52 and 1,300 feet north of dirt road that leads onto Medway Plantation:

A11—0 to 4 inches, black (10YR 2/1) fine sandy loam; weak medium granular structure; very friable; many fine and medium roots; very strongly acid, pH 4.6; abrupt smooth boundary.

A12—4 to 7 inches, dark gray (10YR 4/1) very fine sandy loam; few medium faint pale brown (10YR 6/3) mottles and few fine distinct strong brown mottles; weak medium granular structure; very friable; common fine and medium roots; strongly acid, pH 5.2; abrupt smooth boundary.

B1—7 to 15 inches, light yellowish brown (2.5Y 6/4) very fine sandy loam; common medium faint light brownish gray (2.5Y 6/2) mottles and few fine faint yellowish brown mottles; weak fine subangular blocky structure; friable; few fine roots; strongly acid, pH 5.2; clear smooth boundary.

B21tg—15 to 22 inches, light brownish gray (2.5Y 6/2) clay loam; common medium distinct yellowish brown (10YR 5/6) mottles and few fine distinct brownish yellow mottles; weak fine angular blocky structure; firm; patchy distinct clay films on faces of peds; few fine roots; very strongly acid, pH 4.8; clear wavy boundary.

B22tg—22 to 42 inches, gray (10YR 6/1) clay; common fine distinct strong brown (7.5YR 5/6) mottles and common medium prominent red (2.5YR 4/8) mottles; weak medium subangular blocky structure; firm; patchy faint clay films on faces of peds; few fine roots; very strongly acid, pH 4.8; clear smooth boundary.

B23tg—42 to 52 inches, gray (10YR 6/1) clay; common medium distinct yellowish brown (10YR 5/6) mottles and common coarse prominent dark red (2.5YR 3/6) mottles; weak medium subangular blocky structure; firm; patchy faint clay films on faces of peds; few fine roots; very strongly acid, pH 4.6; clear smooth boundary.

B24tg—52 to 65 inches, gray (10YR 6/1) clay loam; few fine faint light brownish gray mottles, common coarse distinct strong brown (7.5YR 5/6) mottles, few fine distinct light yellowish brown mottles, and few fine prominent greenish gray mottles; weak medium subangular blocky structure; firm; few fine roots; very strongly acid, pH 4.6; clear smooth boundary.

B3g—65 to 80 inches, gray (10YR 6/1) clay loam; few fine distinct strong brown and light yellowish brown mottles and few fine prominent greenish gray mottles; weak coarse subangular blocky structure; firm; few fine roots; very strongly acid, pH 4.6.

The solum is 60 inches or more in thickness. The profile is strongly acid or very strongly acid throughout.

The A horizon is 5 to 11 inches thick. The A1 or Ap horizon is 2 to 7 inches thick. It is gray, dark gray, very dark gray, or black. The A2 horizon, where present, is 6 to 8 inches thick. It is pale olive.

The B1 horizon, where present, is 3 to 8 inches thick. It is light brownish gray, pale brown, brown, or light yellowish brown very fine sandy loam or sandy clay loam. The B2t horizon is 31 inches to more than 60 inches thick. It is sandy clay, clay loam, or clay. The B2t horizon commonly is mottled throughout in various shades of brown, red, gray, olive, and yellow. A chroma of 3 or more is commonly dominant in the upper few inches of the B2t horizon, and gray is the dominant color in the lower part. The B3 horizon, where present, is 10 to 22 inches thick. It has dominantly gray colors and common to many mottles in various shades of yellow, brown, and red. It is clay, clay loam, or sandy clay.

Le—Lenoir fine sandy loam. This soil occurs on broad low flats.

Included with this soil in mapping are small ares of Bethera, Coxville, Rains, Lynchburg, Wahee, Craven, Duplin, and Goldsboro soils and some areas of soils that have a loamy fine sand, very fine sandy loam, and loam surface layer. Also included are a few areas of soils that are sandy clay loam in the upper part of the subsoil.

Most of the acreage of this soil is in woodland. The remainder is in pasture and a few acres of row crops. The principal crops are corn, soybeans, small grain, and bahiagrass.

Open ditches or surface drains, or both, are used to drain this soil. Row crops can be grown each year. Growing and turning under a cover crop every year helps to maintain organic matter content and improve tilth and yields. Capability unit IIIw-3; woodland group 2w8.

Leon series

The soils of the Leon series are nearly level and poorly drained. They formed in sandy Coastal Plain sediment.

In a typical profile the surface layer is black fine sand about 7 inches thick. The subsurface layer is about 8 inches of gray fine sand. The next layer is dark reddish brown, weakly cemented fine sand about 18 inches thick. The underlying material extends to a depth of 70 inches or more; the upper 5 inches is brown loamy sand, the next 20 inches is light brownish gray fine sandy loam, and the lower 12 inches is light gray loamy and sandy material.

Leon soils occur with Chipley, Echaw, Pamlico, Pickney, Rains, Seagate, and Witherbee soils. Leon soils are more poorly drained than Chipley, Echaw, Seagate, and Witherbee soils. Leon soils are better drained than Pamlico and Pickney soils. Leon soils have a Bh horizon, which Rains soils do not have.

Leon soils have rapid permeability in the surface layer and subsurface layer and moderate or moderately rapid permeability in the organic hardpan and lower layers. Surface runoff is slow, and available water capacity is low.

Typical profile of Leon fine sand; from U. S. Highway 17-A and State Secondary Road 50, 4.5 miles south of Moncks Corner, 0.7 mile east on State Secondary Road 50; 465 feet south of road:

Ap—0 to 7 inches, black (10YR 2/1) fine sand; weak fine granular structure; very friable; common fine roots; medium acid, pH 6.0; clear smooth boundary.

A2—7 to 15 inches, gray (10YR 6/1) fine sand, single grained; loose; few fine roots; medium acid, pH 6.0; clear smooth boundary.

Bh—15 to 33 inches, dark reddish brown (5YR 2/2) fine sand; massive parting to weak medium subangular blocky structure; friable; weakly cemented; very strongly acid, pH 5.0; clear smooth boundary.

C1—33 to 38 inches, brown (10YR 5/3) loamy sand, single grained, loose; strongly acid, pH 5.3; abrupt wavy boundary.

C2—38 to 58 inches, light brownish gray (10YR 6/2) fine sandy loam; common medium distinct dark grayish brown (10YR 4/2) mottles; weak fine subangular blocky structure; friable; very strongly acid, pH 4.8; clear wavy boundary.

C3—58 to 70 inches; light gray (10YR 7/1) stratified loamy and sandy material; structureless; friable; strongly acid, pH 5.2.

The profile is extremely acid to strongly acid in each horizon unless limed.

The A horizon is 7 to 17 inches thick. The A1 or Ap horizon is 4 to 8 inches thick. It is black or very dark gray. The A2 horizon is 2 to 9 inches thick. It is grayish brown, light brownish gray, gray, light gray, or white.

The Bh horizon is 10 to 20 inches thick. It is black, dark reddish brown, or dark brown.

The C1 horizon is 5 to 13 inches thick. It is light gray, gray, light brownish gray, grayish brown, dark grayish brown, or brown fine sand, loamy fine sand, or loamy sand. The C2 horizon is 12 to 32 inches thick. It is light gray, gray, or light brownish gray sandy loam or fine sandy loam. The C3 horizon is light gray or gray loamy sand, sandy loam, fine sandy loam, sandy clay loam, or loamy fine sand.

Leon soils in Berkeley County have a slightly finer texture below the Bh horizon than is defined in the range for the series, and they lack an A2 horizon in about 40 percent of the area. These differences, however, do not affect use and management.

Lo—Leon fine sand. This soil is in slightly depressional areas.

Included in this soil in mapping are small areas of Pamlico, Pickney, Rains, Seagate, and Witherbee soils. Also included are some areas of soils that have an organic hardpan directly beneath the surface layer.

Most of the acreage of this soil is in woodland. The remainder is in cropland, pasture, or urban uses. The principal crops are soybeans, small grain, and leafy vegetables.

Extensive drainage systems are necessary when this soil is used for crops or pasture. The organic hardpan limits root development and water movement. Capability units IVw-4, drained, and VIw-4, undrained; woodland group 4w2.

Lucy series

The soils of the Lucy series are nearly level to gently sloping, deep, and well drained. They formed in loamy Coastal Plain sediment.

In a typical profile the surface layer is loamy sand about 6 inches thick. The upper 3 inches is very dark grayish brown, and the lower 3 inches is brown. The subsurface layer is yellowish brown loamy sand about 19 inches thick. The next layer is yellowish red and extends to a depth of more than 60 inches. The upper 12 inches is friable sandy loam, and the lower 23 inches is friable sandy clay loam.

Lucy soils occur with Bonneau, Ocilla, Goldsboro, Norfolk, Caroline, and Cainhoy soils. Lucy soils have a redder subsoil than Bonneau soils. Lucy soils are better drained than Ocilla and Goldsboro soils. Lucy soils have a thicker surface layer than Goldsboro, Norfolk, and Caroline soils. Lucy soils have a coarser textured subsoil than Caroline soils and a finer textured subsoil than Cainhoy soils.

Lucy soils have rapid permeability in the surface layer and subsurface layer and moderate permeability in the subsoil. Surface runoff is slow, and available water capacity is low.

Typical profile of Lucy loamy sand, 0 to 6 percent slopes; from intersection of S. C. Highway 41 and S. C. Highway 402, 1.0 mile south on S. C. Highway 41 and 1.3 miles east on State Secondary Highway 598; 90 feet northeast of highway:

A11—0 to 3 inches, very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; common fine roots; strongly acid, pH 5.1; clear smooth boundary.

A12—3 to 6 inches, brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; common fine roots; strongly acid, pH 5.2; clear smooth boundary.

A2—6 to 25 inches, yellowish brown (10YR 5/4) loamy sand; few medium distinct strong brown (7.5YR 5/8) mottles; weak fine granular structure; very friable; common fine roots; strongly acid, pH 5.2; clear wavy boundary.

B21t—25 to 37 inches, yellowish red (5YR 5/8) sandy loam; weak fine subangular blocky structure; friable; sand grains coated and bridged; few fine roots; strongly acid, pH 5.2; gradual irregular boundary.

B22t—37 to 48 inches, yellowish red (5YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable; sand grains coated and bridged; few fine roots; strongly acid, pH 5.2; clear wavy boundary.

B23t—48 to 60 inches, yellowish red (5YR 5/8) sandy clay loam; few medium distinct strong brown (7.5YR 5/6) mottles; moderate fine subangular blocky structure; friable; sand grains coated and bridged; few fine roots; very strongly acid, pH 4.8.

The solum ranges from 60 inches to more than 80 inches in thickness. The profile is strongly acid in the A horizon and strongly acid or very strongly acid in the B horizon.

The A horizon is 23 to 29 inches thick. The A1 horizon, where present, is 3 to 6 inches thick. The A1 or Ap horizon is very dark grayish brown, dark gray, or brown. The A2 horizon is 19 to 26 inches thick. It is pale brown, light yellowish brown, yellowish brown, brownish yellow, or very pale brown loamy sand or loamy fine sand.

The B2t horizon is 31 inches to more than 50 inches thick. It is yellowish red or red sandy loam or sandy clay loam. In places the B2t horizon has few to many mottles in various hues of brown, yellow, and red.

LuB—Lucy loamy sand, 0 to 6 percent slopes. This nearly level to gently sloping soil is on broad ridges and narrow slopes parallel to streams and drainageways.

Included with this soil in mapping are small areas of Bonneau, Ocilla, Norfolk, and Goldsboro soils; small wet areas, which are shown on the map by wet spot symbols; and a few small areas where slopes are more than 6 percent. Also included are areas of soils that have a loamy fine sand surface layer; a few areas of soils that have a sandy surface layer and subsurface layer more than 40 inches thick combined; and a few areas of soils that are strong brown in the upper part of the subsoil.

Most of the acreage of this soil is in woodland. The remainder is in row crops and pasture. Principal crops are soybeans, corn, and small grain. Yields of shallow rooted crops are reduced because of inadequate moisture in the sandy surface layer and subsurface layer.

Soil blowing is a hazard and maintaining organic matter content is a concern when this soil is used for row crops. Stripcropping, windbreaks, cover crops, and crop rotation are some practices needed to control erosion and replenish organic matter. This soil leaches rapidly. Lime and fertilizer should be applied frequently but in smaller amounts. Capability unit IIs-1; woodland group 3s2.

Lynchburg series

The soils of the Lynchburg series are nearly level, deep, and somewhat poorly drained. They formed in loamy Coastal Plain sediment.

In a typical profile the surface layer is black fine sandy loam about 4 inches thick. The subsurface layer is light yellowish brown fine sandy loam about 3 inches thick. The next layer is about 58 inches thick; the upper 5 inches is yellowish brown, friable fine sandy loam and the lower 53 inches is mottled gray, friable sandy clay loam. The underlying material to a depth of about 80 inches is mottled gray clay that has pockets of sandy clay and sandy clay loam.

Lynchburg soils occur with Goldsboro, Duplin, Lenoir, Coxville, Rains, Wahee, and Ocilla soils. Lynchburg soils are more poorly drained than Goldsboro and Duplin soils. Lynchburg soils have a coarser textured subsoil than Lenoir and Wahee soils. Lynchburg soils are better drained than Coxville and Rains soils and have a thinner surface layer than Ocilla soils.

Lynchburg soils have moderate permeability. Surface runoff is slow, and available water capacity is medium.

Typical profile of Lynchburg fine sandy loam; from intersection of S. C. Highway 402, S. C. Highway 41, and Bob Morris (FS 174) Road, 4.5 miles northeast on Bob Morris Road; 50 feet south of road:

A1—0 to 4 inches, black (10YR 2/1) fine sandy loam; weak fine granular structure; very friable; many fine roots; very strongly acid, pH 4.5; clear smooth boundary.

A2—4 to 7 inches, light yellowish brown (2.5Y 6/4) fine sandy loam; common medium faint dark gray (10YR 4/1) mottles, and few fine faint dark brown mottles around old root holes; moderate coarse granular structure; very friable; many fine and medium roots; very strongly acid, pH 4.8; clear smooth boundary.

B1—7 to 12 inches, yellowish brown (10YR 5/4) fine sandy loam; few fine faint dark brown mottles around old root holes; weak fine subangular blocky structure; friable; many fine roots; very strongly acid, pH 4.7; clear wavy boundary.

B21tg—12 to 28 inches, gray (10YR 5/1) sandy clay loam; pockets of sandy loam material around old root holes; common coarse distinct yellowish brown (10YR 5/6) mottles and few fine prominent red mottles; moderate medium subangular blocky structure; friable; sand grains coated and bridged; common fine roots; very strongly acid, pH 4.7; clear wavy boundary.

B22tg—28 to 54 inches, gray (10YR 5/1) sandy clay loam; many coarse distinct yellowish brown (10YR 5/6) mottles, few fine prominent dark red mottles, and few fine faint light gray mottles; moderate medium subangular blocky structure; friable; sand grains coated and bridged; common fine roots; very strongly acid, pH 4.7; clear wavy boundary.

B3g—54 to 65 inches, mottled gray (10YR 6/1), light gray (10YR 7/1), and yellowish brown (10YR 5/6) sandy clay loam; pockets of sandy loam material around old root holes; weak fine subangular blocky structure; friable; few fine roots; very strongly acid, pH 4.7; clear smooth boundary.

Cg—65 to 80 inches, gray (10YR 6/1) clay; pockets of sandy clay and sandy clay loam material; common medium distinct yellowish brown (10YR 5/6) mottles and few fine prominent red mottles; massive; firm; few fine roots; extremely acid, pH 4.3.

The solum ranges from 60 inches to more than 78 inches in thickness. The profile ranges from extremely acid to strongly acid throughout.

The A horizon is 7 to 19 inches thick. The A1 horizon is 3 to 11 inches thick. It is black, very dark grayish brown, dark grayish brown, or dark gray. Where the A horizon is black or very dark grayish brown, it is less than 10 inches thick. The A2 horizon, where present, is 2 to 16 inches thick. It is light yellowish brown, light olive brown, pale brown, pale yellow, olive yellow, or olive brown.

The B1 horizon, where present, is 4 to 9 inches thick. It is yellowish brown, light olive brown, or pale brown fine sandy loam or sandy loam. The B2t horizon is 31 inches to more than 56 inches thick. It is commonly sandy clay loam, but in places it is sandy loam; in some places it is sandy clay in the lower part. It is gray, light brownish gray, light gray, or brownish gray, or it is mottled in various shades of brown, red, and yellow. The B3 horizon, where present, is 11 to 40 inches thick. It is dominantly gray and has common to many mottles in various shades of red, yellow, and brown. Texture is sandy loam, sandy clay loam, or clay loam.

Ly—Lynchburg fine sandy loam. This soil occurs in broad low areas.

Included with this soil in mapping are small areas of Goldsboro, Lenoir, Rains, and Ocilla soils; small wet areas, which are shown on the map by wet spot symbols; and areas of soils that have a loamy fine sand surface layer. Also included are areas of soils that have a surface layer and subsoil less than 60 inches thick.

Most of the acreage of this soil is in woodland. The remainder is in row crops and pasture. Tilth is generally good. Drainage is required for the production of crops. The principal crops are corn, soybeans, small grain, bahiagrass, and Coastal bermudagrass.

Open ditches or tile drains (fig. 3), or both, are used to drain this soil. Row crops can be grown each year. Growing and turning under a cover crop each year is necessary to maintain the organic matter content and improve tilth and yields. Capability unit IIw-2; woodland group 2w8.

Meggett series

The soils of the Meggett series are nearly level, deep, and poorly drained. They formed in clayey Coastal Plain sediment.

In a typical profile the surface layer is dark gray loam about 7 inches thick. The next layer is about 56 inches thick; the upper 13 inches is dark gray, firm clay loam and the lower 43 inches is mottled, gray, firm clay. The underlying material is pale olive clay that has gray, brownish yellow, and very dark brown mottles.

Meggett soils occur with Bohicket, Capers, Santee, Bayboro, Bethera, Wahee, and Lenoir soils. Meggett soils are not saturated with seawater as are Bohicket soils. Meggett soils have lower sulphur and salt content than Capers soils. Meggett soils are better drained than Santee and Bayboro soils. Meggett soils have a nonacid subsoil, whereas Bethera soils have a highly acid subsoil. Meggett soils are more poorly drained than Wahee and Lenoir soils.

Meggett soils have slow permeability. Surface runoff is very slow, and available water capacity is high.

Typical profile of Meggett loam, approximately 500 feet north of intersection of Strawberry Road and S. C. Highway 402, 200 feet west of Strawberry Road:

A11—0 to 2 inches, very dark gray (10YR 3/1) loam; moderate fine granular structure; friable; slightly plastic; many fine and medium roots; strongly acid, pH 5.1; abrupt wavy boundary.

A12—2 to 7 inches, dark gray (10YR 4/1) loam; common medium distinct reddish brown (5YR 4/4) and dark reddish brown (5YR 3/3) mottles and few fine faint dark grayish brown mottles; moderate fine granular structure; friable; many fine and medium roots; strongly acid, pH 5.2; clear wavy boundary.

B21tg—7 to 20 inches, dark gray (10YR 4/1) clay loam; few fine distinct yellowish red, strong brown, and yellowish brown mottles; strong coarse prismatic structure parting to moderate medium angular blocky; firm, sticky and plastic; broken distinct clay films on faces of peds; common fine roots; few fine pores; slightly acid, pH 6.4; clear wavy boundary.

B22tg—20 to 40 inches, gray (5Y 5/1) clay; common medium and coarse distinct dark yellowish brown (10YR 4/4) and strong brown (7.5YR 5/6) mottles and few fine distinct yellowish brown mottles; moderate medium angular blocky structure; firm, sticky and plastic; broken distinct clay films on faces of peds; few fine roots; few fine pores; neutral, pH 7.0; gradual wavy boundary.

B23tg—40 to 54 inches, gray (5Y 6/1) clay; many medium distinct brownish yellow (10YR 6/6) mottles; weak medium angular blocky structure; firm, sticky and plastic; broken distinct clay films on faces of peds; few fine roots; few fine pores; mildly alkaline, pH 7.4; gradual wavy boundary.

B24tg—54 to 63 inches, gray (5Y 5/1) clay; many coarse prominent reddish brown (5YR 4/4) mottles and common fine distinct light olive brown mottles; weak fine subangular blocky structure; firm, slightly sticky and plastic; broken distinct clay films on faces of peds; few small quartz and chert pebbles 1/8 inch to 1 1/2 inches in diameter; neutral, pH 7.2; gradual wavy boundary.

Cg—63 to 74 inches, pale olive (5Y 6/4) clay; many medium distinct gray (10YR 6/1), brownish yellow (10YR 6/6), and very dark brown (10YR 2/2) mottles; massive; friable, slightly sticky and slightly plastic; gray clay intrusions from horizon above; mildly alkaline, pH 7.4.

The solum ranges from 50 to 72 inches in thickness. The A horizon is strongly acid to neutral, and the B horizon is slightly acid to moderately alkaline.

The A horizon is 2 to 15 inches thick. The A1 horizon is 2 to 10 inches thick. It is black, very dark gray, very dark brown, very dark grayish brown, or dark gray loam or clay loam. Where the A1 horizon is black, very dark grayish brown, or very dark gray, it is less than 10 inches thick. The A2 horizon, where present, is 3 to 10 inches of gray or light brownish gray loam.

The B1 horizon, where present, is 4 to 9 inches thick. It is dark gray or light gray clay or sandy clay. The B2t horizon is 32 inches to more than 50 inches thick. It is gray, dark gray, light gray, light brownish gray, or light olive gray clay, sandy clay, or clay loam that has few to many mottles in various shades of brown, red, yellow, or gray. The B3 horizon, where present, is 9 to 18 inches thick. It is light greenish gray, gray, light brownish gray, or gray sandy clay loam, clay loam, sandy clay, or clay.

The C horizon commonly is sandy clay or clay mixed with marl, soft marl, and shell fragments; in places, however, it is sand, sandy clay loam, or clay.

Meggett soils in Berkeley County do not have an abrupt textural change between the A and B horizons. Use, behavior, and management, however, are the same as for other Meggett soils.

Mg—Meggett loam. This level to depressional soil is in low, flat areas. It has the profile described as representative for the series.

Included with this soil in mapping are small areas of Santee, Bethera, and Wahee soils. Also included are areas of soils that have a silt loam, silty clay loam, and fine sandy loam surface layer; small areas of Meggett clay loam; and areas of soils that have a sandy clay loam subsoil.

About 90 percent of the acreage of this soil is in woodland. Many areas are subject to flooding. Some areas were formerly used for rice. Intensive surface drainage is necessary for crop production. Where this soil is cultivated, the principal crops are corn, small grain, and pasture grasses. The most suitable grasses are bahiagrass and fescue.

Tilth is determined by the moisture content of the surface layer. This soil can be tilled only within a narrow range of moisture content. Capability units IIIw-2, drained, and VIw-1, undrained; woodland group 1w9.

Mp—Meggett clay loam. This level to depressional soil is in low, flat areas. It has a profile similar to that described as representative for the series, but the surface layer is clay loam 2 to 4 inches thick.

Included with this soil in mapping are small areas of Santee, Bethera, and Bayboro soils. A few small areas of Meggett loam are also included.

Most of the acreage of this soil is in woodland. Large areas were once used for rice. These soils are rarely used for cropland, because of the problem of controlling water and the thin clay loam surface layer. Water stands in undrained areas for several months at a time. Tilth is very poor.

This soil is better suited to pasture grasses or timber than to most other uses. Capability unit VIw-1; woodland group 1w9.

Norfolk series

The soils of the Norfolk series are nearly level to gently sloping, deep, and well drained. They formed in loamy Coastal Plain sediment.

In a typical profile the surface layer is dark grayish brown loamy sand about 6 inches thick. The next layer is about 72 inches thick. In sequence from the top, the upper 29 inches is strong brown, friable sandy clay loam; the next 15 inches is yellowish brown, friable sandy clay loam that has yellowish red mottles; the next 10 inches is mottled, friable sandy clay loam; and the lower 18 inches is mottled, friable sandy clay. The underlying material to a depth of more than 91 inches is yellowish red sandy loam.

Norfolk soils occur with Lucy, Bonneau, Ocilla, Duplin, Goldsboro, Lynchburg, and Rains soils. Norfolk soils have a yellower subsoil than Lucy soils. They have a thinner A horizon than Lucy, Bonneau, and Ocilla soils. They have a coarser textured subsoil than Duplin soils and are better drained than Ocilla, Duplin, Goldsboro, Lynchburg, and Rains soils.

Norfolk soils have moderate permeability. Surface runoff and available water capacity are medium.

Typical profile of Norfolk loamy sand, 0 to 2 percent slopes, 0.8 mile west of J. K. Gourdin School and 900 feet south of S. C. Highway 45 on dirt road, 300 feet west of road:

Ap—0 to 6 inches, dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine roots; medium acid, pH 5.7; abrupt wavy boundary.

B1—6 to 9 inches, dark yellowish brown (10YR 4/4) sandy loam; many coarse faint yellowish brown (10YR 5/4) mottles; weak fine subangular blocky structure; very friable; many fine roots; strongly acid, pH 5.1; clear smooth boundary.

B21t—9 to 35 inches, strong brown (7.5YR 5/6) sandy clay loam; weak fine subangular blocky structure; friable; sand grains coated and bridged; common fine roots; strongly acid, pH 5.5; clear smooth boundary.

B22t—35 to 50 inches, yellowish brown (10YR 5/6) sandy clay loam; common medium distinct yellowish red (5YR 4/6) mottles and few medium prominent dark red (2.5YR 3/6) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged; few fine roots; strongly acid, pH 5.5; clear smooth boundary.

B23t—50 to 60 inches, mottled pale brown (10YR 6/3), light brownish gray (10YR 6/2), yellowish brown (10YR 5/8), yellowish red (5YR 4/6), and dark red (2.5YR 3/6) sandy clay loam; weak fine subangular blocky structure; friable; sand grains coated and bridged; very strongly acid, pH 4.8; clear smooth boundary.

B3—60 to 78 inches, mottled gray (10YR 6/1), yellowish brown (10YR 5/6), yellowish red (5YR 5/6), and reddish brown (5YR 4/4) sandy clay; weak fine subangular blocky structure; friable; pockets of sandy loam material; very strongly acid, pH 4.8; clear smooth boundary.

C—78 to 91 inches, yellowish red (5YR 4/8) sandy loam; few fine prominent light gray mottles; massive; very friable; very strongly acid, pH 4.8.

The solum ranges from 60 to 80 inches in thickness. The profile is very strongly acid or strongly acid throughout unless limed.

The A horizon is 6 to 18 inches thick. The Ap horizon, where present, is 3 to 6 inches thick. It is dark gray, very dark grayish brown, dark grayish brown, or dark brown. The A2 horizon, where present, is 11 to 15 inches thick. It is light olive brown, light yellowish brown, yellowish brown, brownish yellow, very pale brown, or pale brown loamy sand or loamy fine sand.

The B1 horizon, where present, is 3 to 6 inches thick. It is dark yellowish brown, light yellowish brown, or yellowish brown sandy loam or fine sandy loam. The B2t horizon is 39 inches to more than 50 inches thick. It is brownish yellow, yellowish brown, strong brown, or light olive brown and generally has few to many mottles in various shades of red, yellow, or brown. The lower part of the B2t horizon has few to many gray mottles. It is sandy clay loam and sandy loam. The B3 horizon, where present, ranges from 7 to 18 inches in thickness. It is sandy clay loam or sandy clay. It commonly is mottled gray, yellowish brown, yellowish red, or reddish brown.

The C horizon is variable in color and texture. It is commonly mottled in various shades of red, brown, yellow, and gray.

NoA—Norfolk loamy sand, 0 to 2 percent slopes. This nearly level soil occurs on broad ridges throughout the county. It has the profile described as representative for the series.

Included with this soil in mapping are small areas of Caroline, Lucy, Bonneau, and Goldsboro soils; some long narrow areas of Norfolk loamy sand, 2 to 6 percent slopes, adjacent to drainageways; and some areas of soils that have a loamy fine sand or fine sandy loam surface layer. Also included are small, wet, depressional areas, less than 2 acres in size, which are shown on the map by wet spot symbols. There are also some areas of soils that have a clay decrease of more than 20 percent within 60 inches of the surface.

Most of the acreage of this soil is in cultivation. The principal crops are tobacco, cotton, corn, soybeans, bahiagrass, and Coastal bermudagrass. This soil is easily tilled within a wide range of moisture content.

Soil blowing is a hazard on some large fields. Stripcropping, windbreaks, rotations with perennial grasses, and cropping systems that keep crop residue on the surface are effective means of reducing the loss of soil and damage to crops. Capability unit I-1; woodland group 2o1.

NoB—Norfolk loamy sand, 2 to 6 percent slopes. This gently sloping soil is on broad ridges and narrow slopes parallel to streams and drainageways.

Included with this soil in mapping are small areas of Caroline, Lucy, and Bonneau soils; a few small areas of soils that have slopes of less than 2 percent or slopes of more than 6 percent; and some areas that have a fine sandy loam surface layer. Also included are small wet areas less than 2 acres in size, which are shown on the map by wet spot symbols, and some areas of soils in which the clay content decreases by more than 20 percent within 60 inches of the surface.

Most of the acreage is in cultivation. The main crops are tobacco, cotton, corn, and soybeans. Bahiagrass and Coastal bermudagrass are among the better suited plants for hay and pasture.

Erosion is the chief hazard on this soil. Contour tillage, cropping systems that include sod crops, and grassed waterways are conservation practices that help to control erosion. Crop residue kept on or near the surface increases water infiltration and reduces erosion. Capability unit IIe-1; woodland group 2o1.

Ocilla series

The soils of the Ocilla series are nearly level, deep, and somewhat poorly drained. They formed in loamy Coastal Plain sediment.

In a typical profile the surface layer is dark grayish brown loamy fine sand about 7 inches thick. The subsurface layer is loamy fine sand about 18 inches thick; the upper 5 inches is pale brown, and the lower 13 inches is very pale brown. The next layer extends to a depth of more than 72 inches. In sequence from the top, the upper 9 inches is yellowish brown, friable sandy loam that has pale brown and gray mottles; the next 7 inches is yellowish brown, friable sandy clay loam that has dark red and gray mottles; and the lower 31 inches is mottled gray, friable sandy clay loam.

Ocilla soils occur with the Chipley, Echaw, Lucy, Bonneau, Norfolk, Goldsboro, Lynchburg, and Rains soils. Ocilla soils have a loamy Bt horizon that is lacking in Chipley and Echaw soils. Ocilla soils are more poorly drained than Lucy and Bonneau soils. Ocilla soils have a thicker A horizon than Norfolk, Goldsboro, Lynchburg, and Rains soils.

Ocilla soils have rapid permeability in the surface layer and subsurface layer and moderate permeability in the subsoil. Surface runoff is slow, and available water capacity is low.

Typical profile of Ocilla loamy fine sand; from intersection of S. C. Highway 45 and State Secondary Highway 23, 2.7 miles north of Diversion Canal, 1.1 miles east on State Secondary Highway 23; 50 feet north of road:

Ap—0 to 7 inches, dark grayish brown (10YR 4/2) loamy fine sand; weak fine granular structure; very friable; common fine roots; medium acid, pH 6.0; clear smooth boundary.

A21—7 to 12 inches, pale brown (10YR 6/3) loamy fine sand; few medium distinct dark grayish brown (10YR 4/2) mottles; weak fine granular structure; few fine roots; medium acid, pH 6.0; clear smooth boundary.

A22—12 to 25 inches, very pale brown (10YR 7/3) loamy fine sand; few fine distinct yellowish brown mottles; weak fine granular structure; few fine roots; strongly acid, pH 5.5; abrupt smooth boundary.

B1—25 to 34 inches, yellowish brown (10YR 5/6) sandy loam; common medium faint pale brown (10YR 6/3) mottles and few fine distinct gray mottles; weak fine subangular blocky structure; friable; strongly acid, pH 5.2; clear smooth boundary.

B21t—34 to 41 inches, yellowish brown (10YR 5/6) sandy clay loam; common coarse distinct dark red (2.5YR 3/6) mottles, common medium distinct gray (10YR 6/1) mottles, and few fine faint brownish yellow mottles; weak fine subangular blocky structure; friable; sand grains coated and bridged; very strongly acid, pH 5.0; clear smooth boundary.

B22t—41 to 50 inches, mottled gray (10YR 6/1), brownish yellow (10YR 6/6), and dark red (2.5YR 3/6) sandy clay loam; weak fine subangular blocky structure; friable; sand grains coated and bridged; very strongly acid, pH 5.0; clear smooth boundary.

B23tg—50 to 72 inches, gray (10YR 6/1) sandy clay loam; common coarse distinct dark red (10R 3/6) mottles; weak fine subangular blocky structure; friable; sand grains coated and bridged; very strongly acid, pH 5.0.

The solum ranges from 60 inches to more than 80 inches in thickness. The profile is strongly acid or very strongly acid throughout unless limed.

The A horizon is 23 to 36 inches thick. The A1 or Ap horizon is 3 to 13 inches thick. It is very dark grayish brown, very dark gray, black, or dark grayish brown. Where the A1 or Ap horizon is black, very dark grayish brown, or very dark gray, it is less than 10 inches thick. The A2 horizon is 11 to 30 inches thick. It is brown, light yellowish brown, grayish brown, very pale brown, or pale brown.

The B1 horizon, where present, is 4 to 9 inches. It is yellowish brown, pale brown, or light yellowish brown sandy loam or fine sandy loam. The B2t horizon is 19 inches to more than 45 inches thick. It is fine sandy loam, sandy loam, or sandy clay loam. The upper part of the B2t horizon is brown, yellowish brown, light yellowish brown, or brownish yellow and has few to many mottles in various shades of brown, yellow, gray, and red. The lower part of the B2t horizon is dominantly gray and has few to many mottles of red, brown, and yellow.

Oc—Ocilla loamy fine sand. This soil is in broad areas throughout the county.

Included with this soil in mapping are small areas of Bonneau, Lucy, Goldsboro, and Lynchburg soils; some areas of soils that have slopes of more than 2 percent; and some small areas of wet soils in slight depressions, which are shown on the map by wet spot symbols. Also included are a few areas of soils that have a loamy sand surface layer and subsurface layer and a few areas of soils that have a medium acid or slightly acid subsoil.

About 80 percent of the acreage of this soil is in woodland (fig. 4). The rest is in row crops and pasture. Tilth is generally good. The principal crops are tobacco, corn, soybeans, and small grain. Bahiagrass and sericea lespedeza are the plants best suited to this soil when it is used for pasture or hay.

Open ditches or tile drains, or both, are used to drain this soil. Because they leach rapidly, fertilizer and lime are more effective on this soil if they are applied frequently but in smaller amounts. Capability unit IIIw-11; woodland group 3w2.

Pamlico series

The soils of the Pamlico series are nearly level and very poorly drained. They formed in decomposed organic matter overlying sandy Coastal Plain sediment.

In a typical profile the surface layer and subsurface layer are black muck about 28 inches thick. The underlying material extends to a depth of more than 60 inches; the upper 4 inches is dark grayish brown loamy fine sand, and the lower 28 inches is black fine sand.

Pamlico soils occur with Pickney, Pantego, Witherbee, and Leon soils. Pamlico soils have an organic surface layer and subsurface layer, which Pickney, Pantego, Witherbee, and Leon soils do not have.

Pamlico soils have moderate permeability. Surface runoff is ponded or very slow, and available water capacity is high.

Typical profile of Pamlico muck; from the Charleston-Berkeley County line on State Secondary Highway 133, 2,800 feet northwest on State Secondary Highway 133; 200 feet north of highway:

Oi—0 to 3 inches, very dark brown (10YR 2/2) fibric material; 70 percent fiber content after rubbing; friable; fibers are of roots, leaves, twigs, and moss; extremely acid, pH 4.0; clear wavy boundary.

Oa1—3 to 9 inches, black (10YR 2/1) sapric material; 20 percent fiber; weak coarse granular structure; friable, slightly sticky; many medium roots; extremely acid, pH 4.0; clear wavy boundary.

Oa2—9 to 28 inches, black (N 2/0) sapric material; 20 percent fiber; weak coarse granular structure; friable, slightly sticky; common fine roots; few flakes of mica; extremely acid, pH 4.1; gradual wavy boundary.

IIC1g—28 to 32 inches, dark grayish brown (10YR 4/2) loamy fine sand; common coarse faint black (N 2/0) mottles; weak fine granular structure; very friable; few fine roots; extremely acid, pH 4.2; gradual wavy boundary.

IIC2g—32 to 60 inches, black (10YR 2/1) fine sand; common medium faint dark grayish brown (10YR 4/2) mottles and few medium faint light brownish gray (10YR 6/2) mottles; weak fine granular structure; very friable; common fine and medium roots; very strongly acid, pH 4.7.

Depth to the underlying sandy material ranges from 20 to 40 inches. This soil is extremely acid in the organic horizons and extremely acid or very strongly acid in the underlying material.

The Oi horizon is 2 to 4 inches thick. It is black or very dark brown. Fiber content is 70 to 85 percent after rubbing. The Oa horizon is 18 to 38 inches thick. It is black, very dark grayish brown, or very dark brown. Fiber content is 10 to 20 percent unrubbed.

The IIC2g horizon is fine sand, loamy sand, or loamy fine sand. It is dark grayish brown, black, very dark gray, dark brown, dark reddish brown, grayish brown, very dark grayish brown, or very dark brown.

Pa—Pamlico muck. This soil is in level to depressional areas and in Carolina Bays.

Included with this soil in mapping are small areas of Pickney, Pantego, Witherbee, and Leon soils. Approximately 30 percent of this mapping unit is Pamlico muck that has mineral layers of sandy loam, sandy clay loam, clay loam, and silty clay below the organic surface layer and subsurface layer.

Most of the acreage of this soil is in woodland. A few areas have been drained and are used for pasture. The native vegetation is pond pine, sweetbay, sweetgum, cypress, greenbrier, and waxmyrtle bushes and an undergrowth of gallberry. This soil is flooded during heavy rains several times a year, and water remains on the surface for long periods.

Extensive drainage and reclamation are necessary if this soil is used for crops or pasture. This soil is better suited to trees than to most other uses. It provides habitat for wildlife. Capability units IVw-5, drained, and VIIw-1, undrained; woodland group 4w3.

Pantego series

The soils of the Pantego series are nearly level, deep, and very poorly drained. They formed in loamy Coastal Plain sediment.

In a typical profile the surface layer is black fine sandy loam about 14 inches thick. The subsurface layer is gray fine sandy loam about 6 inches thick. The next layer is about 45 inches thick. In sequence from the top, the upper 19 inches is gray, friable sandy clay loam; the next 9 inches is mottled gray, dark gray, light gray, and yellowish brown, firm clay; and the lower 17 inches is gray, firm clay. The underlying material is gray sandy clay loam that extends to a depth of more than 80 inches.

Pantego soils occur with Bayboro, Meggett, Coxville, Bethera, Rains, Byars, and Pickney soils. Pantego soils have a coarser textured subsoil than Bayboro, Meggett, Coxville, Bethera, and Byars soils. Pantego soils have a strongly acid or very strongly acid subsoil, but Meggett soils have a slightly acid to moderately alkaline subsoil. Pantego soils are more poorly drained than Meggett, Coxville, Bethera, and Rains soils. Pantego soils have a finer textured subsoil than Pickney soils, which are sandy throughout.

Pantego soils have moderate permeability. Surface runoff is ponded or very slow, and available water capacity is high.

Typical profile of Pantego fine sandy loam; from intersection of S. C. Highway 6 and U. S. Highway 17-A in town limits of Moncks Corner, 1.0 mile west on Highway 6, and 1,000 feet north on State Secondary Highway 510; 300 feet west of road:

A1—0 to 14 inches, black (10YR 2/1) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; extremely acid, pH 4.1; clear irregular boundary.

A2—14 to 20 inches, gray (10YR 5/1) fine sandy loam; few fine faint black mottles around old root holes; weak fine subangular blocky structure; friable; many fine and medium roots; very strongly acid, pH 4.5; clear smooth boundary.

B21tg—20 to 30 inches, gray (10YR 5/1) sandy clay loam; few fine faint yellowish brown mottles and few fine faint black mottles around old root holes; weak fine subangular blocky structure; friable; sand grains coated and bridged; many fine roots; very strongly acid, pH 4.6; clear smooth boundary.

B22tg—30 to 39 inches, gray (10YR 5/1) sandy clay loam; pockets of sandy loam material around old root holes; common medium distinct strong brown (7.5YR 5/6) mottles and few fine faint black mottles around old root holes; weak fine subangular blocky structure; friable; sand grains coated and bridged; common fine roots; very strongly acid, pH 4.7; clear smooth boundary.

B31g—39 to 48 inches, mottled gray (10YR 5/1), dark gray (10YR 4/1), light gray (10YR 7/1), and yellowish brown (10YR 5/6) clay; pockets of sandy loam material around old root holes; moderate medium subangular blocky structure; firm; few fine roots; few flakes of mica; very strongly acid, pH 4.5; clear smooth boundary.

B32g—48 to 65 inches, gray (10YR 6/1) clay; many coarse faint grayish brown (10YR 5/2) mottles, few medium distinct yellowish red (5YR 5/6) mottles, and few fine faint dark gray and light gray mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine flakes of mica; very strongly acid, pH 4.6; clear smooth boundary.

Cg—65 to 80 inches, gray (10YR 6/1) sandy clay loam; pockets of sandy material; many coarse faint grayish brown (10YR 5/2) mottles; massive; friable; strongly acid, pH 5.3.

The solum ranges from 60 inches to more than 70 inches in thickness. The A horizon is strongly acid to extremely acid, and the B horizon is strongly acid or very strongly acid.

The A horizon is 10 to 20 inches thick. The A1 horizon is 10 to 15 inches thick. It is black or very dark gray. The A2 horizon, where present, is 4 to 8 inches thick. It is gray.

The B1 horizon, where present, is 3 to 13 inches thick. It is gray, dark grayish brown, or very dark gray sandy loam or fine sandy loam. The B2t horizon is 19 inches to more than 44 inches thick. It is gray, very dark gray, grayish brown, light brownish gray, or dark gray and has few to many mottles in various shades of gray, brown, black, red, and yellow. The upper part of the B2t horizon commonly is sandy clay loam, but in places it is sandy loam and clay loam. The lower part of the B2t horizon is sandy clay loam, clay loam, sandy clay, or clay. The B3 horizon, where present, is 6 to 26 inches thick. It is dominantly gray and has common to many mottles in various shades of red, yellow, and brown. It is clay, sandy clay, clay loam, or sandy clay loam.

Pe—Pantego fine sandy loam. This soil is in broad, slightly depressional areas and along drainageways throughout the county.

Included in this soil are small areas of Rains, Bayboro, Byars, Coxville, and Bethera soils and three areas, totaling about 200 acres, of soils that have a fragipan below the surface layer. Also included are areas of soils that have a loam surface layer and small areas of soils that have a black or very dark gray surface layer more than 24 inches thick.

Most of the acreage of this soil is in woodland. Where adequate outlets are available, some areas have been drained and are used for pasture grasses, small grain, or row crops.

The seasonal high water table is a major hazard. Adequate drainage and intensive management are needed if this soil is used for pasture grasses, small grain, or row crops. Large amounts of fertilizer and additions of organic matter are needed to maintain crop yields and good tilth. Capability units IIIw-4, drained, and VIw-2, undrained; woodland group 1w9.

Pickney series

The soils of the Pickney series are nearly level, deep, and very poorly drained. They formed in sandy Coastal Plain sediment.

In a typical profile the surface layer is black loamy fine sand about 34 inches thick. The underlying material to a depth of more than 80 inches is dark gray fine sand.

Pickney soils occur with Cainhoy, Chipley, Echaw, Witherbee, Rains, Pantego, and Leon soils. They are more poorly drained than all other associated soils except Pantego soils. They have a thicker black surface layer and a coarser textured subsoil than Pantego soils.

Pickney soils have rapid permeability. Surface runoff is slow, and available water capacity is low.

Typical profile of Pickney loamy fine sand, 1.6 miles southwest of intersection of Ackerman and Little Hellhole Roads, 200 feet west of road:

O1—2 inches to 0, leaves, decomposed roots, and organic matter.

A11—0 to 10 inches, black (N 2/0) loamy fine sand; weak fine granular structure; very friable; many fine and medium roots; few fine pores; extremely acid, pH 4.0; clear smooth boundary.

A12—10 to 24 inches, black (N 2/0) loamy fine sand; weak fine granular structure; very friable; common fine and medium roots; common fine pores; extremely acid, pH 4.3; clear smooth boundary.

A13—24 to 34 inches, black (10YR 2/1) loamy fine sand; weak fine granular structure; very friable; common fine and medium roots; few fine pores; very strongly acid, pH 4.7; clear smooth boundary.

C1g—34 to 69 inches, dark gray (10YR 4/1) fine sand; common medium faint white (10YR 8/1) mottles; single grained; loose; few fine roots; strongly acid, pH 5.4; clear smooth boundary.

C2g—69 to 80 inches, dark gray (10YR 4/1) fine sand; single grained; loose; medium acid, pH 5.6.

The profile is extremely acid to strongly acid in the A horizon and very strongly acid to medium acid in the C horizon.

The A horizon is 26 to 48 inches thick. It is black, very dark gray, or very dark grayish brown.

The C horizon is dark gray, gray, light gray, light brownish gray, grayish brown, or dark grayish brown sand, fine sand, or loamy fine sand.

Pk—Pickney loamy fine sand. This soil occurs in depressions and drainageways.

Included with this soil in mapping are small areas of Pamlico, Pantego, Chipley, Echaw, and Witherbee soils; small areas of soils that have a black or very dark gray surface layer less than 24 inches thick; and areas of soils that have a sandy loam subsoil. Also included are some areas of soils that have a fine sand and loamy sand surface layer.

Most of the acreage of this soil is in woodland. Pasture grass is the principal crop in cleared areas.

Intensive drainage is required if this soil is used for pasture or row crops. Fertilizer and lime leach rapidly. This soil is generally unsuited to row crops. Capability units IVw-8, drained, and VIw-3, undrained; woodland group 1w9.

Rains series

The soils of the Rains series are nearly level, deep, and poorly drained. They formed in loamy Coastal Plain sediment.

In a typical profile the surface layer is black fine sandy loam about 6 inches thick. The subsurface layer is gray fine sandy loam about 6 inches thick. The next layer extends to a depth of more than 78 inches. In sequence from the top, the upper 12 inches is gray, friable fine sandy loam; the next 21 inches is friable sandy clay loam, of which the upper 8 inches is mottled gray and the lower 13 inches is mottled dark gray; and the lower 33 inches is gray, friable fine sandy loam.

Rains soils occur with Lynchburg, Lenoir, Wahee, Ocilla, Bayboro, Pantego, Meggett, Bethera, and Coxville soils. Rains soils are more poorly drained than Lynchburg, Lenoir, Wahee, and Ocilla soils. They are better drained than Bayboro and Pantego soils. They have a coarser textured subsoil than Meggett, Bethera, and Coxville soils.

Rains soils have moderate permeability. Surface runoff is slow, and available water capacity is medium.

Typical profile of Rains fine sandy loam, in the Hell Hole Bay area of the Francis Marion National Forest, 6,200 feet southeast of Window Corner on Farewell Corner Road, 3,700 feet northeast on dirt road, and 150 feet north of road:

A1—0 to 6 inches, black (N 2/0) fine sandy loam; weak medium granular structure; very friable; common fine and medium roots; very strongly acid, pH 4.5; clear wavy boundary.

A2—6 to 12 inches, gray (10YR 5/1) fine sandy loam; few fine distinct strong brown mottles and few coarse distinct black (N 2/0) mottles; weak fine subangular blocky structure; friable; common fine and medium roots; very strongly acid, pH 4.7; clear smooth boundary.

B1—12 to 24 inches, gray (10YR 5/1) fine sandy loam; few fine distinct yellowish brown mottles; weak fine subangular blocky structure; friable; common fine roots; very strongly acid, pH 4.5; clear smooth boundary.

B21tg—24 to 32 inches, gray (10YR 5/1) sandy clay loam; few fine distinct pale brown mottles and common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged; common fine roots; very strongly acid, pH 4.5; clear smooth boundary.

B22tg—32 to 45 inches, dark gray (10YR 4/1) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles and few fine distinct yellowish brown and pale brown mottles; moderate medium subangular blocky structure; friable; sand grains coated and bridged; few fine roots; very strongly acid, pH 4.6; clear smooth boundary.

B31g—45 to 62 inches, gray (10YR 5/1) fine sandy loam; few fine distinct strong brown and yellowish brown mottles and few fine faint white mottles; weak fine subangular blocky structure; friable; continuous sand skeletons on ped faces; few fine roots; common fine quartz grains and few fine flakes of mica; very strongly acid, pH 4.6; clear smooth boundary.

B32g—62 to 78 inches, gray (10YR 6/1) fine sandy loam; few fine distinct yellowish brown mottles and few fine faint brown mottles; weak fine subangular blocky structure; very friable; continuous sand skeletons on ped faces; few fine roots; common fine quartz grains and few fine flakes of mica; very strongly acid, pH 4.7.

The solum ranges from 60 inches to more than 78 inches in thickness. The profile is strongly acid or very strongly acid throughout except where limed.

The A1 horizon is 4 to 9 inches thick. It is very dark gray or black. The A2 horizon, where present, is 5 to 14 inches thick. It is grayish brown, light brownish gray, or gray.

The B1 horizon, where present, is 4 to 12 inches thick. It is grayish brown, light brownish gray, dark gray, or gray sandy loam or fine sandy loam and has few to common mottles in various shades of gray, brown, and yellow. The B2t horizon is 21 to 49 inches thick. It is grayish brown, light brownish gray, light gray, gray, or dark gray fine sandy loam or sandy clay loam. The B2t horizon commonly has few to many mottles in various shades of brown, yellow, and gray. The B3 horizon, where present, is 4 to 33 inches thick. It is gray, light gray, light brownish gray, dark grayish brown, or grayish brown. The B3 horizon commonly has few to many mottles in various shades of brown, yellow, red, and gray. Texture is commonly fine sandy loam, but in places it is sandy loam, sandy clay loam, or sandy clay.

Clay content decreases by more than 20 percent within 60 inches of the surface, and this decrease is more than that defined in the range for the series. Skeletons are present in the horizon that has a clay decrease. These differences, however, do not affect use and management of these soils.

Ra—Rains fine sandy loam. This soil is in slightly depressional areas.

Included with this soil in mapping are small areas of Coxville, Meggett, Bayboro, Pantego, Lynchburg, Lenoir, and Ocilla soils. Also included are some areas of soils that have a sandy loam, loamy sand, and loamy fine sand surface layer and subsurface layer.

About 80 percent of the acreage of this soil is in woodland. The remainder is in row crops and pasture. Drainage is required for crop production.

Both open ditches and tile drains are used, and in larger fields a combination of these practices may be required. This soil can be cultivated only within a narrow range of moisture content, but it can be cropped intensively when adequate drainage is provided. Returning crop residue and using cropping systems that include frequent sod crops are necessary to maintain good tilth and productivity. Capability units IIIw-4, drained, and IVw-3, undrained; woodland group 2w9.

Santee series

The soils of the Santee series are nearly level, deep, and very poorly drained. They formed in clayey Coastal Plain sediment.

In a typical profile, the surface layer is black loam about 14 inches thick. The next layer is 36 inches of plastic and sticky clay; the upper 11 inches is light brownish gray, and the lower 25 inches is dominantly gray. The underlying material to a depth of more than 85 inches is clay; the upper 17 inches is mottled dark gray and the lower 18 inches is dark greenish gray.

Santee soils occur with Bohicket, Capers, Meggett, Wahee, Lenoir, Bethera, and Bayboro soils. Santee soils are not saturated with saltwater as are Bohicket soils. They have lower sulphur and salt content than Capers soils. They are more poorly drained than Meggett, Wahee, Lenoir, and Bethera soils. Santee soils have a nonacid subsoil, whereas Bayboro soils have an acid subsoil.

Santee soils have slow permeability. Surface runoff is very slow, and available water capacity is high.

Typical profile of Santee loam; from intersection of Atlantic Coast Line Railroad and Secondary State Highway 9, 6,350 feet southeast on railroad; 300 feet west of railroad:

A11—0 to 4 inches, black (N 2/0) loam; moderate fine granular structure; friable; many fine and medium roots; slightly acid, pH 6.5; abrupt smooth boundary.

A12—4 to 14 inches, black (N 2/0) loam; moderate medium granular structure; friable; many fine and medium roots; neutral, pH 6.8; abrupt smooth boundary.

B21tg—14 to 25 inches, light brownish gray (2.5Y 6/2) clay; common medium faint gray (5Y 5/1) mottles, few medium faint greenish gray (5GY 5/1) mottles, and black staining around old roots and root channels; moderate medium subangular blocky structure; plastic and sticky; patchy faint clay films on faces of peds; common fine roots; neutral, pH 7.3; clear wavy boundary.

B22tg—25 to 35 inches, gray (5Y 5/1) clay; few medium faint light olive brown (2.5Y 5/4) mottles and few fine faint greenish gray mottles; moderate medium subangular blocky structure; plastic and sticky; patchy distinct clay films on faces of peds; few fine roots; mildly alkaline, pH 7.8; clear wavy boundary.

B23tg—35 to 50 inches, gray (5Y 5/1) clay; few coarse distinct black (10YR 2/1) mottles, common medium prominent yellowish brown (10YR 5/6) mottles, few medium faint olive gray (5Y 5/2) mottles, and few fine distinct light olive brown mottles; weak medium subangular blocky structure; plastic and sticky; patchy faint clay films on faces of peds; few fine roots; mildly alkaline, pH 7.8; gradual smooth boundary.

C1g—50 to 67 inches, dark gray (10YR 4/1) clay; many coarse distinct grayish green (5G 5/2) mottles, many coarse distinct light olive brown (2.5Y 5/4) mottles, and few coarse faint black (10YR 2/1) mottles; massive; plastic and slightly sticky; few fine roots; moderately alkaline, pH 8.0; gradual smooth boundary.

C2g—67 to 75 inches, dark greenish gray (5G 4/1) clay; few fine distinct light gray mottles and few fine distinct grayish brown mottles; massive; plastic and slightly sticky; few fine roots; moderately alkaline, pH 8.3; clear smooth boundary.

C3g—75 to 85 inches, dark greenish gray (5G 4/1) clay; few fine faint olive gray mottles; massive; plastic and slightly sticky; pockets and lenses of sand; few fine flakes of mica; moderately alkaline, pH 8.4.

The solum ranges from 45 inches to more than 60 inches in thickness. The A horizon ranges from neutral to strongly acid, and the B horizon ranges from mildly alkaline to medium acid.

The A horizon is 10 to 15 inches thick. It is very dark gray, very dark brown, or black.

The B2t horizon ranges from 36 inches to more than 46 inches in thickness. It is clay loam, sandy clay, or clay. The B2t horizon is mottled gray, dark gray, and brownish yellow, or it is dominantly gray, dark gray, or light brownish gray and has few to many mottles in various shades of gray, yellow, red, and brown. The B3 horizon, where present, is 9 to 16 inches thick. It is sandy clay or clay. The B3 horizon is greenish gray or gray, or it has few to common mottles in various shades of gray, brown, and red.

The C horizon is gray, dark gray, light gray, or dark greenish gray sandy clay loam, sandy clay, or clay.

Sa—Santee loam. This soil is in low depressional areas.

Included with this soil in mapping are some areas of Pantego, Bayboro, Meggett, Bethera, Capers, and Bohicket soils; some areas of soils that have a clay loam surface layer and sandy clay loam subsoil; and a few areas of soils that have a black or very dark gray surface layer more than 24 inches thick or less than 10 inches thick. Also included are a few small areas of soils that have more than 30 percent silt in the subsoil.

Most of the acreage of this soil is in woodland. It is a productive site for pine trees if good management practices, such as providing adequate drainage, are used. A few areas are in pasture and cultivated crops. Principal crops are soybeans and corn. Much of this soil is subject to occasional to frequent flooding.

Extensive surface drainage systems are necessary when this soil is used for crops or pasture. It is difficult to drain because of its low elevation and plastic subsoil. The water table is at or near the surface about 6 months yearly. Capability units IIIw-2, drained, and VIw-1, undrained; woodland group 1w9.

Seagate series

The soils of the Seagate series are nearly level, deep, and somewhat poorly drained. They formed in loamy Coastal Plain sediment.

In a typical profile the surface layer is black loamy sand about 4 inches thick. The subsurface layer is gray loamy sand about 3 inches thick. The next layer is about 6 inches of loamy sand that is weakly cemented by organic matter. The upper 3 inches is dark reddish brown, and the lower 3 inches is mottled dark brown, brown, pale brown, and dark reddish brown. Beneath this layer is reddish yellow loamy sand about 15 inches thick. The next layer is gray and extends to a depth of about 82 inches. The upper 14 inches is friable sandy loam, and the lower

40 inches is friable sandy clay loam. The underlying material is mottled gray and yellowish brown coarse sandy loam.

Seagate soils occur with the Chipley, Echaw, Witherbee, Leon, Norfolk, Goldsboro, Ocilla, and Lynchburg soils. Seagate soils have a loamy B horizon that is lacking in Chipley, Echaw, and Witherbee soils. They are better drained than Leon soils. They have a weakly cemented organic layer that is lacking in Norfolk, Goldsboro, Ocilla, and Lynchburg soils.

Seagate soils have rapid permeability in the upper sandy horizons and moderate permeability in the lower part of the subsoil. Surface runoff is slow, and available water capacity is low.

Typical profile of Seagate loamy sand; from intersection of U. S. Highway 176 and State Secondary Highway 32, 0.75 mile west on U. S. Highway 176 and 100 feet north of road:

A1—0 to 4 inches, black (10YR 2/1) loamy sand; few light gray sand grains; weak fine granular structure; very friable; common fine and medium roots; extremely acid, pH 3.7; abrupt smooth boundary.

A2—4 to 7 inches, gray (10YR 5/1) loamy sand; few fine faint dark grayish brown mottles; weak fine granular structure; very friable; few fine roots; extremely acid, pH 4.0; abrupt smooth boundary.

B21h—7 to 10 inches, dark reddish brown (5YR 2/2) loamy sand; common medium faint dark brown (10YR 4/3) mottles; massive; friable, brittle and slightly cemented; extremely acid, pH 4.4; abrupt smooth boundary.

B22h—10 to 13 inches, mottled dark brown (10YR 3/3), brown (10YR 5/3), pale brown (10YR 6/3), and dark reddish brown (5YR 2/2) loamy sand; massive; friable, brittle and slightly cemented; very strongly acid, pH 4.8; clear smooth boundary.

A'2—13 to 28 inches, reddish yellow (7.5YR 6/6) loamy sand; common coarse faint strong brown (7.5YR 5/6) and very pale brown (10YR 7/3) mottles; weak fine granular blocky structure; very friable, brittle in some peds; very strongly acid, pH 4.9; diffuse irregular boundary.

B'21tg—28 to 42 inches, gray (10YR 6/1) sandy loam; common medium and coarse distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; extremely acid, pH 4.4; clear wavy boundary.

B'22tg—42 to 82 inches, gray (10YR 6/1) sandy clay loam; many coarse distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged; very strongly acid, pH 4.6; gradual wavy boundary.

Cg—82 to 92 inches, mottled gray (10YR 6/1) and yellowish brown (10YR 5/6) coarse sandy loam; friable; very strongly acid, pH 4.7.

The solum ranges from 60 inches to more than 82 inches in thickness. The profile is extremely acid to medium acid throughout.

The A horizon is 4 to 13 inches thick. The A1 or Ap horizon is 4 to 8 inches thick. It is black, very dark gray, or dark gray. The A2 horizon, where present, ranges from 1 inch to 9 inches in thickness. It is gray, light brownish gray, or light gray loamy sand, or loamy fine sand.

The Bh horizon is 4 to 9 inches thick. It is dark reddish brown, dark brown, very dark grayish brown, or black, or it is mottled with various shades of brown. The texture of the Bh horizon is loamy sand or loamy fine sand.

The A'2 horizon is 4 to 16 inches thick. It is reddish yellow, pale brown, brownish yellow, or light yellowish brown fine sand, sand, or loamy sand.

The B'2t horizon is 32 to 54 inches thick. It commonly is sandy loam or sandy clay loam, but in places it is clay loam or sandy clay in the lower part. The B'2t horizon is gray, light gray, light brownish gray, strong brown, brownish yellow, or light yellowish brown and has mottles in various shades of brown, yellow, or gray.

Seagate soils in Berkeley County have a sandy loam B'2tg horizon at a depth of 28 to 42 inches. It is about 65 percent fine and coarser sand; therefore, these soils are not in the sandy over loamy family. This difference, however, does not affect the use and management of these soils.

Se—Seagate loamy sand. This soil is on broad, smooth interstream divides.

Included with this soil in mapping are small areas of Goldsboro, Ocilla, Lynchburg, Rains, and Leon soils; small, wet, depressional areas, which are shown on the map by wet spot symbols; and areas of soils that have a loamy fine sand and fine sand surface layer. Also included is one large area of soils, approximately 800 acres in size, that is less acid in the subsoil.

About 85 percent of the acreage of this soil is in woodland. Tilth is generally good. Principal crops grown on this soil are corn, soybeans, small grain, bahiagrass, and Coastal bermudagrass.

Open ditches or tile drains, or both, are used to drain this soil. If adequate drainage and other good management practices are used, this soil can be used for row crops each year. Growing and turning under a crop residue every year helps to maintain the organic matter content and improve tilth and yields. Capability unit IIIw-6; woodland group 3w2.

Tawcaw series

The soils of the Tawcaw series are nearly level and somewhat poorly drained. They formed in clayey alluvial sediment on flood plains. They are subject to frequent flooding.

In a typical profile the surface layer is dark brown clay loam about 6 inches thick. The next layer extends to a depth of more than 70 inches. In sequence from the top, the upper 17 inches is brown clay loam, the next 27 inches is mottled light gray clay loam, and the lower 20 inches is yellowish red sandy clay loam that has light brownish gray mottles.

Tawcaw soils occur with Chastain and Meggett soils. Tawcaw soils are better drained than Chastain and Meggett soils.

Tawcaw soils have slow permeability. Surface runoff is slow, and available water capacity is medium.

Typical profile of Tawcaw clay loam in an area of Tawcaw association, frequently flooded, 3 miles west of J. K. Gourdine School on S. C. Highway 45, 1.5 miles past Oakland Hunting Club on dirt road; near Santee River:

A1—0 to 6 inches, dark brown (10YR 3/3) clay loam; weak medium subangular blocky structure; friable; many fine and medium roots; strongly acid, pH 5.2; clear smooth boundary.

B21—6 to 14 inches, brown (10YR 5/3) clay loam; common fine faint pale brown and yellowish brown mottles; strong medium angular blocky structure; firm; few pressure faces on peds; many fine and medium roots; few coarse pores; very strongly acid, pH 4.8; gradual smooth boundary.

B22—14 to 23 inches, brown (10YR 5/3) clay loam; common coarse distinct dark brown (7.5YR 4/4) mottles and common medium distinct light yellowish brown (10YR 6/4) mottles; weak coarse prismatic structure that readily parts to strong coarse subangular blocky; friable; few pressure faces on peds; common fine roots; common medium pores; very strongly acid, pH 5.0; gradual smooth boundary.

B23—23 to 50 inches, light gray (2.5YR 7/2) clay loam; common coarse prominent strong brown (7.5YR 5/6) mottles and common medium distinct yellowish brown (10YR 5/8) mottles; weak coarse subangular blocky structure; friable; few pressure faces on peds; few fine roots; common fine and medium pores; common fine flakes of mica; strongly acid, pH 5.1; diffuse wavy boundary.

B3—50 to 70 inches, yellowish red (5YR 4/6) sandy clay loam; many coarse prominent light brownish gray (10YR 6/2) mottles; moderate coarse subangular blocky structure; friable; few pressure faces on peds; common fine flakes of mica; strongly acid, pH 5.5.

The solum ranges from 45 inches to more than 70 inches in thickness. The profile is very strongly acid to slightly acid throughout.

The A horizon is 4 to 10 inches thick. It is dark brown, dark yellowish brown, or brown.

The B2 horizon commonly is 32 inches to more than 50 inches thick. It is brown, light gray, grayish brown, light brownish gray, dark brown, yellowish brown, or dark yellowish brown and has few to many mottles in various shades of gray, yellow, brown, and red. It is silty clay loam, clay loam, or silty clay. Mottles that have a chroma of 2 or less are within 24 inches of the surface. The B3 horizon, where present, is 17 to 20 inches thick. It is yellowish red or light brownish gray and has strong brown, black, and gray mottles. It is loam, sandy clay loam, or silty clay loam.

TA—Tawcaw association, frequently flooded. This association consists of Tawcaw soils and of similar somewhat poorly drained alluvial soils on the flood plains of the Santee River. It was mapped at a lower intensity than were most other units in this survey area.

Included with these soils in mapping are a few small areas of Meggett and Chastain soils; some areas that have a loam, silt loam, and silty clay loam surface layer, and some areas that have a sandy loam subsoil. Approximately 5 percent of the acreage of this association consists of long narrow depressions; these areas are flooded for longer periods than the other included soils, and they are grayer throughout the profile than the Tawcaw soils.

Approximately 95 percent of the acreage of this association is in woodland. The remainder is in row crops and pasture. These soils are subject to flooding for brief periods. Drainage and protection from flooding are required before these soils can be used for either pasture or crops. Natural fertility is medium, and the response to fertilizer and lime is good. The principal crops in these cultivated areas are corn and soybeans.

The soils are better suited to timber production than to most other uses. Capability unit VIIw-3; woodland group 1w8.

Udorthents

UD—Udorthents. These areas consist mainly of soil materials that were excavated and piled along the waterways during the construction of the Diversion Canal, from Lake Marion to Lake Moultrie, and the Tailrace Canal, from Lake Moultrie to the Cooper River. The soil materials are in narrow bands on either side of the two canals, commonly in strips 50 to 200 feet wide at the base, 5 to 50 feet high, and 300 feet to 3 miles long. The tops of the bands are irregular, and slopes range from about 30 to 75 percent. In addition to the areas along the canals, there are a few areas near some rivers where materials have been dumped during river-deepening operations.

The fine earth fraction of the soil material is dominantly sandy clay loam, sandy loam, or sandy clay. Mostly it is brownish in color. Much variation in texture occurs within short distances, and some areas are more sandy and some are more clayey. Coarse fragments of sea shells and hard marl or limestone, ranging from fine gravel to stones in size, are throughout most areas. Content of coarse fragments ranges from about 10 to 50 percent, but most areas are less than 35 percent coarse fragments. The soils are neutral to moderately alkaline.

A few areas of this mapping unit have been smoothed for homesites, and a few areas have had much of the material hauled away for fill, but about 98 percent of it is covered by trees with fairly dense understory vegetation. Capability unit VIIs-3; woodland group 4r8.

Wahee series

The soils of the Wahee series are nearly level, deep, and somewhat poorly drained. They formed in clayey Coastal Plain sediment.

In a typical profile the surface layer is very dark gray loam about 5 inches thick. The next layer extends to a depth of more than 73 inches. In sequence from the top, the upper 4 inches is light yellowish brown, friable silty clay loam; the next 4 inches is mottled grayish brown, firm silty clay loam; the next 22 inches is mottled gray, firm silty clay; the next 16 inches is mottled gray, firm clay; and the lower 22 inches is mottled gray, friable sandy clay loam.

Wahee soils occur with Craven, Duplin, Goldsboro, Lenoir, Lynchburg, Rains, Bethera, Meggett, and Bayboro soils. Wahee soils are more poorly drained than Craven, Duplin, and Goldsboro soils. Wahee soils have a thinner subsoil than Lenoir soils. Wahee soils have a finer textured subsoil than Lynchburg soils. Wahee soils are better drained than Rains, Bethera, Meggett, and Bayboro soils.

Wahee soils have slow permeability. Surface runoff is slow, and available water capacity is high.

Typical profile of Wahee loam; from intersection of S.C. Highway 402 and S.C. Highway 41, 4 miles north on S.C. Highway 41 and 0.75 mile east on Conifer Road; 40 feet south of road:

A11—0 to 3 inches, very dark gray (10YR 3/1) loam; weak fine granular structure; friable; many fine and medium roots; very strongly acid, pH 4.5; clear smooth boundary.

A12—3 to 5 inches, dark gray (10YR 4/1) loam; common fine faint grayish brown and dark grayish brown mottles; weak fine granular structure; friable; many fine and medium roots; very strongly acid, pH 4.9; clear smooth boundary.

B21t—5 to 9 inches, light yellowish brown (10YR 6/4) silty clay loam; common fine faint yellowish brown and pale brown mottles; weak fine subangular blocky structure; friable, slightly plastic; patchy faint clay films on faces of peds; many fine and medium roots; few fine pores; very strongly acid, pH 4.7; clear wavy boundary.

B22t—9 to 13 inches, grayish brown (10YR 5/2) silty clay loam; many fine prominent strong brown and red mottles; moderate medium subangular blocky structure; firm, slightly sticky and plastic; broken distinct clay films on faces of peds; common fine and medium roots; few fine and medium pores; very strongly acid, pH 4.8; clear wavy boundary.

B23tg—13 to 35 inches, gray (10YR 5/1) silty clay; many medium distinct light yellowish brown (10YR 6/4) mottles and many medium prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; broken distinct clay films on faces of peds; few fine and medium roots; few fine pores; very strongly acid, pH 4.8; gradual wavy boundary.

B24tg—35 to 46 inches, gray (10YR 5/1) clay; many medium distinct light yellowish brown (10YR 6/4) mottles and many medium prominent red (2.5YR 4/6) mottles; weak fine subangular blocky structure; firm; patchy faint clay films on faces of peds; few fine roots; few fine pores; very strongly acid, pH 4.9; clear wavy boundary.

B25tg—46 to 51 inches, gray (10YR 5/1) clay; many medium distinct light yellowish brown (10YR 6/4) mottles and many medium faint grayish brown (10YR 5/2) mottles; weak fine subangular blocky structure; firm; very strongly acid, pH 4.7; abrupt irregular boundary.

B3g—51 to 73 inches, gray (10YR 6/1) sandy clay loam; many medium distinct light yellowish brown (10YR 6/4) mottles and few fine faint grayish brown mottles; weak fine subangular blocky structure; friable; few fine flakes of mica; very strongly acid, pH 4.9.

The solum ranges from 58 inches to more than 75 inches in thickness. The profile is strongly acid or very strongly acid throughout.

The A horizon is 3 to 8 inches thick. The Ap horizon or A1 horizon is very dark gray, very dark grayish brown, dark grayish brown, or dark gray. The A2 horizon, where present, is about 3 inches thick. It is pale brown loam or fine sandy loam.

The B1 horizon, where present, is 3 to 7 inches thick. It is light olive brown, dark yellowish brown, light yellowish brown, brown, or pale brown sandy clay loam, silty clay loam, or clay loam. The B2t horizon is 30 to 46 inches thick. It is commonly clay, but in places it is silty clay loam, clay loam, or silty clay. The B2t horizon commonly is dominantly gray and has common to many mottles in various shades of red, yellow, and brown. The upper part of the B2t horizon is dark yellowish brown, light yellowish brown, pale brown, light olive brown, or grayish brown, or is mottled with gray, red, yellow, and brown. The B3 horizon, where present, is 11 to 22 inches thick. It is dominantly gray and has few to many mottles in various shades of red, yellow, and brown. It is sandy clay loam, clay loam, or silty clay loam.

Wa—Wahee loam. This soil occurs in broad areas throughout the county.

Included in this soil in mapping are small areas of Lenoir, Duplin, Craven, Bethera, Meggett, and Bayboro soils; small, wet, depressional areas, which are shown on the map by wet spot symbols; and some areas of soils that have a nonacid subsoil. Also included are some areas of soils that have a fine sandy loam surface layer and areas of soils that have an abrupt texture change between the surface layer and the subsoil.

About 90 percent of the acreage of this soil is in woodland. The remainder is in row crops and pasture. Drainage is needed for maximum yields of crops. The amount of clay in the surface layer and subsurface layer restricts the range of moisture content within which this soil is easily tilled. The principal crops grown are corn, soybeans, cabbage, small grain, and pasture grasses.

Row crops can be grown each year, but drainage and other conservation practices are necessary to improve tilth and yields. Capability unit IIIw-3; woodland group 2w8.

Witherbee series

The soils of the Witherbee series are nearly level, deep, and somewhat poorly drained. They formed in sandy Coastal Plain sediment.

In a typical profile the surface layer is dark gray fine sand about 7 inches thick. The subsurface layer is light yellowish brown fine sand about 18 inches thick; it has yellowish red and light gray mottles in the lower 13 inches. The next layer is fine sand that extends to a depth of more than 108 inches. In sequence from the top, the upper 3 inches is mottled dark brown, yellowish brown, and light yellowish brown; the next 12 inches is dark reddish brown; the next 10 inches is black; the next 42 inches is dark reddish brown; and the lower 16 inches is dark brown.

Witherbee soils occur with Cainhoy, Pickney, Rains, Chipley, and Echaw soils. Witherbee soils are more poorly drained than Cainhoy, Chipley, and Echaw soils. Witherbee soils are better drained than Pickney soils. Witherbee soils have a coarser textured subsoil than Rains soils.

Witherbee soils have rapid permeability. Surface runoff is slow, and available water capacity is low.

Typical profile of Witherbee fine sand, 2,300 feet southwest of intersection of Harleston Dam Road and State Secondary Highway 133 on Harleston Dam Road, 60 feet west of road:

A1—0 to 7 inches, dark gray (10YR 4/1) fine sand; weak fine granular structure; very friable; many fine roots; very strongly acid, pH 4.8; clear smooth boundary.

A21—7 to 12 inches, light yellowish brown (10YR 6/4) fine sand; weak fine granular structure; very friable; many fine roots; strongly acid, pH 5.4; clear wavy boundary.

A22—12 to 25 inches, light yellowish brown (10YR 6/4) fine sand; few medium prominent yellowish red (5YR 5/8) mottles and common coarse distinct light gray (10YR 7/2) mottles; weak fine granular structure; very friable; few fine roots; strongly acid, pH 5.3; gradual irregular boundary.

A&B—25 to 28 inches, mottled light yellowish brown (10YR 6/4), dark brown (10YR 4/3), and yellowish brown (10YR 5/6) fine sand; weak fine granular structure; very friable; few fine root channels filled with light gray sand; medium acid, pH 6.0; gradual wavy boundary.

B21h—28 to 40 inches, dark reddish brown (5YR 2/2) fine sand; common coarse distinct black (10YR 2/1) mottles; weak fine granular structure; very friable; medium acid, pH 6.0; diffuse wavy boundary.

B22h—40 to 50 inches, black (10YR 2/1) fine sand; many coarse distinct dark reddish brown (5YR 2/2) mottles; single grained; loose; medium acid, pH 5.7; diffuse wavy boundary.

B23h—50 to 92 inches, dark reddish brown (5YR 2/2) fine sand; many coarse distinct black (10YR 2/1) and dark brown (10YR 3/3) mottles; single grained; loose; medium acid, pH 5.8; diffuse wavy boundary.

B24h—92 to 108 inches, dark (10YR 3/3) fine sand; single grained; loose; slightly acid, pH 6.3.

The profile is medium acid to extremely acid in the A horizon and slightly acid to very strongly acid in the Bh horizon.

The A horizon is 15 to 29 inches thick. The A1 horizon is 3 to 12 inches thick. It is black, very dark gray, dark gray, very dark grayish brown, dark grayish brown, very dark brown, or olive brown. The A2 horizon is 8 to 26 inches thick. It is brownish yellow, light yellowish brown, yellowish brown, pale brown, light brownish gray, or light gray.

The Bh horizon is between depths of 50 inches and more than 108 inches. It is black, dark brown, very dark brown, dark reddish brown, very dark grayish brown, very dark gray, or dark gray.

Wt—Witherbee fine sand. This soil occurs in broad depressional areas.

Included with this soil in mapping are some areas of Pickney, Leon, Pamlico, Cainhoy, Ocilla, Lynchburg, Goldsboro, Chipley, and Echaw soils; some areas of soils that have loamy sand or sandy loam layers above a layer that has organic stains; and some areas of soils that do not have a layer with organic stains. Also included are some areas of soils that have a loamy fine sand surface layer and subsurface layer.

Approximately 95 percent of the acreage of this soil is in woodland. Pasture grass is the major crop on the remaining 5 percent. A few small areas of soils are planted to soybeans and truck crops.

Drainage improves yields of pasture or row crops. Tile drains or open ditches, or both, are used to drain this soil. Open ditches, however, are difficult to maintain because of the sloughing action of the sandy subsoil. Returning crop residue to the soil and using soil improving crops at least 1 year out of 3 are needed to maintain good tilth and the supply of organic matter. Capability unit IIIw-1; woodland group 2w8.

Use and management of the soils

The soil survey is a detailed inventory and evaluation of the most basic resource of the survey area—the soil. It is useful in adjusting land use, including urbanization, to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in uses of the land.

While a soil survey is in progress, soil scientists, conservationists, engineers, and others keep extensive notes about the nature of the soils and about unique aspects of behavior of the soils. These notes include data on erosion, drought damage to specific crops, yield estimates, flooding, the functioning of septic systems, and other factors affecting the productivity, potential, and limitations of the soils under various uses and management. In this way, field experience and measured data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section is useful in planning use and management of soils for crops and pasture, and woodland, and as sites for buildings, highways and other transportation systems, sanitary facilities, parks and other recreation facilities, and wildlife habitat. From the data presented, the potential of each soil for specified land uses can be determined, soil limitations to these land uses can be identified, and costly failures in houses and other structures, caused by unfavorable soil properties, can be avoided. A site where soil properties are favorable can be selected, or practices that will overcome the soil limitations can be planned.

Planners and others using the soil survey can evaluate the impact of specific land uses on the overall productivity of the survey area or other broad planning area and on the environment. Productivity and the environment are closely related to the nature of the soil. Plans should maintain or create a land-use pattern in harmony with the natural soil.

Contractors can find information that is useful in locating sources of sand and gravel, roadfill, and topsoil. Other information indicates the presence of organic pans, wetness, or very firm soil horizons that cause difficulty in excavation.

Health officials, highway officials, engineers, and many other specialists also can find useful information in this soil survey. The safe disposal of wastes, for example, is closely related to properties of the soil. Pavements, sidewalks, campsites, playgrounds, lawns, and trees and shrubs are influenced by the nature of the soil.

Crops and pasture

The major management concerns in the use of the soils for crops and pasture are described in this section. In addition, the crops or pasture plants best suited to the soil, including some not commonly grown in the survey area, are discussed; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are presented for each soil.

This section provides information about the overall agricultural potential of the survey area and about the needed management practices. The information is useful to equipment dealers, land improvement contractors, fertilizer companies, processing companies, planners, conservationists, and others. For each kind of soil, information about management is presented in the section "Descriptions of the soils." Planners of management systems for individual fields or farms should also consider the detailed information given in the description of each soil.

General management of cropland

Most soils in the county require similar basic, or general, management practices to produce satisfactory yields. These include applying lime and the proper fertilizer, maintaining the organic matter content of the soil, selecting a good cropping system, tilling the soil properly, controlling erosion, and improving drainage. These basic management practices are discussed in the following paragraphs.

Estimating needs for fertilizer and lime.—Most of the soils in Berkeley County are acid and are low in natural fertility. Nearly all require regular applications of lime and fertilizer for good crop yields. The kind of fertilizer and the amount of lime and fertilizer to apply are most efficiently determined by a soil test.

Some of the soils of this county leach rapidly, and lime and fertilizer are soon lost for crop use. Lime and fertilizer are more effective on such soils when they are applied more frequently but in smaller amounts.

The grasses and legumes in Berkeley County's pastures require regular applications of lime, nitrogen, phosphorus, and potash for sustained high production, but these grasses and legumes will provide erosion control if minimal applications of lime and fertilizer are used.

Maintaining organic matter.—Most of the soils in this county are low or moderate in organic matter content. It is not practical in most cases to significantly increase the organic matter content, but the present level can be maintained or perhaps slightly increased over a long period.

Crop residue, cover crops, and a rotation that includes sod crops are the primary sources of organic matter in Berkeley County. Rye is one of the better cover crops in the county, and all the grasses and legumes suited to the soils of the county can be used in rotations as sod crops.

Selecting a suitable cropping system.—A cropping system that maintains organic matter content is needed. If cover crops and crop residue, especially that from legumes, are plowed under, the yield potential of the succeeding crops will be increased. Suitable cropping systems help to control erosion, insects, plant disease, and weeds. The additional organic matter gained through a suitable cropping system absorbs plant nutrients and releases them to crops over a long period. Lack of organic matter causes fertilizer, especially nitrogen, to leach out if it is not quickly taken up by a growing crop.

The soils of the county are particularly well suited to warm season plants. Corn, cotton, tobacco, and soybeans are the principal row crops. Wheat is the primary small grain; oats and barley are secondary. Coastal bermudagrass is used extensively for pasture and hay. Sericea lespedeza, tall fescue, and bahiagrass are used to a lesser extent.

Tillage.—Most of the arable soils in Berkeley County can be tilled within a wide range of moisture conditions. Exceptions are such soils as those in the Craven, Meggett, and Bethera series, which have a relatively fine textured topsoil and which puddle, pack, and become cloddy if tilled when wet. Other soils, especially those in the Bonneau, Norfolk, and Goldsboro series, develop a compacted restrictive layer called a tillage pan or plowsole if the soils are tilled repeatedly at the same depth. Using sod crops and varying the depth of tillage prevent the formation of a plowpan.

Tillage systems that leave a mulch of crop residue on the surface of the soil have been successful in Berkeley County. These systems disturb the soil the least, return organic matter to the soil, and help to prevent soil blowing and erosion.

Erosion control.—Soil erosion may be caused by wind or water in Berkeley County. Large fields with soils such as those in the Bonneau, Norfolk, and Cainhoy series are especially susceptible to soil blowing when they have been freshly plowed and when the surface layer is dry during spring. Windbreaks, cover crops, wind stripcropping, and tillage systems that leave crop residue on the surface are used to control soil blowing.

Most soils in Berkeley County that are used for crops and that have slopes of more than 2 percent are subject to erosion. Erosion can be controlled by water management systems that include the use of diversions, terraces, contour tillage, and grassed waterways. Cropping systems that include sod crops in a rotation and tillage that leaves protective residue on the surface also help to control erosion.

Drainage.—Drainage is essential for good crop production on many soils in Berkeley County, especially those in the Lenoir, Coxville, and Lynchburg series. Drainage ditches and tile drainage systems are used in this county, and they are often used in combination. Land smoothing and bedding systems are sometimes used also.

Capability classes and subclasses

Capability classes and subclasses show, in a general way, the suitability of soils for most kinds of field crops. The soils are classed according to their limitations when they are used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to horticultural crops or other crops that require special management. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forest trees or for engineering purposes.

In the capability system, all kinds of soil are grouped at three levels: capability class, subclass, and unit. These levels are defined in the following paragraphs. A survey area may not have soils of all classes.

CAPABILITY CLASSES, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use; they are defined as follows:

Class I soils have few limitations that restrict their use.

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

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

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

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and landforms have limitations that nearly preclude their use for commercial crop production.

CAPABILITY SUBCLASSES are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The capability unit is identified in the description of each soil mapping unit in the section "Descriptions of the soils." Capability units are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-4 or IIIe-6.

Yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 2. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. Absence of an estimated yield indicates that the crop is not suited to or not commonly grown on the soil.

The estimated yields were based mainly on the experience and records of farmers, conservationists, and extension agents. Results of field trials and demonstrations and available yield data from nearby counties were also considered.

The yields were estimated assuming that the latest soil and crop management practices were used. Hay and pasture yields were estimated for the most productive varieties of grasses and legumes climatically suited to the area and the soil. A few farmers may be obtaining average yields higher than those shown in table 2.

The management needed to achieve the indicated yields of the various crops depends on the kind of soil and the crop. Such management provides drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate tillage practices, including time of tillage and seedbed preparation and tilling when soil moisture is favorable; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residues, barnyard manure, and green-manure crops; harvesting crops with the smallest possible loss; and timeliness of all fieldwork.

The estimated yields reflect the productive capacity of the soils for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 2 are grown in the survey area, but estimated yields are not included because the acreage of these crops is small. The local offices of the Soil Conservation Service and the Cooperative Extension Service can provide information about the management concerns and productivity of the soils for these crops.

Woodland management and productivity

Approximately 83 percent of Berkeley County is in forest (*6*). The principal forest cover consists of longleaf, loblolly, and slash pine on ridges and upper slopes. The forest cover on the lower slopes, low-lying flats, and flood plains is predominately sweetgum, American sycamore, water oak, yellow-poplar, water tupelo, and baldcypress.

Table 3 contains information useful to woodland owners or forest managers planning use of soils for wood crops. Mapping unit symbols for soils suitable for wood crops are listed, and the ordination (woodland suitability) symbol for each soil is given. All soils bearing the same ordination symbol require the same general kinds of woodland management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *w* indicates excessive water in or on the soil; *s*, sandy texture; and *r*, steep slopes. The letter *o* indicates insignificant limitations or restrictions. If a soil has more than one limitation, priority in placing the soil into a limitation class is in the following order: w, s, and r.

The third element in the symbol indicates the degree of hazards and limitations, and the general suitability of the soils for certain kinds of trees. The numeral *1* indicates soils that have slight management problems, or none, and are suited to needleleaf trees; *2* indicates soils that have one or more moderate management problems, and are suited to needleleaf trees; *3* indicates soils that have one or more severe management problems, and are suited to needleleaf trees; *4* indicates soils that have slight management problems, or none, and are suited to broadleaf trees; *5* indicates soils that have one or more moderate management problems, and are suited to broadleaf trees; *6* indicates soils that have one or more severe management problems, and are suited to broadleaf trees; *7* indicates soils that have slight management problems, or none, and are suited to either needleleaf or broadleaf trees; *8* indicates soils that have one or more moderate management problems, and are suited to either needleleaf or broadleaf trees; *9* indicates soils that have one or more severe management problems, and are suited to either needleleaf or broadleaf trees.

In table 3 the soils are also rated for a number of factors to be considered in management. *Slight*, *moderate*, and *severe* are used to indicate the degree of major soil limitations.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well-managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if some measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or equipment; *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree that the soil affects expected mortality of planted tree seedlings. Plant competition is not considered in the ratings. Seedlings from good planting stock that are properly planted during a period of sufficient rainfall are rated. A rating of *slight* indicates that the expected mortality of the planted seedlings is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

The *potential productivity* of merchantable or *important trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Important trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suitable for commercial wood production and that are suited to the soils.

Wildlife habitat

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover, and they affect the construction of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, and water. If any one of these elements is missing, is inadequate, or is inaccessible, wildlife either are scarce or do not inhabit the area.

If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by helping the natural establishment of desirable plants.

In table 4, the soils in the survey area are rated according to their potential to support the main kinds of wildlife habitat in the area. This information can be used in planning for parks, wildlife refuges, nature study areas, and other developments for wildlife; selecting areas that are suitable for wildlife; selecting soils that are suitable for creating, improving, or maintaining specific elements of wildlife habitat; and determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* means that the element of wildlife habitat or the kind of habitat is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose. A rating of *fair* means that the element of wildlife habitat or kind of habitat can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* means that restrictions for the element of wildlife habitat or kind of wildlife are very severe, and that unsatisfactory results can be expected. Wildlife habitat is impractical or even impossible to create, improve, or maintain on soils having such a rating.

The elements of wildlife habitat are briefly described in the following paragraphs.

Grain and seed crops are seed-producing annuals used by wildlife. The major soil properties that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, sorghum, wheat, oats, barley, millet, cowpeas, soybeans, and sunflowers.

Grasses and legumes are domestic perennial grasses and herbaceous legumes that are planted for wildlife food and cover. Major soil properties that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples are fescue, ryegrass, panicgrass, switchgrass, bahiagrass, annual lespedeza, clover, Coastal bermudagrass, and shrub lespedeza.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds, that provide food and cover for wildlife. Major soil properties that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples are bluestem, indiangrass, goldenrod, beggarweed, pokeweed, partridgepea, perennial lespedeza, fescue, and cheatgrass.

Hardwood trees and the associated woody understory provide cover for wildlife and produce nuts or other fruit, buds, catkins, twigs, bark, or foliage that wildlife eat. Major soil properties that affect growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of native plants are oak, poplar, cherry, sweetgum, apple, dogwood, persimmon, sassafras, sumac, hickory, hazelnut, black walnut, blackberry, grape, viburnum, blueberry, bayberry, and briers. Examples of fruit-producing shrubs that are commercially available and suitable for planting on soils rated *good* are pyracantha, autumn-olive, and crabapple.

Coniferous plants are cone-bearing trees, shrubs, or ground cover plants that furnish habitat or supply food in the form of browse, seeds, or fruitlike cones. Soil properties that have a major effect on the growth of coniferous plants are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, cedar, and ornamental trees and shrubs.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites, exclusive of submerged or floating aquatics. They produce food or cover for wildlife that use wetland as habitat. Major soil properties affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, and slope. Examples of wetland plants are smartweed, wild millet, wildrice, saltgrass, and cordgrass and rushes, sedges, and reeds.

Shallow water areas are bodies of water that have an average depth of less than 5 feet and that are useful to wildlife. They can be naturally wet areas, or they can be created by dams or levees or by water-control structures in marshes or streams. Major soil properties affecting shallow water areas are depth to organic pan, wetness, slope, and permeability. The availability of a dependable water supply is important if water areas are to be developed. Examples of shallow water areas are muskrat marshes, waterfowl feeding areas, wildlife watering developments, duck ponds, and other wildlife ponds.

The kinds of wildlife habitat are briefly described in the following paragraphs.

Openland habitat consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The kinds of wildlife attracted to these areas include bobwhite quail, dove, meadowlark, field sparrow, cottontail rabbit, and red fox.

Woodland habitat consists of areas of hardwoods or conifers, or a mixture of both, and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, opposum, woodcock, thrushes, woodpeckers, squirrels, grey fox, raccoon, deer, and bobcat.

Wetland habitat consists of open, marshy or swampy, shallow-water areas where water-tolerant plants grow. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and alligator.

Engineering

This section provides information about the use of soils for building sites, sanitary facilities, construction material, and water management. Among those who can benefit from this section are engineers, landowners, community planners, town and city managers, land developers, builders, contractors, and farmers.

The ratings in tables in this section are based on test data and estimated data in the "Soil properties" section. The ratings were determined jointly by soil scientists and engineers of the Soil Conservation Service using known relationships between the soil properties and the behavior of soils in various engineering uses.

Among the soil properties and site conditions identified by a soil survey and used in determining the ratings in this section were grain-size distribution, liquid limit, plasticity index, soil reaction, depth to and hardness of organic pans within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure or aggregation, in-place soil density, and geologic origin of the soil material. Where pertinent, data about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of absorbed cations were also considered.

On the basis of information assembled about soil properties, ranges of values can be estimated for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, shear strength, compressibility, slope stability, and other factors of expected soil behavior in engineering uses. As appropriate, these values can be applied to each major horizon of each soil or to the entire profile.

These factors of soil behavior affect construction and maintenance of roads, airport runways, pipelines, foundations for small buildings, ponds and small dams, irrigation projects, drainage systems, sewage and refuse disposal systems, and other engineering works. The ranges of values can be used to (1) select potential residential, commercial, industrial, and recreational uses; (2) make preliminary estimates pertinent to construction in a particular area; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for location of sanitary landfills, onsite sewage disposal systems, and other waste disposal facilities; (5) plan detailed onsite investigations of soils and geology; (6) find sources of gravel, sand, clay, and topsoil; (7) plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; (8) relate performance of structures already built to the properties of the kinds of soil on which they are built so that performance of similar structures on the same or a similar soil in other locations can be predicted; and (9) predict the trafficability of soils for cross-country movement of vehicles and construction equipment.

Data presented in this section are useful for land-use planning and for choosing alternative practices or general designs that will overcome unfavorable soil properties and minimize soil-related failures. Limitations to the use of these data, however, should be well understood. First, the data are generally not presented for soil material below a depth of 5 or 6 feet. Also, because of the scale of the detailed map in this soil survey, small areas of soils that differ from the dominant soil may be included in mapping. Thus, these data do not eliminate the need for onsite investigations, testing, and analysis by personnel having expertise in the specific use contemplated.

The information is presented mainly in tables. Table 5 shows, for each kind of soil, the degree and kind of limitations for building site development; table 6, for sanitary facilities; and table 8, for water management. Table 7 shows the suitability of each kind of soil as a source of construction materials.

The information in the tables, along with the soil map, the soil descriptions, and other data provided in this survey can be used to make additional interpretations and to construct interpretive maps for specific uses of land.

Some of the terms used in this soil survey have a special meaning in soil science. Many of these terms are defined in the Glossary.

Building site development

The degree and kind of soil limitations that affect shallow excavations, dwellings without basements, small commercial buildings, and local roads and streets are indicated in table 5. A *slight* limitation indicates that soil properties are favorable for the specified use; any limitation is minor and easily overcome. A *moderate* limitation indicates that soil properties and site features are unfavorable for the specified use, but the limitations can be overcome or minimized by special planning and design. A *severe* limitation indicates one or more soil properties or site features are so unfavorable or difficult to overcome that a major increase in construction effort, special design, or intensive maintenance is required. For some soils rated severe, such costly measures may not be feasible.

Shallow excavations are used for pipelines, sewerlines, telephone and power transmission lines, basements, open ditches, and cemeteries. Such digging or trenching is influenced by the soil wetness of a high seasonal water table; the texture and consistence of soils; the tendency of soils to cave in or slough; and the presence of very firm, dense soil layers, bedrock, or large stones. In addition, excavations are affected by slope of the soil and the probability of flooding. Ratings do not apply to soil horizons below a depth of 6 feet unless otherwise noted.

In the soil series descriptions, the consistence of each soil horizon is defined, and the presence of very firm or extremely firm horizons, usually difficult to excavate, is indicated.

Dwellings and *small commercial buildings* referred to in table 5 are built on undisturbed soil and have foundation loads of a dwelling no more than three stories high. Separate ratings are made for small commercial buildings without basements and for dwellings without basements. For such structures, soils should be sufficiently stable that cracking or subsidence from settling or shear failure of the foundation does not occur. These ratings were determined from estimates of the shear strength, compressibility, and shrink-swell potential of the soil. Soil texture, plasticity and in-place density, potential frost action, soil wetness, and depth to a seasonal high water table were also considered. Soil wetness and depth to a seasonal high water table indicate potential difficulty in providing adequate drainage for basements, lawns, and gardens. Slope is also an important consideration in the choice of sites for these structures and was considered in determining the ratings. Susceptibility to flooding is a serious limitation.

Local roads and streets referred to in table 5 have an all-weather surface that can carry light to medium traffic all year. They consist of subgrade of the underlying soil material; a base of gravel, crushed rock fragments, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. The roads are graded with soil material at hand, and most cuts and fills are less than 6 feet deep.

The load supporting capacity and the stability of the soil as well as the quantity and workability of fill material available are important in design and construction of roads and streets. The classifications of the soil and the soil texture, density, shrink-swell potential, and potential frost action are indicators of the traffic supporting capacity used in making the ratings. Soil wetness, flooding, and slope affect stability and ease of excavation.

Sanitary facilities

Favorable soil properties and site features are needed for proper functioning of septic tank absorption fields, sewage lagoons, and sanitary landfills. The nature of the soil is important in selecting sites for these facilities and in identifying limiting soil properties and site features to be considered in design and installation. Also, those soil properties that affect ease of excavation or installation of these facilities will be of interest to contractors and local officials. Table 6 shows the degree and kind of limitations of each soil for such uses and for use of the soil as daily cover for landfills. It is important to observe local ordinances and regulations.

If the degree of soil limitation is expressed as *slight*, soils are generally favorable for the specified use and limitations are minor and easily overcome; if *moderate*, soil properties or site features are unfavorable for the specified use, but limitations can be overcome by special planning and design; and if *severe*, soil properties or site features are so unfavorable or difficult to overcome that major soil reclamation, special designs, or intensive maintenance is required.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into the natural soil. Only the soil horizons between depths of 18 and 72 inches are evaluated for this use. The soil properties and site features considered are those that affect the absorption of the effluent and those that affect the construction of the system.

Properties and features that affect absorption of the effluent are permeability, depth to seasonal high water table, depth to bedrock, and susceptibility to flooding. Stones, pans, and a shallow depth to bedrock interfere with installation. Excessive slope may cause lateral seepage and surfacing of the effluent. Also, soil erosion and soil slippage are hazards if absorption fields are installed on sloping soils.

Some soils are underlain by loose sand. In these soils the absorption field does not adequately filter the effluent, and ground water in the area may be contaminated.

On many of the soils that have moderate or severe limitations for use as septic tank absorption fields, a system to lower the seasonal water table could be installed or the size of the absorption field could be increased so that performance is satisfactory.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons have a nearly level floor and cut slopes or embankments of compacted soil material. Aerobic lagoons generally are designed to hold sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Soils that are high in organic matter and those that have stones and pans are not suitable. Unless the soil has very slow permeability, contamination of ground water is a hazard where the seasonal high water table is above the level of the lagoon floor. In soils where the water table is seasonally high, seepage of ground water into the lagoon can seriously reduce the lagoon's capacity for liquid waste. Slope, depth to bedrock, and susceptibility to flooding also affect the suitability of sites for sewage lagoons or the cost of construction. Shear strength and permeability of compacted soils affect the performance of embankments.

Sanitary landfill is a method of disposing of solid waste by placing refuse in successive layers either in excavated trenches or on the surface of the soil. The waste is spread, compacted, and covered daily with thin layers of soil. Landfill areas are subject to heavy vehicular traffic. Risk of polluting ground water and trafficability affect the suitability of a soil for this use. The best soils have a loamy or silty texture, have moderate to slow permeability, are deep to a seasonal water table, and are not subject to flooding. Clayey soils are likely to be sticky and difficult to spread. Sandy or gravelly soils generally have rapid permeability, which might allow noxious liquids to contaminate ground water. Soil wetness may be a limitation because operating heavy equipment on a wet soil is difficult. Seepage into the refuse increases the risk of pollution of ground water.

In the trench type of landfill, ease of excavation also affects the suitability of a soil for this purpose, so the soil must be deep to bedrock and free of large stones and boulders. Where the seasonal water table is high, water seeps into trenches and causes problems in filling.

Unless otherwise stated, the limitations in table 6 apply only to the soil material within a depth of about 6 feet. If the trench is deeper, a limitation of slight or moderate may not be valid. Site investigation is needed before a site is selected.

Daily cover for landfill should be soil that is easy to excavate and spread over the compacted fill in wet and dry weather. Soils that are loamy or silty and free of stones or boulders are better than other soils. Clayey soils may be sticky and difficult to spread; sandy soils may be subject to soil blowing.

The soils selected for final cover of landfills should be suitable for growing plants. Of all the horizons, the A horizon in most soils has the best workability, more organic matter, and the best potential for growing plants. Thus, for either the area- or trench-type landfill, stockpiling material from the A horizon for use as the surface layer of the final cover is desirable.

Where it is necessary to bring in soil material for daily or final cover, thickness of suitable soil material available and depth to a seasonal high water table in soils surrounding the sites should be evaluated. Other factors to be evaluated are those that affect reclamation of the borrow areas. These factors include slope, erodibility, and potential for plant growth.

Potential of the soils for use as daily cover for sanitary landfill is rated good, fair, or poor. A rating of *good* means that the soil can easily be used for this purpose and that satisfactory results are expected with good management. A rating of *fair* means that moderate problems may be encountered in obtaining the material, placing it as cover, or getting the desired results. A rating of *poor* means that severe problems are expected in obtaining and placing the material or in getting it to perform the desired functions.

Construction materials

The suitability of each soil as a source of roadfill, sand, and topsoil is indicated in table 7 by ratings of good, fair, or poor. The texture, thickness, and organic-matter content of each soil horizon are important factors in rating soils for use as construction materials. Each soil is evaluated to the depth observed, generally about 6 feet.

Roadfill is soil material used in embankments for roads. Soils are evaluated as a source of roadfill for low embankments, which generally are less than 6 feet high and less exacting in design than high embankments. The ratings reflect the ease of excavating and working the material and the expected performance of the material where it has been compacted and adequately drained. The performance of soil after it is stabilized with lime or cement is not considered in the ratings, but information about some of the soil properties that influence such performance is given in the descriptions of the soil series.

The ratings apply to the soil material between the A horizon and a depth of 5 to 6 feet. It is assumed that soil horizons will be mixed during excavation and spreading. Many soils have horizons of contrasting suitability within their profile. The estimated engineering properties in table 11 provide specific information about the nature of each horizon. This information can help determine the suitability of each horizon for roadfill.

Soils rated *good* are coarse grained. They have low shrink-swell potential, low potential frost action, and few cobbles and stones. They are at least moderately well drained and have slopes of 15 percent or less. Soils rated *fair* have a plasticity index of less than 15 and have other limiting features, such as moderate shrink-swell potential, moderately steep slopes or wetness. If the thickness of suitable material is less than 3 feet, the entire soil is rated *poor*.

Sand is used in great quantities in many kinds of construction. The ratings in table 7 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand. A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand. Fine-grained soils are not suitable sources of sand.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 11.

Topsoil is used in areas where vegetation is to be established and maintained. Suitability is affected mainly by the ease of working and spreading the soil material in preparing a seedbed and by the ability of the soil material to support plants. Also considered is the damage that can result at the area from which the topsoil is taken.

The ease of excavation is influenced by the thickness of suitable material, wetness, slopes, and amount of stones. The ability of the soil to support plants is determined by texture, structure, and the amount of soluble salts or toxic substances. Organic matter in the A1 or Ap horizon greatly increases the absorption and retention of moisture and nutrients. Therefore, the soil material from these horizons should be carefully preserved for later use.

Soils rated *good* have at least 16 inches of friable loamy material at their surface. They are free of stones and cobbles, are low in content of gravel, and have gentle slopes. They are low in soluble salts that can limit or prevent plant growth. They are naturally fertile or respond well to fertilizer. They are not so wet that excavation is difficult during most of the year.

Soils rated *fair* are loose sandy soils or firm loamy or clayey soils in which the suitable material is only 8 to 16 inches thick or soils that have appreciable amounts of gravel, stones, or soluble salt.

Soils rated *poor* are very sandy soils and very firm clayey soils; soils with suitable layers less than 8 inches thick; soils having large amounts of gravel, stones, or soluble salt; steep soils; and poorly drained soils.

Although a rating of *good* is not based entirely on high content of organic matter, a surface horizon is generally preferred for topsoil because of its organic-matter content. This horizon is designated as A1 or Ap in the soil series descriptions. The absorption and retention of moisture and nutrients for plant growth are greatly increased by organic matter.

Water management

Many soil properties and site features that affect water management practices have been identified in this soil survey. In table 8 the degree of soil limitation and soil and site features that affect use are indicated for each kind of soil. This information is significant in planning, installing, and maintaining water control structures.

Soil and site limitations are expressed as slight, moderate, and severe. *Slight* means that the soil properties and site features are generally favorable for the specified use and that any limitation is minor and easily overcome. *Moderate* means that some soil properties or site features are unfavorable for the specified use but can be overcome or modified by special planning and design. *Severe* means that the soil properties and site features are so unfavorable and so difficult to correct or overcome that major soil reclamation, special design, or intensive maintenance is required.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have a low seepage potential, which is determined by permeability and the depth to fractured or permeable bedrock or other permeable material.

Embankments, dikes, and levees require soil material that is resistant to seepage, erosion, and piping and has favorable stability, shrink-swell potential, shear strength, and compaction characteristics. Large stones and organic matter in a soil downgrade the suitability of a soil for use in embankments, dikes, and levees.

Aquifer-fed excavated ponds are bodies of water made by excavating a pit or dugout into a ground-water aquifer. Excluded are ponds that are fed by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Ratings in table 8 are for ponds that are properly designed, located, and constructed. Soil properties and site features that affect aquifer-fed ponds are depth to a permanent water table, permeability of the aquifer, quality of the water, and ease of excavation.

Drainage of soil is affected by such soil properties as permeability, texture, depth to bedrock, hardpan, or other layers that affect the rate of water movement, depth to the water table, slope, stability of ditchbanks, susceptibility to flooding, salinity and alkalinity, and availability of outlets for drainage.

Irrigation is affected by such features as slope, susceptibility to flooding, hazards of water erosion and soil blowing, texture, presence of salts and alkali, depth of root zone, rate of water intake at the surface, permeability of the soil below the surface layer, available water capacity, need for drainage, and depth to the water table.

Recreation

The soils of the survey area are rated in table 9 according to limitations that affect their suitability for recreation uses. The ratings are based on such restrictive soil features as flooding, wetness, slope, and texture of the surface layer. Not considered in these ratings, but important in evaluating a site, are location and accessibility of the area, size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites available, and either access to public sewerlines or capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degree, for recreation use by the duration and intensity of flooding and the season when flooding occurs. Onsite assessment of height, duration, intensity, and frequency of flooding is essential in planning recreation facilities.

The degree of the limitation of the soils is expressed as slight, moderate, or severe. *Slight* means that the soil properties are generally favorable and that the limitations are minor and easily overcome. *Moderate* means that the limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, or limited use, or by a combination of these measures.

The information in table 9 can be supplemented by information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 6, and interpretations for dwellings without basements and for local roads and streets, given in table 5.

Camp areas require such site preparation as shaping and leveling for tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils for this use have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing camping sites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for use as picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that will increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones or boulders, is firm after rains, and is not dusty when dry. If shaping is required to obtain a uniform grade, the depth of the soil over bedrock or hardpan should be enough to allow necessary grading.

Paths and trails for walking, horseback riding, bicycling, and other uses should require little or no cutting and filling. The best soils for this use are those that are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once during the annual period of use. They should have moderate slopes and have few or no stones or boulders on the surface.

Soil properties

Extensive data about soil properties are summarized on the following pages. The two main sources of these data are the many thousands of soil borings made during the course of the survey and the laboratory analyses of selected soil samples from typical profiles.

In making soil borings during field mapping, soil scientists can identify several important soil properties. They note the seasonal soil moisture condition or the presence of free water and its depth. For each horizon in the profile, they note the thickness and color of the soil material; the texture, or amount of clay, silt, sand, and gravel or other coarse fragments; the structure, or the natural pattern of cracks and pores in the undisturbed soil; and the consistence of the soil material in place under the existing soil moisture conditions. They record the depth of plant roots, determine the pH or reaction of the soil, and identify any free carbonates.

Samples of soil material are analyzed in the laboratory to verify the field estimates of soil properties and to determine all major properties of key soils, especially properties that cannot be estimated accurately by field observation. Laboratory analyses are not conducted for all soil series in the survey area, but laboratory data for many soil series not tested are available from nearby survey areas.

The available field and laboratory data are summarized in tables. The tables give the estimated range of engineering properties, the engineering classifications, and the physical and chemical properties of each major horizon of each soil in the survey area. They also present pertinent data about soil and water features and engineering test data.

Engineering test data

The results of analyses of engineering properties of several typical soils of the survey area are given in table 10.

The data presented are for soil samples that were collected from carefully selected sites. The soil profiles sampled are typical of the series discussed in the section "Descriptions of the soils."

The methods used in obtaining the data are listed by code in the next paragraph. Most of the codes, in parentheses, refer to the methods assigned by the American Association of State Highway and Transportation Officials. The code for Unified classification is that assigned by the American Society for Testing and Materials.

The methods and codes are AASHTO classification (M-145-66); Unified classification (D-2487-69); mechanical analysis (T88-57); liquid limit (T89-60); plasticity index (T90-56).

Engineering properties

Table 11 gives estimates of engineering properties and classifications for the major horizons of each soil in the survey area.

Most soils have, within the upper 5 or 6 feet, horizons of contrasting properties. Table 11 gives information for each of these contrasting horizons in a typical profile. *Depth* to the upper and lower boundaries of each horizon is indicated. More information about the range in depth and about other properties in each horizon is given for each soil series in the section "Descriptions of the soils."

Texture is described in table 11 in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loam." Other texture terms are defined in the Glossary.

The two systems commonly used in classifying soils for engineering use are the Unified Soil Classification System (Unified) (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO) (*1*).

The *Unified* system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter, plasticity index, liquid limit, and organic-matter content. Soils are grouped into 15 classes—eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes have a dual classification symbol, for example, CL-ML.

The *AASHTO* system classifies soils according to those properties that affect their use in highway construction and maintenance. In this system a mineral soil is classified in one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines. At the other extreme, in group A-7, are fine-grained soils. Highly organic soils are classified in group A-8 on the basis of visual inspection.

When laboratory data are available, the A-1, A-2, and A-7 groups are further classified as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As an additional refinement, the desirability of soils as subgrade material can be indicated by a group index number. These numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested in the survey area, with group index numbers in parentheses, is given in table 10. The estimated classification, without group index numbers, is given in table 11.

Percentage of the soil material less than 3 inches in diameter that passes each of four sieves (U.S. standard) is estimated for each major horizon. The estimates are based on tests of soils that were sampled in the survey area and in nearby areas and on field estimates from many borings made during the survey.

Liquid limit and *plasticity index* indicate the effect of water on the strength and consistence of soil. These indexes are used in both the Unified and AASHTO soil classification systems. They are also used as indicators in making general predictions of soil behavior. Range in liquid limit and plasticity index are estimated on the basis of test data from the survey area or from nearby areas and on observations of the many soil borings made during the survey.

In some surveys, the estimates are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterburg limits extend a marginal amount across classification boundaries (1 or 2 percent), the classification in the marginal zone is omitted in table 11.

Physical and chemical properties

Table 12 shows estimated values for several soil characteristics and features that affect behavior of soils in engineering uses. These estimates are given for each major horizon, at the depths indicated, in the typical pedon of each soil. The estimates are based on field observations and on test data for these and similar soils.

Permeability is estimated on the basis of known relationships among the soil characteristics observed in the field—particularly soil structure, porosity, and gradation or texture—that influence the downward movement of water in the soil. The estimates are for vertical water movement when the soil is saturated. Not considered in the estimates is lateral seepage or such transient soil features as plowpans and surface crusts. Permeability of the soil is an important factor to be considered in planning and designing drainage systems, in evaluating the potential of soils for septic tank systems and other waste disposal systems, and in many other aspects of land use and management.

Available water capacity is rated on the basis of soil characteristics that influence the ability of the soil to hold water and make it available to plants. Important characteristics are content of organic matter, soil texture, and soil structure. Shallow-rooted plants are not likely to use the available water from the deeper soil horizons. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design of irrigation systems.

Soil reaction is expressed as a range in pH values. The range in pH of each major horizon is based on many field checks. For many soils, the values have been verified by laboratory analyses. Soil reaction is important in selecting the crops, ornamental plants, or other plants to be grown; in evaluating soil amendments for fertility and stabilization; and in evaluating the corrosivity of soils.

Shrink-swell potential depends mainly on the amount and kind of clay in the soil. Laboratory measurements of the swelling of undisturbed clods were made for many soils. For others the swelling was estimated on the basis of the kind and amount of clay in the soil and on measurements of similar soils. The size of the load and the magnitude of the change in soil moisture content also influence the swelling of soils. Shrinking and swelling of some soils can cause damage to building foundations, basement walls, roads, and other structures unless special designs are used. A high shrink-swell potential indicates that special design and added expense may be required if the planned use of the soil will not tolerate large volume changes.

Risk of corrosion pertains to potential soil-induced chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to soil moisture, particle-size distribution, total acidity, and electrical conductivity of the soil material. The rate of corrosion of concrete is based mainly on the sulfate content, texture, and acidity of the soil. Protective measures for steel or more resistant concrete help to avoid or minimize damage resulting from the corrosion. Uncoated steel intersecting soil boundaries or soil horizons is more susceptible to corrosion than an installation that is entirely within one kind of soil or within one soil horizon.

Erosion factors are used to predict the erodibility of a soil and its tolerance to erosion in relation to specific kinds of land use and treatment (*8*). The soil erodibility factor (K) is a measure of the susceptibility of the soil to erosion by water. Soils having the highest K values are the most erodible. K values range from 0.10 to 0.64. To estimate annual soil loss per acre, the K value of a soil is modified by factors representing plant cover, grade and length of slope, management practices, and climate. The soil-loss tolerance factor (T) is the maximum rate of soil erosion, whether from rainfall or soil blowing, that can occur without reducing crop production or environmental quality. The rate is expressed in tons of soil loss per acre per year.

Wind erodibility index is an estimate of the amount of soil that would be lost to soil blowing from a smooth, unsheltered, wide, bare field in this county. It is expressed in tons per acre per year. Wind erodibility index varies inversely with the proportion of the soil aggregates in the surface layer that are larger than 0.84 millimeters in diameter.

Soil and water features

Table 13 contains information helpful in planning land uses and engineering projects that are likely to be affected by soil and water features.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are placed in one of four groups on the basis of the intake of water after the soils have been wetted and have received precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist chiefly of deep, well drained to excessively drained sands or gravels. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils that have a layer that impedes the downward movement of water or soils that have moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clay soils that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding is the temporary covering of soil with water from overflowing streams, with runoff from adjacent slopes, and by tides. Water standing for short periods after rains or after snow melts is not considered flooding, nor is water in swamps and marshes. Flooding is rated in general terms that describe the frequency and duration of flooding and the time of year when flooding is most likely. The ratings are based on evidence in the soil profile of the effects of flooding, namely thin strata of gravel, sand, silt, or, in places, clay deposited by floodwater; irregular decrease in organic-matter content with increasing depth; and absence of distinctive soil horizons that form in soils of the area that are not subject to flooding. The ratings are also based on local information about floodwater levels in the area and the extent of flooding and on information that relates the position of each soil on the landscape to historic floods.

The generalized description of flood hazards is of value in land-use planning and provides a valid basis for land-use restrictions. The soil data are less specific, however, than those provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table is the highest level of a saturated zone more than 6 inches thick for a continuous period of more than 2 weeks during most years. The depth to a seasonal high water table applies to undrained soils. Estimates are based mainly on the relationship between grayish colors or mottles in the soil and the depth to free water observed in many borings made during the course of the soil survey. Indicated in table 13 are the depth to the seasonal high water table; the kind of water table, that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. Only saturated zones above a depth of 5 or 6 feet are indicated.

Information about the seasonal high water table helps in assessing the need for specially designed foundations, the need for specific kinds of drainage systems, and the need for footing drains to ensure dry basements. Such information is also needed to decide whether or not construction of basements is feasible and to determine how septic tank absorption fields and other underground installations will function. Also, a seasonal high water table affects ease of excavation.

Formation, morphology, and classification of the soils

This section tells how the factors of soil formation affected the development of the soils in Berkeley County. It also tells how the soils are classified. The current system of soil classification is explained, and each soil series in the county is placed in classes of this system.

Factors of soil formation

Soil is the natural medium for the growth of plants and is the product of soil forming processes acting on accumulated or deposited geologic materials. The five important factors in soil formation are parent material, climate, living organisms (plants and animals), relief, and time.

Climate and living organisms are the active forces of soil formation. Their effect on the parent material is modified by relief and by the length of time the parent material has been in place. The relative importance of each factor differs from place to place. In some places one factor dominates in the formation of the soils and fixes most of the properties of the soil, but normally the interaction of all five factors determines what kind of soil is formed at any given place.

Although soil formation is complex, some understanding of the soil forming processes may be gained by considering each of the five factors separately. It must be remembered, however; that each of the five factors affects each of the other factors.

Parent material

Parent material is the unconsolidated mass from which a soil is formed, and mainly determines the mineralogical and chemical composition of the soils. In Berkeley County the parent material of the soils is marine or fluvial deposits. These deposits have varying amounts of sand, silt, and clay. There are four terrace formations in this county that were deposited and formed during the Pleistocene Epoch (*4*). These are the Wicomico, the Penholoway, the Talbot, and the Pamlico (fig. 5).

The Wicomico terrace is about 70 to 100 feet above sea level. Goldsboro, Lynchburg, Rains, Bonneau, Norfolk, Byars, and Coxville are the dominant soils that formed in this material.

The Penholoway terrace is about 42 to 70 feet above sea level. A large portion of this terrace is covered by Lake Moultrie. Goldsboro, Lynchburg, Rains, Chipley, Echaw, Pickney, Wahee, and Meggett are the dominant soils that formed in this material.

The Talbot terrace is about 25 to 42 feet above sea level. Tawcaw and Chastain are the dominant soils on the flood plains; Wahee, Duplin, Lenoir, Bethera, Bayboro, Pantego, Goldsboro, Lynchburg, and Rains are the dominant soils on uplands and low-lying flats.

The Pamlico terrace ranges from sea level to elevation of 25 feet. Most of the flood plain of the Santee River is on this terrace. Tawcaw and Chastain are the dominant soils on the flood plains; Meggett, Santee, Bohicket, Capers, and Wahee are the dominant soils that formed on low-lying flats, in drainageways, and in marsh areas in other parts of the county.

There are three scarps (*3*) associated with the Talbot terrace in Berkeley County (fig. 6).

The approximate elevation of the toe of Cainhoy Scarp is 20 to 25 feet above sea level, with crests as high as 40 feet. This scarp parallels the Berkeley and Charleston County line. This is a long narrow scarp that parallels the coast and is observed in several counties in South Carolina and also in other states. This scarp is somewhat higher than the surrounding area, and the southwest corner of the scarp dips sharply into the marsh near the Cooper River. Generally, all soils that are at a lower elevation than the Cainhoy Scarp will have mixed mineralogy.

The approximate elevation of the toe of Bethera Scarp is 40 feet above sea level, with a crest as high as 60 feet. This is a short and narrow scarp and is only observed in Berkeley County. This scarp is somewhat higher than surrounding areas. Toward the southeast from the crest of the scarp, the elevation of the land surface decreases with decreasing gradient to form a flat plain with an elevation of 35 to 40 feet.

There are sandy ridges and swampy swales alined in a northeast direction parallel to the Bethera Scarp. The Bethera Scarp is between the Cainhoy and Summerville Scarps. The soils between these two scarps that are in the clayey family have mixed mineralogy. The soils that are in the loamy or sandy family have siliceous mineralogy.

The approximate elevation of the toe of Summerville Scarp is 40 feet above sea level, with crests as high as 60 feet. This scarp is in the middle of the county. This is a long and narrow scarp that parallels the coast and some of the larger rivers. This scarp is in other counties and states. The Summerville Scarp forms the topographic division between the Wicomico and Talbot terraces. Generally, all soils that are at a higher elevation than Summerville Scarp have kaolinitic or siliceous mineralogy.

Climate

Berkeley County has a temperate climate. Rainfall is well distributed throughout the year. The climate is fairly uniform for the entire county. For this reason, climate does not account for significant differences among the soils. Data on climate are given in the section "Additional facts about the county."

Climate, particularly precipitation and temperature, affects the physical, chemical, and biological relationships in the soil. Water dissolves minerals, aids chemical and biological activity, and transports the dissolved mineral and organic material through the soil profile. Large amounts of rainwater promote leaching of the soluble bases and the translocation of the less soluble and fine-textured soil material downward through the soil profile. The amount of water that percolates through the soil depends on the amount of rainfall, the length of the frost-free season, relief, and the permeability of the soil material.

Weathering of the parent material is speeded by moist conditions and warm temperatures, and the growth and activity of living organisms is increased by the warm humid climate. Thus, the high rainfall, warm temperatures, and long freeze-free growing season of Berkeley County have had a marked effect both on the soils directly and on some of the other factors that affect the soils.

Living organisms

The number and kinds of plants and animals that live in and on the soil are determined mainly by the climate but also, to a lesser extent, by parent material, relief, and age of the soil.

Bacteria, fungi, and other micro-organisms greatly influence soil formation. They hasten the weathering of minerals and the decomposing of organic matter. Larger plants alter the soil microclimate, furnish organic matter, and transfer chemical elements from the subsoil to the surface layer.

Most of the fungi, bacteria, and other micro-organisms in the soils of Berkeley County are in the upper few inches of the soil. The activity of earthworms and other small invertebrates is chiefly in the A horizon and the upper part of the B horizon, where these organisms slowly but continuously mix the soil material. Bacteria and fungi decompose organic matter and release nutrients for plant use.

Animals play a secondary role in soil formation. By eating plants, they perform one step in returning plant material to the soil.

In Berkeley County the native vegetation in the better drained areas is chiefly loblolly pine, longleaf pine, oak, and hickory. In the wetter areas it is mainly sweetgum, black gum, yellow-poplar, maple, tupelo, ash, and cypress. Large trees affect soil formation by bringing nutrients up from deep in the soil, by bringing soil material up from varying depths when the trees are blown over, and by providing, as large roots decay, large openings to be filled by material from the upper layers.

Relief

Relief, or lay of the land, influences soil formation because of its effect on moisture, temperature, and erosion. The effect of relief may cause several different kinds of soil to form from similiar parent material. Most of Berkeley County is nearly level to gently sloping. There are, however, four general kinds of landscapes in the county that affect the formation of soils. These landscapes are described as follows:

1. Areas of nearly level to gently sloping soils that are moderately dissected by streams. In these areas the soils mostly are moderately well drained and deep.
2. Areas of nearly level, slightly dissected, low lying flat soils between streams. Most of the soils are dominantly gray and have yellow and brown mottles. The soils are poorly drained to very poorly drained and deep and moderately deep.
3. Areas of nearly level soils on stream bottoms and low terraces. The soils in these areas are young, are predominantly gray, and have poorly defined genetic layers.
4. Areas of nearly level soils on low lying flats, in drainageways, and in marsh areas that are intricately dissected by meandering drainageways. These soils are poorly drained to very poorly drained and are predominantly gray.

Time

The length of time required for a soil to develop depends largely on the intensity of other soil-forming factors. The soils of Berkeley County range from immature, or young, to mature. On the higher elevations of the uplands, most of the soils have well-developed horizons that are easily recognized. However, where the parent material is very sandy, little horizon development has taken place, and where the relief is very low and the soils are permanently saturated, horizons are only moderately distinct. On the first bottoms of the streams, the soil material has not been in place long enough for soil horizons to form.

Morphology of soils

If a vertical cut is made in a soil, several layers, or horizons, are evident. The differentation of horizons is the result of many soil forming processes. These include the accumulation of organic matter, the leaching of soluble salts, reduction and translocation of iron, the formation of soil structure, physical weathering such as freezing and thawing, and chemical weathering of primary minerals or rocks.

Some of these processes are continually taking place in all soils, but the number of active processes and the degree of their activity vary from one soil to another.

Most soils contain three major horizons called A, B, and C horizons (*7*). These major horizons may be further subdivided by the use of subscripts and letters to indicate differences within one horizon. An example is the B2t horizon, which is a layer within the B horizon that has translocated clay illuviated from the A horizon.

The A horizon is the surface layer. The layer with the largest accumulation of organic matter is called an A1 horizon. If the soils are cleared and plowed, the surface layer becomes an Ap horizon. The Lynchburg and Leon soils are examples of soils that have a distinctive, dark colored A1 or Ap horizon. The A horizon is also the layer of maximum leaching or eluviation of clay and iron. When considerable leaching has taken place, an A2 horizon is formed just below the surface layer. Normally, it is the lightest colored horizon in the soil. It is well expressed in such soils as those in the Bonneau and Ocilla series.

The B horizon lies underneath the A horizon and is commonly called the subsoil. It is the horizon of maximum accumulation, or illuviation, of clay, iron, aluminum, or other compounds leached from the A horizon. Norfolk, Byars, and Caroline soils are among the soils that have a well expressed B horizon.

The C horizon is below the A horizon or, where present, the B horizon. Some soils, such as Chipley and Pickney soils, have not formed a B horizon, and the C horizon lies immediately under the A horizon. The C horizon consists of materials that are little altered by the soil forming processes but may be modified by weathering.

Well drained and moderately well drained soils in Berkeley County have a yellowish brown or reddish subsoil. These colors are mainly caused by thin coatings of iron oxides on the sand, silt, and clay particles. A soil is considered well drained if it is free of gray mottles to a depth of at least 30 inches. Among the well drained soils in this county are those in the Norfolk and Caroline series. Moderately well drained soils are wet for short periods and are generally free of gray mottles to a depth of about 15 to 20 inches. Goldsboro and Craven soils are examples of moderately well drained soils.

The reduction and transfer of iron is associated with the wetter, more poorly drained soils. This process is called gleying. Poorly drained to very poorly drained soils, such as the Rains and Pantego soils, have a subsoil and underlying material that are grayish colored, indicating reduction and transfer of iron. Moderately well drained to somewhat poorly drained soils have yellowish brown and gray mottles, indicating the segregation of iron. Lynchburg soils are an example of the somewhat poorly drained soils in this county.

Classification of soils

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. Readers interested in further details about the system should refer to the latest literature available (*9*).

The system of classification has six categories. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. In this system the classification is based on the different soil properties that can be observed in the field or those that can be inferred either from other properties that are observable in the field or from the combined data of soil science and other disciplines. The properties selected for the higher categories are the result of soil genesis or of factors that affect soil genesis. In table 14, the soils of the survey area are classified according to the system. Categories of the system are discussed in the following paragraphs.

ORDER. Ten soil orders are recognized as classes in the system. The properties used to differentiate among orders are those that reflect the kind and degree of dominant soil-forming processes that have taken place. Each order is identified by a word ending in *sol.* An example is Entisol.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis and are important to plant growth or that are selected to reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of expression of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and a prefix that suggests something about the properties of the soil. An example is Haplaquents (*Hapl*, meaning simple horizons, plus *aquent*, the suborder of Entisols that have an aquic moisture regime).

SUBGROUP. Each great group may be divided into three subgroups: the central (typic) concept of the great groups, which is not necessarily the most extensive subgroup; the intergrades, or transitional forms to other orders, suborders, or great groups; and the extragrades, which have some properties that are representative of the great groups but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that is thought to typify the great group. An example is Typic Haplaquents.

FAMILY. Families are established within a subgroup on the basis of similar physical and chemical properties that affect management. Among the properties considered in horizons of major biological activity below plow depth are particle-size distribution, mineral content, temperature regime, thickness of the soil penetrable by roots, consistence, moisture equivalent, soil slope, and permanent cracks. A family name consists of the name of a subgroup and a series of adjectives. The adjectives are the class names for the soil properties used as family differentiae. An example is fine-loamy, mixed, nonacid, mesic Typic Haplaquents.

SERIES. The series consists of soils that formed in a particular kind of material and have horizons that, except for texture of the surface soil or of the underlying substratum, are similar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineral and chemical composition.

Additional facts about the county

This section gives general facts about Berkeley County. It briefly discusses climate; physiography, drainage, and geology; settlement and development; and the development and use of the Santee-Cooper Authority.

Climate

Berkeley County has a subtropical climate, with warm summers, mild winters, and ample precipitation. Except in summer, when maritime tropical air persists in the area for extended periods, the day-to-day weather is largely controlled by the generally west to east motion of pressure systems and fronts. Rainfall averages about 47 inches per year and ranges from 39 to 55 inches 6 years in 10. Precipitation of 0.1 inch or more falls on an average of 78 days a year. The annual distribution shows a maximum of about 7 inches in July and a minimum of about 2 inches in November. The period April to September, which includes the growing season for most crops in this area, receives an average of 31 inches of rain, or about 66 percent of the annual total. Additional temperature and precipitation data are shown in table 15.

The prevailing wind is northeasterly at about 9 miles per hour. Average windspeed tends to be highest, 10 miles per hour, in March, when winds are from the southwest. Relative humidity in midafternoon averages about 50 percent in spring and about 56 percent at other times. The average maximum, usually observed at dawn, is 86 percent. Heavy fog occurs about 28 days each year. The sun is visible during about 65 percent of the daylight hours in summer and about 55 percent in winter. Clear days number about 110 each year. The average evaporation rate (pan measured) is 55 to 60 inches per year.

Summer is long, warm, and moist. Maximum daily temperatures hover near or above 90 degrees F, and minimum daily temperatures range from 65 to 70 degrees. Temperatures in excess of 100 degrees are usually recorded a few days each year; the highest during the period of record, 106 degrees, was recorded in August 1954. The abundant supply of warm, moist, relatively unstable maritime tropical air that is drawn into the area each summer produces frequent scattered showers and thunderstorms. An average of about 57 thunderstorms occur annually, 14 of them in July. Hailstorms are infrequent and usually of little consequence. Tropical storms rarely occur in summer.

Autumn tends to be warm and pleasant. The average date of the first freezing temperature in fall is November 2; 2 years in 10 it is earlier than October 28. Tropical storms or hurricanes occasionally bring heavy rains and strong winds to the area in this season.

Winter is short, mild, and relatively dry, accounting for only about 20 percent of the average annual precipitation. Average daily maximum and minimum temperatures are about 60 degrees and 35 degrees, respectively, yielding an average winter temperature of about 48 degrees. Freezing temperatures occur on fewer than half of the winter days. The coldest temperature during the period of record, 4 degrees, was recorded in February 1973. Winter precipitation is usually in the form of rain. Measureable snowfall is rare, and snow seldom stays on the ground more than 1 day. Freezing rain (glaze) can be expected once or twice each winter, occasionally producing a damaging ice storm.

Spring is a season of rapid transition. March is typically a month of heavy rain and warming temperatures. In late spring scattered thunderstorm activity begins. April is the month of greatest tornado hazard, though the tornado season in this region is roughly March through August.

The average length of the freeze-free growing season is approximately 260 days (table 16). The normal monthly accumulation of growing degree days, as shown in table 15, can be used to schedule single or successive plantings of a crop within the limits of the freeze-free season.

Physiography, drainage, and geology

Berkeley County is mainly made up of one broad physiographic area, the Atlantic Coast Flatwoods. The soils are sedimentary and were transported from other areas by the ocean or streams and were deposited in their present location.

The central and southern parts of the county are drained by the Cooper River and its tributaries. In these areas the soils are predominantly nearly level to gently sloping but are strongly sloping in areas adjacent to the streams and drainageways. Soils in this area are predominantly moderately well drained to very poorly drained.

An area in the central-southwestern part of the county is drained by the Ashley River through Cypress Swamp and a few smaller tributaries. The soils in this area are mainly nearly level and moderately well drained to poorly drained. Some shallow, oval depressions that lack natural surface outlets are in this area and are locally known as Carolina Bays.

A small, narrow strip along the southern part of the northwestern boundary of the county drains into the Edisto River through Four Hole Swamp. The soils in this area are mainly nearly level to gently sloping and well drained to very poorly drained.

A narrow strip along the northern and northeastern boundaries of the county is drained by short laterals into the Santee River. The soils in this area are mainly nearly level and moderately well drained to poorly drained. Most of the area is within the flood plain of the Santee River.

The elevation of Berkeley County ranges from a high of about 105 feet above sea level in the Catons Bay area in the western part of the county to sea level on Daniels Island at the intersection of the Cooper and Wando Rivers.

The geology of Berkeley County is characteristic of the Atlantic Coastal Plain. The geologic formation covering the surface of the county is of Pleistocene age.

Settlement and development

The first to be attracted to this area were hunters, trappers, and dealers in furs and skins. Later came others who herded cattle and drove them to Charleston and other distant markets. These early enterprises gave way to permanent settlement, and farming became the chief means of livelihood. Farming was confined almost entirely to areas of well drained soils. The extensive wet areas were not considered of any value until later, when the production of turpentine and lumber became important.

From the first settlements a farming system developed that prevailed without many changes until the Civil War. Corn and wheat were the main crops, and hogs, cows, and sheep were the main types of livestock. Some attention was given to the growing of indigo, which was a profitable crop as long as a bounty was kept on it by the English Government. The removal of the bounty during the Revolutionary War caused a rapid decline in the industry. In 1794 the cotton gin was introduced and the production of cotton began to attract attention. Corn was a crop of export, but production declined rapidly when cotton began to be grown extensively.

While farming was the main occupation of the settlers, a great deal of attention was given to wood products such as turpentine, lumber, shingles, and staves.

About the time of the Civil War, the farmers were growing only cotton. As a result the soils declined in productivity and yields were low, bringing about the extensive use of commercial fertilizers.

About 1890 the price of cotton fell below the cost of production. This paved the way for the diversification of crops (*5*). Tobacco was grown and proved to be very profitable. Today, soybeans are the dominant cash crop produced in the county.

Santee-Cooper Authority

The Santee-Cooper Authority was created on May 19, 1934, by the South Carolina General Assembly for the purpose of providing electrical power, navigation, and recreation to the area. It accounts for about 11 percent of the electrical power in the State.

The Santee-Cooper Authority controls two lakes: Lake Marion (110,600 acres) and Lake Moultrie (60,800 acres). All of Lake Moultrie and 10,200 acres of Lake Marion are in Berkeley County. These lakes were named after Revolutionary War heroes General Francis Marion and General William Moultrie.

Recreation has emerged as one of the primary uses of these lakes. The Santee-Cooper area provides habitat for the world's only landlocked striped bass, also known as rockfish. There is excellent fishing for bass, crappie, and bream. More than 800 permanent campsites are at various locations around the lakes. These lakes are surrounded by thousands of summer homes and cottages and provide opportunities for swimming, boating, and water skiing.

The Santee-Cooper Authority has made land available to the U.S. Fish and Wildlife Service for use in the attraction and wintering of waterfowl. As a result, the Santee-Cooper area provides excellent hunting for wildfowl. The north-south Atlantic Flyway passes over this area.

References

(1) American Association of State Highway [and Transportation] Officials. 1970. Standard specifications for highway materials and methods of sampling and testing. Ed. 10, 2 vol., illus.

(2) American Society for Testing and Materials. 1974. Method for classification of soils for engineering purposes. ASTM Stand. D 2487-69. *In* 1974 Annual Book of ASTM Standards, Part 19, 464 pp., illus.

(3) Colquhoun, Donald J. 1965. Terrace sediment complexes in central South Carolina. Atlantic Coastal Plain Geological Association Field Conference. 62 pp., illus.

(4) Cooke, C. Wythe. 1936. Geology of the Coastal Plain of South Carolina, U.S. Dept. Int., Geol. Survey Bull. 867, 196 pp., illus.

(5) Latimer, W. J., and others. 1921. Soil survey of Berkeley County, South Carolina. *In* Field operations of the Bureau of Soils, 1916. U.S. Dep. Agric., pp. 483-520.

(6) Love, Theodore R., and Andrew, Louis E. 1967. Soil management report, Francis Marion National Forest, South Carolina. U.S. Dep. Agric., Forest Service.
(7) United States Department of Agriculture. 1951. Soil survey manual. U.S. Dep. Agric. Handb. 18, 503 pp., illus. [Supplements replacing pp. 173-188 issued May 1962]
(8) United States Department of Agriculture. 1965. Predicting rainfall erosion losses for cropland east of the Rocky Mountains. U.S. Dep. Agric. Handb. 282, 47 pp.
(9) United States Department of Agriculture. 1975. Soil taxonomy: a basic system of soil classification for making and interpreting soil surveys. U.S. Dep. Agric. Handb. 436, 754 pp., illus.

Glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim. An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	More than 9

Base saturation. The degree to which material having base exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the exchange capacity.

Carolina Bay. A shallow, commonly oval depression in the coastal plain of the southeastern United States.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coat, clay skin.

Compressible. Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Cutbanks cave. Unstable walls of cuts made by earthmoving equipment. The soil sloughs easily.

Erosion. The wearing away of the land surface by running water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes a bare surface.

Excess fines. Excess silt and clay. The soil does not provide a source of gravel or sand for construction purposes.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Flooding. The temporary covering of soil with water from overflowing streams, runoff from adjacent slopes, and tides. Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; *November-May*, for example, means that flooding can occur during the period November through May. Water standing for short periods after rainfall or commonly covering swamps and marshes is not considered flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Gleyed soil. A soil having one or more neutral gray horizons as a result of waterlogging and lack of oxygen. The term "gleyed" also designates gray horizons and horizons having yellow and gray mottles as a result of intermittent waterlogging.

Horizon, argillic. A subsurface horizon into which clay has moved. It has about 20 percent more clay than the horizons above. The presence of clay films on ped surfaces and in soil pores is evidence of clay movement.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:

O horizon.—An organic layer, fresh and decaying plant residue, at the surface of a mineral soil.

A horizon.—The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.

A2 horizon.—A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Horizon, spodic. A subsurface horizon in which amorphous material consisting of organic matter plus compounds of aluminum and usually iron have accumulated.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Large stones. Rock fragments 10 inches (25 centimeters) or more across. Large stones adversely affect the specified use.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. Inadequate strength for supporting loads.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is greater than that of organic soil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Muck. Dark colored, finely divided, well decomposed organic soil material mixed with mineral soil material. The content of organic matter is more than 20 percent.

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Nutrient, plant. Any element taken in by a plant, essential to its growth, and used by it in the production of food and tissue. Plant nutrients are nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, zinc, and perhaps other elements obtained from the soil; and carbon, hydrogen, and oxygen obtained largely from the air and water.

Parent material. The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly. The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality that enables the soil to transmit water or air, measured as the number of inches per hour that water moves through the soil. Terms describing permeability are *very slow* (less than 0.06 inch), *slow* (0.06 to 0.20 inch), *moderately slow* (0.2 to 0.6 inch), *moderate* (0.6 to 2.0 inches), *moderately rapid* (2.0 to 6.0 inches), *rapid* (6.0 to 20 inches), and *very rapid* (more than 20 inches).

Phase, soil. A subdivision of a soil series or other unit in the soil classification system based on differences in the soil that affect its management. A soil series, for example, may be divided into phases on the bases of differences in slope, stoniness, thickness, or some other characteristic that affects management. These differences are too small to justify separate series.

Plastic limit. The moisture content at which a soil changes from a semisolid to a plastic state.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents that commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on exposure to repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade, whereas ironstone cannot be cut but can be broken or shattered with a spade. Plinthite is one form of the material that has been called laterite.

Poor outlets. Surface or subsurface drainage outlets difficult or expensive to install.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Runoff. The precipitation discharged in stream channels from a drainage area. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Seepage. The rapid movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils, formed from a particular type of parent material, having horizons that, except for the texture of the A or surface horizon, are similar in all profile characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineralogical and chemical composition.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slow refill. The slow filling of ponds, resulting from restricted permeability in the soil.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. A marine terrace, generally wide, was deposited by the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or " very fine."

Thin layer. Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The condition of the soil, especially the soil structure, as related to the growth of plants. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Topsoil (engineering). Presumably a fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Unstable fill. Risk of caving or sloughing in banks of fill material.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water.

Water table, apparent. 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.

Water table, artesian. A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water table, perched. A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Illustrations

Figure 1.—Controlled catfish production pond on Craven loam, 0 to 2 percent slopes.

Figure 2.—Natural pine forest on Goldsboro loamy sand, 0 to 2 percent slopes.

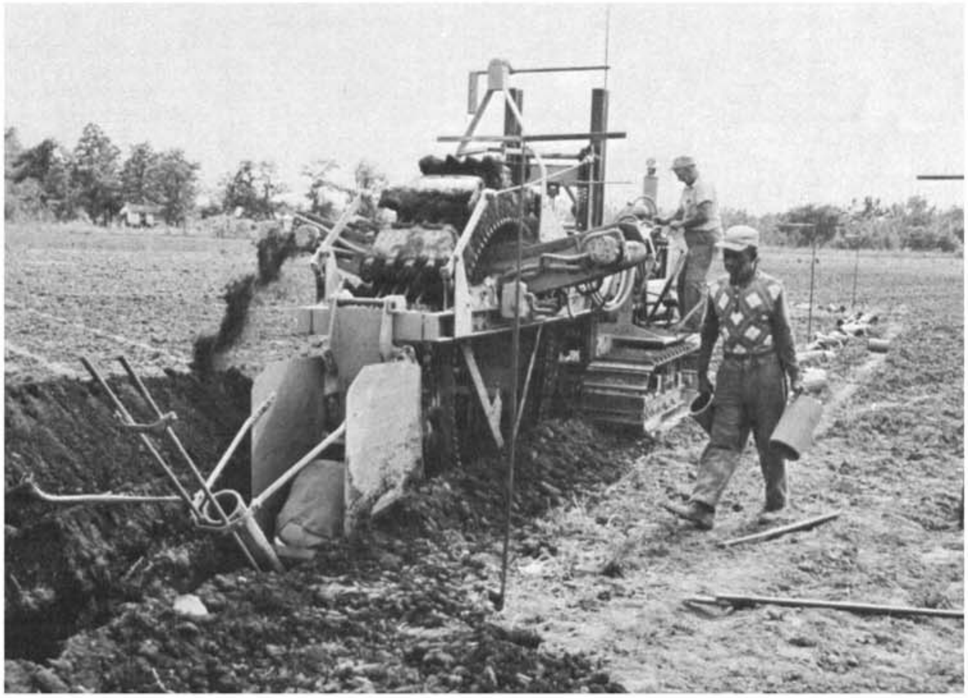


Figure 3.—Installing tile on somewhat poorly drained Lynchburg fine sandy loam. This soil is very suitable for tile drainage.

Figure 4.—Recently prepared beds for pine seedlings on Ocilla loamy fine sand.

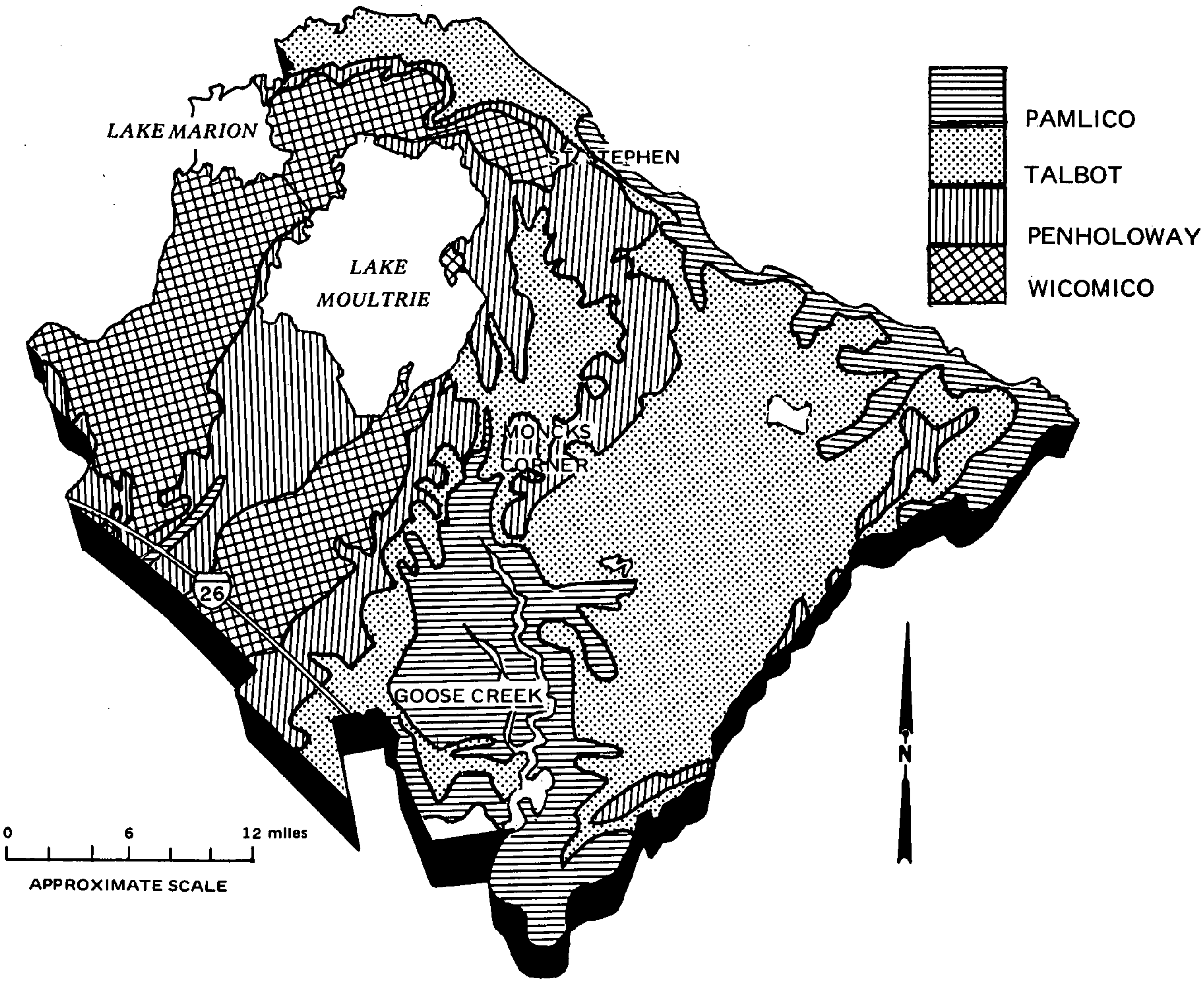


Figure 5.—Geological terraces of Berkeley County.

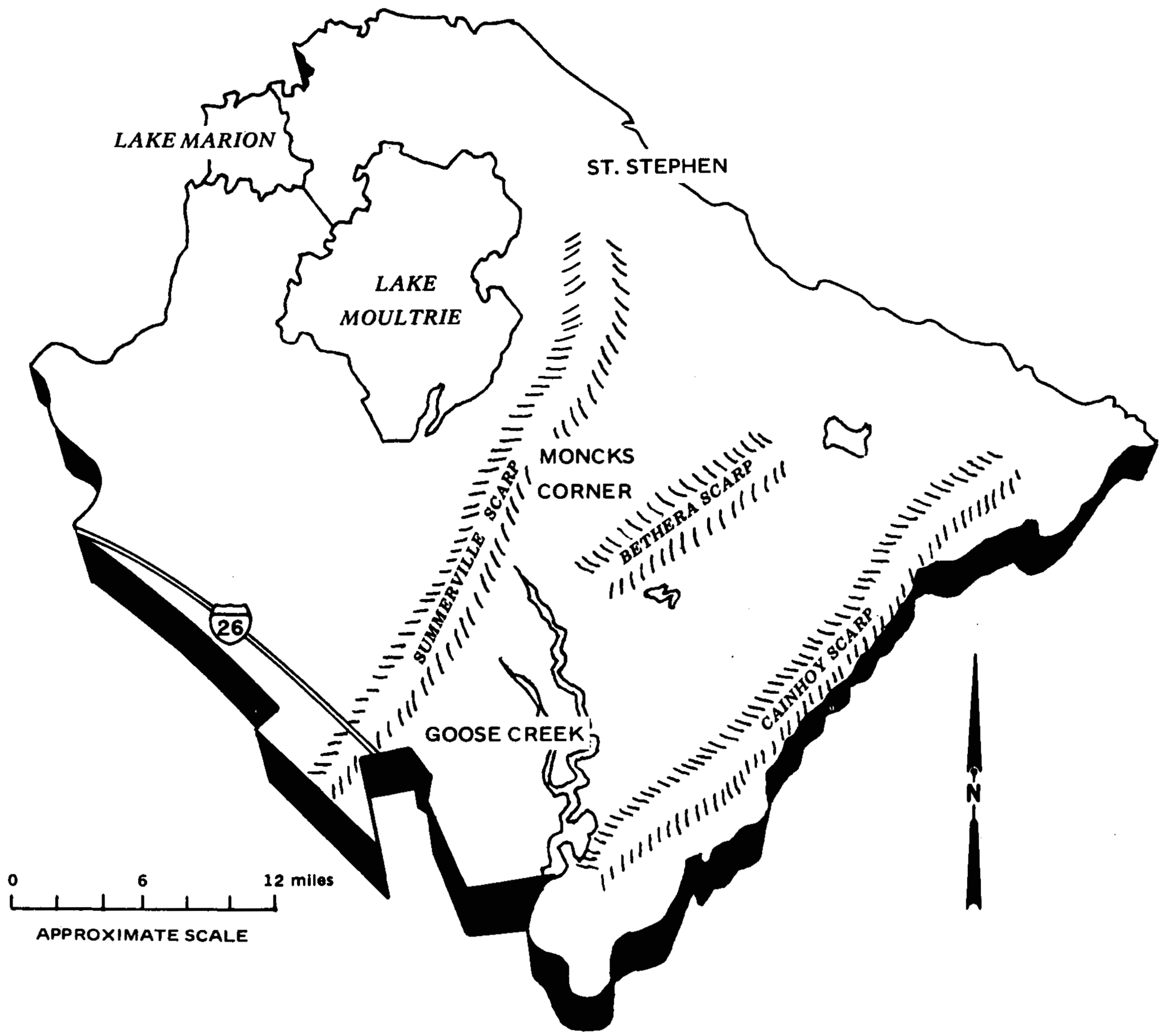


Figure 6.—Physiographic scrap relationship in Berkeley County.

Tables

TABLE 1.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AU	Aquic Udifluvents	1,600	0.2
Ba	Bayboro loam	23,100	3.3
Be	Bethera loam	42,100	6.0
BH	Bohicket association	13,500	1.9
BoA	Bonneau loamy sand, 0 to 2 percent slopes	17,000	2.4
BoB	Bonneau loamy sand, 2 to 6 percent slopes	32,000	4.5
Bp	Borrow pits	1,000	0.1
By	Byars loam	10,900	1.5
CaB	Cainhoy fine sand, 0 to 6 percent slopes	10,675	1.5
CP	Capers association	4,100	0.6
CoA	Caroline fine sandy loam, 0 to 2 percent slopes	1,205	0.2
CoB	Caroline fine sandy loam, 2 to 6 percent slopes	8,900	1.2
CS	Chastain association, frequently flooded	5,500	0.8
Ct	Chipley-Echaw complex	23,800	3.4
Cu	Coxville fine sandy loam	9,725	1.3
CvA	Craven loam, 0 to 2 percent slopes	28,700	4.1
CvB	Craven loam, 2 to 6 percent slopes	1,280	0.2
DuA	Duplin fine sandy loam, 0 to 2 percent slopes	40,700	5.8
DuB	Duplin fine sandy loam, 2 to 6 percent slopes	9,500	1.3
GoA	Goldsboro loamy sand, 0 to 2 percent slopes	69,000	9.8
Le	Lenoir fine sandy loam	20,800	3.0
Lo	Leon fine sand	2,525	0.4
LuB	Lucy loamy sand, 0 to 6 percent slopes	825	0.1
Ly	Lynchburg fine sandy loam	25,150	3.6
Mg	Meggett loam	72,000	10.2
Mp	Meggett clay loam	17,500	2.5
NoA	Norfolk loamy sand, 0 to 2 percent slopes	10,400	1.5
NoB	Norfolk loamy sand, 2 to 6 percent slopes	3,085	0.4
Oc	Ocilla loamy fine sand	16,000	2.3
Pa	Pamlico muck	4,590	0.7
Pe	Pantego fine sandy loam	25,430	3.6
Pk	Pickney loamy fine sand	14,900	2.1
Ra	Rains fine sandy loam	31,200	4.4
Sa	Santee loam	3,350	0.5
Se	Seagate loamy sand	1,900	0.3
TA	Tawcaw association, frequently flooded	37,700	5.4
UD	Udorthents	1,085	0.2
Wa	Wahee loam	47,000	6.7
Wt	Witherbee fine sand	6,500	0.9
	Water[1]	7,775	1.1
	Total	704,000	100.0

[1]Excludes Lake Moultrie and Lake Marion.

TABLE 2.--YIELDS PER ACRE OF CROPS AND PASTURE

[All yields were estimated for a high level of management in 1974. Absence of a yield figure indicates the crop is seldom grown or is not suited]

Soil name and map symbol	Corn	Soybeans	Improved bermudagrass	Bahiagrass
	Bu	Bu	AUM[1]	AUM[1]
Aquic Udifluvents:				
AU	100	40	---	10.0
Bayboro:				
Ba	110	40	---	10.0
Bethera:				
Be	105	35	---	10.0
Bohicket:				
[2]BH	---	---	---	---
Bonneau:				
BoA, BoB	85	30	8.5	8.0
Borrow pits:				
Bp.				
Byars:				
By	110	40	---	10.0
Cainhoy:				
CaB	55	20	6.5	5.0
Capers:				
[2]CP	---	---	---	---
Caroline:				
CoA	100	35	8.5	8.5
CoB	95	30	8.0	7.5
Chastain:				
[2]CS	---	---	---	---
Chipley:				
[2]Ct	70	30	7.5	7.5
Coxville:				
Cu	105	35	---	10.0
Craven:				
CvA	105	40	---	8.5
CvB	95	35	---	8.5
Duplin:				
DuA	110	45	---	8.5
DuB	100	40	---	8.5
Goldsboro:				
GoA	120	45	11.5	11.5
Lenoir:				
Le	90	40	---	8.0
Leon:				
Lo	50	20	---	7.5
Lucy:				
LuB	80	30	8.5	8.5
Lynchburg:				
Ly	115	45	---	10.0
Meggett:				
Mg	105	35	---	10.0
Mp	---	---	---	---

See footnotes at end of table.

TABLE 2.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Soybeans	Improved bermudagrass	Bahiagrass
	Bu	Bu	AUM[1]	AUM[1]
Norfolk:				
NoA	110	40	11.0	10.5
NoB	100	35	11.0	10.0
Ocilla:				
Oc	85	35	8.5	7.5
Pamlico:				
Pa	---	---	---	---
Pantego:				
Pe	110	40	---	10.0
Pickney:				
Pk	---	---	---	8.0
Rains:				
Ra	110	40	---	10.0
Sa	110	40	---	10.0
Seagate:				
Se	75	30	---	8.0
Tawcaw:				
[2]TA	---	---	---	---
Udorthents:				
UD	---	---	---	---
Wahee:				
Wa	90	40	---	8.0
Witherbee:				
Wt	70	25	10.0	10.0

[1]Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for a period of 30 days.

[2]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 3.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed in this table. Absence of an entry in a column means the information was not available]

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Potential productivity: Important trees	Potential productivity: Site index	Trees to plant
Aquic Udifluvents:							
AU	2w8	Slight	Moderate	Moderate	---	---	Loblolly pine, sweetgum, American sycamore.
Bayboro:							
Ba	2w9	Slight	Severe	Severe	Loblolly pine	95	Slash pine, loblolly pine, sweetgum, water tupelo.
					Sweetgum	94	
					Slash pine	95	
					Yellow-poplar	---	
					Southern red oak	---	
					White oak	---	
Bethera:							
Be	2w9	Slight	Severe	Severe	Loblolly pine	92	Loblolly pine, slash pine, sweetgum, American sycamore.
					Slash pine	90	
					Longleaf pine	71	
Bonneau:							
BoA, BoB	2s2	Slight	Moderate	Moderate	Loblolly pine	95	Loblolly pine, longleaf pine.
					Longleaf pine	75	
Byars:							
By	2w9	Slight	Severe	Severe	Loblolly pine	95	Loblolly pine, slash pine, water tupelo, American sycamore.
					Sweetgum	90	
					Water tupelo	90	
					Slash pine	92	
					Water oak	90	
Cainhoy:							
CaB	3s2	Slight	Moderate	Moderate	Longleaf pine	70	Longleaf pine.
					Loblolly pine	76	
Caroline:							
CoA, CoB	2o1	Slight	Moderate	Moderate	Virginia pine	90	Loblolly pine, slash pine.
					Loblolly pine	90	
					White oak	---	
					Red oak	---	
Chastain:							
[1]CS	2w9	Slight	Severe	Severe	Sweetgum	94	Loblolly pine, American sycamore, sweetgum, cherrybark oak.
					Water oak	89	
					Eastern cottonwood	90	
					Green ash	88	
					Loblolly pine	90	
					Water tupelo	---	
					White oak	---	
					Southern red oak	---	
					Baldcypress	---	
Chipley:							
[1]Ct:							
Chipley part	2s2	Slight	Moderate	Slight	Slash pine	90	Slash pine, loblolly pine.
					Loblolly pine	90	
					Longleaf pine	80	
Echaw part	3w2	Slight	Moderate	Slight	Longleaf pine	68	Longleaf pine, loblolly pine, slash pine, shortleaf pine.
					Loblolly pine	85	
					Slash pine	80	

See footnote at end of table.

TABLE 3.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Potential productivity: Important trees	Potential productivity: Site index	Trees to plant
Coxville:							
Cu	2w9	Slight	Severe	Severe	Loblolly pine	90	Loblolly pine, slash pine, sweetgum, American sycamore.
					Slash pine	90	
					Longleaf pine	71	
					Sweetgum	90	
					Water oak	90	
					Willow oak	---	
					Water tupelo	---	
Craven:							
CvA, CvB	3w2	Slight	Moderate	Slight	Loblolly pine	81	Loblolly pine, slash pine.
					Longleaf pine	67	
					Water oak	80	
Duplin:							
DuA, DuB	2w8	Slight	Moderate	Moderate	Loblolly pine	90	Loblolly pine, slash pine, yellow-poplar, american sycamore, sweetgum.
					Slash pine	90	
					Sweetgum	90	
					Blackgum	---	
					Southern red oak	---	
					White oak	---	
					Yellow-poplar	100	
Goldsboro:							
GoA	2w8	Slight	Moderate	Slight	Loblolly pine	90	Loblolly pine, slash pine, yellow-poplar, American sycamore, sweetgum.
					Slash pine	93	
					Longleaf pine	77	
					Sweetgum	90	
					Southern red oak	---	
					White oak	---	
Lenoir:							
Le	2w8	Slight	Moderate	Moderate	Loblolly pine	90	Loblolly pine, slash pine, longleaf pine, sweetgum, American sycamore.
					Slash pine	90	
					Sweetgum	90	
					Longleaf pine	70	
					Southern red oak	---	
					White oak	---	
Leon:							
Lo	4w2	Slight	Moderate	Moderate	Loblolly pine	75	Loblolly pine, slash pine.
					Slash pine	75	
					Longleaf pine	70	
Lucy:							
LuB	3s2	Slight	Moderate	Moderate	Slash pine	80	Slash pine, longleaf pine, loblolly pine.
					Longleaf pine	70	
					Loblolly pine	80	
Lynchburg:							
Ly	2w8	Slight	Moderate	Slight	Slash pine	91	Slash pine, loblolly pine, American sycamore, sweetgum.
					Loblolly pine	86	
					Longleaf pine	74	
					Yellow-poplar	92	
					Sweetgum	90	
					Southern red oak	---	
					White oak	---	
					Blackgum	---	
Meggett:							
Mg, Mp	1w9	Slight	Severe	Severe	Slash pine	100	Slash pine, loblolly pine.
					Loblolly pine	104	
					Pond pine	75	
Norfolk:							
NoA, NoB	2o1	Slight	Slight	Slight	Loblolly pine	86	Slash pine, loblolly pine.
					Longleaf pine	68	
					Slash pine	86	
Ocilla:							
Oc	3w2	Slight	Moderate	Moderate	Loblolly pine	79	Loblolly pine, slash pine.
					Slash pine	80	
					Longleaf pine	75	

See footnote at end of table.

TABLE 3.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Important trees	Site index	
Pamlico:							
Pa	4w3	Slight	Severe	Severe	Slash pine	70	Slash pine, loblolly pine, water tupelo.
					Pond pine	55	
					Baldcypress	---	
					Water tupelo	---	
Pantego:							
Pe	1w9	Slight	Severe	Severe	Loblolly pine	98	Loblolly pine, slash pine, sweetgum, American sycamore, water tupelo.
					Slash pine	95	
					Pond pine	73	
					Baldcypress	---	
					Water tupelo	---	
					Water oak	---	
Pickney:							
Pk	1w9	Slight	Severe	Severe	Baldcypress	---	Baldcypress, water tupelo, sweetgum, loblolly pine, longleaf pine, yellow-poplar.
					Water tupelo	---	
					Sweetgum	---	
					Water oak	---	
					Water tupelo	---	
					Loblolly pine	100	
					Longleaf pine	70	
					Pond pine	---	
					Yellow-poplar	---	
Rains:							
Ra	2w9	Slight	Severe	Severe	Loblolly pine	94	Loblolly pine, slash pine, sweetgum, American sycamore.
					Slash pine	91	
					Sweetgum	90	
Santee:							
Sa	1w9	Slight	Severe	Severe	Loblolly pine	105	Loblolly pine, sweetgum, water tupelo, American sycamore.
					Sweetgum	100	
					Water tupelo	80	
					Willow oak	90	
Seagate:							
Se	3w2	Slight	Moderate	Moderate	Slash pine	80	Slash pine, loblolly pine.
					Loblolly pine	80	
					Longleaf pine	70	
Tawcaw:							
[1]TA	1w8	Slight	Moderate	Moderate	Loblolly pine	100	Loblolly pine, eastern cottonwood, American sycamore, sweetgum, water oak, cherrybark oak.
					Sweetgum	100	
					Water oak	90	
					Water tupelo	---	
Udorthents:							
UD	4r8	Moderate	Moderate	Moderate	-------------------	---	Loblolly pine, sweetgum, American sycamore, eastern redcedar.
Wahee:							
Wa	2w8	Slight	Moderate	Moderate	Loblolly pine	90	Loblolly pine, slash pine, sweetgum, American sycamore, water oak.
					Slash pine	90	
					Sweetgum	90	
Witherbee:							
Wt	2w8	Slight	Moderate	Slight	Longleaf pine	72	Loblolly pine, longleaf pine, slash pine, shortleaf pine.
					Loblolly pine	90	
					Slash pine	90	

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 4.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates the soil was not rated]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Aquic Udifluvents: AU	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Bayboro: Ba	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Bethera: Be	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
Bohicket: [1]BH	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Bonneau: BoA, BoB	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Borrow pits: Bp.										
Byars: By	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
Cainhoy: CaB	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Capers: [1]CP	---	---	---	---	---	Good	Good	---	---	Good.
Caroline: CoA, CoB	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Chastain: [1]CS	Very poor.	Poor	Poor	Fair	Poor	Good	Good	Poor	Fair	Good.
Chipley: [1]Ct: Chipley part	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Echaw part	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Coxville: Cu	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
Craven: CvA	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CvB	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Duplin: DuA	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
DuB	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Goldsboro: GoA	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Lenoir: Le	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Leon: Lo	Very poor.	Poor	Poor	Poor	Fair	Fair	Fair	Fair	Fair	Fair.

See footnote at end of table.

TABLE 4.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Lucy: LuB	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Lynchburg: Ly	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Meggett: Mg, Mp	Fair	Fair	Fair	Good	Fair	Good	Good	Fair	Good	Good.
Norfolk: NoA, NoB	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ocilla: Oc	Fair	Fair	Good	Fair	Good	Fair	Fair	Fair	Good	Fair.
Pamlico: Pa	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Pantego: Pe	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
Pickney: Pk	Poor	Poor	Poor	Fair	Fair	Good	Good	Poor	Fair	Good.
Rains: Ra	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
Santee: Sa	Fair	Fair	Good	Good	Good	Good	Good	Fair	Good	Good.
Seagate: Se	Poor	Poor	Fair	Poor	Poor	Poor	Poor	Poor	Poor	Poor.
Tawcaw: [1]TA	Very poor.	Poor	Poor	Good	Fair	Fair	Fair	Poor	Fair	Fair.
Udorthents: UD	Very poor.	Poor	Fair	Fair	Poor	Very poor.	Very poor.	Poor	Fair	Very poor.
Wahee: Wa	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Witherbee: Wt	Poor	Fair	Fair	Fair	Fair	Fair	Very poor.	Fair	Fair	Poor.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 5.--BUILDING SITE DEVELOPMENT

["Shrink-swell" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry means soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets
Aquic Udifluvents:				
AU	Severe: too clayey, wetness.	Severe: low strength, wetness.	Severe: low strength, wetness.	Severe: low strength, wetness.
Bayboro:				
Ba	Severe: wetness, floods, too clayey.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.
Bethera:				
Be	Severe: floods, too clayey, wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.
Bohicket:				
[1]BH	Severe: floods, too clayey, wetness.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.
Bonneau:				
BoA	Moderate: wetness.	Slight	Slight	Slight.
BoB	Moderate: wetness.	Slight	Moderate: slope.	Slight.
Borrow pits:				
Bp.				
Byars:				
By	Severe: wetness, floods, too clayey.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.
Cainhoy:				
CaB	Severe: cutbanks cave.	Slight	Slight	Slight.
Capers:				
[1]CP	Severe: floods, wetness.	Severe: floods, low strength.	Severe: floods, low strength.	Severe: floods, low strength.
Caroline:				
CoA, CoB	Severe: too clayey.	Severe: low strength.	Severe: low strength.	Severe: low strength.
Chastain:				
[1]CS	Severe: floods, wetness, too clayey.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.
Chipley:				
[1]Ct:				
Chipley part	Severe: cutbanks cave.	Slight	Moderate: wetness.	Moderate: wetness.
Echaw part	Moderate: cutbanks cave, wetness.	Slight	Moderate: wetness.	Moderate: wetness.
Coxville:				
Cu	Severe: wetness, too clayey, floods.	Severe: wetness, low strength, floods.	Severe: wetness, low strength, floods.	Severe: wetness, low strength, floods.

See footnote at end of table.

TABLE 5.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets
Craven:				
CvA, CvB	Severe: too clayey.	Severe: low strength.	Severe: low strength.	Severe: low strength.
Duplin:				
DuA	Moderate: too clayey, wetness.	Moderate: shrink-swell, wetness.	Moderate: wetness, shrink-swell.	Severe: low strength.
DuB	Moderate: too clayey, wetness.	Moderate: shrink-swell, wetness.	Moderate: slope, shrink-swell.	Severe: low strength.
Goldsboro:				
GoA	Moderate: wetness.	Slight	Moderate: wetness.	Slight.
Lenoir:				
Le	Severe: wetness, too clayey.	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: low strength.
Leon:				
Lo	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Lucy:				
LuB	Slight	Slight	Slight	Slight.
Lynchburg:				
Ly	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.
Meggett:				
Mg	Severe: too clayey, floods, wetness.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.
Mp	Severe: too clayey, floods, wetness.	Severe: shrink-swell, floods, wetness.	Severe: shrink-swell, floods, wetness.	Severe: shrink-swell, floods, wetness.
Norfolk:				
NoA	Slight	Slight	Slight	Slight.
NoB	Slight	Slight	Moderate: slope.	Slight.
Ocilla:				
Oc	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.
Pamlico:				
Pa	Severe: floods, wetness.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.
Pantego:				
Pe	Severe: wetness.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
Pickney:				
Pk	Severe: cutbanks cave, floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.

See footnote at end of table.

TABLE 5.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets
Rains:				
Ra	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: floods, wetness.
Santee:				
Sa	Severe: too clayey, floods, wetness.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.
Seagate:				
Se	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.
Tawcaw:				
[1]TA	Severe: floods, wetness, too clayey.	Severe: floods, low strength.	Severe: floods, wetness, low strength.	Severe: floods, low strength.
Udorthents:				
UD	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Wahee:				
Wa	Severe: wetness, too clayey.	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: low strength.
Witherbee:				
Wt	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 6.--SANITARY FACILITIES

["Percs slowly" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms used to rate soils. Absence of an entry means soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Aquic Udifluvents:					
AU	Severe: percs slowly, wetness.	Slight	Severe: too clayey, wetness.	Severe: wetness.	Poor: too clayey, wetness.
Bayboro:					
Ba	Severe: wetness, floods, percs slowly.	Slight	Severe: wetness, floods, too clayey.	Severe: wetness, floods.	Poor: wetness, too clayey.
Bethera:					
Be	Severe: floods, wetness, percs slowly.	Slight	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey, wetness.
Bohicket:					
[1]BH	Severe: floods, percs slowly, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: too clayey, wetness.
Bonneau:					
BoA, BoB	Moderate: wetness.	Severe: seepage.	Severe: wetness, seepage.	Slight	Fair: too sandy.
Borrow pits:					
Bp.					
Byars:					
By	Severe: wetness, floods, percs slowly.	Slight	Severe: wetness, floods,	Severe: wetness, floods.	Poor: wetness, too clayey.
Cainhoy:					
CaB	Slight[2]	Severe: seepage.	Severe: too sandy, seepage.	Severe: seepage.	Poor: seepage, too sandy.
Capers:					
[1]CP	Severe: wetness, floods, perc slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: too clayey, wetness.
Caroline:					
CoA	Severe: percs slowly.	Slight	Severe: too clayey.	Slight	Poor: too clayey.
CoB	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey.
Chastain:					
[1]CS	Severe: floods, wetness, percs slowly.	Severe: floods.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey, wetness.
Chipley:					
[1]Ct:					
Chipley part	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage.	Poor: too sandy, seepage.
Echaw part	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, too sandy, wetness.	Severe: seepage, wetness.	Fair: too sandy, seepage.
Coxville:					
Cu	Severe: wetness, percs slowly, floods.	Slight	Severe: wetness, floods, too clayey.	Severe: wetness, floods.	Poor: wetness, too clayey.

See footnotes at end of table.

TABLE 6.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Craven:					
CvA, CvB	Severe: percs slowly, wetness.	Slight	Severe: wetness.	Severe: wetness.	Poor: too clayey.
Duplin:					
DuA, DuB	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Fair: too clayey.
Goldsboro:					
GoA	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
Lenoir:					
Le	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: too clayey.
Leon:					
Lo	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy, wetness.
Lucy:					
LuB	Slight	Severe: seepage.	Slight	Slight	Fair: too sandy.
Lynchburg:					
Ly	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
Meggett:					
Mg	Severe: percs slowly, wetness, floods.	Slight	Severe: too clayey, floods, wetness.	Severe: floods, wetness.	Poor: too clayey, wetness.
Mp	Severe: percs slowly, wetness, floods.	Slight	Severe: too clayey, floods, wetness.	Severe: floods, wetness.	Poor: too clayey, wetness.
Norfolk:					
NoA	Slight	Moderate: seepage.	Slight	Slight	Good.
NoB	Slight	Moderate: slope, seepage.	Slight	Slight	Good.
Ocilla:					
Oc	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
Pamlico:					
Pa	Severe: wetness, floods.	Severe: wetness, floods, excess humus.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness, excess humus, hard to pack.
Pantego:					
Pe	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Pickney:					
Pk	Severe: floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Poor: seepage, too sandy, wetness.

See footnotes at end of table.

TABLE 6.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Rains:					
Ra	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Santee:					
Sa	Severe: percs slowly, floods, wetness.	Slight	Severe: too clayey, floods, wetness.	Severe: floods, wetness.	Poor: too clayey, wetness.
Seagate:					
Se	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: thin layer, seepage.
Tawcaw:					
[1]TA	Severe: floods, wetness, percs slowly.	Severe: floods.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey.
Udorthents:					
UD	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Wahee:					
Wa	Severe: wetness, floods, percs slowly.	Slight	Severe: wetness, floods.	Severe: wetness, floods.	Poor: too clayey.
Witherbee:					
Wt	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, too sandy.	Severe: seepage, wetness.	Poor: too sandy, seepage.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

[2]Excessive permeability rate may cause pollution of ground water.

TABLE 7.--CONSTRUCTION MATERIALS

["Shrink-swell" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," and "unsuited." Absence of an entry means soil was not rated]

Soil name and map symbol	Roadfill	Sand	Topsoil
Aquic Udifluvents:			
AU	Poor: low strength, wetness.	Unsuited	Poor: too clayey, wetness.
Bayboro:			
Ba	Poor: wetness, low strength.	Unsuited	Poor: wetness.
Bethera:			
Be	Poor: wetness, low strength.	Unsuited	Poor: wetness.
Bohicket:			
[1]BH	Poor: shrink-swell, low strength, wetness.	Unsuited	Poor: wetness, too clayey.
Bonneau:			
BoA, BoB	Good	Poor: excess fines.	Poor: too sandy.
Borrow pits:			
Bp.			
Byars:			
By	Poor: wetness, low strength.	Unsuited	Poor: wetness.
Cainhoy:			
CaB	Good	Fair: excess fines.	Poor: too sandy.
Capers:			
[1]CP	Poor: low strength, shrink-swell, wetness.	Unsuited	Poor: too clayey, wetness.
Caroline:			
CoA, CoB	Poor: low strength.	Unsuited	Fair: thin layer.
Chastain:			
[1]CS	Poor: wetness, low strength.	Unsuited	Poor: wetness, too clayey.
Chipley:			
[1]Ct:			
Chipley part	Good	Fair: excess fines.	Poor: too sandy.
Echaw part	Fair: wetness.	Good	Poor: too sandy.
Coxville:			
Cu	Poor: wetness, low strength.	Unsuited	Poor: wetness, too clayey.
Craven:			
CvA, CvB	Poor: low strength.	Unsuited	Fair: thin layer.

See footnote at end of table.

TABLE 7.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Topsoil
Duplin: DuA, DuB	Poor: low strength.	Unsuited	Fair: thin layer.
Goldsboro: GoA	Good	Unsuited	Good.
Lenoir: Le	Poor: low strength.	Unsuited	Fair: thin layer.
Leon: Lo	Poor: wetness.	Fair: excess fines.	Poor: too sandy.
Lucy: LuB	Good	Poor: excess fines.	Poor: too sandy.
Lynchburg: Ly	Fair: wetness.	Unsuited	Good.
Meggett: Mg, Mp	Poor: shrink-swell, wetness.	Unsuited	Poor: thin layer, wetness.
Norfolk: NoA, NoB	Good	Unsuited	Good.
Ocilla: Oc	Fair: wetness.	Poor: excess fines.	Poor: too sandy.
Pamlico: Pa	Poor: wetness, excess humus.	Poor: excess humus.	Poor: wetness.
Pantego: Pe	Poor: wetness.	Poor: excess fines.	Poor: wetness.
Pickney: Pk	Poor: wetness.	Fair: excess fines.	Poor: too sandy, wetness.
Rains: Ra	Poor: wetness.	Unsuited	Poor: wetness.
Santee: Sa	Poor: wetness, low strength.	Unsuited	Poor: too clayey, wetness.
Seagate: Se	Fair: wetness.	Unsuited	Poor: too sandy.
Tawcaw: [1]TA	Poor: low strength.	Unsuited	Poor: too clayey.

See footnote at end of table.

TABLE 7.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Topsoil
Udorthents:			
UD	Poor: slope.	Unsuited	Poor: slope, large stones.
Wahee:			
Wa	Poor: low strength.	Unsuited	Poor: thin layer, area reclaim.
Witherbee:			
Wt	Fair: wetness.	Fair: excess fines.	Poor: too sandy.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 8.--WATER MANAGEMENT

["Seepage" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry means soil was not evaluated]

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation
Aquic Udifluvents: AU	Slight	Severe: low strength.	Slight	Percs slowly, wetness.	Wetness, percs slowly.
Bayboro: Ba	Slight	Moderate: shrink-swell, compressible.	Slight	Percs slowly, floods, wetness.	Wetness, percs slowly, floods.
Bethera: Be	Slight	Moderate: low strength, shrink-swell.	Slight	Percs slowly, wetness, floods.	Percs slowly, wetness, floods.
Bohicket: [1]BH	Slight	Severe: low strength, compressible, shrink-swell.	Severe	Floods, percs slowly, wetness.	Not needed.
Bonneau: BoA, BoB	Moderate: seepage.	Moderate: seepage, piping.	Moderate: deep to water.	Not needed	Fast intake, seepage.
Borrow pits: Bp.					
Byars: By	Slight	Moderate: compressible, shrink-swell.	Slight	Wetness, percs slowly, poor outlets.	Wetness, percs slowly, floods.
Cainhoy: CaB	Severe: seepage.	Severe: seepage, piping, unstable fill.	Severe: deep to water.	Not needed	Fast intake, seepage.
Capers: [1]CP	Severe: excess humus.	Severe: low strength, shrink-swell.	Severe: slow refill.	Floods, percs slowly.	Floods, percs slowly.
Chastain: [1]CS	Slight	Moderate: compressible, low strength.	Slight	Floods, wetness, percs slowly.	Floods, wetness, percs slowly.
Chipley: [1]Ct: Chipley part	Severe: seepage.	Severe: seepage, piping, unstable fill.	Moderate: deep to water.	Cutbanks cave	Fast intake, slope.
Echaw part	Severe: seepage.	Severe: seepage, unstable fill, piping.	Severe: deep to water.	Cutbanks cave	Seepage, fast intake.
Coxville: Cu	Slight	Moderate: low strength, shrink-swell.	Slight	Wetness, percs slowly. floods.	Wetness, percs slowly.

See footnote at end of table.

TABLE 8.—WATER MANAGEMENT—Continued

Soil name and map symbol	Limitations for— Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting— Drainage	Irrigation
Craven:					
CvA, CvB	Slight	Moderate: piping.	Severe: deep to water, slow refill.	Percs slowly	Erodes easily, percs slowly.
Duplin:					
DuA	Slight	Moderate: compressible.	Moderate: deep to water, slow refill.	Percs slowly	Wetness, percs slowly.
DuB	Slight	Moderate: compressible.	Moderate: deep to water, slow refill.	Slope	Favorable.
Goldsboro:					
GoA	Moderate: seepage.	Slight	Moderate: deep to water.	Slope	Favorable.
Lenoir:					
Le	Slight	Moderate: compressible.	Moderate: slow refill.	Percs slowly	Wetness, slow intake, percs slowly.
Leon:					
Lo	Severe: seepage.	Severe: seepage, piping, erodes easily.	Moderate: deep to water.	Cutbanks cave, wetness.	Wetness.
Lucy:					
LuB	Severe: seepage.	Severe: seepage, piping, erodes easily.	Severe: deep to water.	Not needed	Erodes easily, fast intake, seepage.
Lynchburg:					
Ly	Moderate: seepage.	Moderate: piping.	Moderate: deep to water.	Favorable	Wetness.
Meggett:					
Mg	Slight	Moderate: shrink-swell, thin layer.	Slight	Percs slowly, wetness, floods.	Percs slowly, wetness.
Mp	Slight	Moderate: shrink-swell, thin layer.	Moderate: slow refill.	Percs slowly, wetness, floods.	Percs slowly, wetness.
Norfolk:					
NoA, NoB	Moderate: seepage.	Slight	Severe: deep to water.	Not needed	Favorable.
Ocilla:					
Oc	Moderate: seepage.	Moderate: seepage.	Moderate: slow refill.	Favorable	Fast intake.
Pamlico:					
Pa	Severe: seepage.	Severe: piping.	Slight	Floods, poor outlets.	Wetness, floods.
Pantego:					
Pe	Moderate: seepage.	Slight	Slight	Poor outlets	Wetness.
Pickney:					
Pk	Severe: seepage.	Severe: seepage, piping, unstable fill.	Slight	Cutbanks cave, floods, poor outlets.	Seepage, floods, wetness.

See footnote at end of table.

TABLE 8.—WATER MANAGEMENT—Continued

Soil name and map symbol	Limitations for— Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting— Drainage	Irrigation
Rains:					
Ra	Moderate: seepage.	Slight	Moderate: deep to water.	Wetness, floods.	Wetness, floods.
Santee:					
Sa	Slight	Moderate: compressible, low strength.	Slight	Percs slowly, floods, wetness.	Percs slowly, floods, wetness.
Seagate:					
Se	Severe: seepage.	Moderate: piping.	Slight	Wetness	Favorable.
Tawcaw:					
[1]TA	Slight	Moderate: compressible, low strength.	Severe: deep to water.	Floods, wetness, percs slowly.	Floods, wetness, percs slowly.
Udorthents:					
UD	Severe: slope.	Moderate: large stones.	Severe: no water.	Not needed	Slope.
Wahee:					
Wa	Slight	Moderate: compressible.	Moderate: slow refill.	Percs slowly, wetness,	Percs slowly, wetness, slow intake.
Witherbee:					
Wt	Severe: seepage.	Severe: seepage, piping, unstable fill.	Moderate: deep to water.	Cutbanks cave, wetness.	Seepage, wetness, fast intake.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 9.--RECREATIONAL DEVELOPMENT

["Shrink-swell" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe"]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Aquic Udifluvents:				
AU	Severe: percs slowly, too clayey, wetness.	Severe: too clayey, wetness.	Severe: percs slowly, too clayey, wetness.	Severe: too clayey, wetness.
Bayboro:				
Ba	Severe: wetness, floods, percs slowly.	Severe: wetness, floods.	Severe: wetness, floods, percs slowly.	Severe: wetness, floods.
Bethera:				
Be	Severe: floods, percs slowly, wetness.	Severe: floods, wetness.	Severe: floods, percs slowly, wetness.	Severe: floods, wetness.
Bohicket:				
[1]BH	Severe: floods, too clayey, wetness.	Severe: floods, too clayey, wetness.	Severe: floods, too clayey, wetness.	Severe: floods, too clayey, wetness.
Bonneau:				
BoA	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.
BoB	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy, slope.	Moderate: too sandy.
Borrow pits:				
Bp.				
Byars:				
By	Severe: wetness, floods, percs slowly.	Severe: wetness, floods.	Severe: wetness, floods, percs slowly.	Severe: wetness, floods.
Cainhoy:				
CaB	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.
Capers:				
[1]CP	Severe: floods, too clayey.	Severe: floods, too clayey.	Severe: floods, too clayey.	Severe: floods, too clayey.
Caroline:				
CoA	Moderate: percs slowly.	Slight.	Moderate: percs slowly.	Slight.
CoB	Moderate: percs slowly.	Slight.	Moderate: percs slowly, slope.	Slight.
Chastain:				
[1]CS	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.
Chipley:				
[1]Ct:				
Chipley part	Severe: too sandy.	Severe: too sandy.	Severe: too sandy, soil blowing.	Severe: too sandy.
Echaw part	Moderate: too sandy, wetness.	Moderate: too sandy.	Moderate: too sandy, wetness.	Moderate: too sandy.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Coxville:				
Cu	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, percs slowly.	Severe: wetness.
Craven:				
CvA	Moderate: percs slowly.	Slight	Moderate: percs slowly, wetness.	Slight.
CvB	Moderate: percs slowly.	Slight	Moderate: percs slowly, slope.	Slight.
Duplin:				
DuA	Moderate: percs slowly.	Slight	Moderate: wetness, percs slowly.	Slight.
DuB	Moderate: percs slowly.	Slight	Moderate: slope, percs slowly.	Slight.
Goldsboro:				
GoA	Slight	Slight	Moderate: wetness.	Slight.
Lenoir:				
Le	Severe: wetness, percs slowly.	Moderate: wetness.	Severe: wetness, percs slowly.	Moderate: wetness.
Leon:				
Lo	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Lucy:				
LuB	Moderate: too sandy.	Moderate: too sandy.	Severe: too sandy.	Moderate: too sandy.
Lynchburg:				
Ly	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.
Meggett:				
Mg	Severe: wetness, percs slowly, floods.	Severe: wetness, floods.	Severe: wetness, percs slowly, floods.	Severe: wetness, floods
Mp	Severe: wetness, percs slowly, floods.	Severe: wetness, floods.	Severe: wetness, percs slowly, floods.	Severe: wetness, floods.
Norfolk:				
NoA	Slight	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.
NoB	Slight	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.
Ocilla:				
Oc	Moderate: wetness, too sandy.	Moderate: wetness.	Moderate: wetness, too sandy.	Moderate: wetness.
Pamlico:				
Pa	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
Pantego:				
Pe	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Pickney: Pk	Severe: floods, too sandy, wetness.	Severe: floods, too sandy, wetness.	Severe: floods, too sandy, wetness.	Severe: floods, too sandy, wetness.
Rains: Ra	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Santee: Sa	Severe: percs slowly, floods, wetness.	Severe: floods, wetness.	Severe: percs slowly, floods, wetness.	Severe: floods, wetness.
Seagate: Se	Moderate: too sandy, wetness.	Moderate: too sandy, wetness.	Severe: too sandy.	Severe: too sandy.
Tawcaw: [1]TA	Severe: floods, wetness, percs slowly.	Severe: floods.	Severe: floods, wetness, percs slowly.	Severe: floods.
Udorthents: UD	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Wahee: Wa	Severe: wetness, percs slowly.	Moderate: wetness.	Severe: wetness, percs slowly.	Moderate: wetness.
Witherbee: Wt	Severe: too sandy, wetness.	Moderate: too sandy, wetness.	Severe: too sandy, wetness.	Moderate: too sandy, wetness.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 10.--ENGINEERING TEST DATA[1]

Soil name and location	Parent material	Report No.	Depth	Horizon	Mechanical analysis[2]: Percentage passing sieve: No. 10 (2.0 mm)	No. 60 (0.25 mm)	No. 200 (0.074 mm)	Percentage smaller than: (0.005 mm)	Liquid limit	Plasticity index	Classification: AASHTO[3]	Unified[4]
Bethera loam: on South Carolina Highway 41, 1.2 miles north of intersection of South Carolina Highway 41 and Forest Service Road 251F; 100 feet north of weir and 30 feet east of highway.	Coastal plain sediments S71SC-08-2	H-87573	12-23	B21tg	100	90	65	47	47	17	A-7-5(10)	ML
		H-87574	23-37	B22tg	100	91	65	47	48	19	A-7-6(11)	ML
		H-87575	37-52	B23tg	100	91	63	48	48	18	A-7-5(10)	ML
Chastain silty clay loam: from intersection of Echaw Road (State Secondary Highway 817) and county line (Wambaw Creek), 300 yards north on Echaw Road; 100 yards east of Echaw Road.	Alluvial sediments. S71SC-08-4	H-87579	0-7	A1	100	93	88	72	72	37	A-7-5(20)	MH
		H-87580	11-19	B22g	100	94	89	71	71	37	A-7-5(20)	MH
		H-87581	31-51	B3g	100	92	89	77	77	41	A-7-5(20)	MH
Craven loam: from intersection of South Carolina Highway 41 and South Carolina Highway 402 near Huger, 3.3 miles north on Highway 41 and 100 yards east on Lottie Road; 50 feet north of road.	Coastal plain sediments S71SC-08-5	H-87582	11-18	B22t	100	97	92	80	77	40	A-7-5(20)	MH
		H-87583	28-38	B24t	100	93	73	60	61	30	A-7-5(20)	MH
		H-87584	38-55	B25tg	100	85	62	53	55	26	A-7-6(13)	MH
Goldsboro loamy sand: from intersection of South Carolina Highway 6 and U.S. Highway 17-A; 1.0 mile west on Highway 6, 1,320 feet north on State Secondary Highway 510 and 500 feet west on unmarked road; 50 feet wouth of road.	Coastal plain sediments S71SC-08-9	H-87594	14-24	B21t	100	74	37	33	35	13	A-6-(1)	SC
		H-87595	24-35	B22t	100	68	29	25	27	5	A-2-4	SM-SC
		H-87596	35-57	B23tg	100	65	28	24	25	4	A-2-4	SM-SC
Lynchburg fine sandy loam: from intersection of South Carolina Highway 402, South Carolina Highway 41 and Bob Morris Forest Service Road 174, 4.5 miles northeast on Bob Morris Road; 50 feet south on road.	Coastal plain sediments S71SC-08-8	H-87591	12-28	B21tg	100	98	47	34	33	10	A-4-(2)	SC
		H-87592	28-54	B22tg	100	98	43	33	32	8	A-4-(2)	SM
		H-87593	54-65	B3g	100	99	41	27	26	4	A-4-(1)	SM

TABLE 10.--ENGINEERING TEST DATA[1]--Continued

Soil name and location	Parent material	Report No.	Depth	Horizon	Mechanical analysis[2]: Percentage passing sieve: No. 10 (2.0 mm)	No. 60 (0.25 mm)	No. 200 (0.074 mm)	Percentage smaller than: 0.005 mm	Liquid limit	Plasticity index	Classification: AASHTO[3]	Unified[4]
Meggett loam: about 500 feet north of intersection of Strawberry Road and State Secondary Highway 402; 200 feet west of Strawberry Road.	Coastal plain sediments S71SC-08-3	H-87576	7-20	B21tg	100	74	67	48	57	26	A-7-5(15)	MH
		H-87577	20-40	B22tg	100	83	78	63	70	37	A-7-5(20)	MH
		H-87578	54-63	B24tg	100	61	56	47	57	26	A-7-5(12)	MH
Norfolk loamy sand: 0.8 mile west of J. K. Gourdin School and 900 feet south of South Carolina Highway 45 on dirt road; 300 feet west of road.	Coastal plain sediments S71SC-08-1	H-87570	9-35	B21t	100	63	44	32	38	14	A-6(3)	SC
		H-87571	35-50	B22t	100	65	45	32	37	12	A-6(3)	SM
		H-87572	60-78	B3	100	56	42	36	44	14	A-7-5(2)	SM
Pantego fine sandy loam: from intersection of South Carolina Highway 6 and U.S. Highway 17-A in town limits of Moncks Corner, 1.0 mile west on Highway 6 and 1,000 feet north on State Secondary Highway 510; 300 feet west of road.	Coastal plain sediments S71SC-08-6	H-87585	0-14	A1	100	67	29	21	-	NP	A-2-4	SM
		H-87586	20-30	B21tg	100	64	32	26	28	5	A-2-4	SM
		H-87587	48-65	B32g	100	83	65	56	58	28	A-7-5(16)	MH
Tawcaw clay loam: 3 miles west of J. K. Gourdin School on South Carolina Highway 45, 1.5 miles past Oakland Hunt Club on dirt road; near Santee River.	Alluvial sediments. S71SC-08-7	H-87588	14-23	B22	100	93	78	62	64	32	A-7-5(20)	MH
		H-87589	23-50	B23	100	91	51	33	34	11	A-6(3)	CL
		H-87590	50-70	B3	100	97	44	30	30	8	A-4(2)	SC

[1]Tests performed by South Carolina State Highway Department.

[2]Mechanical analyses according to the AASHTO Designation T 88(1). Results by this procedure frequently may differ somewhat from results that would have been obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHTO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soil.

[3]AASHTO Designation M 145-49(1).

[4]Based on the Unified soil classification system (2).

TABLE 11.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[The symbol < means less than. Absence of an entry means data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In								Pct	
Aquic Udifluvents:										
AU----------------	0-5	Silt loam, silty clay loam	MH, CH, ML, CL	A-7, A-6	100	100	100	80-100	30-60	11-30
	5-65	Clay, silty clay	CH	A-7	100	100	100	95-100	55-80	30-45
Bayboro:										
Ba----------------	0-10	Loam------------	CL, ML	A-6, A-7	100	100	85-100	60-80	30-42	11-22
	10-60	Clay loam, sandy clay, clay.	CL, CH	A-7	100	100	85-100	55-90	41-70	20-40
Bethera:										
Be----------------	0-7	Loam------------	ML, CL, CL-ML, SM-SC	A-4, A-6	100	98-100	88-97	40-76	20-40	3-20
	7-68	Clay, clay loam, sandy clay.	CL, CH, ML	A-6, A-7	100	98-100	93-100	55-95	35-55	12-30
	68-94	Clay, sandy clay, sandy clay loam.	CL, CH, MC	A-7, A-6, A-4	100	98-100	80-100	51-95	30-55	8-30
Bohicket:										
[1]BH---------------	0-16	Silty clay loam	CH	A-7	100	99-100	98-100	90-100	60-100	35-70
	16-60	Silty clay, clay	CH	A-7	100	99-100	98-100	70-95	50-100	30-70
Bonneau:										
BoA, BoB----------	0-22	Loamy sand------	SM	A-2	100	100	50-80	13-35	---	NP
	22-50	Sandy loam, sandy clay loam.	SC, SM-SC	A-2, A-6, A-4	100	100	60-90	30-50	21-37	4-14
	50-74	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SM-SC, CL-ML	A-4, A-6	100	100	60-95	36-60	20-40	4-18
Borrow pits:										
Bp.										
Byars:										
By----------------	0-16	Loam------------	ML, CL-ML	A-4	100	100	70-95	51-80	<30	NP-7
	16-64	Clay, sandy clay	CH, CL	A-7	100	100	90-100	75-95	41-75	17-42
Cainhoy:										
CaB---------------	0-81	Fine sand-------	SP-SM, SP	A-3	100	100	80-100	3-10	---	NP
Capers:										
[1]CP---------------	0-10	Loam, silty clay loam.	MH	A-7-5	100	100	80-100	70-100	50-80	15-40
	10-80	Clay, silty clay	MH, CH	A-7-5	100	100	85-100	75-100	60-80	18-40
Caroline:										
CoA, CoB----------	0-16	Fine sandy loam	SM, SM-SC	A-2, A-4	100	95-100	75-95	25-40	<30	NP-7
	16-55	Clay, sandy clay	CL, CH, ML	A-6, A-7	100	95-100	80-90	51-75	30-55	11-30
	55-82	Sandy clay loam, sandy loam.	SM-SC, SC	A-4, A-6	100	95-100	85-95	36-50	16-35	4-16
Chastain:										
[1]CS---------------	0-7	Silty clay loam	ML, CL, CL-ML, MH	A-4, A-6	100	100	90-100	70-95	41-75	15-40
	7-51	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	100	100	90-100	70-90	30-78	11-42
Chipley:										
[1]Ct:										
Chipley part-----	0-4	Fine sand-------	SP-SM	A-3, A-2-4	100	100	80-100	6-12	---	NP
	4-80	Sand, fine sand	SP-SM	A-3, A-2-4	100	100	80-100	6-12	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
Chipley:										
Echaw part-------	0-5	Loamy sand------	SM	A-2	100	100	65-80	15-35	---	NP
	5-40	Loamy sand, loamy fine sand, fine sand.	SM	A-2	100	100	50-75	15-30	---	NP
	40-50	Fine sand, loamy sand, loamy fine sand.	SM, SP-SM	A-2, A-3	100	100	50-70	5-20	---	NP
	50-65	Loamy sand, loamy fine sand, fine sand.	SM, SP-SM	A-2, A-3	100	100	50-75	5-30	---	NP
Coxville:										
Cu----------------	0-8	Fine sandy loam	SM, ML, SM-SC, CL-ML.	A-4	100	100	85-97	40-60	<40	NP-7
	8-69	Clay loam, sandy clay, clay.	CL, CH	A-6, A-7	100	100	90-98	53-80	30-55	15-35
Craven:										
CvA, CvB----------	0-7	Loam------------	ML, CL-ML	A-4	100	100	75-100	51-70	<25	NP-7
	7-55	Clay, silty clay, silty clay loam.	CH, MH	A-7	100	100	90-100	70-95	51-80	18-42
	55-78	Clay, sandy clay loam, clay loam, sandy clay.	CH, CL, SC	A-7, A-6	100	100	80-100	36-85	30-55	11-35
Duplin:										
DuA, DuB----------	0-6	Fine sandy loam	SM, ML, SM-SC	A-2, A-4	100	100	67-98	24-58	<16	NP-7
	6-80	Sandy clay, clay loam, clay.	CL, CH	A-6, A-7	100	98-100	80-100	51-82	30-54	12-30
Goldsboro:										
GoA---------------	0-14	Loamy sand------	SM, SM-SC, SC	A-2, A-4	90-100	85-100	50-95	15-45	<25	NP-8
	14-75	Sandy clay loam, sandy loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	98-100	95-100	60-95	25-55	16-35	4-16
Lenoir:										
Le----------------	0-15	Fine sandy loam	ML, CL, CL-ML	A-4	100	100	85-95	60-85	20-35	1-10
	15-80	Clay, silty clay, clay loam.	CL, CH, MH	A-6, A-7	100	100	85-95	55-95	30-75	11-42
Leon:										
Lo----------------	0-15	Fine sand	SP, SP-SM	A-3, A-2	100	100	80-100	2-12	---	NP
	15-33	Sand, fine sand	SM, SP-SM	A-3, A-2	100	100	80-100	5-20	---	NP
	33-58	Loamy sand,	SM	A-2	100	100	80-100	13-35	---	NP
Lucy:										
LuB---------------	0-25	Loamy sand------	SM, SP-SM	A-2	100	95-100	50-80	10-30	---	NP
	25-37	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	100	95-100	55-85	15-50	<30	NP-15
	37-60	Sandy loam, sandy clay loam	SC, SM-SC	A-2, A-6, A-4	100	95-100	60-95	20-50	20-40	5-20
Lynchburg:										
Ly----------------	0-12	Fine sandy loam	SM, SM-SC	A-2, A-4,	100	100	70-100	25-50	<30	NP-7
	12-65	Sandy clay loam, sandy loam, clay loam.	SM-SC, SC, CL, CL-ML, SM	A-2, A-4, A-6	100	100	70-100	25-65	15-40	4-18

See footnote at end of table.

TABLE 11.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
Meggett:										
Mg	0-7	Loam	CL, CL-ML	A-4	100	100	90-100	51-65	<30	4-10
	7-63	Sandy clay, clay, clay loam.	CH, SC, CL, MH	A-7	100	100	90-100	45-80	45-70	25-45
Mp	0-4	Clay loam	CL, CH, MH	A-4, A-6, A-7	100	100	90-100	51-75	25-58	7-32
	4-63	Sandy clay, clay clay loam.	CH, SC, CL, MH	A-7	100	100	90-100	45-80	45-70	25-45
Norfolk:										
NoA, NoB	0-6	Loamy sand	SM, SM-SC,	A-2	95-100	95-100	50-91	15-33	<25	[1]NP-7
	6-78	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML, SM	A-2, A-4, A-6, A-7	95-100	91-100	70-96	30-55	20-45	4-20
Ocilla:										
Oc	0-25	Loamy fine sand	SM, SP-SM	A-2, A-3	100	95-100	75-100	8-35	---	NP
	25-72	Sandy loam, sandy clay loam.	SM, CL, SC	A-2, A-4, A-6	100	95-100	80-100	30-55	<40	NP-18
Pamlico:										
Pa	0-28	Muck	Pt	---	---	---	---	---	---	---
	28-60	Loamy sand, sand, loamy fine sand.	SM, SP-SM	A-2, A-3	100	100	70-95	5-20	---	NP
Pantego:										
Pe	0-20	Fine sandy loam	SM, SM-SC, CL, CL-ML	A-2, A-4	100	100	60-95	25-75	<30	NP-12
	20-39	Sandy clay loam, sandy loam, clay loam.	SC, CL, SM	A-4, A-6, A-2	100	95-100	80-100	30-80	25-40	4-16
	39-65	Sandy clay, clay sandy clay loam, clay loam	CL, CH, SC, MH	A-6, A-7	100	95-100	90-100	36-80	30-60	11-30
Pickney:										
Pk	0-34	Loamy fine sand	SM, SP-SM	A-2	100	100	50-90	10-25	---	NP
	34-80	Loamy fine sand, loamy sand, fine sand.	SP, SP-SM, SM	A-2, A-3	100	100	50-90	3-25	---	NP
Rains:										
Ra	0-12	Fine sandy loam	SM, SM-SC	A-2, A-4	100	95-100	50-85	25-50	<35	NP-7
	12-45	Sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	100	98-100	65-98	30-70	18-40	4-18
	45-78	Sandy loam, sandy clay loam sandy clay.	SC, SM, ML CL	A-2, A-4, A-6	100	95-100	65-95	30-60	15-40	3-18
Santee:										
Sa	0-14	Loam	CL, ML, CL-ML	A-4, A-6, A-7	100	100	85-100	51-80	20-45	5-18
	14-50	Sandy clay, clay loam, clay	CL, CH	A-6, A-7	100	100	90-100	75-95	30-60	12-35
	50-85	Sandy clay loam, sandy clay, clay.	CL, CH, ML	A-4, A-6, A-7	100	100	90-100	65-95	30-80	8-48

See footnotes at end of table.

TABLE 11.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
Seagate:										
Se	0-7	Loamy sand	SM, SP-SM	A-2, A-3	100	100	90-100	5-20	---	NP
	7-13	Loamy fine sand, loamy sand.	SM, SP-SM	A-2	100	100	90-100	10-25	---	NP
	13-28	Fine sand, sand, loamy sand.	SM, SP-SM	A-2	100	100	90-100	5-20	---	NP
	28-42	Sandy loam, sandy clay loam.	SM, SM-SC	A-2, A-4	100	100	85-100	20-45	<30	NP-7
	42-82	Clay loam, sandy clay loam, sandy clay.	CL	A-6, A-7	100	100	80-100	55-95	35-50	16-27
Tawcaw:										
[2]TA	0-6	Clay loam	CL, CH	A-4, A-6, A-7	100	100	85-100	75-95	28-50	8-24
	6-50	Clay loam, silty clay loam, silty clay	CL, CH, ML, MH	A-6, A-7	100	100	90-100	51-98	30-65	11-33
	50-70	Silty clay loam, sandy clay loam, loam.	SC, SM-SC, CL-ML, CL	A-4, A-6, A-7	100	100	90-100	40-90	22-45	5-20
Udorthents:										
UD	0-60	Sandy loam, sandy clay loam sandy clay.	GM-GC, GC, SM-SC, SC, CL	A-2, A-4, A-6	70-90	60-80	50-75	30-60	20-40	4-18
Wahee:										
Wa	0-5	Loam	ML, CL-ML	A-4	100	100	90-98	51-75	20-35	2-10
	5-51	Clay, clay loam, silty clay.	CL, CH	A-7	100	100	95-100	70-90	41-60	18-32
	51-73	Sandy clay loam, clay loam, silty clay loam.	CL, SC	A-6, A-7	100	100	90-100	36-65	30-50	11-25
Witherbee:										
Wt	0-25	Fine sand	SP-SM	A-3	100	100	80-100	5-10	---	NP
	25-80	Fine sand	SP-SM, SP	A-3	100	100	80-100	3-10	---	NP

[1]NP = nonplastic.
[2]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[Dashes indicate data were not available. The symbol < means less than; > means greater than. The erosion tolerance factor (T) is for the entire profile]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete	Erosion factors: K	Erosion factors: T	Wind erodibility index
	In	In/hr	In/in	pH						Tons/acre/yr
Aquic Udifluvents:										
AU----------------	0-5	0.6-2.0	0.16-0.24	7.4-8.4	High------	High-----	Moderate	0.20	5	38
	5-65	0.06-0.2	0.15-0.20	7.4-8.4	High------	High-----	Moderate	0.20		
Bayboro:										
Ba----------------	0-10	0.6-2.0	0.15-0.20	4.5-5.5	Low-------	High-----	High-----	0.28	5	56
	10-60	0.06-0.2	0.14-0.18	4.5-5.5	Moderate	High-----	High-----	0.32		
Bethera:										
Be----------------	0-7	0.6-2.0	0.11-0.16	3.6-5.5	Low-------	High-----	High-----	0.17	5	86
	7-68	0.06-0.6	0.14-0.18	3.6-5.5	Moderate	High-----	High-----	0.32		
	68-94	0.06-2.0	0.12-0.16	3.6-5.5	Moderate	High-----	High-----	---		
Bohicket:										
[1]BH---------------	0-16	0.06-0.2	0.14-0.18	6.1-8.4	High------	High-----	High-----	0.32	5	0
	16-60	<0.06	0.12-0.16	6.1-8.4	High------	High-----	High-----	0.24		
Bonneau:										
BoA, BoB----------	0-22	6.0-20	0.05-0.11	4.5-5.5	Very low	Low------	High-----	0.17	5	134
	22-50	0.6-2.0	0.10-0.15	4.5-5.5	Low-------	Low------	High-----	0.20		
	50-74	0.6-2.0	0.10-0.16	4.5-5.5	Low-------	Low------	High-----	0.20		
Borrow pits:										
Bp----------------	---	---	---	---	---	---	---	---	---	---
Byars:										
By----------------	0-16	0.6-2.0	0.11-0.16	3.6-5.5	Low-------	High-----	High-----	0.17	5	56
	16-64	0.06-0.2	0.14-0.18	3.6-5.5	Moderate	High-----	High-----	0.32		
Cainhoy:										
CaB---------------	0-81	6.0-20	0.05-0.08	4.5-6.5	Very low	Low------	Moderate	0.17	5	310
Capers:										
[1]CP---------------	0-10	0.06-0.2	0.14-0.18	6.6-7.8	Very high	High-----	High-----	0.32	5	0
	10-80	<0.06	0.12-0.18	6.6-7.8	Very high	High-----	High-----	0.28		
Caroline:										
CoA, CoB----------	0-16	2.0-6.0	0.12-0.16	5.1-6.5	Low-------	High-----	High-----	0.43	3	86
	16-55	0.2-0.6	0.14-0.18	4.5-5.5	Moderate	High-----	High-----	0.43		
	55-82	0.6-2.0	0.15-0.18	4.5-5.5	Moderate	High-----	High-----	0.43		
Chastain:										
[1]CS---------------	0-7	0.2-0.6	0.12-0.18	4.5-5.5	Moderate	High-----	High-----	0.32	5	56
	7-51	0.06-0.2	0.12-0.16	4.5-5.5	Moderate	High-----	High-----	0.37		
Chipley:										
[1]Ct:										
Chipley part-----	0-4	6.0-20	0.05-0.10	4.5-6.0	Very low	Low------	High-----	0.15	5	134
	4-80	6.0-20	0.03-0.08	4.5-6.0	Very low	Low------	High-----	---		
Echaw part-------	0-5	2.0-6.0	0.05-0.10	4.5-6.0	Very low	Low------	High-----	0.10	5	134
	5-40	2.0-6.0	0.05-0.10	4.5-6.0	Very low	Low------	High-----	---		
	40-50	2.0-20	0.03-0.08	4.5-6.0	Very low	Low------	High-----	---		
	50-65	>6.0	0.03-0.08	4.5-6.0	Very low	Low------	High-----	---		
Coxville:										
Cu----------------	0-8	0.6-2.0	0.12-0.17	4.5-6.0	Low-------	High-----	High-----	0.24	4	56
	8-69	0.2-0.6	0.14-0.18	4.5-5.5	Moderate	High-----	High-----	0.28		
Craven:										
CvA, CvB----------	0-7	0.6-2.0	0.12-0.18	4.5-6.0	Low-------	High-----	High-----	0.32	3	86
	7-55	<0.2	0.12-0.15	4.5-5.5	Moderate	High-----	High-----	0.32		
	55-78	<0.2	0.12-0.15	4.5-5.5	Moderate	High-----	High-----	0.28		
Duplin:										
DuA, DuB----------	0-6	2.0-6.0	0.10-0.15	5.1-7.3	Low-------	Moderate	High-----	0.32	3	86
	6-80	0.2-0.6	0.13-0.18	4.5-5.5	Moderate	High-----	High-----	0.28		
Goldsboro:										
GoA---------------	0-14	2.0-6.0	0.08-0.12	4.5-6.0	Low-------	Moderate	High-----	0.17	5	134
	14-75	0.6-2.0	0.11-0.15	4.5-5.5	Low-------	Moderate	High-----	0.24		

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete	Erosion factors: K	Erosion factors: T	Wind erodibility index
	In	In/hr	In/in	pH						Tons/acre/yr
Lenoir:										
Le----------------	0-15	0.6-2.0	0.14-0.18	4.5-5.5	Low--------	High-----	High-----	0.24	5	56
	15-80	0.06-0.2	0.13-0.15	4.5-5.5	Moderate	High-----	High-----	0.24		
Leon:										
Lo----------------	0-15	6.0-20	0.01-0.05	3.6-5.5	Very low	High-----	High-----	0.15	4	134
	15-33	0.6-6.0	0.05-0.10	3.6-5.5	Very low	High-----	High-----	0.15		
	33-58	0.6-6.0	0.06-0.10	3.6-5.5	Very low	High-----	High-----	0.15		
Lucy:										
LuB---------------	0-25	>6.0	0.06-0.10	5.1-5.5	Low--------	Low------	High-----	0.20	5	134
	25-37	2.0-6.0	0.10-0.12	4.5-5.5	Low--------	Low------	High-----	0.20		
	37-60	0.6-2.0	0.12-0.14	4.5-5.5	Low--------	Low------	High-----	0.20		
Lynchburg:										
Ly----------------	0-12	2.0-6.0	0.09-0.13	3.6-5.5	Low--------	High-----	High-----	0.20	4	86
	12-65	0.6-2.0	0.12-0.16	3.6-5.5	Low--------	High-----	High-----	---		
Meggett:										
Mg----------------	0-7	0.6-2.0	0.15-0.20	5.1-7.3	Low--------	High-----	Low------	0.32	5	86
	7-63	0.06-0.2	0.13-0.18	6.1-8.4	High------	High-----	Low------	0.32		
	0-4	0.2-0.6	0.15-0.20	5.6-7.3	Moderate--	High-----	Low------	0.32		
Mp----------------	4-63	0.06-0.2	0.13-0.18	6.1-8.4	High------	High-----	Low------	0.32		
Norfolk:										
NoA, NoB----------	0-6	2.0-6.0	0.06-0.10	4.5-6.0	Low--------	Moderate	High-----	0.17	5	134
	6-78	0.6-2.0	0.10-0.15	4.5-5.5	Low--------	Moderate	High-----	0.24		
Ocilla:										
Oc----------------	0-25	2.0-20	0.05-0.08	4.5-5.5	Low--------	High-----	Moderate	0.17	5	134
	25-72	0.6-2.0	0.09-0.12	4.5-5.5	Low--------	High-----	Moderate	0.24		
Pamlico:										
Pa----------------	0-28	0.6-2.0	0.24-0.26	3.6-4.4	----------	High-----	High-----	0.15	3	0
	28-60	6.0-20	0.03-0.06	3.6-5.5	Low--------	High-----	High-----	0.10		
Pantego:										
Pe----------------	0-20	2.0-6.0	0.10-0.20	3.6-5.5	Low--------	Moderate	High-----	0.10	5	86
	20-39	0.6-2.0	0.12-0.20	4.5-5.5	Low--------	High-----	High-----	0.15		
	39-65	0.6-2.0	0.15-0.20	4.5-5.5	Low--------	High-----	High-----	---		
Pickney:										
Pk----------------	0-34	6.0-20	0.07-0.12	3.6-5.5	Very low	High-----	High-----	0.10	5	38
	34-80	6.0-20	0.03-0.11	4.5-6.0	Very low	High-----	High-----	---		
Rains:										
Ra----------------	0-12	2.0-6.0	0.08-0.12	4.5-6.5	Low--------	High-----	High-----	0.17	5	86
	12-45	0.6-2.0	0.10-0.15	4.5-5.5	Low--------	High-----	High-----	0.17		
	45-78	0.6-2.0	0.10-0.15	4.5-5.5	Low--------	High-----	High-----	0.20		
Santee:										
Sa----------------	0-14	0.6-2.0	0.15-0.20	5.1-7.3	Low--------	High-----	Moderate	0.28	5	48
	14-50	0.06-0.2	0.14-0.18	5.6-7.8	Moderate--	High-----	Low------	0.32		
	50-85	0.06-0.6	0.12-0.16	6.1-8.4	Moderate--	High-----	Low------			
Seagate:										
Se----------------	0-7	6.0-20	0.03-0.06	3.6-6.0	Low--------	High-----	High-----	0.17	5	86
	7-13	6.0-20	0.05-0.12	3.6-6.0	Low--------	High-----	High-----	0.24		
	13-28	2.0-6.0	0.03-0.06	3.6-6.0	Low--------	High-----	High-----	0.17		
	28-42	0.6-2.0	0.12-0.20	3.6-6.0	Low--------	High-----	High-----	0.24		
	42-82	0.6-2.0	0.15-0.20	3.6-6.0	Low--------	High-----	High-----	---		
Tawcaw:										
[1]TA---------------	0-6	0.06-0.6	0.12-0.18	4.5-6.5	Moderate--	High-----	High-----	0.32	5	56
	6-50	0.06-0.2	0.12-0.16	4.5-6.5	Moderate--	High-----	High-----	0.37	5	86
	50-70	0.2-0.6	0.11-0.16	4.5-6.5	Low--------	High-----	High-----	---		
Udorthents:										
UD----------------	0-60	0.6-6.0	0.10-0.18	6.6-8.4	Low--------	Low-------	Low-------	0.28	5	86
Wahee:										
Wa----------------	0-5	0.2-2.0	0.15-0.20	4.5-5.5	Low--------	High-----	High-----	0.28	5	56
	5-51	0.06-0.2	0.12-0.20	4.5-5.5	Moderate	High-----	High-----	0.32		
	51-73	0.2-0.6	0.12-0.20	4.5-5.5	Moderate	High-----	High-----	0.20		

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permea-bility	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors		Wind erodibility index
						Uncoated steel	Concrete	K	T	
	In	In/hr	In/in	pH						Tons/acre/yr
Witherbee:										
Wt----------------	0-25	>20	0.05-0.08	3.6-6.0	Very low	Low------	High-----	0.10	5	86
	25-80	6.0-20	0.03-0.08	4.5-6.5	Very low	Low------	High-----	0.10		

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 13.--SOIL AND WATER FEATURES

[Absence of an entry indicates the feature is not a concern. See text for descriptions of symbols and such terms as "rare," "brief," and "perched." The symbol > means greater than]

Soil name and map symbol	Hydro-logic group	Flooding			High water table		
		Frequency	Duration	Months	Depth[1]	Kind	Months
					Ft		
Aquic Udifluvents: AU	D	Common	Long	Dec-Mar	1.0-3.0	Apparent	Dec-Mar
Bayboro: Ba	D	Common	Brief	Dec-Mar	0-1.0	Apparent	Nov-Apr
Bethera: Be	D	Common	Brief	Dec-Apr	0-1.5	Apparent	Dec-Apr
Bohicket: [1]BH	D	Frequent	Very brief	Jan-Dec	(3)-0	Apparent	Jan-Dec
Bonneau: BoA, BoB	A	None	---	---	3.5-5.0	Apparent	Dec-Apr
Borrow pits: Bp.							
Byars: By	D	Common	Brief	Dec-Mar	0-1.0	Apparent	Nov-Apr
Cainhoy: CaB	A	None	---	---	>6.0	---	---
Capers: [2]CP	D	Frequent	Very long	Jan-Dec	(1)-1.0	Apparent	Jan-Dec
Caroline: CoA, CoB	C	None	---	---	>6.0	---	---
Chastain: [2]CS	D	Common	Very long	Dec-Apr	0-1.0	Apparent	Nov-May
Chipley: [2]Ct:							
Chipley part	C	None	---	---	2.5-5.0	Apparent	Nov-Apr
Echaw part	B	None	---	---	2.5-5.0	Apparent	Dec-Apr
Coxville: Cu	D	Rare	---	---	0-1.5	Apparent	Nov-Apr
Craven: CvA, CvB	C	None	---	---	2.0-3.5	Apparent	Dec-Mar
Duplin: DuA, DuB	C	None	---	---	2.0-3.5	Apparent	Dec-Mar
Goldsboro: GoA	B	None	---	---	2.5-3.5	Apparent	Dec-Mar
Lenoir: Le	D	None	---	---	1.0-2.5	Apparent	Dec-Mar
Leon: Lo	A/D	None	---	---	0-1.0	Apparent	Nov-Mar
Lucy: LuB	A	None	---	---	>6.0	---	---
Lynchburg: Ly	B/D	None	---	---	0.5-1.5	Apparent	Nov-Apr
Meggett: Mg, Mp	D	Common	Brief	Dec-Mar	0-1.0	Apparent	Jun-Apr
Norfolk: NoA, NoB	B	None	---	---	>6.0	---	---

See footnotes at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table		
		Frequency	Duration	Months	Depth[1]	Kind	Months
					Ft		
Ocilla:							
Oc	C	None	---	---	1.0-2.5	Apparent	Dec-Apr
Pamlico:							
Pa	D	Frequent	Very long	Nov-Jun	(1)-1.0	Apparent	Nov-Jul
Pantego:							
Pe	D	Rare	---	---	0-1.0	Apparent	Nov-Apr
Pickney:							
Pk	D	Common	Very long	Dec-Mar	0-1.0	Apparent	Dec-Mar
Rains:							
Ra	B/D	Rare	---	---	0-1.0	Apparent	Nov-Apr
Santee:							
Sa	D	Common	Long	Dec-Mar	0-1.0	Apparent	Nov-Apr
Seagate:							
Se	D	None	---	---	1.5-2.5	Apparent	Nov-Apr
Tawcaw:							
[1]TA	C	Common	Long	Dec-Apr	1.5-2.5	Apparent	Nov-Apr
Udorthents:							
UD	B	None	---	---	>6.0	---	---
Wahee:							
Wa	D	None	---	---	0.5-1.5	Apparent	Dec-Mar
Witherbee:							
Wt	B	None	---	---	0-2.0	Apparent	Nov-Sep

[1]Numerals in parentheses indicate feet above the surface.
[2]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 14.—CLASSIFICATION OF THE SOILS

[An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics of this taxadjunct that are outside the range of the series]

Soil name	Family or higher taxonomic class
Aquic Udifluvents.	
Bayboro	Clayey, mixed, thermic Umbric Paleaquults
Bethera	Clayey, mixed, thermic Typic Paleaquults
Bohicket	Fine, mixed, nonacid, thermic Typic Sulfaquents
Bonneau	Loamy, siliceous, thermic Arenic Paleudults
Byars	Clayey, kaolinitic, thermic Umbric Paleaquults
Cainhoy	Thermic, coated Typic Quartzipsamments
Capers	Fine, mixed, nonacid, thermic Typic Sulfaquents
*Caroline	Clayey, mixed, thermic Typic Paleudults
Chastain	Fine, kaolinitic, acid, thermic Typic Haplaquepts
Chipley	Thermic, coated Aquic Quartzipsamments
Coxville	Clayey, kaolinitic, thermic Typic Paleaquults
Craven	Clayey, mixed, thermic Aquic Hapludults
Duplin	Clayey, kaolinitic, thermic Aquic Paleudults
Echaw	Sandy, siliceous, thermic Entic Haplohumods
Goldsboro	Fine-loamy, siliceous, thermic Aquic Paleudults
Lenoir	Clayey, mixed, thermic Aeric Paleaquults
*Leon	Sandy, siliceous, thermic Aeric Haplaquods
Lucy	Loamy, siliceous, thermic Arenic Paleudults
Lynchburg	Fine-loamy, siliceous, thermic Aeric Paleaquults
*Meggett	Fine, mixed, thermic Typic Albaqualfs
Norfolk	Fine-loamy, siliceous, thermic Typic Paleudults
Ocilla	Loamy, siliceous, thermic Aquic Arenic Paleudults
Pamlico	Sandy or sandy-skeletal, siliceous, dysic, thermic Terric Medisaprists
Pantego	Fine-loamy, siliceous, thermic Umbric Paleaquults
Pickney	Sandy, siliceous, thermic Cumulic Humaquepts
*Rains	Fine-loamy, siliceous, thermic Typic Paleaquults
Santee	Fine, mixed, thermic Typic Argiaquolls
*Seagate	Sandy over loamy, siliceous, thermic Typic Haplohumods
Tawcaw	Fine, kaolinitic, thermic Fluvaquentic Dystrochrepts
Udorthents.	
Wahee	Clayey, mixed, thermic Aeric Ochraquults
Witherbee	Sandy, siliceous, thermic Entic Haplaquods

TABLE 15.--TEMPERATURE AND PRECIPITATION DATA[1]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than	2 years in 10 will have-- Minimum temperature lower than	Average number of growing degree days[2]	Average	2 years in 10 will have-- Less than	2 years in 10 will have-- More than	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F		In	In	In		In
January---	58.3	35.4	46.8	78.9	15.4	89.0	3.2	1.6	4.8	6.8	0.0
February--	60.4	36.7	48.6	79.7	16.3	91.6	3.4	2.0	4.9	6.6	0.6
March-----	67.3	42.9	55.1	86.2	24.3	209.7	3.9	2.3	5.6	6.7	0.0
April-----	75.9	51.4	63.7	90.4	32.0	413.0	2.6	1.3	4.0	4.7	0.0
May-------	82.5	59.6	71.0	95.9	42.0	652.4	3.9	2.5	5.3	6.4	0.0
June------	87.5	66.7	77.1	99.2	53.1	812.9	6.5	2.8	10.2	8.3	0.0
July------	89.8	70.4	80.1	99.1	59.9	931.2	7.1	4.2	10.0	9.8	0.0
August----	89.3	69.9	79.6	98.5	59.2	916.8	6.6	3.8	9.4	8.8	0.0
September-	84.9	64.9	74.9	95.1	48.8	743.8	4.1	2.3	6.0	6.0	0.0
October---	77.6	54.3	65.9	91.4	32.3	494.7	2.9	0.7	5.1	4.2	0.0
November--	68.4	42.2	55.3	84.7	21.0	209.2	2.0	0.8	3.1	3.5	0.0
December--	60.7	36.6	48.6	79.5	17.3	108.9	2.8	1.7	3.9	5.9	0.0
Year----	75.4	52.8	64.1	100.8[3]	12.3[4]	5716	47.3	39.1	55.6	77.8	.06

[1]Recorded at Summerville, Dorchester County, South Carolina, during the period 1949-73, and at Pinopolis Dam, Berkeley County, South Carolina, during the period 1966-73.

[2]A growing degree day is an index of the amount of heat available for plant growth. Growing degree days accumulate each day in the amount by which the average daily temperature exceeds the temperature below which growth is minimal for the principal crops in the area (50° F).

[3]Average annual highest temperature.

[4]Average annual lowest temperature.

TABLE 16.--FREEZE DATES IN SPRING AND FALL[1]

Probability	Dates for given probability and temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 10	March 29	April 15
2 years in 10 later than--	March 7	March 23	April 11
5 years in 10 later than--	February 28	March 16	April 3
First freezing temperature in fall:			
1 year in 10 earlier than--	November 13	November 3	October 26
2 years in 10 earlier than--	November 21	November 4	October 28
5 years in 10 earlier than--	November 21	November 13	November 2

[1]Recorded at Summerville, Dorchester County, South Carolina, during the period 1949-73, and at Pinopolis Dam, Berkeley County, South Carolina, during the period 1966-73.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1980-232-406/52

NRCS Accessibility Statement