United States
Department of
Agriculture

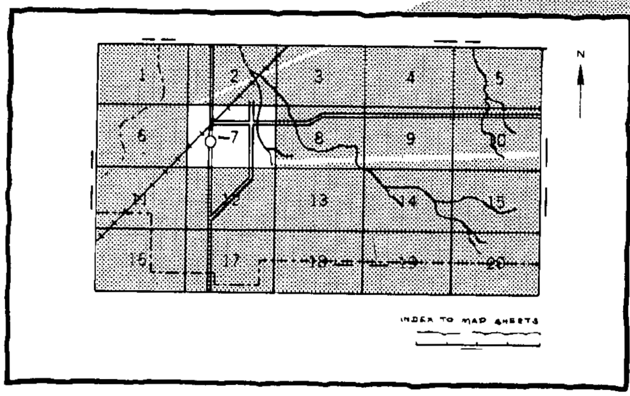
Soil
Conservation
Service

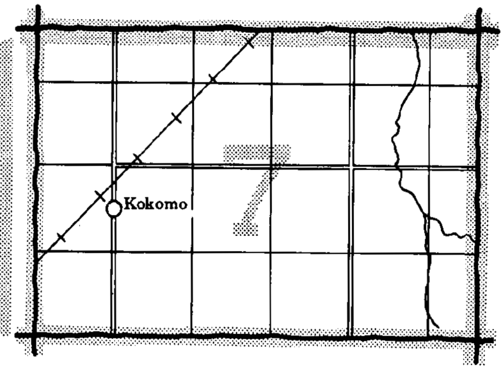
In cooperation with
South Carolina
Agricultural Experiment
Station and the
South Carolina
Land Resources
Conservation Commission

Soil Survey of Orangeburg County, South Carolina

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.

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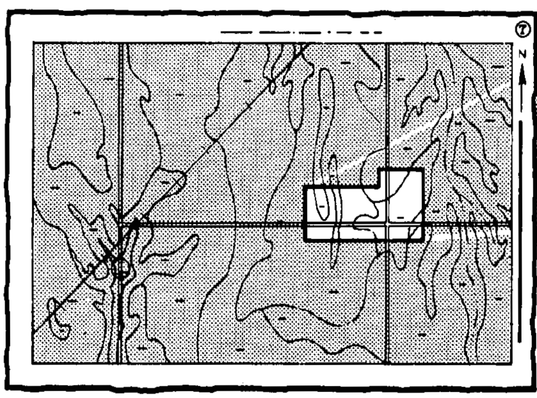
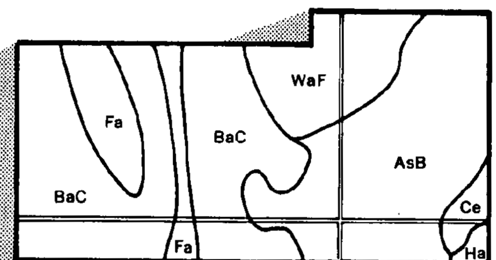
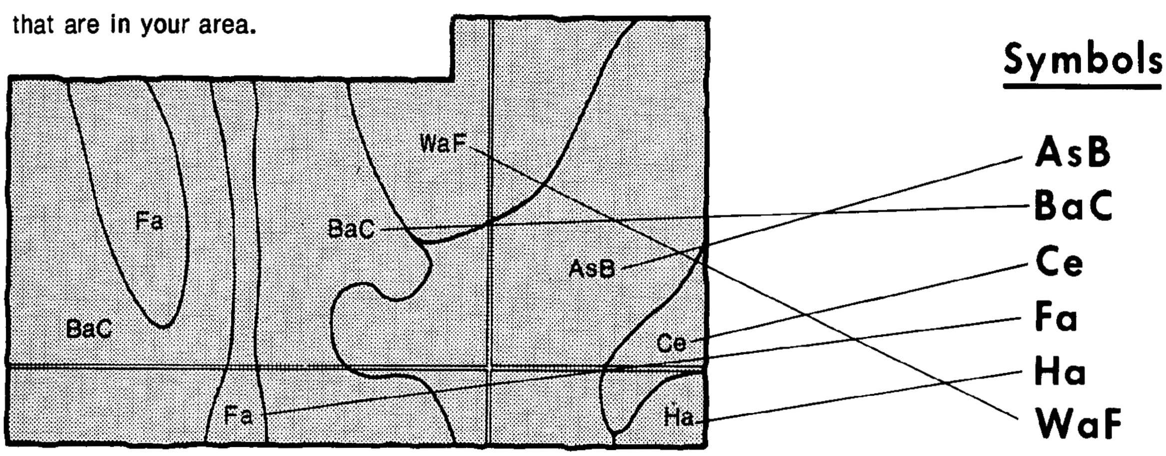


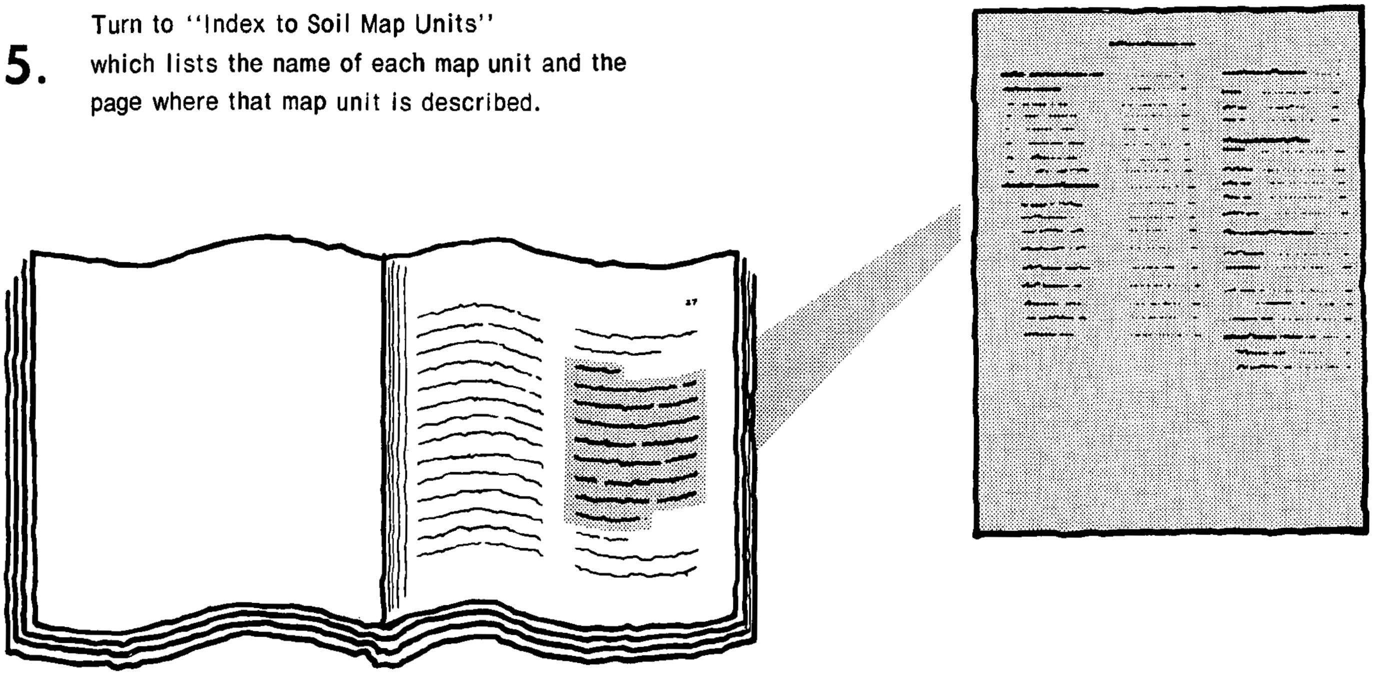


4. List the map unit symbols that are in your area.

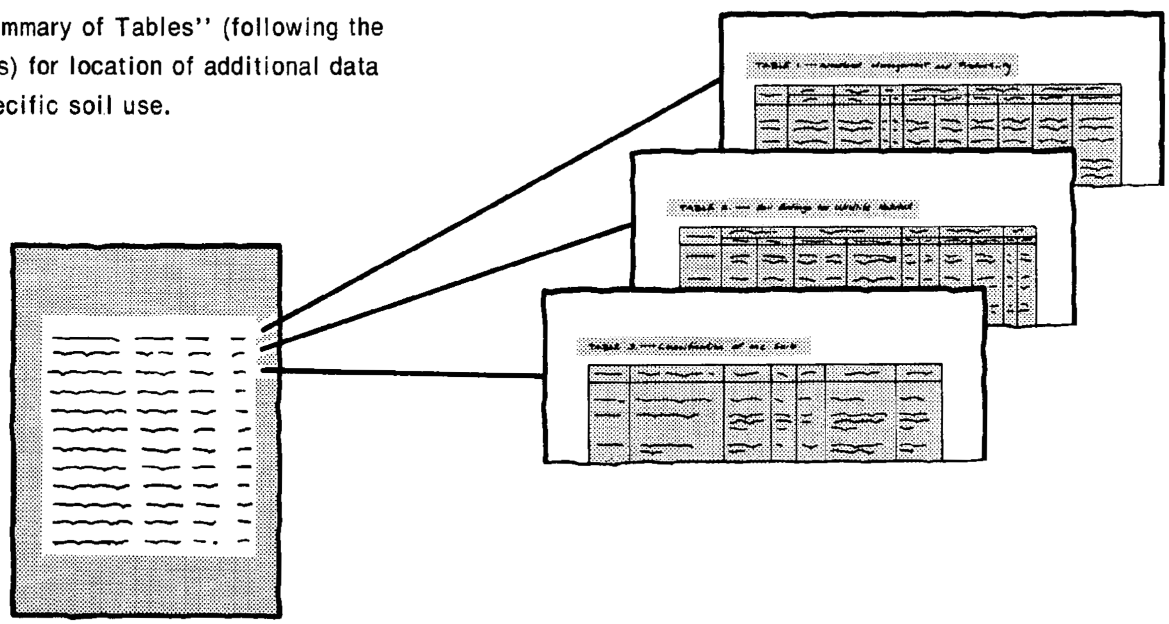


THIS SOIL SURVEY

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 soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. 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, handicap, or age.

Major fieldwork for this soil survey was completed in 1984. Soil names and descriptions were approved in 1984. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1984. This soil survey was made cooperatively by the Soil Conservation Service, the South Carolina Agricultural Experiment Station, and the South Carolina Land Resources Conservation Commission. It is part of the technical assistance furnished to the Orangeburg County Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: Orangeburg County is one of the leading producers of crops in South Carolina. No-till crops, such as soybeans in wheat stubble, give high returns. This crop is on Dothan loamy sand, 0 to 2 percent slopes.

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Foreword

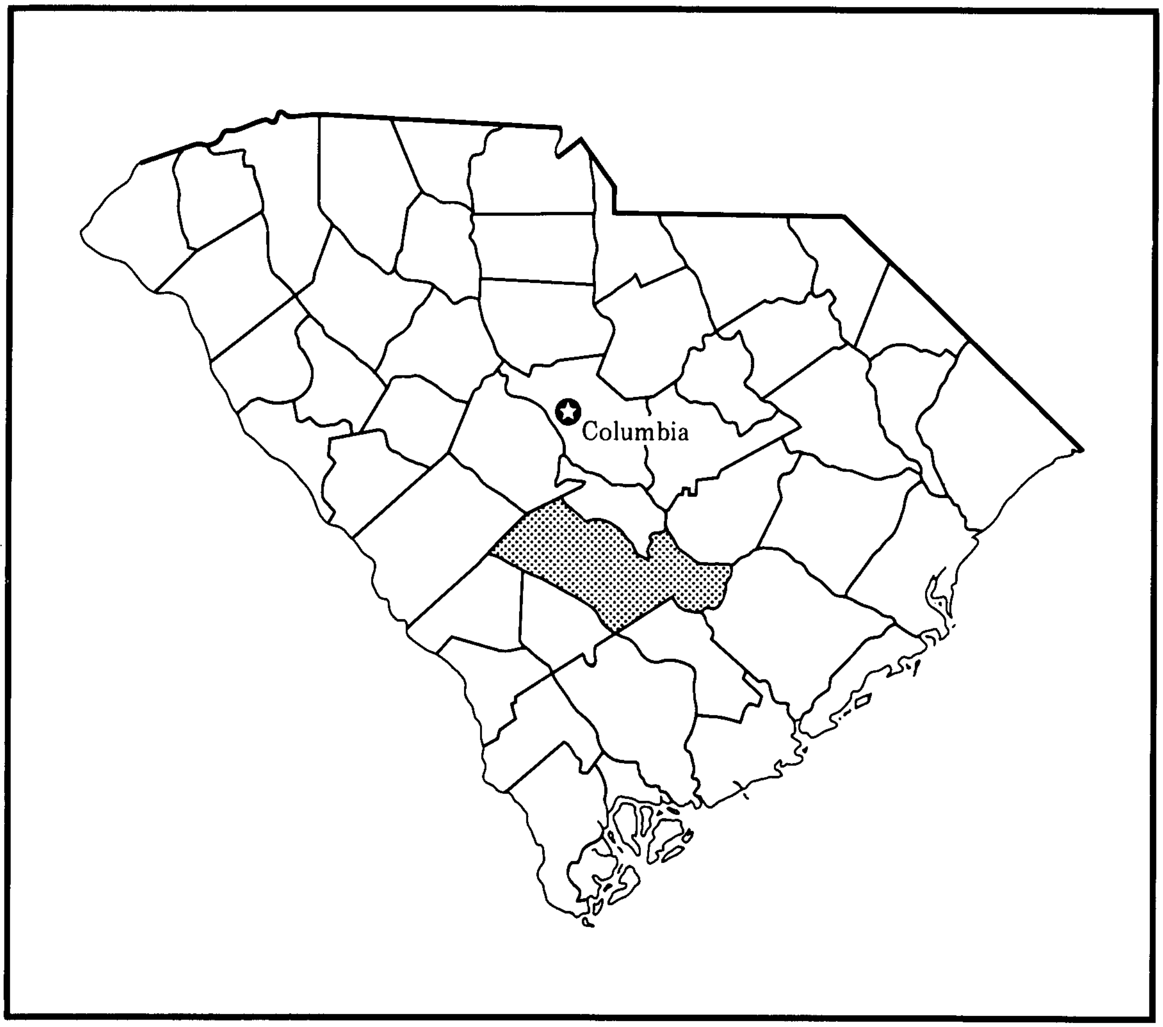
This soil survey contains information that can be used in land-planning programs in Orangeburg County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment. This survey updates a survey published in 1915.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as 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 soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

Billy R. Abercrombie
State Conservationist
Soil Conservation Service



Location of Orangeburg County in South Carolina.

Soil Survey of Orangeburg County, South Carolina

By Dennis J. DeFrancesco, Soil Conservation Service

Fieldwork by Dennis J. DeFrancesco, G. Wade Hurt, Randall K. Fowler, George A. Honchar, and James A. Allen, Soil Conservation Service; and Jack R. Brown and Carl B. Lawrence, South Carolina Land Resources Conservation Commission

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

ORANGEBURG COUNTY is in the south-central part of South Carolina. It has a population of about 83,000. Orangeburg is the county seat and has a population of about 45,000. The total area of Orangeburg County is about 1,105 square miles, or 707,000 acres.

The county is bounded on the north by Calhoun and Clarendon Counties. Clarendon County is separated from Orangeburg County by Lake Marion. Berkeley County is east of Orangeburg County, and Dorchester County is south. Bamberg and Barnwell Counties are southwest and are separated from Orangeburg County by the South Fork of the Edisto River. Aiken and Lexington Counties are on the northwest boundary.

Orangeburg County is in three Coastal Plain provinces, or Major Land Resource Areas. The Carolina and Georgia Sand Hills make up about 11 percent of the county and are in the northwest part. The highest elevation in the county, about 400 feet above sea level, occurs in this resource area just north of Woodford. The soils are mostly well drained and sandy. Local relief is in tens of feet.

The Southern Coastal Plain makes up about 35 percent of the county. This area is northwest of Orangeburg to the Sand Hills and also immediately adjacent to Lake Marion. The soils are mostly well drained or moderately well drained. They formed in loamy or clayey sediment. The elevation ranges from about 220 to 350 feet.

The Atlantic Coast Flatwoods make up about 54 percent of the county. This area is southeast of Orangeburg. The soils are moderately well drained to poorly drained. They formed in loamy or clayey sediment. The lowest elevation in the county is in this area where the Four Holes Swamp exits Orangeburg County. The North and South Forks of the Edisto River, Four Holes Swamp, and Lake Marion drain southeast towards the coast and provide a diversity of hunting and fishing activities.

Orangeburg County is a mostly rural area although good roads provide easy access to Columbia, Charleston, and Savannah. The county is about half cropland and pasture and half woodland. Some small urban and industrial areas are also in the county. Four colleges and several radio stations and newspapers serve the county.

General History of the County

Orangeburg County is not one of the original counties of South Carolina; it was formed from parts of Colleton and Berkeley Counties *(5)*. The first known settler in the area was Henry Sterling, an Indian trader who came in 1704. Access to the area from "Charles Towne" was by an Indian path or by river.

In 1735, the township of "Orangeburgh" was formed along the banks of the Pon-Pon River, later named the Edisto River. The township was named in honor of William, Prince of Orange, son-in-law of the reigning King George of England.

To induce settlement in the undeveloped backcountry, the General Assembly provided special funds for transportation, food, equipment, and land. The first contingent of settlers, about 250 Swiss, arrived late in 1735. In subsequent years, the settlers were mainly German and Swiss but included English, Irish, Scotch, and Dutch. They came either for economic reasons or to flee religious persecution.

A shortage of food was not among the hardships of pioneer life. The woods abounded in deer and small game, and the streams were full of fish. Indian corn was soon a staple crop.

Relations with the Indians were generally good. Fur trading, in fact, played a large part in the early economy. The Cherokees, the largest and most powerful of Indian tribes in South Carolina, claimed the territory between the Savannah and Catawba Rivers, and about as far south as present day Orangeburg.

The unrest and anxieties of pre-revolutionary times left the settlers divided in their loyalties. Many were averse to any action against George III of England. Families were divided to the end of the revolution and even afterward. The Battle of Eutaw Springs, the bloodiest in the Revolutionary War, was the last major battle in South Carolina.

In 1830, the first railroad service in America was established in Branchville.

During the Civil War, General William T. Sherman and the Union Army entered Orangeburg on February 12, 1865, destroying part of the city. Although the years that followed were economically and politically difficult, there were indications of a better life ahead. Deflated land prices enabled the poor to buy land. Also, good prices for cotton occurred at a time when money was scarce. Several agricultural and social organizations were formed, and schools and churches were organized.

Today, Orangeburg County is the leading agricultural county in South Carolina. It has the largest amount of land in farms in the state, and it consistently ranks at or near the top in the production of soybeans, corn, wheat, and in specialty crops, such as cucumbers, watermelons, and cantaloupes. Orangeburg County generally ranks first in the production of milk and dairy products and in hogs. Industrial production in the county is also highly important; output is about equal to agricultural production in dollar value.

Climate

Prepared by the National Climatic Data Center, Asheville, North Carolina.

Orangeburg County is hot and generally humid in summer because of moist maritime air. Winter is moderately cold but short because the mountains to the west protect the area against many cold waves. Precipitation is quite evenly distributed throughout the year and is adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Orangeburg in the period 1953 to 1979. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 46 degrees F, and the average daily minimum temperature is 34 degrees. The lowest temperature on record, which occurred at Orangeburg on December 13, 1962, is 6 degrees. In summer the average temperature is 79 degrees, and the average daily maximum temperature is 89 degrees. The highest recorded temperature, which occurred at Orangeburg on August 6, 1954, is 106 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 47 inches. Of this, 28 inches, or 60 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 23 inches. The heaviest 1-day rainfall during the period of record was 6.61 inches at Orangeburg on September 5, 1979. Thunderstorms occur on about 55 days each year, and most occur in summer.

Snowfall is rare. In 90 percent of the winters, there is no measurable snowfall. In 10 percent, the snowfall, usually of short duration, is more than 2 inches. The heaviest 1-day snowfall on record was more than 20 inches.

The average relative humidity in midafternoon is about 50 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 65 percent of the time possible in summer and 60 percent in winter. The prevailing wind is from the southeast. Average windspeed is highest, 8 miles per hour, in spring.

Every few years, heavy snow covers the ground for a few days in winter, and a tropical storm moving inland from the Atlantic Ocean causes extremely heavy rainfall for 1 to 3 days late in summer or in autumn.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, the landforms, relief, climate, and the natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with considerable accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, acidity, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. Soil scientists interpreted the data from these analyses and tests as well as the field-observed characteristics and the soil properties in terms of expected behavior of the soils under different uses. Interpretations for all of the soils were field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and new interpretations sometimes are developed to meet local needs. Data were assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management were assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can state with a fairly high degree of probability that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by several kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed and are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Soils of the Carolina and Georgia Sand Hills

These soils are excessively drained to well drained and are on gently sloping uplands. Local relief is in tens of feet. Soils of this group make up about 11 percent of the county.

1. Troup-Fuquay-Alpin

Well drained and excessively drained, sandy soils that have a loamy or sandy subsoil

The landscape of this map unit typically has moderate relief, and the scenic quality is fair. Vegetative patterns provide limited diversity to a somewhat homogeneous landscape. The landscape is mostly nearly level to gently sloping, broad ridges with associated side slopes separated by well defined drainageways. Slopes generally are rolling, short to medium in length, and range from 0 to 10 percent. Residences, farmsteads, and roads are common.

This map unit makes up about 2 percent of the county. It is about 35 percent Troup soils, 20 percent Fuquay soils, 15 percent Alpin soils, and 30 percent soils of minor extent.

Troup soils are on nearly level to gently sloping, broad, convex ridges and the associated side slopes. Typically, the surface layer is dark grayish brown sand, the subsurface layer is brownish yellow and yellow sand, and the subsoil is red sandy loam and sandy clay loam.

Fuquay soils are on broad, nearly level to gently sloping ridges. Typically, the surface layer is very dark gray and dark grayish brown sand, and the subsurface layer is light yellowish brown sand. The subsoil is yellowish brown sandy clay loam that contains iron-rich nodules.

Alpin soils are on nearly level to gently sloping, broad, convex ridges and the associated side slopes. Typically, the surface layer is dark gray sand, the subsurface layer is very pale brown sand, and the subsoil is yellow, reddish yellow, and strong brown sand in the upper part. The lower part is thin alternating bands of reddish yellow and light gray sand and yellowish red loamy sand.

Of minor extent in this map unit are the Ailey, Lucy, and Bibb soils. Ailey soils are on steeper side slopes, Lucy soils are on less rolling broad ridges, and Bibb soils are in drainageways.

About 30 percent of the acreage of this map unit is cleared and used for row crops, pasture, or hay (fig. 1). The cleared areas are predominantly Fuquay soils.

The soils of this map unit are suited to poorly suited to corn, soybeans, and small grains. The major management problems are droughtiness, low nutrient-holding capacity, and soil blowing. Maintaining crop residue on or near the surface increases moisture retention and organic matter content. Soil blowing is reduced on large fields if row crops and windbreaks are planted perpendicular to wind direction, if cover crops are used, and if crop residue is left on the surface.

These soils are suited or well suited to pasture and hay. Coastal bermudagrass and bahiagrass grow well if they are properly managed and fertilized. Proper stocking, pasture rotation, and restricted grazing during dry periods help keep the pasture and soil in good condition.

These soils are suited to use as woodland. Common trees to plant are loblolly and longleaf pines. The sandy texture of these soils is a moderate limitation for the use of equipment. This limitation can be reduced by using either wide tires on equipment or crawler-type equipment. The moderate seedling mortality rate caused by droughtiness can be reduced by planting in a furrow and by controlling competing vegetation.

These soils are suited or well suited to use for homesite development.

Figure 1.—Coastal bermudagrass is well adapted to the soils in the Troup-Fuquay-Alpin general soil map unit.

2. Fuquay-Dothan-Troup

Well drained, sandy soils that have a loamy subsoil

The landscape of this map unit typically has moderate relief, and the scenic quality is fair. Vegetative patterns provide some visual diversity. The landscape is broad to narrow ridges that are gently sloping and have rolling complex slopes. Slopes range from 0 to 15 percent. Many well defined drainageways that have narrow flood plains originate in areas of this map unit. Many residences, farmsteads, and roads are part of this map unit.

This map unit makes up about 9 percent of the county. It is about 30 percent Fuquay soils, 25 percent Dothan soils, 23 percent Troup soils, and 22 percent soils of minor extent.

Fuquay soils are on nearly level to gently sloping, convex ridges. Typically, the surface layer is very dark gray and dark grayish brown sand, and the subsurface layer is light yellowish brown sand. The subsoil is yellowish brown sandy clay loam that contains iron-rich nodules.

Dothan soils are on nearly level to gently sloping, convex ridges and the associated gentle side slopes. Typically, the surface layer is dark grayish brown loamy sand, and the subsurface layer is yellowish brown sandy loam. The subsoil is strong brown and yellowish brown sandy clay loam that contains iron-rich nodules.

Troup soils are on nearly level to gently sloping, convex ridges and the associated side slopes. Typically, the surface layer is very dark grayish brown sand, and the subsurface layer is brownish yellow and yellow sand. The subsoil is red sandy loam and sandy clay loam.

Of minor extent in this map unit are the Alpin, Lucy, Orangeburg, Ailey, Neeses, and Bibb soils. The Alpin soils are on sandier, broad ridges, and Lucy and Orangeburg soils are on less rolling, broad to narrow ridges. The Ailey and Neeses soils are on more rolling ridges and side slopes, and Bibb soils are in drainageways.

About 30 percent of the acreage of this map unit has been cleared and is used for row crops, small grains, pasture, or hay.

The soils of this map unit are well suited to poorly suited to corn, soybeans, and small grains. The major management problems on the sandier soils are droughtiness, low nutrient-holding capacity, and soil blowing. Moisture retention and organic matter content can be increased by maintaining crop residue on or near the surface. Soil blowing is reduced if row crops and windbreaks are planted perpendicular to wind direction, if cover crops are used, and if crop residue is left on the surface.

These soils are suited or well suited to pasture and hay. Coastal bermudagrass and bahiagrass grow well if they are properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

These soils are suited or well suited to use as woodland. Common trees to plant are loblolly and longleaf pines. The main concern in producing and harvesting timber is moderate seedling mortality caused by droughtiness on the sandier Fuquay and Troup soils. Seedling mortality can be reduced by planting in a furrow and by controlling competing vegetation.

These soils are suited or well suited to use for homesite development; however, moderately slow or slow permeability is a limitation for septic tank absorption fields. This limitation can be reduced by enlarging the absorption field.

Soils of the Southern Coastal Plain

These soils are well drained to moderately well drained and are on nearly level to sloping uplands. Local relief is in tens of feet. Soils of this group make up about 32 percent of the county.

3. Bonneau-Blanton

Moderately well drained, sandy soils that have a loamy subsoil

The landscape of this map unit typically has slight to moderate relief, and the scenic quality is fair. Vegetative patterns provide limited diversity to a somewhat homogeneous landscape. The landscape is nearly level to gently sloping, broad ridges with associated side slopes that have poorly defined to well defined drainageways. Slopes generally are long, smooth, and range from 0 to 10 percent. Areas of this map unit are north and east of Eutawville and are bordered by Lake Marion and Berkeley County. The shoreline of Lake Marion provides visual diversity to the immediately adjacent areas. Residences, farmsteads, and roads are common in areas of this map unit.

This map unit makes up about 2 percent of the county. It is about 50 percent Bonneau soils, 20 percent Blanton soils, and 30 percent soils of minor extent.

Bonneau soils are on nearly level to gently sloping, broad ridges at lower elevations. Typically, the surface layer is dark grayish brown sand, and the subsurface layer is light yellowish brown loamy sand. The subsoil is yellowish brown sandy clay loam that has gray mottles in the lower part.

Blanton soils are on nearly level to gently sloping, broad ridges and side slopes at higher elevations. Typically, the surface layer is very dark grayish brown sand, and the subsurface layer is yellowish brown sand. The subsoil is yellowish brown sandy clay loam that has gray mottles.

Of minor extent in this map unit are the Noboco, Goldsboro, and Ocilla soils. Noboco soils are on ridges, Goldsboro soils are on lower terraces, and Ocilla soils are in slight depressions.

About 60 percent of the acreage of this map unit is cleared and used for row crops, pasture, or hay. The cleared areas are predominantly Bonneau soils.

The soils of this map unit are suited or poorly suited to corn, soybeans, and small grains. The major management problems are droughtiness, low nutrient-holding capacity, and soil blowing. Moisture retention and organic matter content can be increased by maintaining crop residue on or near the surface. Soil blowing is reduced on large fields if row crops and windbreaks are planted perpendicular to wind direction, if cover crops are used, and if crop residue is left on the surface.

These soils are suited or well suited to pasture and hay. Coastal bermudagrass and bahiagrass grow well if they are properly managed and fertilized. Proper stocking, pasture rotation, and restricted grazing during dry periods help keep the pasture and soil in good condition.

These soils are suited or well suited to use as woodland. Common trees to plant are loblolly and longleaf pines. The sandy texture of these soils is a moderate limitation for the use of equipment. This limitation can be reduced by using either wide tires on equipment or crawler-type equipment. The moderate seedling mortality caused by droughtiness can be reduced by planting in a furrow and by controlling competing vegetation.

These soils are suited or well suited to use for homesite development. Some of these soils have moderate limitations for septic tank absorption fields because of wetness. Systems should be designed so that the base of the absorption field is free of water.

4. Dothan-Fuquay-Orangeburg

Well drained, sandy soils that have a loamy subsoil

The landscape of this map unit typically has moderate relief, and the scenic quality is good. Vegetative patterns provide a great deal of visual diversity. The landscape is nearly level to gently sloping, narrow to broad ridges and the associated side slopes. Slopes generally are smooth, convex, and medium in length. They range from 0 to 10 percent. Many well defined drainageways with narrow flood plains originate in the area. Many residences and farmsteads and numerous roads are part of this map unit.

This map unit makes up about 20 percent of the county. It is about 16 percent Dothan soils, 15 percent Fuquay soils, 14 percent Orangeburg soils, and 55 percent soils of minor extent.

Dothan soils are on nearly level to slightly rolling, convex ridges and associated side slopes. Typically, the surface layer is dark grayish brown loamy sand, and the subsoil is strong brown and yellowish brown sandy clay loam that contains iron-rich nodules.

Fuquay soils are on nearly level to slightly sloping, convex ridges. Typically, the surface layer is very dark gray and dark grayish brown sand, and the subsurface layer is light yellowish brown sand. The subsoil is yellowish brown sandy clay loam that contains iron-rich nodules.

Orangeburg soils are on nearly level, convex, broad ridges and associated side slopes. Typically, the surface layer is dark grayish brown loamy sand, and the subsurface layer is yellowish brown loamy sand. The subsoil is yellowish red sandy clay loam.

Of minor extent in this map unit are the Troup, Noboco, Goldsboro, Bibb, and Johnston soils. Troup soils are on the sandier broad ridges, and Noboco soils are on broad ridges at an intermediate elevation. Goldsboro soils are on broad ridges and upland flats at a lower elevation. Bibb and Johnston soils are in drainageways and on flood plains.

About 60 percent of the acreage of this map unit is cleared and used for row crops, small grains, pasture, or hay.

The soils of this map unit are suited or well suited to corn, soybeans, and small grains. Erosion is a hazard on sloping fields. Conservation tillage, contour farming, and terraces reduce runoff and help to control erosion.

These soils are well suited to pasture and hay. Coastal bermudagrass and bahiagrass grow well if they are properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

These soils are suited or well suited to use as woodland. Common trees to plant are loblolly and longleaf pines. The main concern in producing and harvesting timber is moderate seedling mortality caused by droughtiness on the sandier Fuquay soils. Seedling mortality can be reduced by planting in a furrow and by controlling competing vegetation.

These soils are well suited to use for homesite development. Moderately slow to slow permeability is a moderate to severe limitation for septic tank absorption fields. This limitation can be reduced by enlarging the absorption field.

5. Noboco-Faceville-Neeses

Well drained, sandy soils that have a loamy or clayey subsoil

The landscape of this map unit typically has moderate relief, and the scenic quality is good. Vegetative patterns provide a great deal of visual diversity. The landscape is broad to narrow, nearly level to sloping ridges separated by well defined drainageways. Many well-kept residences and farmsteads and numerous roads are part of this map unit. Slopes generally are smooth, convex, and medium in length, but they can range to complex, rolling, and short. Slopes range from 0 to 15 percent.

This map unit makes up about 10 percent of the county. It is about 20 percent Noboco soils, 18 percent Faceville soils, 16 percent Neeses soils, and 46 percent soils of minor extent.

Noboco soils are at the highest elevation on broad ridges and the associated gentle side slopes. Typically, the surface layer is dark grayish brown loamy sand, and the subsurface layer is light yellowish brown loamy sand. The subsoil is yellowish brown sandy clay loam that has gray mottles in the lower part.

Faceville soils are on broad, nearly level, convex ridges and the associated gentle side slopes. Typically, the surface layer is dark brown loamy sand, and the subsoil is red sandy clay.

Neeses soils are on broad to narrow ridges and long, narrow slopes parallel to streams and drainageways. Typically, the surface layer is yellowish brown loamy sand, and the subsurface layer is light yellowish brown loamy sand. The subsoil is strong brown sandy clay and mottled red sandy clay loam and yellowish brown and pale brown sandy clay. The lower part of the subsoil is dense, firm, and slightly cemented.

Of minor extent in this map unit are the Troup, Fuquay, Orangeburg, and Bibb soils. The Troup and Fuquay soils are on sandier ridges than the major soils, and the Orangeburg soils are on nearly level, broad ridges and associated side slopes. The Bibb soils are in drainageways and on flood plains.

About 60 percent of the acreage of this map unit is cleared and used for row crops, small grains, pasture, or hay.

The soils of this map unit are well suited to very poorly suited to corn, soybeans, and small grains. Erosion is a hazard on the more sloping fields. Conservation tillage, contour farming, and terraces reduce runoff and help to control erosion.

These soils are suited or well suited to pasture and hay. Coastal bermudagrass and bahiagrass grow well if they are properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

These soils are suited or well suited to use as woodland. Loblolly pine is a common tree to plant.

These soils are well suited to very poorly suited to use for homesite development. In some soils, the dense and compact subsoil has slow permeability that is a limitation for septic tank absorption fields. This limitation can be reduced by enlarging the absorption fields. In sloping areas of these soils, absorption lines need to be installed on the contour.

Soils of the Atlantic Coast Flatwoods

These soils are well drained to poorly drained and are on broad flats and in depressions. Most drainageways are poorly defined, but a few well defined drainageways that have narrow flood plains are in areas of this map unit. Local relief is mainly a few feet to ten or twenty feet. This group makes up about 46 percent of the county.

6. Goldsboro-Noboco-Rains

Moderately well drained, well drained, and poorly drained, loamy or sandy soils that have a loamy subsoil

The landscape of this map unit typically has little relief, and the scenic quality is fair. Vegetative patterns provide limited diversity to a somewhat homogeneous landscape. The landscape is broad, nearly level to gently sloping ridges dissected by shallow drainageways and depressions. Slopes generally are long, smooth, and range from 0 to 6 percent. Residences, farmsteads, and roads are common.

This map unit makes up about 23 percent of the county. It is about 19 percent Goldsboro soils, 18 percent Noboco soils, 12 percent Rains soils, and 51 percent soils of minor extent.

Goldsboro soils are at an intermediate elevation on broad ridges and upland flats. Typically, the surface layer is dark grayish brown sandy loam, and the subsurface layer is light yellowish brown sandy loam. The subsoil is sandy clay loam that is yellowish brown in the upper part and gray in the lower part.

Noboco soils are at the highest elevation on broad ridges and the associated gentle side slopes. Typically, the surface layer is dark grayish brown loamy sand, and the subsurface layer is light yellowish brown loamy sand. The subsoil is yellowish brown sandy clay loam that has gray mottles in the lower part.

Rains soils are in depressional bays and poorly defined drainageways. Typically, the surface layer is very dark gray sandy loam, and the subsurface layer is grayish brown sandy loam. The subsoil is gray sandy clay loam.

Of minor extent in this map unit are the Bonneau, Ocilla, Lynchburg, and Coxville soils. Bonneau and Ocilla soils are on low, sandier ridges, and Lynchburg soils are on lower ridges. Coxville soils are in oval bays and depressions.

About 70 percent of the acreage of this map unit is cleared and used for row crops, pasture, or hay. The cleared areas are mostly the better drained soils.

The soils of this map unit are well suited to corn, soybeans, and small grains; however, the more poorly drained soils at the lower elevation require drainage to consistently produce high yields. Open ditches, tile drains, or a combination of the two can be used. Returning crop residue to the soil helps to maintain good tilth, increases water infiltration, and improves yields on all the soils of this map unit. Soil blowing is reduced on large fields if row crops and windbreaks are planted perpendicular to the wind direction, if cover crops are used, and if crop residue is left on the surface.

These soils are well suited to pasture and hay. The better drained soils are well suited to improved bermudagrass, and the more poorly drained soils are well suited to bahiagrass. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and soil in good condition. Shallow surface drains are needed on the more poorly drained soils to give good yields.

These soils are well suited to use as woodland. Loblolly pine is a common tree to plant. Seedlings survive and grow well on the better drained soils if competing vegetation is controlled. The more poorly drained soils have a high site index, but seedling mortality and equipment use limitations are severe if excess surface water is not removed.

These soils are well suited to poorly suited to use for homesite development. Wetness is the main limitation, especially on the more poorly drained soils at the lower elevation. It is a severe limitation for septic tank absorption fields, but adding suitable fill material or using a specially designed system can help to overcome this limitation. The better drained soils at the higher elevation have fewer limitations for homesite development and other engineering uses.

7. Lynchburg-Goldsboro-Rains

Moderately well drained to poorly drained, loamy soils that have a loamy subsoil

The landscape of this map unit typically has little relief, and the scenic quality is poor. Occasional bodies of water and streams provide limited visual interest. The landscape is broad, nearly level ridges, upland flats, and depressions. A few areas have gentle slopes that are long and smooth. The drainageways are poorly defined. Many residences, farmsteads, and roads are part of this map unit.

This map unit makes up about 15 percent of the county. It is about 27 percent Lynchburg soils, 19 percent Goldsboro soils, 12 percent Rains soils, and 42 percent soils of minor extent.

Lynchburg soils are on low, broad ridges. Typically, the surface layer is black fine sandy loam, and the subsurface layer is dark grayish brown sandy loam. The subsoil is sandy clay loam that is yellowish brown in the upper part and mottled in gray and shades of brown and red in the lower part.

Goldsboro soils are on higher ridges and upland flats. Typically, the surface layer is dark grayish brown sandy loam, and the subsurface layer is light yellowish brown sandy loam. The subsoil is sandy clay loam that is yellowish brown in the upper part and gray in the lower part.

Rains soils are in depressional bays and poorly defined drainageways. Typically, the surface layer is very dark gray sandy loam, and the subsurface layer is grayish brown sandy loam. The subsoil is gray sandy clay loam.

Of minor extent in this map unit are the Noboco, Bonneau, Ocilla, Coxville, and Pantego soils. The Noboco soils are well drained and are at the highest elevation. Bonneau and Ocilla soils are on the sandier low ridges. Coxville and Pantego soils are in oval bays and in depressions.

About 60 percent of the acreage of this map unit is cleared and used for row crops, pasture, or hay. The cleared areas are mostly the better drained soils.

The soils of this map unit are well suited to corn, soybeans, and small grains. The more poorly drained soils at the lower elevation require drainage to consistently produce high yields. Open ditches, tile drains, or a combination of the two can be used. When returned to the soil, crop residue helps to maintain good tilth, increases water infiltration, and improves yields on all the soils. Soil blowing is reduced on large fields if row crops and windbreaks are planted perpendicular to the wind direction, if cover crops are used, and if crop residue is left on the surface.

These soils are well suited to pasture and hay. The better drained soils are well suited to improved bermudagrass, and the more poorly drained soils are well suited to bahiagrass. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and soil in good condition. Shallow surface drains are needed on the more poorly drained soils to give good yields.

These soils are well suited to use as woodland. Loblolly pine is a common tree to plant. Seedlings survive and grow well on the better drained soils if competing vegetation is controlled. The more poorly drained soils have a high site index, but seedling mortality and equipment use limitations are severe if excess surface water is not removed.

These soils are poorly suited or suited to use for homesite development. Wetness is the main limitation, especially on the more poorly drained soils at the lower elevation. It is a severe limitation for septic tank absorption fields, but adding suitable fill material or using a specially designed system can help to overcome this limitation. The better drained soils have fewer limitations for homesite development and other engineering uses.

8. Dothan-Rains-Clarendon

Well drained, poorly drained, and moderately well drained, sandy and loamy soils that have a loamy subsoil

The landscape of this map unit typically has some slight relief, and the scenic quality is fair. Vegetative patterns provide limited visual diversity to a somewhat homogenous landscape. The landscape is broad, nearly level ridges, upland flats, and depressions. Drainageways are poorly defined, but a few well defined drainageways that have narrow flood plains originate in areas of this map unit. Slopes generally are long, smooth, and range from 0 to 6 percent. Residences, farmsteads, and roads are common.

This map unit makes up about 8 percent of the county. It is about 24 percent Dothan soils, 18 percent Rains soils, 16 percent Clarendon soils, and 42 percent soils of minor extent.

Dothan soils are on nearly level, convex ridges and upland flats and on side slopes. Typically, the surface layer is dark grayish brown loamy sand, and the subsoil is strong brown and yellowish brown sandy clay loam that contains iron-rich nodules.

Rains soils are in depressional bays and poorly defined drainageways. Typically, the surface layer is very dark gray sandy loam, and the subsurface layer is grayish brown sandy loam. The subsoil is gray sandy clay loam.

Clarendon soils are on upland flats and interstream divides. Typically, the surface layer is very dark grayish brown loamy sand, and the subsurface layer is light yellowish brown loamy sand. The subsoil is yellowish brown sandy clay loam that contains iron-rich nodules.

Of minor extent in this map unit are the Orangeburg, Fuquay, Lynchburg, Mouzon, Byars, and Pantego soils. Orangeburg and Fuquay soils are on ridges and side slopes, and Lynchburg soils are on upland flats and in slight depressions. Mouzon soils are on flood plains, and Byars and Pantego soils are in oval bays.

About 70 percent of the acreage of this map unit is cleared and used for row crops, pasture, or hay. The cleared areas are mostly the better drained soils.

The soils of this map unit are well suited to corn, soybeans, small grains, and cotton. The more poorly drained soils at the lower elevation require drainage to consistently produce high yields. Open ditches, tile drains, or a combination of the two can be used. When returned to the soil, crop residue helps to maintain good tilth, increases water infiltration, and improves yields on all the soils. Soil blowing is reduced on large fields if row crops and windbreaks are planted perpendicular to the wind direction, if cover crops are used, and if crop residue is left on the surface.

These soils are well suited to pasture and hay. The better drained soils are well suited to improved bermudagrass, and the more poorly drained soils are well suited to bahiagrass. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and soil in good condition. Shallow surface drains are needed on the more poorly drained soils to give good yields.

These soils are well suited to use as woodland. Loblolly pine is a common tree to plant. Seedlings survive and grow well on the better drained soils if competing vegetation is controlled. The more poorly drained soils have a high site index, but seedling mortality and equipment use limitations are severe if excess surface water is not removed.

These soils are well suited to poorly suited to homesite development. Wetness is the main limitation, especially on the more poorly drained soils at the lower elevation. It is a severe limitation for septic tank absorption fields, but adding suitable fill material or using a specially designed system can help to overcome this limitation. The better drained soils have fewer limitations for homesite development and other engineering uses.

Soils of the Major Flood Plains

These soils are on flood plains near creeks and streams including the Four Hole Swamp and the North Fork and South Fork of the Edisto River. Drainageways are well defined to poorly defined. These soils are subject to frequent flooding or ponding. Soils of this group make up about 11 percent of the county.

9. Mouzon-Elloree

Poorly drained, loamy and sandy soils that have a loamy subsoil

The landscape of this map unit typically has little or no relief, and the scenic quality is poor. Because of the dominance of woodland, the vegetative patterns provide very little visual diversity. The landscape is flood plains near creeks and streams including Four Hole Swamp and Dean Swamp. Very few structures or roads are in areas of this map unit. The soils of this map unit are alkaline and are subject to frequent flooding. They have water on or at the surface most of the year. Slopes are less than 1 percent.

This map unit makes up about 4 percent of the county. It is about 70 percent Mouzon soils, about 20 percent Elloree soils, and about 10 percent soils of minor extent.

Mouzon soils are on well defined flood plains or the larger Carolina Bays. Typically, the surface layer is very dark brown fine sandy loam, and the subsurface layer is light brownish gray loamy sand. The subsoil is gray clay.

Elloree soils are on well defined flood plains. Typically, the surface layer is black loamy sand, and the subsurface layer is light brownish gray sand. The subsoil is grayish brown, gray, and light gray sandy loam and loamy sand.

Of minor extent in this map unit are the Johns, Bibb, Lumbee, and Johnston soils. Johns soils are on adjacent and higher stream terraces. Bibb soils are on flood plains, and Lumbee soils are on low stream terraces. Johnston soils are in the same positions as those of the Mouzon and Elloree soils.

The soils of this map unit are very poorly suited to most agricultural uses, such as row crops and pasture. Wetness and the hazard of flooding are severe limitations that can be only partly reduced by major reclamation projects.

These soils are well suited to use as woodland. Common trees to plant are loblolly pine, sweetgum, and yellow poplar. The equipment use limitation and seedling mortality, caused by wetness and flooding, are the main concerns in producing and harvesting timber. Using water control measures and wide tires on equipment, controlling competing vegetation, planting in raised beds, and operating in the drier months can reduce these problems.

These soils are very poorly suited to use for homesite development. Wetness and the hazard of flooding are very severe limitations that can only be partly reduced by major reclamation projects.

10. Lumbee-Johnston

Poorly drained and very poorly drained, sandy and loamy soils that have a loamy subsoil

The landscape of this map unit typically has little or no relief, and the scenic quality is poor. Because of the dominance of woodland, the vegetative patterns provide very little visual diversity. The landscape is flood plains near creeks and streams, mainly the North Fork and South Fork of the Edisto River. Very few structures or roads are in areas of this map unit. The soils of this map unit are acidic and are subject to frequent flooding. The high water table is at or near the surface most of the year. Slopes are less than 1 percent.

This map unit makes up about 7 percent of the county. It is about 32 percent Lumbee soils, about 20 percent Johnston soils, and about 48 percent soils of minor extent.

Lumbee soils are on well defined flood plains and stream terraces. Typically, the surface layer is dark gray loamy sand, and the subsoil is gray sandy clay loam. The substratum is gray sand.

Johnston soils are on flood plains and in large depressional bays. Typically, these soils have about 3 inches of decomposed leaves, twigs, and stems on the surface. The surface layer is black sandy loam. The underlying material is dark gray and light brownish gray sandy loam in the upper part, brown loamy sand in the middle part, and grayish brown sandy loam in the lower part.

Of minor extent in this map unit are the Johns, Ocilla, and Bibb soils. The Johns and Ocilla soils are on adjacent and higher stream terraces, and the Bibb soils are in the same positions on the landscape as the Lumbee and Johnston soils.

The soils of this map unit are very poorly suited to most agricultural uses, such as row crops and pasture, because wetness and the hazard of flooding are severe limitations. Major reclamation projects can only partly overcome these limitations.

These soils are well suited to use as woodland. Common trees to plant are loblolly pine, sweetgum, and yellow poplar. The equipment use limitation and seedling mortality, caused by wetness and flooding, are the main concerns in producing and harvesting timber. These concerns can be minimized by using water control measures, wide tires on equipment, and raised beds for plants; by controlling competing vegetation; and by operating equipment in the drier months.

These soils are very poorly suited to use for homesite development. Wetness and the hazard of flooding are very severe limitations that can only be partly overcome by major reclamation projects.

Broad Land Use Considerations

The soils in Orangeburg County vary widely in their suitability for major land uses. About 33 percent of the land in the county is used for cultivated crops, mainly soybeans, corn, and small grains. This cropland is scattered throughout the county, but is concentrated to some extent in general soil map units 4, 5, 6, 7, and 8. Soils in map units 1, 2, and 3 are dominantly sandy and require more land use treatments for good yields. Soils in map units 9 and 10 are in very low areas and are frequently flooded. They are very poorly suited to use as cropland.

About 7 percent of the county is used as pasture or for hay. The soils in all map units except 9 and 10 are either suited or well suited to this purpose. Mild temperatures and moderately high rainfall enhance the suitability of the soils for adapted pasture grasses. Soils in map units 9 and 10 are frequently flooded and are poorly suited to pasture and hay.

About 53 percent of the county is woodland. Soils in general soil map units 4, 5, 6, 7, and 8 are well suited to pines. Those in map units 1, 2, and 3 are somewhat droughty for pines, but satisfactory to good yields are common. The soils in map units 9 and 10 are frequently flooded and have only fair to poor suitability for use as woodland.

A small percent of the county is urban or built-up land or is in miscellaneous use. Soils in map units 1, 2, 3, 4, and 5 are well suited to urban development. Those in map units 6, 7, and 8 have limitations caused by wetness, but small areas are suitable for building sites. The soils in map units 9 and 10 are very poorly suited to urban use because of frequent flooding.

Potential for wildlife habitat is generally high throughout the county. Soils in map units 1, 2, and 3 are generally suited to use as habitat for openland wildlife. Soils in map units 4, 5, 6, 7, and 8 are generally suited to use as habitat for woodland wildlife and, in areas that have been cleared, to openland wildlife. The soils in map units 9 and 10 are poorly drained and frequently flooded. They provide suitable habitat for wetland wildlife.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Dothan loamy sand, 2 to 6 percent slopes, is one of several phases in the Dothan series.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Water is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

AeB—Ailey sand, 2 to 6 percent slopes. This soil is well drained and is on broad, undulating ridges and side slopes of the Coastal Plain. Slopes generally are 4 to 6 percent. They are convex, smooth to irregular in shape, and are from 75 to 100 feet long. Most areas are about 5 to 100 acres.

Typically, the surface layer is dark grayish brown sand about 6 inches thick. The subsurface layer, to a depth of 25 inches, is light yellowish brown sand. The subsoil to a depth of 31 inches is yellowish brown sandy clay loam, and to a depth of 64 inches, it is firm, dense, and slightly cemented sandy loam and sandy clay loam that is mottled in shades of brown, yellow, and red.

Included with this soil in mapping are small areas of Blanton, Lucy, Neeses, Orangeburg, and Troup soils. The included soils make up about 20 percent of this map unit.

Important soil properties:

Permeability: slow in the lower part of the subsoil
Available water capacity: low
Surface runoff: slow
Erosion hazard: slight
High water table: none within a depth of 6 feet

This Ailey soil is mainly used as pasture, or the acreage is native woodland of upland oaks, loblolly pine, and longleaf pine. In a few areas, this soil is used for cultivated crops or truck crops, such as watermelons and cantaloupes.

This soil is suited to row crops and small grains. The major management problems are droughtiness, low nutrient-holding capacity, and soil blowing. Conservation tillage and cover crops increase the water holding and plant nutrient capacity and prevent soil blowing. Fertilizers are more efficient if they are applied at intervals rather than in a single application.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking, pasture rotation, and restricted use during dry periods help keep the pasture and soil in good condition.

This soil is suited to use as woodland. Longleaf pine is a common tree to plant. The main concerns in producing and harvesting timber are the equipment use limitation and seedling mortality. The sandy texture of this soil is a moderate limitation for the use of equipment. This limitation can be reduced by using wide tires on equipment or crawler-type equipment. Planting high quality seedlings in a shallow furrow increases plant survival.

This soil is suited to use for urban development; however, it has a severe limitation for septic tank absorption fields because of slow permeability in the lower part of the subsoil. Onsite sewage disposal systems sometimes fail or do not function properly during periods of high rainfall because of this restrictive layer. This limitation can be partly reduced by enlarging the absorption field. In addition, a tile drain positioned upslope can intercept and divert perched ground water that is moving laterally toward the absorption field. This soil also has slight limitations for dwellings without basements. It has a moderate limitation for small commercial buildings because of slope. This limitation can be reduced by cutting, filling, and vegetating disturbed areas.

This Ailey soil is in capability subclass IIIs.

AeC—Ailey sand, 6 to 10 percent slopes. This soil is well drained and is on side slopes along drainageways of the Coastal Plain. Slopes generally are from 6 to 9 percent. They are concave, smooth to irregular in shape, and are 50 to 100 feet long. Most areas are 5 to 150 acres.

Typically, the surface layer is dark grayish brown sand about 6 inches thick. The subsurface layer, to a depth of 25 inches, is light yellowish brown sand. The subsoil to a depth of 31 inches is yellowish brown sandy clay loam, and to a depth of 64 inches, it is firm, dense, and slightly cemented sandy loam and sandy clay loam that is mottled in shades of brown, yellow, and red.

Included with this soil in mapping are small areas of Lucy, Neeses, and Troup soils. The included soils make up about 25 percent of this map unit.

Important soil properties:

Permeability: slow in the lower part of the subsoil
Available water capacity: low
Surface runoff: medium
Erosion hazard: moderate
High water table: none within a depth of 6 feet

Most of the acreage of this Ailey soil is native woodland of upland oaks, hickory, loblolly pine, and longleaf pine. Most cleared areas of this soil are used as pasture, but a few are used for cultivated crops and truck crops, such as watermelons and cantaloupes.

This soil is poorly suited to row crops and small grains. The major management problems are erosion, droughtiness, and low nutrient-holding capacity. Conservation tillage, contour farming, terraces, and strip crops reduce runoff and help to control erosion. Crop residue on or near the surface also aids in moisture retention. Fertilizers are more efficient if they are applied at intervals rather than in a single application.

This soil is suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking, pasture rotation, and restricted use during dry periods help keep the pasture and soil in good condition.

This soil is suited to use as woodland. Longleaf pine is a common tree to plant. The main concerns in producing and harvesting timber are the equipment use limitation and seedling mortality. The sandy texture of this soil is a moderate limitation to the use of equipment. This limitation can be reduced by using wide tires on equipment or crawler-type equipment. Planting high quality seedlings in a shallow furrow on the contour increases plant survival.

This soil is suited to use for urban development; however, it has severe limitations for septic tank absorption fields because of slow permeability in the lower part of the subsoil. This limitation can be partly reduced by enlarging the absorption field. Stepdown boxes between lines that are installed on the contour can aid in the proper functioning of septic tank absorption fields. A tile drain positioned upslope can intercept and divert perched ground water that is moving laterally toward the absorption field. Steepness of slope is a moderate limitation for dwellings without basements and a severe limitation for small commercial buildings. Revegetating disturbed areas around construction sites as soon as possible helps to control erosion.

This Ailey soil is in capability subclass IVs.

AlA—Albany sand, 0 to 2 percent slopes. This soil is somewhat poorly drained and is on irregular ridges and the edges of Carolina Bays. Slopes are smooth and convex and generally are less than 1 percent. Most areas are about 5 to 50 acres.

Typically, the surface layer is very dark grayish brown and dark grayish brown sand about 8 inches thick. The subsurface layer, to a depth of 68 inches, is sand that is mottled in shades of yellow and brown and in white. The subsoil to a depth of 82 inches is gray sandy clay loam.

Included with this soil in mapping are small areas of Blanton, Bonneau, and Ocilla soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: rapid in the surface and subsurface layers; moderate in the subsoil
Available water capacity: low
Surface runoff: slow

Erosion hazard: slight
High water table: 12 to 30 inches below the surface in winter and early in spring

Most of the acreage of this Albany soil is native woodland of longleaf pine, sweetgum, poplar, oak, and hickory. A few areas have been cleared and are used for cultivated crops or pasture.

This soil is suited to row crops and small grains. The major management problems are the seasonal high water table and low nutrient-holding capacity. A system of tile drains and open ditches can remove excess water in the soil. Where tile drains are used, a protective filter prevents sand from entering the lines. Water control structures help to control water levels during dry seasons. Because of the low nutrient-holding capacity of this soil, fertilizers are more efficient if they are applied at intervals rather than in a single application. Crop residue on or near the surface reduces soil blowing and increases moisture retention and organic matter content.

This soil is well suited to hay and pasture. Bahiagrass grows well if properly managed and fertilized. Surface drainage is needed and can be provided by open ditches, surface drains, or a combination of these. Proper stocking, pasture rotation, and restricted use during wet periods help keep the pasture and soil in good condition.

This soil is suited to use as woodland. Loblolly pine is a common tree to plant. The main concerns in producing and harvesting timber are the equipment use limitation and seedling mortality. Conventional methods of harvesting timber generally can be used, but use may be limited during wet seasons. Control of competing vegetation is required for the survival of young seedlings. This can be done by site preparation, burning, spraying, cutting, or girdling.

This soil is poorly suited to use for urban development. It has severe limitations for septic tank absorption fields because of wetness, which generally prohibits the use of this soil for conventional septic tank absorption fields. Wetness is also a severe limitation for dwellings without basements and for small commercial buildings. This limitation can be reduced by installing tile drains around the foundation, adding suitable fill material, and shaping the area to move surface water away from buildings.

This Albany soil is in capability subclass IIIw.

ApB—Alpin sand, 0 to 6 percent slopes. This soil is excessively drained and is on broad ridges and gentle side slopes of the Coastal Plain. Slopes generally are about 1 to 3 percent. They are smooth and convex and are from 100 to 400 feet long. Most areas are about 30 to 400 acres.

Typically, the surface layer is dark gray sand about 4 inches thick. The subsurface layer, to a depth of 11 inches, is very pale brown sand. The subsoil to a depth of 46 inches is yellow, reddish yellow, and strong brown sand, and to a depth of 80 inches, it is thin alternating bands of reddish yellow and gray sand and yellowish red loamy sand.

Included with this soil in mapping are small areas of Ailey, Lucy, Blanton, and Troup soils. Also included are soils that do not have thin alternating bands of darker color loamy sand in the lower part of the subsoil. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderately rapid
Available water capacity: very low
Surface runoff: slow
Erosion hazard: slight
High water table: none within a depth of 6 feet

Most of the acreage of this Alpin soil is natural woodland of longleaf pine, turkey oak, and blackjack oak. Most cleared areas are used as pasture, but a few areas are used for row crops and small grains.

This soil is poorly suited to row crops and small grains. Because of the sandy texture, crops need to be tolerant of drought. The major management problems are droughtiness, low nutrient-holding capacity, and soil blowing. Crop residue on or near the surface increases moisture retention and organic matter content. Stripcropping and conservation tillage reduce soil blowing. Fertilizers are more efficient if they are applied at intervals rather than in a single application.

This soil is suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during dry periods help keep the pasture and soil in good condition. The use of this soil for pasture or hay is effective in controlling soil blowing.

This soil is well suited to use as woodland. Longleaf pine is a common tree to plant. The main concerns in producing and harvesting timber are the equipment use limitation and seedling mortality. The use of track vehicles or wide tires on equipment reduces the equipment limitation. Seedling mortality caused by droughtiness can be reduced by planting seedlings in a furrow and by controlling competing vegetation.

This soil is well suited to use for urban development. It has slight limitations for septic tank absorption fields, dwellings without basements, and small commercial buildings.

This Alpin soil is in capability subclass IVs.

ApC—Alpin sand, 6 to 10 percent slopes. This soil is excessively drained and is on slopes parallel to drainageways. Slopes generally are about 6 to 8 percent. They are smooth and convex and are from 50 to 200 feet long. Most areas are about 20 to 150 acres.

Typically, the surface layer is dark gray sand about 4 inches thick. The subsurface layer, to a depth of 11 inches, is very pale brown sand. The subsoil to a depth of 46 inches is yellow, reddish yellow, and strong brown sand, and to a depth of 80 inches, it is thin alternating bands of reddish yellow and gray sand and yellowish red loamy sand.

Included with this soil in mapping are small areas of Ailey, Lucy, Blanton, and Troup soils. Also included are soils that do not have thin alternating bands of darker color loamy sand in the lower part of the subsoil. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderately rapid
Available water capacity: very low
Surface runoff: slow
Erosion hazard: slight to moderate
High water table: none within a depth of 6 feet

Most of the acreage of this Alpin soil remains in natural woodland of longleaf pine, turkey oak, and blackjack oak. Most cleared areas are used as pasture.

This soil is very poorly suited to row crops and small grains. The sandy texture is a limitation that is difficult to reduce.

This soil is suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if they are properly managed and fertilized. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during dry periods help keep the pasture and soil in good condition. The use of this soil for pasture or hay is also effective in controlling soil blowing.

This soil is well suited to use as woodland. Longleaf pine is a common tree to plant. The main concerns in producing and harvesting timber are the equipment use limitation and seedling mortality. The use of track vehicles or wide tires on equipment reduces the equipment limitation. Seedling mortality caused by droughtiness can be reduced by planting seedlings in a furrow and by controlling competing vegetation.

This soil is suited to use for urban development; however, it has moderate limitations for septic tank absorption fields because of slope. This limitation can be reduced by using stepdown boxes and installing the absorption lines on the contour. Slope is a moderate limitation for dwellings without basements and a severe limitation for small commercial buildings. Revegetating disturbed areas around construction sites helps to control erosion.

This Alpin soil is in capability subclass VIs.

Bb—Bibb sandy loam, frequently flooded. This soil is poorly drained and is on flood plains. It is subject to frequent flooding for brief durations in winter and early in spring. Slopes are less than 2 percent. The areas are narrow and elongated and range from 10 to 150 acres.

Typically, the surface layer is very dark grayish brown and dark grayish brown sandy loam about 9 inches thick. The underlying material to a depth of 15 inches is light brownish gray sand. It is grayish brown sandy loam to a depth of 26 inches, gray sandy loam to a depth of 40 inches, and gray sand to a depth of 62 inches.

Included with this soil in mapping are areas of Elloree, Johnston, Lumbee, Pelham, and Rains soils. The included soils make up about 25 percent of this map unit.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Surface runoff: very slow
Erosion hazard: slight
High water table: 0.5 foot to 1.5 feet below the surface in winter and spring

Most of the acreage of this Bibb soil is native vegetation of sweetgum, red maple, blackgum, and water oak.

This soil is very poorly suited to row crops and to use as pasture. Wetness and the hazard of flooding are severe limitations that are difficult to reduce.

This soil is well suited to production of water-tolerant hardwoods. The equipment use limitation and seedling mortality, caused by wetness and flooding, are the main concerns in producing and harvesting timber. Using wide tires on equipment, planting on raised beds, and operating equipment in the drier months can minimize these concerns.

This soil is very poorly suited to use for urban development. The difficulty and expense of reducing the problems caused by wetness and flooding generally prohibit the development of this soil for homesites.

This Bibb soil is in capability subclass Vw.

BlB—Blanton sand, 0 to 6 percent slopes. This soil is somewhat excessively drained and is on broad upland ridges and side slopes of the Coastal Plain. Slopes generally are 1 to 3 percent. They are smooth and convex and are 100 to 500 feet long. Most areas are about 10 to 400 acres.

Typically, the surface layer is very dark grayish brown sand about 5 inches thick. The subsurface layer, to a depth of 61 inches, is yellowish brown and pale brown sand. The subsoil to a depth of 64 inches is light yellowish brown sandy loam, and to a depth of 82 inches, it is light yellowish brown sandy loam and mottled light yellowish brown, yellowish brown, yellowish red, and light gray sandy clay loam.

Included with this soil in mapping are small areas of Ailey, Bonneau, Fuquay, Lucy, and Troup soils. The included soils make up about 20 percent of this map unit.

Important soil properties:

Permeability: rapid in the surface layer and upper part of the subsoil and moderate in the lower part
Available water capacity: very low
Surface runoff: slow
Erosion hazard: slight
High water table: 5 to 6 feet below the surface in winter and early in spring

Most of the acreage of this Blanton soil is native woodland of longleaf pine, turkey oak, southern red oak, and hickory. Some areas have been cleared and are used as pasture or for truck crops, such as watermelons or cantaloupes.

This soil is poorly suited to row crops and small grains. Crops that are drought-tolerant will grow; however, soil blowing in large fields can damage crops. Soil blowing can be reduced by using all crop residue and conservation tillage. Because of the low nutrient-holding capacity of this soil, split applications of fertilizers are more efficient than a single application.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. The use of this soil for pasture and hay is also effective in controlling soil blowing. Proper stocking, pasture rotation, and restricted use during dry periods help keep the pasture and soil in good condition.

This soil is suited to use as woodland. Common trees to plant are loblolly and longleaf pines. The moderate equipment use limitation and seedling mortality caused by the sandy texture are concerns in producing and harvesting timber. The equipment limitation can be reduced by using wide tires on equipment or crawler-type equipment. Planting high-quality seedlings in a shallow furrow increases plant survival.

This soil is suited to use for urban development; however, it has moderate limitations for septic tank absorption fields because of wetness. This limitation can be reduced by installing the absorption lines a suitable distance above the high water table. This soil has slight limitations for dwellings without basements and for small commercial buildings.

This Blanton soil is in capability subclass IIIs.

BlC—Blanton sand, 6 to 10 percent slopes. This soil is somewhat excessively drained and is on side slopes of the Coastal Plain. Slopes generally are 6 to 8 percent. They are smooth and convex and are 100 to 200 feet long. Most areas are about 10 to 70 acres.

Typically, the surface layer is very dark grayish brown sand about 5 inches thick. The subsurface layer, to a depth of 61 inches, is yellowish brown and pale brown sand. The subsoil to a depth of 64 inches is light yellowish brown sandy loam, and to a depth of 82 inches, it is brown sandy loam in the upper part and sandy clay loam that is mottled in shades of brown, red, and gray in the lower part.

Included with this soil in mapping are small areas of Ailey, Lucy, and Troup soils. The included soils make up about 20 percent of this map unit.

Important soil properties:

Permeability: rapid in the surface layer and upper part of the subsoil and moderate in the lower part
Available water capacity: very low
Surface runoff: slow
Erosion hazard: moderate
High water table: 5 to 6 feet below the surface in winter and early in spring

Most of the acreage of this Blanton soil is native woodland of longleaf pine, turkey oak, southern red oak, and hickory. Some areas have been cleared and are used as pasture.

This soil is poorly suited to row crops and small grains. The major management problems are droughtiness, the hazard of erosion, low nutrient-holding capacity, and soil blowing. Crops need to be tolerant of drought because the available moisture during dry seasons is not adequate for good growth of most plants. Conservation tillage and contour farming slow the movement of water over the soil surface, reducing the amount of erosion. Crop residue on or near the surface reduces soil blowing and aids in moisture retention. Because of the low nutrient-holding capacity, split applications of fertilizers are more efficient than single applications.

The soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. The use of this soil for pasture and hay is also effective in controlling soil blowing. Proper stocking, pasture rotation, and restricted use during dry periods help keep the pasture and soil in good condition.

This soil is suited to use as woodland. Common trees to plant are loblolly and longleaf pines. The moderate equipment use limitation and seedling mortality caused by the sandy texture are concerns in producing and harvesting timber. The equipment limitation can be reduced by using wide tires on equipment or crawler-type equipment. Planting high-quality seedlings in a shallow furrow on the contour increases plant survival.

This soil is suited to use for urban development; however, it has moderate limitations for septic tank absorption fields because of wetness and slope. The wetness limitation can be reduced by installing the absorption lines a suitable distance above the high water table. The slope limitation can be reduced by the use of stepdown boxes between lines that are installed on the contour. Steepness of slope is also a moderate limitation for dwellings without basements and a severe limitation for small commercial buildings. The slope affects ease of excavation. Revegetating disturbed areas around construction sites helps to control erosion.

This Blanton soil is in capability subclass IVs.

BoB—Bonneau sand, 0 to 4 percent slopes. This soil is well drained and is on low ridges and side slopes of the Coastal Plain. Slopes generally are 1 to 3 percent. They are smooth and convex and are 75 to 200 feet long. Most areas are 5 to 70 acres.

Typically, the surface layer is dark grayish brown sand about 8 inches thick. The subsurface layer, to a depth of 35 inches, is light yellowish brown and yellowish brown loamy sand. The subsoil is sandy clay loam. It is yellowish brown to a depth of 43 inches and is mottled in shades of gray, brown, yellow, and red to a depth of 80 inches.

Included with this soil in mapping are small areas of Albany, Fuquay, Goldsboro, Noboco, and Ocilla soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderate
Available water capacity: low
Surface runoff: slow
Erosion hazard: slight
High water table: 3.5 to 5 feet below the surface in winter and early in spring

This Bonneau soil is used mainly as cropland or for small grains. The remaining areas are pasture or native woodland.

This soil is suited to row crops and small grains. The major management problems are droughtiness, low nutrient-holding capacity, and soil blowing. Crop residue on or near the surface increases moisture retention and organic matter content. Contour farming and terraces are needed in areas that have long, smooth slopes. Soil blowing is reduced on large fields if row crops and windbreaks are planted perpendicular to the wind direction, if cover crops are used, and if crop residue is left on the surface. Fertilizers are more efficient if they are applied at intervals rather than in a single application.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized (fig. 2). Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during dry periods help keep the pasture and soil in good condition. The use of this soil for pasture or hay is also effective in controlling soil blowing.

This soil is well suited to use as woodland. Common trees to plant are loblolly and longleaf pines. The main concerns in producing and harvesting timber are the equipment use limitation and seedling mortality. The use of track vehicles or wide tires on equipment reduces the equipment limitation. Seedling mortality caused by droughtiness can be reduced by planting seedlings in a furrow and by controlling competing vegetation.

This soil is well suited to use for urban development; however, it has severe limitations for septic tank absorption fields because of wetness. Septic systems should be designed so that the base of the absorption field is free of water. This soil has slight limitations for dwellings without basements and for small commercial buildings.

This Bonneau soil is in capability subclass IIs.

By—Byars loam. This soil is very poorly drained and is in depressions and Carolina Bays of the Coastal Plain. Slopes are less than 2 percent. Most areas are 5 to 40 acres.

Typically, the surface layer is black loam about 9 inches thick. The subsoil to a depth of 16 inches is black clay loam, and to a depth of 63 inches, it is very dark gray and dark gray clay loam and grayish brown clay.

Included with this soil in mapping are small areas of Coxville, Pantego, and Rains soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: slow
Available water capacity: high
Surface runoff: ponded to very slow
Erosion hazard: slight
High water table: at or above the surface in winter and spring

Most of the acreage of this Byars soil is native woodland of water tupelo, sweetgum, cypress, and water oak. A few areas have been cleared and are used for row crops or pasture.

This soil is well suited to row crops and small grains. The major management problems are the seasonal high water table and slow permeability. Shallow surface drains and open ditches can lower the water table.

This soil is suited to hay and pasture. Drainage can be provided by shallow surface drains. Bahiagrass grows well if properly managed and fertilized. Proper stocking, pasture rotation, timely determent of grazing, and restricted use during wet periods help keep the pasture in good condition.

This soil is well suited to use as woodland. Common trees to plant are loblolly pine and American sycamore. The equipment use limitation and seedling mortality, caused by wetness, are the main concerns in producing and harvesting timber. These concerns can be minimized by removing excess water, using wide tires on equipment, planting seedlings on raised beds, and operating equipment in the drier months.

This soil is very poorly suited to use for urban development. Ponding and moderately slow permeability are severe limitations for septic tank absorption fields, dwellings without basements, and small commercial buildings. These limitations are difficult to reduce and generally prohibit the use of this soil for urban development.

This Byars soil is in capability subclass IIIw.

Figure 2.—Some areas of Bonneau sand, 0 to 4 percent slopes, are used as pasture.

CdA—Clarendon loamy sand, 0 to 2 percent slopes. This soil is moderately well drained and is on upland or broad interstream divides of the Coastal Plain. Slopes generally are less than 1 percent. Most areas are about 5 to 100 acres.

Typically, the surface layer is very dark grayish brown loamy sand about 8 inches thick. The subsurface layer, to a depth of about 15 inches, is light yellowish brown loamy sand. The subsoil is sandy clay loam. It is yellowish brown to a depth of 40 inches and gray to a depth of 88 inches. Common iron-rich bodies are below a depth of 27 inches.

Included with this soil in mapping are small areas of Dothan, Dunbar, Duplin, and Lynchburg soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderate in the upper part of the subsoil and moderately slow in the lower part
Available water capacity: moderate
Surface runoff: slow
Erosion hazard: slight
High water table: 2 to 3 feet below the surface in winter and early in spring

This Clarendon soil is used mainly for row crops and small grains. A few areas are pasture or native woodland.

This soil is well suited to row crops and small grains. For early spring cultivation, drainage is needed to lower the high water table. Open ditches or tile drains, or both, can be used. Conservation tillage and cover crops increase the water holding and plant nutrient capacity and prevent soil blowing.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during wet periods help keep the pasture and soil in good condition.

The soil is well suited to use as woodland. Loblolly pine is a common tree to plant. The moderate equipment limitation caused by wetness is the main concern in producing and harvesting timber. This concern can be minimized by using wide tires on equipment or operating equipment in the drier months.

This soil is suited to use for urban development; however, it has severe limitations for septic tank absorption fields because of wetness and moderately slow permeability. Shallow placement of filter lines and use of fill material or an alternate system aid in the function of septic tank absorption fields. Wetness is also a moderate limitation for dwellings without basements and small commercial buildings. This limitation can be reduced by installing tile drains around the foundation and by shaping the area to move surface water away from buildings.

This Clarendon soil is in capability subclass IIw.

Cx—Coxville sandy loam. This soil is poorly drained and is in slightly depressional oval bays and poorly defined drainageways of the Coastal Plain. Slopes are less than 2 percent. Most areas are 5 to 100 acres.

Typically, the surface layer is very dark gray sandy loam about 5 inches thick. The subsoil to a depth of 60 inches is gray sandy clay loam and clay that has mottles in shades of brown, yellow, and red.

Included with this soil in mapping are small areas of Byars, Dunbar, Lynchburg, Pantego, and Rains soils. The included soils make up about 20 percent of this map unit.

Important soil properties:

Permeability: moderately slow
Available water capacity: high
Surface runoff: slow to ponded
Erosion hazard: slight
High water table: at or near the surface in winter and spring

Most of the acreage of this Coxville soil is native woodland of sweetgum, water oak, water tupelo, loblolly pine, and longleaf pine. A few areas have been cleared and are used for row crops or pasture.

This soil is well suited to row crops and small grains. The major management problems are the seasonal high water table and moderately slow permeability. Because of the moderately slow permeability, shallow surface drains and open ditches are commonly used to lower the high water table.

This soil is well suited to use as pasture. Bahiagrass grows well if properly managed and fertilized. The major limitation is the seasonal high water table. Shallow surface drains can sufficiently remove excess surface water and lower the high water table. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during wet periods help keep the pasture and soil in good condition.

This soil is well suited to use as woodland. Loblolly pine is a common tree to plant. The equipment use limitation and seedling mortality, caused by wetness, are the main concerns in producing and harvesting timber. These concerns can be minimized by removing excess water, using wide tires on equipment, planting seedlings in raised beds, and operating equipment in the drier months.

This soil is poorly suited to use for urban development. Wetness and moderately slow permeability are severe limitations for septic tank absorption fields, dwellings without basements, and small commercial buildings. These limitations generally prohibit an onsite sewage disposal system. The wetness limitation for dwellings without basements and small commercial buildings can be reduced by installing tile drains around the foundation, adding suitable fill material, and shaping the land so surface water moves away from buildings.

This Coxville soil is in capability subclass IIIw.

DaA—Dothan loamy sand, 0 to 2 percent slopes. This soil is well drained and is on broad, smooth ridges of the Coastal Plain. Slopes generally are 1 to 2 percent. They are smooth and are about 100 to 250 feet long. Most areas are 5 to 300 acres.

Typically, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsurface layer, to a depth of 14 inches, is yellowish brown sandy loam. The subsoil to a depth of 48 inches is strong brown and yellowish brown sandy clay loam, and to a depth of 66 inches, it is mottled yellowish brown, yellowish red, and red sandy clay loam and light gray and white sandy clay. Iron-rich bodies are below a depth of 37 inches.

Included with this soil in mapping are small areas of Clarendon, Fuquay, Noboco, and Orangeburg soils. The included soils make up about 10 percent of this map unit.

Important soil properties:

Permeability: moderate in the upper part of the subsoil and moderately slow in the lower part
Available water capacity: moderate
Surface runoff: slow
Erosion hazard: slight
High water table: 3 to 5 feet below the surface in winter and early in spring

This Dothan soil is used mainly for row crops and small grains. A few areas are pasture or native woodland.

This soil is well suited to row crops and small grains. There are no major management problems. Returning crop residue to the soil helps to maintain good tilth and organic matter content. Soil blowing is reduced on large fields if row crops and windbreaks are planted perpendicular to wind direction, if cover crops are used, and if crop residue is left on the surface.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

This soil is well suited to use as woodland. Common trees to plant are loblolly and longleaf pines. This soil has few limitations for woodland use and management.

This soil is well suited to use for urban development; however, it has severe limitations for septic tank absorption fields because of a perched high water table and moderately slow permeability in the lower part of the subsoil. These limitations can be reduced by designing the system so the base of the absorption field is free of water and by increasing the size of the absorption field. This soil has slight limitations for dwellings without basements and for small commercial buildings.

The Dothan soil is in capability class I.

DaB—Dothan loamy sand, 2 to 6 percent slopes. This soil is well drained and is on broad, smooth ridges and gentle side slopes of the Coastal Plain. Slopes are generally 2 to 4 percent. They are smooth and convex and are 50 to 200 feet long. Most areas are 20 to 300 acres.

Typically, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsurface layer, to a depth of 14 inches, is yellowish brown sandy loam. The subsoil to a depth of 48 inches is strong brown and yellowish brown sandy clay loam. To a depth of 66 inches, it is mottled yellowish brown, yellowish red, and red sandy clay loam and light gray and white sandy clay. Iron-rich bodies are below a depth of 37 inches.

Included with this soil in mapping are small areas of Ailey, Fuquay, Neeses, Noboco, and Orangeburg soils. The included soils make up about 20 percent of this map unit.

Important soil properties:

Permeability: moderate in the upper part of the subsoil and moderately slow in the lower part
Available water capacity: moderate
Surface runoff: medium
Erosion hazard: moderate
High water table: 3 to 5 feet below the surface in winter and early in spring

This Dothan soil is used mainly for row crops and small grains. A few areas are pasture or native woodland.

This soil is well suited to row crops and small grains; however, erosion is a hazard. Conservation tillage, contour farming, stripcropping, and terraces reduce runoff and help to control erosion (fig. 3). Tilth and fertility are improved by returning crop residue to the soil.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

This soil is well suited to use as woodland. Common trees to plant are loblolly and longleaf pines. This soil has few limitations for woodland use and management.

This soil is well suited to use for urban development; however, it has severe limitations for septic tank absorption fields because of a perched high water table and moderately slow permeability. These limitations can be reduced by designing the system so the base of the absorption field is free of water and by increasing the size of the absorption field. Absorption lines should be placed on the contour. This soil has slight limitations for dwellings without basements. It has moderate limitations for small commercial buildings because of slope.

This Dothan soil is in capability subclass IIe.

Dn—Dunbar sandy loam. This soil is somewhat poorly drained and is on broad interstream divides on slightly depressional upland flats of the Coastal Plain. Slopes are less than 2 percent. Most areas are 5 to 60 acres.

Typically, the surface layer is very dark grayish brown sandy loam about 8 inches thick. The subsoil to a depth of 14 inches is mottled brown, grayish brown, yellowish brown, and yellowish red clay loam and very dark grayish brown sandy loam. To a depth of 70 inches, it is gray clay loam, sandy clay, and clay.

Included with this soil in mapping are small areas of Coxville, Goldsboro, and Rains soils. The included soils make up about 20 percent of this map unit.

Important soil properties:

Permeability: moderately slow
Available water capacity: high
Surface runoff: slow
Erosion hazard: slight
High water table: 1 foot to 2.5 feet below the surface in winter and early in spring

About half of this Dunbar soil is used as cropland or pasture. The remainder is native woodland of oaks, sweetgum, loblolly pine, and longleaf pine.

This soil is well suited to row crops and small grains. The major management problems are a seasonal high water table and moderately slow permeability. For good yields and easier management, this soil needs to be drained. Because of the moderately slow permeability, shallow surface drains and open ditches are commonly used to lower the high water table.

This soil is well suited to hay and pasture. Bahiagrass grows well if properly managed and fertilized. Surface drainage is needed and can be provided by open ditches, surface drains, or a combination of these. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during wet periods help keep the pasture and soil in good condition.

Figure 3.—Contour stripcropping reduces soil erosion on Dothan loamy sand, 2 to 6 percent slopes.

This soil is well suited to use as woodland. Loblolly pine is a common tree to plant. The equipment use limitation and seedling mortality, caused by wetness, are the main concerns in producing and harvesting timber. These concerns can be minimized by removing excess water, using wide tires on equipment, planting seedlings on raised beds, operating equipment in the drier months, and controlling competing vegetation.

This soil is poorly suited to use for urban development. Wetness and moderately slow permeability are severe limitations that generally prohibit the use of this soil for septic tank absorption fields. Wetness is also a severe limitation for dwellings without basements and for small commercial buildings. This limitation can be reduced by installing tile drains around the foundation, adding suitable fill material, and shaping the area to move surface water away from buildings. Plants that tolerate a seasonal high water table should be selected if drainage is not provided.

This Dunbar soil is in capability subclass IIw.

DpA—Duplin loamy sand, 0 to 2 percent slopes. This soil is moderately well drained and is on upland flats or broad interstream divides of the Coastal Plain. Slopes generally are less than 1 percent. They are smooth and convex and are 100 to 300 feet long. Most areas are about 5 to 70 acres.

Typically, the surface layer is very dark grayish brown loamy sand about 6 inches thick. The subsurface layer, to a depth of 13 inches, is light yellowish brown loamy sand. The subsoil to a depth of 28 inches is brownish yellow sandy clay loam and sandy clay that has strong brown and light gray mottles. To a depth of 38 inches, it is mottled light gray, yellowish red, and brownish yellow sandy clay. The subsoil to a depth of 62 inches is light gray clay that has mottles in shades of red, yellow, and brown.

Included with this soil in mapping are small areas of Dunbar and Lynchburg soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderately slow
Available water capacity: high
Surface runoff: slow
Erosion hazard: slight
High water table: 2 to 3 feet below the surface in winter and early in spring

Most of the acreage of this Duplin soil is native woodland of loblolly pine, longleaf pine, southern red oak, water oak, sweetgum, and yellow poplar. Many areas have been cleared and are used for cultivated crops or pasture.

This soil is well suited to row crops and small grains. The major management problems are occasional wetness and the moderately slow permeability. Shallow surface drains and open ditches are commonly used to lower the high water table. Returning crop residue to the soil improves fertility and tilth and increases the water infiltration rate.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during wet periods help keep the pasture and soil in good condition.

This soil is well suited to use as woodland. Loblolly pine is a common tree to plant. The main concerns in producing and harvesting timber are the moderate equipment use limitation and seedling mortality. These problems can be minimized by using wide tires on equipment, operating equipment in the drier months, and controlling competing vegetation.

This soil is suited to use for urban development; however, it has severe limitations for septic tank absorption fields because of wetness and moderately slow permeability. Shallow placement of filter lines and use of fill material or an alternate system aid in the function of septic tank absorption fields. Wetness is a moderate limitation for dwellings without basements and for small commercial buildings. This limitation can be reduced by installing tile drains around the foundation and by shaping the area to move surface water away from buildings.

This Duplin soil is in capability subclass IIw.

Eo—Elloree loamy sand, frequently flooded. This soil is nearly level and poorly drained. It is on flood plains of the middle and lower Coastal Plain. This soil is subject to frequent flooding of long duration in winter and early in spring. The areas are narrow and elongated and range from 20 to 300 acres.

Typically, the surface layer is black loamy sand about 6 inches thick. The subsurface layer, to a depth of 23 inches, is light brownish gray sand. The subsoil to a depth of 42 inches is grayish brown and gray sandy loam. To a depth of 69 inches, it is gray and light gray loamy sand and sandy loam. The substratum to a depth of 80 inches is light gray sandy loam.

Included with this soil in mapping are small areas of Johnston, Mouzon, and Rains soils. The included soils make up about 20 percent of this map unit.

Important soil properties:

Permeability: moderately rapid
Available water capacity: moderate
Surface runoff: slow
Erosion hazard: slight
High water table: 0 to 12 inches below the surface in winter and early in spring

Most of the acreage of this Elloree soil is native woodland of sweetgum, red maple, southern bayberry, and black cherry.

This soil is very poorly suited to row crops and poorly suited to use as pasture. Wetness and the hazard of flooding are severe limitations that can be only slightly reduced by major reclamation projects.

This soil is well suited to production of water-tolerant hardwoods; however, wetness and the hazard of flooding are limitations. The main concerns in producing and harvesting timber are the equipment use limitation and seedling mortality. These concerns can be minimized by using water control measures and wide tires on equipment, by controlling competing vegetation, by planting seedlings on raised beds, and by operating equipment in the drier months.

This soil is very poorly suited to use for urban development. Wetness and the hazard of flooding are very severe limitations for septic tank absorption fields, dwellings without basements, and small commercial buildings. These limitations can only be partly reduced by major reclamation projects.

This Elloree soil is in capability subclass VIw.

FaA—Faceville loamy sand, 0 to 2 percent slopes. This soil is well drained and is on broad uplands of the Coastal Plain. Slopes generally are 1 to 2 percent. They are smooth and convex and are 100 to 200 feet long. Most areas are 10 to 80 acres.

Typically, the surface layer is dark brown loamy sand about 6 inches thick. The subsoil to a depth of 62 inches is red sandy clay.

Included with this soil in mapping are small areas of Ailey, Dothan, Neeses, and Orangeburg soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Surface runoff: medium
Erosion hazard: slight
High water table: none within a depth of 6 feet

This Faceville soil is used mainly for row crops and small grains. A few areas are pasture or native woodland.

This soil is well suited to row crops and small grains, and there are no major management problems. It produces good yields under proper management. Returning crop residue to the soil helps to maintain good tilth and organic matter content.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

This soil is suited to use as woodland and has few limitations for woodland use and management. Loblolly pine is a common tree to plant.

This soil is well suited to use for urban development. It has slight limitations for septic tank absorption fields, dwellings without basements, and small commercial buildings.

This Faceville soil is in capability class I.

FaB—Faceville loamy sand, 2 to 6 percent slopes. This soil is well drained and is on short side slopes and rolling uplands of the Coastal Plain. Slopes generally are 2 to 6 percent. They are smooth and convex and are 50 to 150 feet long. Most areas are 10 to 150 acres.

Typically, the surface layer is dark brown loamy sand about 6 inches thick. The subsoil to a depth of 62 inches is red and yellowish red sandy clay.

Included with this soil in mapping are small areas of Ailey, Dothan, Neeses, and Orangeburg soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Surface runoff: medium
Erosion hazard: moderate
High water table: none within a depth of 6 feet

This soil is used mainly as cropland. In some areas, it is used as pasture or native woodland.

This soil is well suited to row crops and small grains; however, erosion is a hazard. Conservation tillage, contour farming, and terraces reduce runoff and help to control erosion.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

This soil is suited to use as woodland and has few limitations for producing and harvesting timber. Loblolly pine is a common tree to plant.

This soil is well suited to use for urban development. It has slight limitations for septic tank absorption fields. Absorption lines should be placed on the contour. This soil has slight limitations for dwellings. It has moderate limitations for small commercial buildings because of slope.

This Faceville soil is in capability subclass IIe.

FuB—Fuquay sand, 0 to 6 percent slopes. This soil is well drained and is on ridgetops and side slopes of the Coastal Plain. Slopes generally are less than 3 percent. They are smooth and convex and are 150 to 400 feet long. Most areas are about 25 to 300 acres.

Typically, the surface layer is very dark gray and dark grayish brown sand about 8 inches thick. The subsurface layer, to a depth of 24 inches, is light yellowish brown sand. The subsoil to a depth of 45 inches is yellowish brown sandy clay loam, and to a depth of 74 inches, it is mottled yellowish brown, pale brown, gray, yellowish red, and red sandy clay that has firm iron-rich bodies.

Included with this soil in mapping are small areas of Ailey, Dothan, and Troup soils. The included soils make up about 10 percent of this map unit.

Important soil properties:

Permeability: moderate in the upper part of the subsoil and slow in the lower part
Available water capacity: low
Surface runoff: slow
Erosion hazard: slight
High water table: 4 to 6 feet below the surface in winter and early in spring

This Fuquay soil is used mainly as cropland. In a few areas, it is used as pasture or woodland.

This soil is suited to row crops and small grains. The major management problems are droughtiness, low nutrient-holding capacity, and soil blowing. Conservation tillage and cover crops reduce soil blowing and increase moisture retention and organic matter content. Contour farming reduces erosion in areas that have long, smooth slopes. Fertilizers are more efficient if they are applied at intervals rather than in a single application.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during dry periods help keep the pasture and soil in good condition. The use of this soil for pasture or hay is also effective in controlling soil blowing.

This soil is suited to use as woodland. Longleaf pine is a common tree to plant. The main concerns in producing and harvesting timber are the equipment use limitation and seedling mortality. The use of track vehicles or wide tires on equipment reduces the equipment limitation. The moderate seedling mortality rate caused by droughtiness can be reduced by planting in a furrow and by controlling competing vegetation.

This soil is well suited to use for urban development; however, it has moderate limitations for septic tank absorption fields because of slow permeability in the subsoil. This limitation can be reduced by increasing the size of the absorption field. This soil has slight limitations for dwellings without basements and for small commercial buildings.

This Fuquay soil is in capability subclass IIs.

GoA—Goldsboro sandy loam, 0 to 2 percent slopes. This soil is moderately well drained and is on broad ridges or upland flats of the Coastal Plain. Slopes generally are less than 1 percent. They are smooth and convex and are 150 to 300 feet long. Most areas are about 5 to 200 acres.

Typically, the surface layer is dark grayish brown sandy loam about 8 inches thick. The subsurface layer, to a depth of 16 inches, is light yellowish brown sandy loam. The subsoil is sandy clay loam. It is yellowish brown to a depth of 56 inches and gray to a depth of 68 inches.

Included with this soil in mapping are small areas of Bonneau, Clarendon, Lynchburg, Noboco, Rains, and Stallings soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Surface runoff: slow to medium
Erosion hazard: slight
High water table: 2 to 3 feet below the surface in winter and early in spring

This Goldsboro soil is used mainly for row crops or pasture. A few areas are native woodland of loblolly pine, sweetgum, yellow poplar, and water oak.

This soil is well suited to row crops and small grains; however, wetness is a management concern. Random subsurface drains or surface drainage can reduce wetness. Returning crop residue to the soil helps to maintain good tilth and organic matter content.

This soil is well suited to hay and pasture. Bahiagrass grows well if properly managed and fertilized. Proper stocking, pasture rotation, and deferred grazing during wet periods help keep the pasture and soil in good condition.

This soil is well suited to use as woodland. Loblolly pine is a common tree to plant. The equipment use limitation is moderate because of wetness.

This soil is suited to use for urban development; however, it has severe limitations for septic tank absorption fields because of wetness. Shallow placement of filter lines and use of fill material or an alternate system aid in the function of absorption fields. Wetness is also a moderate limitation for dwellings without basements and for small commercial buildings. This limitation can be reduced by installing tile drains around the foundation and by shaping the area to move surface water away from buildings.

This Goldsboro soil is in capability subclass IIw.

Jo—Johns loamy sand. This soil is moderately well drained and is on stream terraces of the Coastal Plain. Slopes are generally less than 1 percent and are 50 to 200 feet long. Most areas are about 10 to 50 acres.

Typically, the surface layer is very dark gray loamy sand about 4 inches thick. The subsurface layer, to a depth of 14 inches, is light yellowish brown loamy sand. The subsoil, to a depth of 28 inches, is light yellowish brown and pale brown sandy clay loam. The substratum to a depth of 62 inches is light brownish gray, brownish yellow, and white sand.

Included with this soil in mapping are small areas of Clarendon, Lumbee, and Lynchburg soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderate in the subsoil
Available water capacity: low
Surface runoff: slow
Erosion hazard: slight
High water table: 1.5 to 3 feet below the surface in winter and early in spring

Most of the acreage of this Johns soil is native woodland of mixed hardwoods and loblolly and longleaf pines. A few areas have been cleared and are used as cropland.

This soil is well suited to row crops and small grains; however, wetness is a management concern. Subsurface drainage or open ditches are effective in reducing wetness. Because of the sandy substratum, ditchbanks can cave in if ditches are cut through this soil.

This soil is well suited to hay and pasture. Bahiagrass grows well if properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

This soil is well suited to use as woodland. Loblolly pine is a common tree to plant. Equipment use limitations are moderate because of wetness.

This soil is suited to use for urban development; however, it has severe limitations for septic tank absorption fields because of wetness. Shallow placement of filter lines and use of fill material or an alternate system aid in the function of absorption fields. Wetness is also a moderate limitation for dwellings without basements and for small commercial buildings. This limitation can be reduced by installing tile drains around the foundation and by shaping the area to move surface water away from buildings.

This Johns soil is in capability subclass IIw.

Js—Johnston sandy loam, frequently flooded. This soil is very poorly drained and is in depressional bays and on flood plains. It frequently floods for brief to long durations from late in fall to early in summer. Most areas are 15 to 500 acres.

Typically, about a 3-inch thick layer of partly decomposed leaves, twigs, and stems is on the surface. The surface layer is black sandy loam about 26 inches thick. The underlying material is dark gray sandy loam to a depth of 36 inches, light brownish gray sandy loam to a depth of 44 inches, brown loamy sand to a depth of 64 inches, and grayish brown sandy loam to a depth of 72 inches.

Included with this soil in mapping are small areas of Bibb, Mouzon, and Rains soils. Also included are soils that have a muck surface layer. The included soils make up about 25 percent of this map unit.

Important soil properties:

Permeability: moderately rapid in the surface layer and rapid in the underlying material
Available water capacity: moderate
Surface runoff: very slow
Erosion hazard: slight
High water table: at or above the surface in winter and spring

Most of the acreage of this Johnston soil is native woodland of tupelo, sweetgum, water oak, pond pine, and cypress.

This soil is very poorly suited to row crops and poorly suited to use as pasture. Wetness and the hazard of flooding are severe limitations that can be only partly reduced by major flood-control and drainage measures.

This soil is well suited to production of water-tolerant hardwoods. The equipment use limitation and seedling mortality, caused by wetness, are the main concerns in producing and harvesting timber. These concerns can be minimized by using wide tires on equipment, planting seedlings on raised beds, and operating equipment in the drier months.

This soil is very poorly suited to use for urban development. Wetness and the hazard of flooding are severe limitations for septic tank absorption fields, dwellings without basements, and small commercial buildings. These limitations can be only partly reduced by major reclamation projects.

This Johnston soil is in capability subclass VIIw.

LcB—Lucy loamy sand, 0 to 6 percent slopes. This soil is well drained and is on ridges and side slopes of the Coastal Plain. Slopes generally are 1 to 2 percent. They are smooth and convex and are 100 to 400 feet long. Most areas are about 10 to 80 acres.

Typically, the surface layer is brown loamy sand about 8 inches thick. The subsurface layer, to a depth of 29 inches, is brownish yellow and yellow sand. The subsoil to a depth of 62 inches is red sandy clay loam.

Included with this soil in mapping are small areas of Ailey, Fuquay, Orangeburg, and Troup soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderate
Available water capacity: low
Surface runoff: slow
Erosion hazard: slight
High water table: none within a depth of 6 feet

This Lucy soil is used mainly for crops, pasture, or hay. A few areas are native mixed hardwoods and pines.

This soil is suited to row crops and small grains. The major management problems are droughtiness, low nutrient-holding capacity, and soil blowing. Crop residue on or near the surface reduces soil blowing and increases moisture retention and organic matter content. Contour farming reduces soil erosion in areas that have long, smooth slopes. Fertilizers are more efficient if they are applied at intervals rather than in a single application.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking, pasture rotation, and restricted use during dry periods help keep the pasture and soil in good condition. The use of this soil for pasture or hay is also effective in controlling soil blowing.

This soil is suited to use as woodland. Common trees to plant are loblolly and longleaf pines. The main concerns in producing and harvesting timber are the equipment use limitation and seedling mortality. The use of track vehicles or wide tires on equipment reduces the equipment limitation on this sandy soil. Seedling mortality caused by droughtiness is reduced by planting seedlings in a furrow and by controlling competing vegetation.

This soil is well suited to use for urban development. It has slight limitations for septic tank absorption fields, dwellings without basements, and small commercial buildings.

This Lucy soil is in capability subclass IIs.

LcC—Lucy loamy sand, 6 to 10 percent slopes. This soil is well drained and is on side slopes of the Coastal Plain. Slopes generally are from 6 to 8 percent. They are smooth and convex and are 100 to 250 feet long. Most areas are about 10 to 100 acres.

Typically, the surface layer is brown loamy sand about 8 inches thick. The subsurface layer, to a depth of 29 inches, is yellow sand. The subsoil to a depth of 62 inches is red sandy clay loam.

Included with this soil in mapping are small areas of Ailey, Alpin, Orangeburg, and Troup soils. The included soils make up about 25 percent of this map unit.

Important soil properties:

Permeability: moderate
Available water capacity: low
Surface runoff: slow to medium
Erosion hazard: moderate
High water table: none within a depth of 6 feet

Most of the acreage of this Lucy soil is in native mixed hardwoods and pines. A few areas are cleared and used as cropland or pasture.

This soil is suited to row crops and small grains. The major management problems are droughtiness, erosion, and soil blowing. Crop residue on or near the surface reduces soil blowing and increases moisture retention and organic matter content. Conservation tillage and contour farming reduce runoff and help to control erosion.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during dry periods help keep the pasture and soil in good condition. The use of this soil for pasture or hay is also effective in controlling soil blowing.

This soil is suited to use as woodland. Common trees to plant are loblolly and longleaf pines. The main concerns in producing and harvesting timber are the equipment use limitation and seedling mortality. The use of track vehicles or wide tires on equipment reduces the equipment limitation. Seedling mortality caused by droughtiness is reduced by planting seedlings in a furrow and by controlling competing vegetation.

This soil is fairly well suited to use for urban development. It has moderate limitations for septic tank absorption fields because of slope. This limitation can be reduced by using stepdown boxes and by installing tile lines on the contour. Slope is also a moderate limitation for dwellings without basements and a severe limitation for small commercial buildings. Revegetating disturbed areas around construction sites as soon as possible helps to control erosion.

This Lucy soil is in capability subclass IIIs.

Lm—Lumbee loamy sand. This soil is poorly drained and is on stream terraces of the Coastal Plain. Slopes are dominantly less than 1 percent. Most areas are about 5 to 60 acres.

Typically, the surface layer is dark gray loamy sand about 8 inches thick. The subsoil, to a depth of 23 inches, is light brownish gray and gray sandy clay loam. The substratum to a depth of 61 inches is light gray sand.

Included with this soil in mapping are small areas of Coxville, Lynchburg, and Rains soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderate in the subsoil
Available water capacity: low
Surface runoff: very slow
Erosion hazard: slight
High water table: 0 to 1.5 feet below the surface in winter and spring

Most of the acreage of this Lumbee soil is native woodland of loblolly pine and water oak. A few areas are cleared and used as cropland.

This soil is well suited to row crops and small grains. The major management problem is the seasonal high water table. If this soil is drained, it produces good yields. Caving in of ditchbanks and clogging of tile lines are common problems. A protective filter prevents sand from entering tile lines. Water control structures in open ditches help to maintain desired water levels during dry seasons.

This soil is well suited to hay and pasture. Bahiagrass grows well if properly managed and fertilized. The seasonal high water table is a limitation, but shallow surface drains can remove excess surface water and lower the water table. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during wet periods help keep the pasture and soil in good condition.

This soil is well suited to use as woodland. Common trees to plant are loblolly pine and sweetgum. The equipment use limitation and seedling mortality, caused by wetness, are the main concerns in producing and harvesting timber. These concerns can be minimized by removing excess water, using wide tires on equipment, planting seedlings on raised beds, and operating equipment in the drier months.

This soil is poorly suited to use for urban development. Wetness is a severe limitation for septic tank absorption fields, dwellings without basements, and small commercial buildings. This limitation generally prohibits use of an onsite sewage disposal system. The wetness limitation for dwellings without basements and small commercial buildings can be reduced by installing tile drains around the foundation, adding suitable fill material, and shaping the land so surface water moves away from buildings.

This Lumbee soil is in capability subclass IIIw.

Lu—Lumbee loamy sand, frequently flooded. This soil is poorly drained and is on broad, flat, low stream terraces of the North Fork and South Fork of the Edisto River. It is subject to frequent flooding of long duration in winter and early in spring. Slopes are dominantly less than 1 percent. Most areas are about 200 to 500 acres, but they can range to several thousand acres.

Typically, the surface layer is dark gray loamy sand about 8 inches thick. The subsoil, to a depth of 23 inches, is light brownish gray and gray sandy clay loam. The substratum to a depth of 61 inches is light gray sand.

Included with this soil in mapping are small areas of Bibb, Coxville, Johnston, and Rains soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderate in the subsoil
Available water capacity: low
Surface runoff: very slow
Erosion hazard: slight
High water table: 0 to 1.5 feet below the surface in winter and spring

Most of the acreage of this Lumbee soil is native woodland of tupelo, sweetgum, water oak, and cypress.

This soil is very poorly suited to row crops and poorly suited to use as pasture. Wetness and the hazard of flooding are severe limitations that can only be reduced by major reclamation projects.

This soil is well suited to production of water-tolerant hardwoods. The equipment use limitation and seedling mortality, caused by wetness and flooding, are the main concerns in producing and harvesting timber. These concerns can be minimized by using water control measures, using wide tires on equipment, planting seedlings on raised beds, controlling competing vegetation, and operating equipment in the drier months.

This soil is very poorly suited to use for urban development. Wetness and the hazard of flooding are severe limitations for septic tank absorption fields, dwellings without basements, and small commercial buildings. These limitations can only be partly reduced by major reclamation projects.

This Lumbee soil is in capability subclass VIw.

Ly—Lynchburg fine sandy loam. This soil is somewhat poorly drained and is on broad interstream divides or slightly depressional upland flats of the Coastal Plain. Slopes are mostly less than 1 percent. Most areas are about 10 to 200 acres.

Typically, the surface layer is black fine sandy loam about 6 inches thick. The subsurface layer, to a depth of 9 inches, is dark grayish brown sandy loam. The subsoil to a depth of 28 inches is brown and gray sandy loam. To a depth of 71 inches, it is mottled gray, yellowish brown, brown, yellowish red, and red sandy clay loam.

Included with this soil in mapping are small areas of Ocilla, Rains, and Stallings soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Surface runoff: slow
Erosion hazard: slight
High water table: 0.5 foot to 1.5 feet below the surface in winter and early in spring

About half of this Lynchburg soil is used as cropland or pasture. The remainder is native woodland of oaks, sweetgum, longleaf pine, and loblolly pine.

This soil is well suited to row crops and small grains. The major management problem is a seasonal high water table. If this soil is drained, it produces good yields. Tile drains and open ditches effectively reduce wetness. Water control structures in open ditches help to maintain desired water levels during dry seasons.

This soil is well suited to hay and pasture. Bahiagrass grows well if properly managed and fertilized. Surface drainage is needed and can be provided by open ditches or surface drains, or a combination of these. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during wet periods help keep the pasture and soil in good condition.

This soil is well suited to use as woodland. Loblolly pine is a common tree to plant. The equipment use limitation caused by wetness is the main concern in producing and harvesting timber. Removing excess water, using wide tires on equipment, and operating equipment in the drier months can reduce the limitation.

This soil is poorly suited to use for urban development. Wetness is a severe limitation for septic tank absorption fields, dwellings without basements, and small commercial buildings. This limitation generally prohibits the use of this soil for septic tank absorption fields. The wetness limitation for dwellings without basements and small commercial buildings can be reduced by installing tile drains around the foundation, adding suitable fill material, and shaping the area to move surface water away from dwellings.

This Lynchburg soil is in capability subclass IIw.

Mo—Mouzon fine sandy loam, frequently flooded. This soil is poorly drained and is on broad, flat flood plains and in depressions of the Coastal Plain. It is subject to frequent flooding of long duration in winter and early in spring. Slopes are mostly less than 1 percent. Most areas are about 200 to 500 acres, but they can range to several thousand acres.

Typically, the surface layer is very dark brown fine sandy loam about 4 inches thick. The subsurface layer, to a depth of 11 inches, is light brownish gray loamy sand. The subsoil extends to a depth of 61 inches. It is mottled dark grayish brown, gray, and yellowish brown sandy clay loam to a depth of 26 inches; grayish brown clay loam to a depth of 38 inches; gray sandy clay loam to a depth of 50 inches; and light gray sandy clay loam below that. The substratum to a depth of 74 inches is gray sandy loam.

Included with this soil in mapping are small areas of Elloree and Rains soils. The included soils make up about 10 percent of this map unit.

Important soil properties:

Permeability: slow
Available water capacity: high
Surface runoff: very slow
Erosion hazard: slight
High water table: at or near the surface in winter and spring

Most of the acreage of this Mouzon soil is native woodland of water oak, pines, and sweetgum.

This soil is very poorly suited to row crops and poorly suited to use as pasture. Wetness and the hazard of flooding are severe limitations that can only be reduced by major reclamation projects.

This soil is well suited to production of water-tolerant hardwoods. The equipment use limitation and seedling mortality, caused by wetness and flooding, are the main concerns in producing and harvesting timber. These concerns can be minimized by using water control measures, using wide tires on equipment, controlling competing vegetation, planting seedlings on raised beds, and operating equipment in the drier months.

This soil is very poorly suited to use for urban development. Wetness and the hazard of flooding are severe limitations for septic tank absorption fields, dwellings without basements, and small commercial buildings. These limitations can be only partly reduced by major reclamation projects.

This Mouzon soil is in capability subclass VIw.

NeB—Neeses loamy sand, 2 to 6 percent slopes. This soil is well drained and is on narrow ridges and short side slopes parallel to drainageways of the Coastal Plain. Slopes generally range from 4 to 6 percent. They are convex, smooth to irregular in shape, and are 75 to 200 feet long. Most areas are 10 to 60 acres.

Typically, the surface layer is yellowish brown loamy sand to a depth of 5 inches. The subsurface layer, to a depth of 8 inches, is light yellowish brown loamy sand. The subsoil extends to a depth of 54 inches. It is strong brown sandy clay to a depth of 28 inches and mottled red sandy clay loam and yellowish brown and pale brown sandy clay to a depth of 37 inches. The sandy clay loam is dense, firm, and slightly cemented. The next layer, to a depth of 54 inches, is mottled red and reddish yellow sandy clay loam. The substratum is red sandy clay loam.

Included with this soil in mapping are small areas of Ailey, Dothan, Faceville, and Orangeburg soils. The included soils make up about 20 percent of the map unit.

Important soil properties:

Permeability: moderate in the upper part of the subsoil and slow in the lower part
Available water capacity: moderate
Surface runoff: medium to rapid
Erosion hazard: moderate
High water table: none within a depth of 6 feet

Most of the acreage of this Neeses soil is native woodland of upland oaks, loblolly pine, and longleaf pine. In a few areas, this soil is used as pasture or for row crops.

This soil is suited to row crops and small grains. The major management problems are slow permeability and the hazard of erosion. Conservation tillage, contour farming, terraces, and grassed waterways reduce runoff and help to control erosion. Crop residue on or near the surface also reduces runoff and helps to maintain soil tilth and organic matter content.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if they are properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

This soil is suited to use as woodland. Loblolly pine is a common tree to plant. The main concerns in producing and harvesting timber are erosion and windthrow hazard. Roads and skid trails built on the contour reduce maintenance costs and prevent erosion. Trees commonly are subject to windthrow because the dense, compacted subsoil restricts root growth (fig. 4).

This soil is suited to use for urban development; however, slow permeability is a severe limitation for septic tank absorption fields. This limitation can be reduced by enlarging the absorption field. Stepdown boxes between absorption lines that are installed on the contour also aid in the proper functioning of the septic tank absorption fields. A tile drain upslope of the absorption field will intercept and divert ground water. This soil has slight limitations for dwellings without basements. It has moderate limitations for small commercial buildings because of slope.

This Neeses soil is in capability subclass IIIe.

NeC—Neeses loamy sand, 6 to 10 percent slopes. This soil is well drained and is on narrow side slopes parallel to drainageways of the Coastal Plain. Slopes generally are 6 to 8 percent. They are convex, irregular in shape, and are 50 to 200 feet long. Most areas are 10 to 100 acres.

Typically, the surface layer is yellowish brown loamy sand to a depth of 5 inches. The subsurface layer, to a depth of 8 inches, is light yellowish brown loamy sand. The subsoil extends to a depth of 54 inches. It is strong brown sandy clay to a depth of 28 inches and mottled red sandy clay loam and yellowish brown and pale brown sandy clay to a depth of 37 inches. The sandy clay loam is dense, firm, and slightly cemented. The next layer, to a depth of 54 inches, is mottled red and reddish yellow sandy clay loam. The substratum is red sandy clay loam.

Included with this soil in mapping are small areas of Ailey, Dothan, Faceville, and Orangeburg soils. The included soils make up about 20 percent of the map unit.

Important soil properties:

Permeability: moderately slow in the upper part of the subsoil and slow in the lower part
Available water capacity: moderate
Surface runoff: medium to rapid
Erosion hazard: severe
High water table: none within a depth of 6 feet

Most of the acreage of this Neeses soil is native woodland of upland oaks, loblolly pine, and longleaf pine. In a few areas, this soil is used as pasture or for row crops.

This soil is poorly suited to row crops and small grains. The major management problems are moderately slow permeability and the hazard of erosion. Tillage should be kept to a minimum on this soil, but if the soil is tilled; it

Figure 4.—Pine trees on Neeses loamy sand, 2 to 6 percent slopes, are occasionally uprooted or broken by strong winds.

should be tilled on the contour. Conservation tillage, contour stripcropping, terraces, and grassed waterways reduce runoff and help to control erosion.

This soil is well suited to hay or pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

This soil is suited to use as woodland. Loblolly pine is a common tree to plant. The main concerns in producing and harvesting timber are the hazards of erosion and windthrow. Harvesting methods that least disturb the soil help to control erosion. These methods include moving logs and plowing fire lanes on the contour and locating skid trails, log landings, and temporary logging roads so that they do not lead to drainageways. Trees are subject to windthrow because of the limited rooting depth.

This soil is suited to use for urban development; however, slow permeability is a severe limitation for septic tank absorption fields. This limitation can be reduced by enlarging the absorption field. Stepdown boxes between absorption lines that are installed on the contour aid in the proper functioning of septic tank absorption fields. A tile drain upslope of the absorption field will intercept and divert ground water. This soil also has moderate limitations for dwellings without basements and severe limitations for small commercial buildings because of slope. Properly designed buildings reduce the need for cutting and filling on this sloping soil.

This Neeses soil is in capability subclass IVe.

NeD—Neeses loamy sand, 10 to 15 percent slopes. This soil is well drained and is on narrow side slopes parallel to drainageways of the Coastal Plain. Slopes generally are 10 to 13 percent. They are convex, irregular in shape, and are 50 to 150 feet long. Most areas are 5 to 40 acres.

Typically, the surface layer is yellowish brown loamy sand to a depth of 5 inches. The subsurface layer, to a depth of 8 inches, is light yellowish brown loamy sand. The subsoil extends to a depth of 54 inches. It is strong brown sandy clay to a depth of 28 inches and mottled red sandy clay loam and yellowish brown and pale brown sandy clay to a depth of 37 inches. The sandy clay loam is dense, firm, and slightly cemented. The next layer, to a depth of 54 inches, is mottled red and reddish yellow sandy clay loam. The substratum is red sandy clay loam.

Included with this soil in mapping are small areas of Ailey, Faceville, and Orangeburg soils. The included soils make up about 20 percent of the map unit.

Important soil properties:

Permeability: moderate in the upper part of the subsoil and slow in the lower part
Available water capacity: moderate
Surface runoff: rapid
Erosion hazard: severe
High water table: none within a depth of 6 feet

Almost all of the acreage of this Neeses soil is native woodland of upland oaks, loblolly pine, and longleaf pine.

This soil is very poorly suited to row crops and small grains because of slope and the hazard of erosion. Because of the severity of these limitations, this soil is best used as pasture or woodland.

This soil is suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Livestock grazing should be managed to protect the soil from excessive erosion.

This soil is fairly well suited to use as woodland. Loblolly pine is a common tree to plant. The main concerns in producing and harvesting timber are erosion and windthrow hazard. Harvesting methods that least disturb the soil help to control erosion. These methods include moving logs and plowing fire lanes on the contour and locating skid trails, log landings, and temporary logging roads so that they do not lead to drainageways. Trees are subject to windthrow because of the limited rooting depth.

This soil is very poorly suited to use for urban development. It has severe limitations for septic tank absorption fields because of slow permeability and slope. These limitations can be reduced by enlarging absorption fields and by using stepdown boxes between absorption lines that are installed on the contour. Because of the steepness of slope, however, effluent can still surface at points downslope. Steepness of slope is also a moderate limitation for dwellings without basements and a severe limitation for small commercial buildings. Properly designed buildings reduce the need for cutting and filling on this strongly sloping soil. Revegetating disturbed areas around construction sites as soon as possible helps to control erosion.

This Neeses soil is in capability subclass VIe.

NoA—Noboco loamy sand, 0 to 2 percent slopes. This soil is well drained and is on broad ridges and upland flats of the Coastal Plain. Slopes generally are 1 to 2 percent. They are smooth and convex and are 100 to 400 feet long. Most areas are 5 to 150 acres.

Typically, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsurface layer, to a depth of 13 inches, is light yellowish brown loamy sand. The subsoil is sandy clay loam. It extends to a depth of at least 72 inches. It is yellowish brown to a depth of 41 inches and yellowish brown with mottles in shades of gray, brown, and red to a depth of 58 inches. Below that, the subsoil is mottled in shades of gray, red, and brown.

Included with this soil in mapping are small areas of Bonneau, Dothan, Goldsboro, and Orangeburg soils. The included soils make up about 10 percent of this map unit.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Surface runoff: slow or medium
Erosion hazard: slight
High water table: 2.5 to 4 feet below the surface in winter and early in spring

This Noboco soil is mainly used for row crops and small grains. A few areas are pasture or native woodland.

This soil is well suited to row crops and small grains. There are no major management problems. Returning crop residue to the soil helps to maintain good tilth and organic matter content. Soil blowing is reduced on large fields if row crops and windbreaks are planted perpendicular to wind direction (fig. 5), if cover crops are used, and if crop residue is left on the surface.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

This soil is well suited to use as woodland. Common trees to plant are loblolly and longleaf pines. This soil has few limitations for woodland use and management.

This soil is well suited to use for urban development; however, it has severe limitations for septic tank absorption fields because of wetness. Systems need to be designed so that the base of the absorption field is free of water. This soil has slight limitations for dwellings without basements and small commercial buildings.

This Noboco soil is in capability class I.

Figure 5.—Windstrips of small grains protect young cotton plants in this area of Noboco loamy sand, 0 to 2 percent slopes.

NoB—Noboco loamy sand, 2 to 6 percent slopes. This soil is well drained and is on narrow side slopes of the Coastal Plain. Slopes generally are 2 to 4 percent. They are smooth and convex and are 150 to 350 feet long. Most areas are 5 to 50 acres.

Typically, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsurface layer, to a depth of 13 inches, is light yellowish brown loamy sand. The subsoil is sandy clay loam to a depth of at least 72 inches. To a depth of 58 inches, it is yellowish brown. Mottles in shades of gray, brown, and red are between depths of 41 and 58 inches. Below that, the subsoil is mottled in shades of gray, yellow, red, and brown.

Included with this soil in mapping are small areas of Bonneau, Dothan, and Orangeburg soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Surface runoff: slow to medium
Erosion hazard: moderate
High water table: 2.5 to 4 feet below the surface in winter and early in spring

This Noboco soil is used mainly as cropland. The remaining areas are pasture or native woodland.

This soil is well suited to row crops and small grains. The major management problem is the hazard of erosion. Conservation tillage, contour farming, and terraces reduce runoff and help to control erosion. Returning crop residue to the soil improves tilth and fertility.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

This soil is well suited to use as woodland and has few limitations for producing and harvesting timber. Loblolly pine is a common tree to plant.

This soil is well suited to use for urban development; however, it has severe limitations for septic tank absorption fields because of wetness. Septic systems should be designed so that the base of the absorption field is free of water. Absorption lines should be installed on the contour. This soil also has slight limitations for dwellings without basements and moderate limitations for small commercial buildings.

This Noboco soil is in capability subclass IIe.

OcA—Ocilla loamy sand, 0 to 2 percent slopes. This soil is somewhat poorly drained and is on broad, flat interstream divides and the rims of Carolina Bays. Slopes are mostly less than 1 percent. Most areas are 5 to 50 acres.

Typically, the surface layer is very dark grayish brown and dark grayish brown loamy sand about 7 inches thick. The subsurface layer, to a depth of 24 inches, is yellowish brown and light yellowish brown loamy sand. The subsoil extends to a depth of at least 70 inches. It is yellowish brown sandy loam to a depth of 28 inches. To a depth of 37 inches, it is mottled yellowish brown, yellowish red, strong brown, and light brownish gray sandy loam. Below that, it is gray sandy clay loam.

Included with this soil in mapping are small areas of Albany, Bonneau, Elloree, Stallings, and Lynchburg soils. The included soils make up about 15 percent of the map unit.

Important soil properties:

Permeability: moderate
Available water capacity: low
Surface runoff: slow
Erosion hazard: slight
High water table: 1 foot to 2.5 feet below the surface in winter and early in spring

Most of the acreage of this Ocilla soil is native woodland of longleaf pine and scattered oaks. A few areas are cleared and used as cropland or pasture.

This soil is suited to row crops and small grains. The major management problems are a seasonal high water table and droughtiness. A system of tile drains and open ditches can remove excess water. Caving in of ditchbanks and clogging of tile lines are common problems. A protective filter prevents sand from entering the tile lines. If this soil is drained, it tends to become droughty during periods of low rainfall. Water control structures in open ditches reduce this problem. Crop residue on or near the surface aids moisture retention.

This soil is well suited to hay and pasture. Bahiagrass grows well if properly managed and fertilized. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during wet periods help keep the pasture and soil in good condition. Shallow surface drains will remove excess surface water.

This soil is well suited to use as woodland. Loblolly pine is a common tree to plant. The equipment use limitation and seedling mortality, caused by wetness, are the main concerns in producing and harvesting timber. These concerns can be minimized by removing excess water, using wide tires on equipment, planting seedlings in raised beds, and operating equipment in the drier months.

This soil is poorly suited to use for urban development. It has severe limitations for septic tank absorption fields because of wetness. A specially designed system that includes shallow placement of filter lines and use of fill material and low pressure lines can reduce this limitation. Wetness is a moderate limitation for dwellings without basements and a severe limitation for small commercial buildings. This limitation can be reduced by installing tile drains around the foundation, adding suitable fill material, and shaping the land so surface water moves away from dwellings.

This Ocilla soil is in capability subclass IIIw.

OrA—Orangeburg loamy sand, 0 to 2 percent slopes. This soil is well drained and is on upland flats of the Coastal Plain. Slopes generally are 1 to 2 percent. They are smooth and convex and are 100 to 300 feet long. Most areas are 5 to 250 acres.

Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer, to a depth of 11 inches, is yellowish brown loamy sand. The subsoil is yellowish red sandy clay loam to a depth of 60 inches and yellowish red sandy clay to a depth of 72 inches.

Included with this soil in mapping are small areas of Dothan, Faceville, Lucy, and Noboco soils. The included soils make up about 10 percent of this map unit.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Surface runoff: medium
Erosion hazard: slight
High water table: none within a depth of 6 feet

This Orangeburg soil is used mainly for row crops and small grains. A few areas are pasture or native woodland.

This soil is well suited to row crops and small grains. There are no major management problems. Returning crop residue to the soil helps to maintain good tilth and organic matter content. Soil blowing can be reduced on large fields if row crops and windbreaks are planted perpendicular to wind direction, if cover crops are used, and if crop residue is left on the surface.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

This soil is suited to use as woodland and has few limitations for woodland use and management. Loblolly pine is a common tree to plant.

This soil is well suited to use for urban development. It has slight limitations for septic tank absorption fields, dwellings without basements, and small commercial buildings.

This Orangeburg soil is in capability class I.

OrB—Orangeburg loamy sand, 2 to 6 percent slopes. This soil is well drained and is on broad ridges and side slopes of the Coastal Plain. Slopes generally are 2 to 4 percent. They are smooth and convex and are 75 to 250 feet long. Most areas are 10 to 150 acres.

Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer, to a depth of 11 inches, is yellowish brown loamy sand. The subsoil is yellowish red sandy clay loam to a depth of 60 inches and yellowish red sandy clay to a depth of 72 inches.

Included with this soil in mapping are small areas of Ailey, Faceville, Lucy, and Noboco soils. The included soils make up about 10 percent of the map unit.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Surface runoff: medium
Erosion hazard: moderate
High water table: none within a depth of 6 feet

This Orangeburg soil is used mainly for row crops and small grains. The remaining areas are pasture or native woodland.

This soil is well suited to row crops and small grains. The major management problem is the hazard of erosion. Conservation tillage, contour farming, and terraces reduce runoff and help to control erosion. Crop residue on or near the surface helps to maintain soil tilth and organic matter content.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

This soil is suited to use as woodland and has few limitations for producing and harvesting timber. Loblolly pine is a common tree to plant.

This soil is well suited to use for urban development. It has slight limitations for septic tank absorption fields. Absorption lines should be installed on the contour. This soil also has slight limitations for dwellings without basements. It has moderate limitations for small commercial buildings because of slope.

This Orangeburg soil is in capability subclass IIe.

OrC—Orangeburg loamy sand, 6 to 10 percent slopes. This soil is well drained and is on narrow side slopes parallel to drainageways of the Coastal Plain. Slopes generally are 6 to 8 percent. They are smooth and convex and are 50 to 150 feet long. Most areas are 10 to 50 acres.

Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer, to a depth of 11 inches, is yellowish brown loamy sand. The subsoil is yellowish red sandy clay loam to a depth of 60 inches and yellowish red sandy clay to a depth of 72 inches.

Included with this soil in mapping are small areas of Ailey, Lucy, and Neeses soils. The included soils make up about 25 percent of the map unit.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Surface runoff: medium
Erosion hazard: severe
High water table: none within a depth of 6 feet

Most of the acreage of this Orangeburg soil is native woodland of upland oaks, loblolly pine, and longleaf pine. In a few areas, this soil is used as pasture or cropland.

This soil is suited to row crops and small grains. The major management problem is the hazard of erosion. All tillage should be on the contour. Conservation tillage, contour stripcropping, terraces, and grassed waterways reduce runoff and help to control erosion.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if they are properly managed and fertilized. Proper stocking and pasture rotation help keep the pasture and soil in good condition.

This soil is suited to use as woodland and has few limitations for producing and harvesting timber. Loblolly pine is a common tree to plant.

This soil is poorly suited to use for urban development. It has moderate limitations for septic tank absorption fields because of slope. Stepdown boxes between absorption lines that are installed on the contour aid in the proper functioning of absorption fields. During extended rainy periods, effluent from onsite sewage disposal systems can seep to the surface at points downslope. Steepness of slope is also a moderate limitation for dwellings without basements and a severe limitation for small commercial buildings.

This Orangeburg soil is in capability subclass IVe.

Pa—Pantego fine sandy loam. This soil is very poorly drained and is in depressional bays of the Coastal Plain. Slopes are dominantly less than 1 percent. Most areas are 5 to 60 acres.

Typically, the surface layer is 18 inches thick. It is black fine sandy loam to a depth of about 12 inches and very dark gray sandy loam below that. The subsoil to a depth of 59 inches is sandy clay loam. It is very dark gray to a depth of 28 inches and mottled gray, very dark gray, and yellowish brown below that. To a depth of 67 inches, the subsoil is mottled gray, yellowish brown, and very dark gray sandy clay.

Included with this soil in mapping are small areas of Byars, Coxville, and Rains soils. The included soils make up about 10 percent of this map unit.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Surface runoff: very slow

Erosion hazard: slight
High water table: 0 to 1 foot below the surface in winter and spring

Most of the acreage of this Pantego soil is native woodland of water tupelo, water oak, willow oak, cypress, and pond pine. A few areas have been cleared and are used as cropland and pasture.

This soil is well suited to row crops and small grains. The major management problem is a seasonal high water table. If this soil is drained, it produces good yields. Open ditches and tile drains reduce wetness and function well in this soil.

This soil is suited to hay and pasture. Drainage is needed and can be provided by shallow surface drains. Bahiagrass grows well if properly managed and fertilized. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during wet periods help keep the pasture and soil in good condition.

This soil is well suited to use as woodland. Common trees to plant are loblolly pine and sweetgum. The equipment use limitation and seedling mortality, caused by wetness, are the main concerns in producing and harvesting timber. These concerns can be minimized by removing excess water, using wide tires on equipment, planting seedlings on raised beds, and operating equipment in the drier months.

This soil is very poorly suited to use for urban development. Wetness is a severe limitation for septic tank absorption fields, dwellings without basements, and small commercial buildings. This limitation is difficult to reduce and generally prohibits the use of this soil for urban development and small commercial buildings.

This Pantego soil is in capability subclass IIIw.

Ph—Pelham loamy sand. This soil is poorly drained and is in slight depressions or poorly defined drainageways of the Coastal Plain. Slopes are dominantly less than 1 percent. Most areas are 10 to 100 acres.

Typically, the surface layer is very dark gray loamy sand about 7 inches thick. The subsurface layer, to a depth of 24 inches, is gray loamy sand and light gray sand. The subsoil is gray sandy loam to a depth of 37 inches and gray and yellowish brown sandy clay loam to a depth of 63 inches.

Included with this soil in mapping are small areas of Ocilla and Rains soils. The included soils make up about 20 percent of the map unit.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Surface runoff: slow
Erosion hazard: slight
High water table: 0.5 foot to 1.5 feet below the surface in winter and early in spring

Most of the acreage of this Pelham soil is native woodland of loblolly pine, longleaf pine, sweetgum, water oak, and cypress. A few areas have been cleared and are used as pasture or cropland.

This soil is suited to row crops and small grains. The major management problem is the seasonal high water table. A system of tile drains and open ditches can remove excess water in this soil if a suitable outlet is available. Caving in of ditchbanks and clogging of tile lines are common problems. A protective filter prevents sand from entering the lines. Water control structures in open ditches help to maintain desired water levels during dry periods.

This soil is suited to hay and pasture. Bahiagrass grows well if properly managed and fertilized. Shallow surface drains provide sufficient drainage to remove surface water and to lower the high water table. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during wet periods help keep the pasture and soil in good condition.

This soil is well suited to use as woodland. Loblolly pine is a common tree to plant. The equipment use limitation and seedling mortality, caused by wetness, are the main concerns in producing and harvesting timber. These concerns can be minimized by removing excess water, using wide tires on equipment, planting seedlings on raised beds, and operating equipment in the drier months.

This soil is poorly suited to use for urban development. Wetness is a severe limitation for septic tank absorption fields, dwellings without basements, and small commercial buildings. This limitation generally prohibits the use of an onsite sewage disposal system. The wetness limitation for dwellings without basements and small commercial buildings can be reduced by installing tile drains around the foundation, adding suitable fill material, and shaping the land so surface water moves away from dwellings.

This Pelham soil is in capability subclass IIIw.

Ra—Rains sandy loam. This soil is poorly drained and is in broad, flat areas, slightly depressional oval bays, and shallow drainageways of the Coastal Plain. Slopes are dominantly less than 1 percent. Most areas are 10 to 200 acres.

Typically, the surface layer is very dark gray sandy loam about 5 inches thick. The subsurface layer is grayish brown sandy loam to a depth of about 8 inches. The subsoil is grayish brown sandy loam to a depth of 21 inches and gray sandy clay loam to a depth of 51 inches. It is mottled light gray, gray, and yellowish brown sandy clay loam to a depth of 70 inches.

Included with this soil in mapping are small areas of Coxville, Stallings, and Pantego soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: moderate
Available water capacity: moderate
Surface runoff: slow
Erosion hazard: slight
High water table: at or near the surface in winter and spring

About half of the acreage of this Rains soil is native woodland of sweetgum, yellow poplar, water oak, and loblolly pine. The remaining acreage has been cleared and is used as cropland or pasture.

This soil is well suited to row crops and small grains. The major management problem is the seasonal high water table. If this soil is drained, it produces good yields. Open ditches and a tile drainage system reduce the wetness problem and function well in this soil. Water control structures in open ditches help to maintain desired water levels during dry periods.

This soil is well suited to hay and pasture. Bahiagrass grows well if properly managed and fertilized. The seasonal high water table is a limitation, but shallow surface drains provide sufficient drainage to remove excess surface water and to lower the water table. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during wet periods help keep the pasture and soil in good condition.

This soil is well suited to use as woodland. Common trees to plant are loblolly pine and sweetgum. The equipment use limitation and seedling mortality, caused by wetness, are the main concerns in producing and harvesting timber. These concerns can be minimized by removing excess water, using wide tires on equipment, planting seedlings on raised beds, and operating equipment in the drier months.

This soil is poorly suited to use for urban development. Wetness is a severe limitation for septic tank absorption fields, dwellings without basements, and small commercial buildings. This limitation generally prohibits the use of an onsite sewage disposal system. The wetness limitation for dwellings without basements and small commercial buildings can be reduced by installing tile drains around the foundation, adding suitable fill material, and shaping the land so surface water moves away from buildings.

This Rains soil is in capability subclass IIIw.

RmB—Rimini sand, 0 to 4 percent slopes. This soil is excessively drained and is on the edges of Carolina Bays and on undulating ridges along the Edisto River below Branchville. Slopes generally are 1 to 3 percent. They are irregular in shape and are 50 to 150 feet long. Most areas are 10 to 300 acres.

Typically, the surface layer is dark gray sand about 4 inches thick. The subsurface layer, to a depth of 57 inches, is light gray and white sand. The subsoil is sand. It is dark reddish brown to a depth of 74 inches and brown to a depth of 83 inches.

Included with this soil in mapping are small areas of Alpin, Blanton, and Troup soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: rapid
Available water capacity: very low
Surface runoff: slow
Erosion hazard: slight
High water table: more than 6 feet below the surface most of the year, but can rise to 4.5 feet below the surface for a few days in winter and early in spring

Most of the acreage of this Rimini soil is native woodland of turkey oak, live oak, blackjack oak, loblolly pine, and longleaf pine.

This soil is very poorly suited to row crops and small grains. Droughtiness, low nutrient-holding capacity, and soil blowing are severe management problems that are difficult to reduce.

This soil is poorly suited to hay and pasture. Droughtiness and the low nutrient-holding capacity are limitations that are difficult to reduce.

This soil is poorly suited to use as woodland. Common trees to plant are longleaf pine and sand pine. The main concerns in producing and harvesting timber are the severe equipment use limitation and seedling mortality. The sandy texture of this soil is a severe limitation for the use of equipment, but this limitation can be reduced by using wide tires on equipment or crawler-type equipment. Planting high-quality seedlings in a shallow furrow increases plant survival.

This soil is fairly well suited to use for urban development. It has severe limitations for septic tank absorption fields because of rapid permeability. Ground water pollution is a hazard because of the poor filtering capacity of this soil. This soil has slight limitations for dwellings without basements and small commercial buildings.

This Rimini soil is in capability subclass VIs.

Sa—Stallings loamy sand. This soil is somewhat poorly drained and is on broad interstream divides or slightly depressional upland flats of the Coastal Plain. Slopes are mostly less than 1 percent. Most areas are about 5 to 30 acres.

Typically, the surface layer is black loamy sand about 5 inches thick. The next layer has a slight accumulation of organic matter. It extends to a depth of 11 inches and is brown loamy sand. The subsoil extends to a depth of at least 68 inches. It is light yellowish brown sandy loam to a depth of 19 inches and gray sandy loam and sandy clay loam below that.

Included with this soil in mapping are small areas of Goldsboro, Lynchburg, Ocilla, and Rains soils. The included soils make up about 20 percent of this map unit.

Important soil properties:

Permeability: moderately rapid
Available water capacity: moderate
Surface runoff: slow
Erosion hazard: slight
High water table: 1 foot to 2.5 feet below the surface in winter and early in spring

Most of the acreage of this Stallings soil is native woodland of oaks, sweetgum, longleaf pine, and loblolly pine. Some areas have been cleared and are used for cultivated crops or pasture.

This soil is well suited to row crops and small grains. The major management problem is a seasonal high water table. If this soil is drained, it produces good yields. Open ditches and a tile drainage system work well in this soil, but filters are needed to prevent clogging of tile lines. Water control structures in open ditches help to maintain desired water levels during dry periods.

This soil is well suited to hay and pasture. Bahiagrass grows well if properly managed and fertilized. Drainage is needed and can be provided by open ditches, surface drains, or a combination of these. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during wet periods help keep the pasture and soil in good condition.

This soil is well suited to use as woodland. Loblolly pine is a common tree to plant. The equipment use limitation caused by wetness is the main concern in producing and harvesting timber. This concern can be minimized by removing excess water, using wide tires on equipment, and operating equipment in the drier months.

This soil is poorly suited to use for urban development. Wetness is a severe limitation that generally prohibits the use of this soil for septic tank absorption fields. It is a moderate limitation for dwellings without basements and for small commercial buildings. The limitations for dwellings without basements and small commercial buildings can be reduced by installing tile drains around the foundation, adding suitable fill material, and shaping the area to move surface water away from dwellings.

This Stallings soil is in capability subclass IIw.

TrB—Troup sand, 0 to 6 percent slopes. This soil is well drained and is on ridges and side slopes of the Coastal Plain. Slopes generally are 1 to 3 percent. They are smooth and convex and are 100 to 500 feet long. Most areas are about 5 to 100 acres.

Typically, the surface layer is dark grayish brown sand about 6 inches thick. The subsurface layer, to a depth of 63 inches, is brownish yellow and yellow sand and strong brown loamy sand. The subsoil is red sandy loam to a depth of 70 inches and red sandy clay loam to a depth of 80 inches.

Included with this soil in mapping are small areas of Alpin, Blanton, Fuquay, and Lucy soils. The included soils make up about 15 percent of this map unit.

Important soil properties:

Permeability: rapid in the surface and subsurface layers and moderate in the subsoil
Available water capacity: low
Surface runoff: slow
Erosion hazard: slight
High water table: none within a depth of 6 feet

Most of the acreage of this Troup soil is native woodland of upland oaks, loblolly pine, and longleaf pine (fig. 6). A few areas are cleared and used as pasture or cropland.

This soil is poorly suited to row crops and small grains. The major management problems are droughtiness, low nutrient-holding capacity, and soil blowing. Crop residue on or near the surface reduces soil blowing and increases moisture retention and organic matter content. Fertilizers are more efficient if they are applied at intervals rather than in a single application.

This soil is well suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during dry periods help keep the pasture and soil in good condition. The use of this soil for pasture or hay is also effective in controlling soil blowing.

This soil is suited to use as woodland. Common trees to plant are loblolly and longleaf pines. Seedling mortality caused by droughtiness is the main concern in producing and harvesting timber. It can be reduced by planting seedlings in a furrow and by controlling competing vegetation.

This soil is well suited to use for urban development; however, it has slight limitations for septic tank absorption fields, dwellings without basements, and small commercial buildings.

This Troup soil is in capability subclass IIIs.

TrC—Troup sand, 6 to 10 percent slopes. This soil is well drained and is on side slopes of the Coastal Plain. Slopes generally are 6 to 8 percent. They are smooth and convex and are 75 to 300 feet long. Most areas are 5 to 100 acres.

Typically, the surface layer is dark grayish brown sand about 6 inches thick. The subsurface layer, to a depth of 63 inches, is brownish yellow and yellow sand and strong brown loamy sand. The subsoil is red sandy loam to a depth of 70 inches and red sandy clay loam to a depth of 80 inches.

Included with this soil in mapping are small areas of Ailey, Alpin, and Lucy soils. The included soils make up about 20 percent of this map unit.

Important soil properties:

Permeability: rapid in the surface and subsurface layers and moderate in the subsoil

Figure 6.—Troup soils have a thick subsurface layer and are more suited to use as woodland or for deep-rooted pasture grasses than to use for row crops.

Available water capacity: low
Surface runoff: slow
Erosion hazard: moderate
High water table: none within a depth of 6 feet

Most of the acreage of this Troup soil is native woodland of upland oaks, loblolly pine, and longleaf pine. A few cleared areas are used as pasture.

This soil is poorly suited to row crops and small grains. The major management problems are the hazard of erosion, droughtiness, low nutrient-holding capacity, and soil blowing. All tillage should be on the contour. Conservation tillage, contour stripcropping, and grassed waterways reduce runoff and help to control erosion. Crop residue on or near the surface reduces soil blowing and increases moisture retention and organic matter content. Fertilizers are more efficient if they are applied at intervals rather than in a single application.

This soil is suited to hay and pasture. Coastal bermudagrass and bahiagrass grow well if properly managed and fertilized. Proper stocking, pasture rotation, timely deferment of grazing, and restricted use during dry periods help keep the pasture and soil in good condition. The use of this soil for pasture or hay is also effective in controlling soil blowing.

This soil is suited to use as woodland. Common trees to plant are loblolly and longleaf pines. Seedling mortality caused by droughtiness is the main concern in producing and harvesting timber. It can be reduced by planting seedlings in a furrow and by controlling competing vegetation.

This soil is suited to use for urban development; however, it has moderate limitations for septic tank absorption fields because of slope. Stepdown boxes between absorption lines that are installed on the contour aid in the proper functioning of absorption fields. This soil also has moderate limitations for dwellings without basements and severe limitations for small commercial buildings because of slope. Revegetating disturbed areas around construction sites as soon as possible helps to control erosion.

This Troup soil is in capability subclass IVs.

Ud—Udorthents, loamy. This map unit consists of borrow pits or borrow areas that have been excavated for such uses as roadfill, pond dams, and highway interchanges. The soils in this map unit consist of the material left behind after most of the soil layers were removed. The soil material exposed in these pits is generally loamy and is mainly the underlying material from areas of Bonneau, Dothan, Goldsboro, Neeses, and Troup soils. Slopes are from 0 to 4 percent and are irregular in shape. Most areas are 5 to 100 acres.

Also included in this map unit are areas where fill material has been placed on uplands, terraces, and flood plains for construction purposes. This includes extensively cut and filled areas, sanitary landfill areas, and industrial sites.

The physical properties of the soils in this map unit are highly variable. Generally, the permeability is moderate to slow, and the available water capacity is moderate to low.

Most of the acreage is barren or sparsely vegetated with pines and grasses. The soils are very poorly suited to row crops and small grains and to use as pasture or woodland because of the low fertility level, low organic matter content, and the hard consistency of the soil when it is dry. Extensive reclamation is necessary to make the soils productive.

The suitability of the soils for urban development is variable. Specific onsite investigation is needed to determine the suitabilities and limitations for any proposed use.

The soils in this map unit are not assigned a capability subclass.

Prime Farmland

In this section, prime farmland is defined and discussed, and the prime farmland soils in Orangeburg County are listed.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and federal levels, as well as individuals, must encourage and facilitate the wise use of our nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. The soils need only to be treated and managed using acceptable farming methods. The moisture supply, of course, must be adequate, and the growing season has to be sufficiently long. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland soils may presently be in use as cropland, pasture, or woodland, or they may be in other uses. They either are used for producing food or fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water control structures. Public land is land not available for farming in national forests, national parks, military reservations, and state parks.

Prime farmland soils usually get an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not subject to frequent flooding during the growing season. The slope ranges mainly from 0 to 6 percent.

Nearly 37 percent of Orangeburg County, or about 262,730 acres, is prime farmland. This farmland is throughout the county, but most is in the eastern part, mainly in general soil map units 5, 6, 7, and 8. About a third of this prime farmland is used for crops, mainly corn and soybeans. These crops account for about 80 percent of the income from crops.

The following map units, or soils, make up prime farmland in Orangeburg County. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 4. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

Soils that have limitations, such as a high water table or flooding, may qualify as prime farmland if these limitations are overcome by such measures as drainage or flood control. In the following list, the measures needed to overcome the limitations of a map unit, if any, are shown in parentheses after the map unit name. Onsite evaluation is necessary to determine if the limitations have been overcome by the corrective measures.

CdA	Clarendon loamy sand, 0 to 2 percent slopes
DaA	Dothan loamy sand, 0 to 2 percent slopes
DaB	Dothan loamy sand, 2 to 6 percent slopes
DpA	Duplin loamy sand, 0 to 2 percent slopes
FaA	Faceville loamy sand, 0 to 2 percent slopes
FaB	Faceville loamy sand, 2 to 6 percent slopes
GoA	Goldsboro sandy loam, 0 to 2 percent slopes
Jo	Johns loamy sand
Ly	Lynchburg fine sandy loam (where drained)
NoA	Noboco loamy sand, 0 to 2 percent slopes
NoB	Noboco loamy sand, 2 to 6 percent slopes
OrA	Orangeburg loamy sand, 0 to 2 percent slopes
OrB	Orangeburg loamy sand, 2 to 6 percent slopes

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern that is in harmony with nature.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

Gene Hardee, conservation agronomist, Soil Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; 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 listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

About 280,000 acres in Orangeburg County was used as pasture, hayland, and cropland in 1980, according to the Orangeburg Soil and Water Conservation District. Of this, about 235,000 acres was used for field crops, mainly soybeans, corn, and wheat; and about 1,000 acres was used for orchards, mainly pecans and peaches.

The suitability of the soils in Orangeburg County for increased production of food is good. In 1967, according to the County Resources Inventory, more than 240,000 acres of potentially good cropland was woodland or pasture. In addition to conversion of this land to cropland, the production of food can be increased by extending the latest crop production technology to all cropland in the county. This soil survey can greatly facilitate the application of such technology.

In general, the soils in the county that are well suited to crops and pasture are also well suited to urban development. According to the 1982 County Resources Inventory, an estimated 21,050 acres was urban and built-up land. This figure has been growing at the rate of about 350 acres per year.

Soil erosion is a major concern on about 28 percent of the land in Orangeburg County. It is a hazard on about 40 percent of the pasture and cropland. Water erosion commonly is a hazard on soils that have slopes of more than 2 percent or that have very long slopes of 1 to 2 percent. Erosion is a hazard on many soils used for crops. Wind erosion is also a concern on clean-tilled, sandy soils; however, most of the damage by wind movement of soil particles is to young plants rather than actual soil loss.

Loss of the surface layer through erosion reduces productivity and pollutes streams. Productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface is especially damaging on soils that have a clayey subsoil, such as the Faceville soils, and on soils that have a layer in or below the subsoil that limits the depth of the root zone. Such layers include a dense, somewhat brittle layer, such as that in the Neeses soils. Erosion also reduces productivity on deep, sandy soils, such as the Ailey, Alpin, Blanton, Lucy, and Troup soils.

Soil erosion on farmland also results in sediment entering streams. Control of erosion minimizes the pollution of streams by sediment and improves the quality of water for municipal use, for recreation, and for use by fish and wildlife.

Because the original friable surface layer has eroded away, preparation of a good seedbed and tillage are difficult in clayey spots on some sloping fields. Such spots commonly are on the most sloping part of intensively-cropped areas of the Faceville soils.

Water erosion can best be controlled by a combination of structural measures that remove excess water from the field and cropping and tillage systems that provide surface cover and reduce runoff. Structural measures, such as diversions, terraces, and grassed waterways, reduce the length of slope and remove excess water from the field.

Contour tillage reduces the amount and velocity of runoff. Sod crops in the cropping system and tillage that leaves protective residue on the surface provide protective surface cover, reduce runoff, and increase infiltration. On livestock farms that require pasture and hay, the legume and grass forage crops in the cropping system reduce erosion on the sloping land and provide nitrogen for the following crop.

Commonly, terraces and diversions can be used effectively in erosion control systems on deep, well drained soils that have uniform slopes, such as the Dothan, Faceville, Noboco, and Orangeburg soils. However, these practices concentrate water and are not adapted on the less stable sandy soils, such as the Ailey, Alpin, Blanton, Fuquay, Lucy, Rimini, and Troup soils. On these soils, effective erosion control systems commonly consist of practices, such as contour farming, contour stripcropping, and conservation tillage, that reduce the amount and velocity of runoff and do not concentrate the runoff.

Information on the design of erosion control practices for each kind of soil in Orangeburg County is available in the local office of the Soil Conservation Service.

Damage to young plants by soil blowing is a major management concern on the Ailey, Alpin, Blanton, Bonneau, Dothan, Fuquay, Lucy, Noboco, Orangeburg, Neeses, Rimini, and Troup soils. Damage is especially bad in extensive fields that are left unprotected. Conservation tillage, permanent vegetated strips, and strips of close-growing crops protect sandy soils that are subject to blowing.

Soil drainage is a major management concern on about 46 percent of the soils in Orangeburg County, but drainage to the extent needed for cropland and hayland is feasible on only about 70 percent of the soils that have a wetness problem. Drainage commonly is feasible on the Albany, Byars, Clarendon, Coxville, Dunbar, Duplin, Goldsboro, Johns, Lynchburg, Pantego, Pelham, and Rains soils and in some areas of the Lumbee soils. Because of inadequate outlets and the hazard of flooding, drainage is generally not feasible on the Bibb, Elloree, Johnston, and Mouzon soils and in most areas of the Lumbee soils.

Low available water capacity is a limitation of the Ailey, Alpin, Blanton, Bonneau, Fuquay, Lucy, Ocilla, Rimini, and Troup soils. This limitation can be reduced through crop residue management, proper crop selection, and irrigation. Pasture grasses, such as bahiagrass and bermudagrass, and drought-tolerant crops, such as grain sorghum, are well suited to these soils. Because of the rapid leaching of nutrients from these soils, frequent applications of fertilizer and lime are needed for good plant growth.

Soil fertility is naturally low in all soils in Orangeburg County. Regular applications of lime and fertilizer are needed. Nearly all of the soils are naturally medium acid, strongly acid, or very strongly acid. Commonly, they require regular applications of ground limestone to raise and maintain the pH sufficiently for good crop growth. Available phosphorus and potash are naturally low in most of the soils. Fertilizers should be applied in split applications on the deep, sandy soils to reduce losses by leaching. On all soils, additions of lime and fertilizer should be based on the results of soil tests, on the need of the crop, and on the expected level of yields. The Cooperative Extension Service can help in determining the amounts of fertilizer and lime to apply.

Soil tilth is an important factor in the germination of seeds and in the infiltration of water into the soil. The surface layer of most soils in Orangeburg County is sand or loamy sand. Consequently, the surface layer is granular, porous, and has weak structure. These conditions are generally ideal for good germination of seeds and infiltration of water; however, the soils generally are very low in organic matter, and the retention of moisture in the surface layer is low.

Fall tillage is generally not recommended. Cropland in Orangeburg County is mostly sloping soils that are subject to damaging water erosion or soil blowing if the soil is tilled in the fall. Fall tillage is used for some crops to control insects and diseases. In such cases, a winter cover crop needs to be planted following the fall tillage.

Field crops suited to the soils and climate of Orangeburg County include many that are not commonly grown. Soybeans and corn are the principal row crops. A small acreage of cropland is used for cotton, peanuts, tobacco, and grain sorghum. Wheat, oats, and rye are the common close-growing crops; however, barley, pearl millet, sudangrass, and several close-growing legumes, such as alfalfa, arrowleaf clover, crimson clover, and sericea lespedeza can be grown for forage or seed. The principal perennial grasses grown for forage are bahiagrass and Coastal bermudagrass.

Special crops include vegetables, small fruits, peaches, and pecans. Small acreages are used for melons, cucumbers, field peas, lima beans, sweet corn, tomatoes, collards, turnips, strawberries, and blueberries. Large areas can be adapted to these and other special crops, such as grapes.

Deep soils that have good natural drainage, moderate to high available water capacity, and that warm early in the spring are especially well suited to many vegetables. In this county, crops generally can be planted and harvested early on Dothan, Faceville, Lucy, Norfolk, and Orangeburg soils.

The latest information and suggestions for growing crops can be obtained from local offices of the Cooperative Extension Service and the Soil Conservation Service.

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 5. 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.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; 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 residue, barnyard manure, and green manure crops; and harvesting that insures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil 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 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major, and generally expensive, landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

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. The classes 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 they 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 miscellaneous areas 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,* or *s,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless a 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); and *s* shows that the soil is limited mainly because it is shallow, droughty, or stony.

There are no subclasses in class I because the soils of this class have few limitations. The soils in class V are subject to little or no erosion, but they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation. Class V contains only the subclasses indicated by *w* or *s*.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in the section "Detailed Soil Map Units."

Woodland Management and Productivity

Norman Runge, forester, Soil Conservation Service, helped prepare this section.

This section explains how soils affect tree growth and forest management in Orangeburg County.

Originally, the county was mainly forested. Forests now cover 52 percent, or 369,300 acres, of the county. Good stands of commercial trees are produced. Pine species are mostly on the hills, and hardwood species generally are dominant on the bottom lands along rivers and creeks.

Southern pine and upland hardwood forest types make up about 61 percent of the forest land. Dominant pine species are longleaf, slash, loblolly, and shortleaf pines (fig. 7). Upland hardwood species are oak and hickory. The remaining forest land is bottom land hardwood forest types, primarily oak, gum, and cypress.

The commercial value of forest products in Orangeburg County is substantial. It is much below the potential productive capacity; however, although present growth is 60 percent greater than the amount harvested.

Much of the existing commercial forest would benefit if stands were improved by weeding out undesirable species. Continued protection from grazing and fire and control of diseases and insects are also needed to improve stands. The level of forest management has improved significantly during recent years. Uncontrolled

Figure 7.—Fuquay sand, 0 to 6 percent slopes, has moderately high potential productivity for trees, such as loblolly pine.

burning, which was generally practiced in the area about two decades ago, has given way to fire protection or prescribed burning, or both. Additional forest management measures being practiced or considered include genetically improved seedlings, natural regeneration, and fertilization.

Soils vary in their ability to produce trees. Depth, fertility, texture, and the available water capacity influence tree growth. Elevation, aspect, and climate determine the kinds of trees that can grow on a site. Available water capacity and depth of the root zone are major influences of tree growth. Elevation and aspect are of particular importance in mountainous areas.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to fertilization than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special efforts to reforest. In the section "Detailed Soil Map Units," each map unit in the survey area suitable for producing timber presents information about productivity, limitations for harvesting timber, and management concerns for producing timber. Table 7 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate*, and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

The first tree listed for each soil under the column "Common trees" is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation activities or harvesting operations expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions; *moderate* if erosion control measures are needed for particular silvicultural activities; and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of *moderate* or *severe* indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning of harvesting and reforestation operations, or use of specialized equipment.

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, stoniness, or susceptibility of the surface layer to compaction. As slope gradient and length increase, it becomes more difficult to use wheeled equipment. On the steeper slopes, tracked equipment must be used. On the steepest slopes, even tracked equipment cannot operate; more sophisticated systems are needed. The rating is *slight* if equipment use is restricted by soil wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are steep enough that wheeled equipment cannot be operated safely across the slope, if soil wetness restricts equipment use from 2 to 6 months per year, if stoniness restricts ground-based equipment, or if special equipment is needed to avoid or reduce soil compaction. The rating is *severe* if slopes are steep enough that tracked equipment cannot be operated safely across the slope, if soil wetness restricts equipment use for more than 6 months per year, if stoniness restricts ground-based equipment, or if special equipment is needed to avoid or reduce soil compaction. Ratings of *moderate* or *severe* indicate a need to choose the most suitable equipment and to carefully plan the timing of harvesting and other management operations.

Ratings of *seedling mortality* refer to the probability of death of naturally occurring or properly planted seedlings of good stock in periods of normal rainfall as influenced by kinds of soil or topographic features. *Seedling mortality* is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth and duration of the water table, rock fragments in the surface layer, rooting depth, and the aspect of the slope. Mortality generally is greatest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of *moderate* or *severe* indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing surface drainage, or providing artificial shade for seedings. Reinforcement planting is often needed if the risk is *moderate* or *severe*.

Ratings of *windthrow hazard* consider the likelihood of trees being uprooted by the wind. Restricted rooting depth is the main reason for windthrow. Rooting depth can be restricted by a high water table, fragipan, or bedrock, or by a combination of such factors as soil wetness, texture, structure, and depth. The risk is *slight* if strong winds cause trees to break but do not uproot them; *moderate* if strong winds cause an occasional tree to be blown over and many trees to break; and *severe* if moderate or strong winds commonly blow trees over. Ratings of *moderate* or *severe* indicate the need for care in thinning or possibly not thinning. Specialized equipment may be needed to avoid damage to shallow root systems in partial cutting operations. A plan for periodic salvage of windthrown trees and the maintenance of a road and trail system may be needed.

The potential productivity of *common trees* on a soil is expressed as a *site index*. Common trees are listed in the order of their observed general occurrence. Generally, only two or three tree species dominate.

The soils that are commonly used to produce timber have the yield predicted in cubic feet and board feet. The yield is predicted at the point where mean annual increment culminates. The productivity of the soils in this survey is mainly based on loblolly pine, but other species are also used where appropriate.

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands. The procedure and technique for doing this are given in the site index tables used for the Orangeburg County soil survey *(3, 4, 6)*.

The *productivity class* represents an expected volume produced by the most important trees, expressed in cubic feet per acre per year. It can be converted to board feet by multiplying by a factor of about 4.97. For example, a productivity class of 114 cubic feet per acre per year at the point where mean annual increment culminates means the soil can be expected to produce about 568 board feet per acre per year.

Trees to plant are those that are used for reforestation or, if suitable conditions exist, natural regeneration. They are suited to the soils and will produce a commercial wood crop. Desired product, topographic position (such as a low, wet area), and personal preference are three factors of many that can influence the choice of trees to use for reforestation.

Recreation

In table 8, the soils of the survey area are rated according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that 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, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation, such as shaping and leveling the 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 have gentle 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 campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for 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, stones, or boulders that 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 and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

William J. Melven, biologist, Soil Conservation Service, helped prepare this section.

Wildlife populations are directly related to habitat diversity. Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments or watering facilities used by various wildlife species.

The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Human activities influence the quantity and quality of habitat by the decisions to alter the vegetative patterns on the landscape. Natural conditions also play a role, such as soil characteristics, moisture regime conditions, and topography. The habitat varies from the dry, sandy ridges and upland hardwood sites to the bottom land hardwood swamps. In between are pine plantations, intensive farming, and ribbons of woodland along streams. Farm ponds, lakes, streams, and adjacent wetlands produce favorable conditions for many fish and wildlife species, both resident and migratory.

The principal wildlife species in Orangeburg County include opossum, quail, deer, rabbit, dove, gray squirrel, nongame birds, and ducks along the Edisto River system. Furbearers are along the drainageways, and a few wild turkeys are near the lower end of the county along the Edisto River.

Incorporating the principles of habitat management in this intensive agricultural county is extremely important now and will be more so in the future. The concept of stream corridor management may play an important role in distributing wildlife populations in the intensive agriculture areas.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in 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* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features 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, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, sunflowers, soybeans, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, bahiagrass, clover, and lespedeza.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are ragweed, goldenrod, beggarweed, croton, wheatgrass, and lespedeza.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are pyracantha, autumn olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, cedar, juniper, and introduced ornamentals.

Wetland plants are annual and perennial, wild herbaceous plants that grow on moist or wet sites. Submerged and floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, alder buttonbush, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, swamps, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife 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 wildlife attracted to these areas include bobwhite quail, dove, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy, or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, otter, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet, and because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations must be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to: evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer, stone content, soil texture, and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. Depth to a high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, depth to a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost-action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, depth to a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the 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.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, depth to a water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, and soil reaction affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel or stones, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel or stones, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and releases a variety of plant-available nutrients as it decomposes.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders or organic matter. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 18.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil Series and Their Morphology."

Texture is given 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 the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(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 and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups 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 (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20, or higher, for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 18.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area, or from nearby areas, and on field examination.

Physical and Chemical Properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They influence the soil's adsorption of cations, moisture retention, shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion and the amount of soil lost. Soils are grouped according to the following distinctions:

1. Sands, coarse sands, fine sands, and very fine sands. These soils are generally not suitable for crops.

They are extremely erodible, and vegetation is difficult to establish.

2. Loamy sands, loamy fine sands, and loamy very fine sands. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

3. Sandy loams, coarse sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4L. Calcareous loamy soils that are less than 35 percent clay and more than 5 percent finely divided calcium carbonate. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Clays, silty clays, clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control wind erosion are used.

5. Loamy soils that are less than 18 percent clay and less than 5 percent finely divided calcium carbonate and sandy clay loams and sandy clays that are less than 5 percent finely divided calcium carbonate. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.

6. Loamy soils that are 18 to 35 percent clay and less than 5 percent finely divided calcium carbonate, except silty clay loams. These soils are very slightly erodible. Crops can easily be grown.

7. Silty clay loams that are less than 35 percent clay and less than 5 percent finely divided calcium carbonate. These soils are very slightly erodible. Crops can easily be grown.

8. Stony or gravelly soils and other soils not subject to wind erosion.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive 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 mainly of deep, well drained to excessively drained sands or gravelly sands. 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 having a layer that impedes the downward movement of water or soils of 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 clays that have 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.

Some of the soils are shown in table 16 with dual hydrologic groups, for example B/D. This means that under natural conditions the soil is in group D, but by artificial methods, the water table can be lowered to the point that the soil fits in group B. Onsite investigation is needed, however, to determine the hydrologic group of the soil at any particular location because there are different degrees of drainage and water table control.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as *none, rare, occasional,* or *frequent. None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (there is a near 0 to 5 percent chance of flooding in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (there is a 5 to 50 percent chance of flooding in any year). *Frequent* means that flooding occurs often under normal weather conditions (there is more than a 50 percent chance of flooding in any year). *Common* is used when classification as occasional or frequent does not affect interpretations. Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that floods are most likely to occur is expressed in months. November-May, for example, means that flooding can occur during the period November through May. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely, thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons, which are characteristic of soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table, that is, *perched* or *apparent;* and the months of the year that the water table commonly is highest. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

The two numbers in the "High water table-Depth" column indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that the water table exists for less than a month.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severely corrosive environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and the amount of sulfates in the saturation extract.

Chemical Analyses of Selected Soils

Bill R. Smith, associate professor, Department of Agronomy and Soils, South Carolina Agricultural Experiment Station, Clemson University, helped prepare this section.

The results of chemical analysis of several typical pedons in the survey area are given in table 17. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the Soil Characterization Laboratory, South Carolina Agricultural Experiment Station.

The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(9)*.

Exchangeable bases—ammonium acetate pH 7.0, (5B5b); calcium (6N2), magnesium (6O2), sodium (6P2), potassium (6Q2).
Extractable acidity—barium chloride-triethanolamine (6H4).
Exchangeable aluminum—potassium chloride (6G9).
Cation-exchange capacity—sum of cations (5A3).
Base saturation—sum of cations (5C3).
Aluminum saturation—bases plus aluminum (5G1).
Reaction (pH)—1:1 water dilution (8C1).

Exchangeable bases are rather low in the soils analyzed and tend to decrease to very low amounts with depth. All of these soils are in forests. Nutrient cycling by the native vegetation explains the higher amounts of exchangeable bases in the surface layer and the decreases in amounts of exchangeable bases with depth. Low nutrient levels are expected in soils that have not been limed or fertilized and are in a warm, humid climate, such as that of Orangeburg County. These conditions favor development of leached, acid soils that have low inherent fertility.

Amounts of exchangeable aluminum that may be toxic to some plants are in all horizons of the soils analyzed that have pH values of less than 5.5. Aluminum saturation levels that are more than 20 to 30 percent of the effective cation-exchange capacity (exchangeable bases plus aluminum) are toxic to some crops. The saturation levels generally are fairly high in mineral soils if pH values are less than 4.8 to 5.0. The Bibb soils have aluminum saturation levels of about 25 percent in the surface layer, and levels decrease with depth to less than 10 percent as pH values increase to 5.5. The Johns, Lucy, Lumbee, and Neeses soils have aluminum saturation levels of more than 50 percent in the surface layer. Aluminum saturation levels of the Johns, Lumbee, and Neeses soils are very high and approach or exceed 80 percent in the middle part of the subsoil. These levels would be toxic to many crops. Aluminum saturation levels of the Lucy soil are somewhat less in the subsoil. If these soils were used for cultivated crops, liming the soils to pH 6.0 would quickly reduce exchangeable aluminum in the surface layer to extremely low levels. Subsurface horizons would be less affected by liming, and exchangeable A1 levels in these horizons would, therefore, be reduced much more slowly and to a lesser extent.

Engineering Index Test Data

Table 18 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." The soil samples were tested by the South Carolina Department of Highways and Public Transportation.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are: AASHTO classification—M 145 (AASHTO), Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), Liquid limit—T 89 (AASHTO), Plasticity index—T 90 (AASHTO).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(8)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 19 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that 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 development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Fluvaquents (*Fluv*, meaning river deposit, plus *aquent*, the suborder of the Entisols that has an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group 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 typifies the great group. An example is Typic Fluvaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, siliceous, acid, thermic Typic Fluvaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the substratum within a series. An example is the Bibb series, which is a member of the coarse-loamy, siliceous, acid, thermic Typic Fluvaquents.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the *Soil Survey Manual (7)*. Many of the technical terms used in the descriptions are defined in *Soil Taxonomy (8)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Ailey Series

The Ailey series consists of well drained soils that formed in thick deposits of sandy and loamy marine sediments on the Coastal Plain. The soils are on ridges and side slopes. Slopes range from 2 to 10 percent. The Ailey series is a member of the loamy, siliceous, thermic family of Arenic Hapludults.

The Ailey soils in Orangeburg County are taxadjuncts to the Ailey series because they do not have a clay decrease within a depth of 60 inches. The brittle nature of the Btx horizon is considered to be the major influence in these soils. The lack of a clay decrease in these soils does not affect their use, management, or behavior.

Ailey soils are on the same landscape with Lucy, Neeses, Noboco, and Troup soils. These soils do not have a Btx horizon. Troup soils have a grossarenic epipedon. Neeses soils have a clayey particle-size control section. Noboco soils have an argillic horizon within 20 inches of the surface.

Typical pedon of Ailey sand, 2 to 6 percent slopes; about 2.5 miles east of Neeses, 1 mile north on South Carolina Highway 161 from its junction with South Carolina Highway 4, 0.2 mile southwest on county road, 800 feet west of road.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) sand; weak fine granular structure; loose; common fine and medium roots; strongly acid; abrupt smooth boundary.

E—6 to 25 inches; light yellowish brown (10YR 6/4) sand; many medium faint pale yellow (2.5Y 7/4) mottles; single grained; loose; few fine and medium roots; few medium pores; strongly acid; abrupt wavy boundary.

Bt—25 to 31 inches; yellowish brown (10YR 5/8) sandy clay loam; few medium faint strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable, firm mottles; common fine roots; common fine pores; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

Btx1—31 to 39 inches; mottled brownish yellow (10YR 6/8), strong brown (7.5YR 5/8), and brown (7.5YR 4/4) sandy loam, and yellowish brown (10YR 5/8) sandy clay loam; sandy loam is massive, brittle, dense, slightly cemented in about 40 percent of the mass and firm in the remainder, and has few fine roots and common coarse gravel pebbles; sandy clay loam has moderate medium subangular blocky structure, is friable, has common distinct clay films on faces of peds, and has common medium roots; strongly acid; clear smooth boundary.

Btx2—39 to 64 inches; mottled reddish yellow (7.5YR 6/8), yellowish red (5YR 5/8), and pale yellow (2.5Y 8/4) sandy loam, and yellowish brown (10YR 5/8) sandy clay loam; sandy loam is massive, brittle, dense, slightly cemented in about 30 percent of the mass and firm in the remainder, has few fine roots, common fine mica flakes, and common coarse gravel pebbles; sandy clay loam has moderate medium subangular blocky structure, common distinct clay films on faces of peds, common medium roots, and is friable; strongly acid.

The solum is more than 60 inches thick. The soil is very strongly acid or strongly acid throughout except where lime has been added. Depth to a horizon that is dense, compact, and slightly cemented ranges from 27 to 50 inches. Gravel ranges from 0 to 10 percent.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 or 4. It is sand or loamy sand.

The Bt horizon has hue of 5YR to 10YR, value of 5 or 6, and chroma of 4 to 8. It has mottles in shades of brown, red, or yellow. This horizon is commonly sandy clay loam but ranges to sandy loam.

The Btx horizon has about the same colors as those of the Bt horizon, or it is mottled in these colors. This horizon is gray in the lower part of some pedons. It is sandy loam or sandy clay loam that is dense, brittle, and slightly cemented in about 20 to 50 percent of the mass.

Albany Series

The Albany series consists of somewhat poorly drained soils that formed in thick deposits of sandy and loamy marine sediments on the Coastal Plain. The soils are on narrow ridges and around the edge of Carolina Bays. Slopes range from 0 to 2 percent. The Albany series is a member of the loamy, siliceous, thermic family of Grossarenic Paleudults.

Albany soils are on the same landscape with Blanton, Bonneau, Ocilla, and Troup soils. Blanton, Bonneau, and Troup soils have a deeper seasonal high water table than that of the Albany soil. In addition, Bonneau and Ocilla soils have an arenic epipedon.

Typical pedon of Albany sand, 0 to 2 percent slopes; about 4 miles northeast of Branchville, 3.5 miles northeast on South Carolina Highway 210 from junction with U.S. Highway 21, 1.2 miles east on county road to intersection, 2,000 feet southeast on county road, 120 feet north of road.

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) sand; weak fine granular structure; loose; many clean sand grains; salt and pepper appearance; many fine, medium, and large roots; very strongly acid; abrupt smooth boundary.

A2—4 to 8 inches; dark grayish brown (10YR 4/2) sand; single grained; loose; many fine, medium, and large roots; many clean sand grains; very strongly acid; clear smooth boundary.

E1—8 to 26 inches; yellowish brown (10YR 5/6) sand; few clean sand grains; single grained; loose; many fine, medium, and large roots; strongly acid; clear wavy boundary.

E2—26 to 36 inches; mottled yellowish brown (10YR 5/8), brownish yellow (10YR 6/6), and very pale brown (10YR 8/4) sand; common fine faint white and few fine faint strong brown mottles; single grained; loose; few fine and medium roots; strongly acid; clear smooth boundary.

E3—36 to 49 inches; mottled brownish yellow (10YR 6/8), yellow (10YR 8/6), and white (10YR 8/1) sand; few fine faint strong brown mottles; single grained; loose; few fine and medium roots; strongly acid; clear wavy boundary.

E4—49 to 68 inches; white (10YR 8/1) sand; common medium distinct brownish yellow (10YR 6/8) mottles and common medium prominent strong brown (7.5YR 5/8) mottles; single grained; loose; few fine and medium roots; very strongly acid; abrupt wavy boundary.

Btg—68 to 82 inches; gray (10YR 5/1) sandy clay loam; weak medium subangular blocky structure; friable; common faint clay films on faces of peds; very strongly acid.

The solum ranges in thickness from 70 to more than 90 inches. The soil is very strongly acid to medium acid throughout except where lime has been added.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 or 2.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 to 8, or it is mottled in shades of brown, yellow, and white. It is sand or loamy sand.

The Btg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. Mottles in shades of brown or yellow are in some pedons. This horizon is sandy loam or sandy clay loam.

Alpin Series

The Alpin series consists of excessively drained soils that formed in thick deposits of sandy marine sediment on the Coastal Plain. The soils are on broad ridges and side slopes. Slopes range from 0 to 10 percent. The Alpin series is a member of the thermic, coated family of Typic Quartzipsamments.

Alpin soils are on the same landscape with Blanton, Bonneau, Lucy, Fuquay, and Troup soils. Bonneau, Lucy, and Fuquay soils have an arenic epipedon. Blanton and Troup soils have a grossarenic epipedon.

Typical pedon of Alpin sand, 0 to 6 percent slopes; about 10 miles southwest of Orangeburg, 5.2 miles southwest on South Carolina Highway 70 from junction with U.S. Highway 301, 0.2 mile southwest of junction of South Carolina Highway 70 and South Carolina Highway 73, 400 feet northwest on trail, 60 feet north of trail.

A—0 to 4 inches; dark gray (10YR 4/1) sand; weak fine granular structure; very friable; many fine and few medium roots; many clean sand grains; salt and pepper appearance; very strongly acid; abrupt smooth boundary.

E—4 to 11 inches; very pale brown (10YR 7/4) sand; single grained; loose; common fine and medium roots; strongly acid; clear smooth boundary.

Bw1—11 to 27 inches; yellow (10YR 7/6) sand; single grained; loose; common fine and few medium roots; strongly acid; clear smooth boundary.

Bw2—27 to 34 inches; reddish yellow (7.5YR 6/6) sand; single grained; loose; few fine roots; very strongly acid; gradual smooth boundary.

Bw3—34 to 46 inches; strong brown (7.5YR 5/8) sand; very weak coarse subangular blocky structure; very friable; few fine roots; very strongly acid; gradual smooth boundary.

E&Bt1—46 to 58 inches; reddish yellow (7.5YR 8/6) sand; yellowish red (5YR 5/6) loamy sand lamellae in bands up to 0.2 inch thick, 1 inch to 2 inches apart; single grained; loose; strongly acid; diffuse smooth boundary.

E&Bt2—58 to 80 inches; light gray (10YR 7/1) sand; yellowish red (5YR 5/6) loamy sand lamellae in bands up to 0.4 inch thick, 2 to 3 inches apart; single grained; loose; strongly acid.

The solum is 80 inches or more thick. The soil is very strongly acid to medium acid throughout.

The A horizon has hue of 10YR, value of 4, and chroma of 1 to 3.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 5. It is sand.

The Bw horizon has hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 6 or 8. It is sand.

The E part of the E&Bt horizon has hue of 7.5YR or 10YR, value of 7 or 8, and chroma of 6, or value of 7 or 8 and chroma of 1 or 2. It is sand. The lamellae, or Bt part of the E&Bt horizon, has hue of 5YR or 7.5YR, value of 5, and chroma of 6 or 8. It is loamy sand.

Bibb Series

The Bibb series consists of poorly drained soils that formed in recent alluvial deposits on the Coastal Plain. The soils are on flood plains of streams. Slopes are less than 2 percent. The Bibb series is a member of the coarse-loamy, siliceous, acid, thermic family of Typic Fluvaquents.

Bibb soils are on the same landscape with Elloree, Johnston, and Rains soils. The Elloree and Rains soils have a Bt horizon. Johnston soils have a cumulic epipedon.

Typical pedon of Bibb sandy loam, frequently flooded; about 12.7 miles southwest of Orangeburg, 8.7 miles southwest of the junction of South Carolina Highway 400 and South Carolina Highway 4, 3.2 miles southwest of Bolentown, 125 feet west of culvert, 100 feet south of road.

A1—0 to 3 inches; very dark grayish brown (10YR 3/2) sandy loam; moderate medium granular structure; friable; many fine and medium roots and few large roots; strongly acid; clear wavy boundary.

A2—3 to 9 inches; dark grayish brown (10YR 4/2) sandy loam; few fine faint reddish yellow mottles; weak medium granular structure; friable; common fine and medium roots; strongly acid; clear wavy boundary.
Cg1—9 to 15 inches; light brownish gray (10YR 6/2) sand; single grained; loose; common fine roots; common medium grayish brown (10YR 5/2) sandy loam streaks; strongly acid; clear broken boundary.
Cg2—15 to 26 inches; grayish brown (10YR 5/2) sandy loam; massive; friable; common fine roots; common light gray (10YR 6/1) sand strata; strongly acid; gradual wavy boundary.
Cg3—26 to 40 inches; gray (10YR 5/1) sandy loam; massive; friable; few medium roots; few medium gray (10YR 6/1) sand pockets; strongly acid; gradual wavy boundary.
Cg4—40 to 62 inches; gray (10YR 6/1) sand; single grained; loose; few medium roots; strongly acid.

The Bibb soils are very strongly acid or strongly acid throughout.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 to 3.

The Cg horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2; or it is neutral and has value of 4 to 6. Mottles in shades of brown, yellow, or gray are in some pedons. This horizon is sandy loam, loamy sand, or sand and is often stratified. Below a depth of about 40 inches, the texture ranges from sand to sandy clay loam, or it is stratified.

Blanton Series

The Blanton series consists of somewhat excessively drained soils that formed in sandy and loamy marine sediments on the Coastal Plain. The soils are on broad ridges and side slopes. Slopes range from 0 to 10 percent. The Blanton series is a member of the loamy, siliceous, thermic family of Grossarenic Paleudults.

Blanton soils are on the same landscape with Ailey, Alpin, Bonneau, Fuquay, Lucy, and Troup soils. Ailey, Bonneau, Fuquay, and Lucy soils have an arenic epipedon. In addition, Ailey soils have a firm and compact subsoil, Fuquay soils are plinthic, and Lucy soils have a redder argillic horizon than the Blanton soils. Alpin soils are sandy throughout. Troup soils have a deeper seasonal high water table and also have a redder argillic horizon.

Typical pedon of Blanton sand, 0 to 6 percent slopes; about 11 miles northwest of Neeses, 2.2 miles north on South Carolina Highway 3 from junction with South Carolina Highway 394, 0.6 mile east on county road, and 210 feet south of road.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) sand; single grained; loose; common fine and medium roots; common clean sand grains; strongly acid; abrupt wavy boundary.
Bw1—5 to 34 inches; yellowish brown (10YR 5/4) sand; common medium faint very pale brown (10YR 7/3) mottles; single grained; loose; common fine and medium roots; many clean sand grains; medium acid; clear smooth boundary.
Bw2—34 to 51 inches; yellowish brown (10YR 5/8) sand; few medium faint very pale brown (10YR 7/3) mottles; single grained; loose; few fine roots; many clean sand grains; medium acid; clear wavy boundary.
Bw3—51 to 61 inches; very pale brown (10YR 7/4) sand; many coarse faint white (10YR 8/2) mottles; single grained; loose; many clean sand grains; strongly acid; clear wavy boundary.
Bt1—61 to 64 inches; light yellowish brown (10YR 6/4) sandy loam; many coarse distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few very fine pores; sand grains coated and bridged with clay; strongly acid; clear wavy boundary.
Bt2—64 to 82 inches; mottled light yellowish brown (10YR 6/4), yellowish brown (10YR 5/8), yellowish red (5YR 5/6), and light gray (10YR 7/2) sandy clay loam; moderate medium subangular blocky structure; firm; common fine pores; few faint clay films on some vertical ped faces and in pores; strongly acid.

The solum ranges in thickness from 60 to more than 80 inches. The soil is very strongly acid to medium acid in the A and Bw horizons and very strongly acid or strongly acid in the Bt horizon.

The A horizon has hue of 10YR, value of 3 to 6, and chroma of 1 or 2.

The Bw horizon has hue of 7.5YR or 10YR, value of 5 to 8, and chroma of 4 to 8. It is sand or loamy sand.

The upper part of the Bt horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 3 to 8. The lower part has the same range in colors as that of the upper part and has gray mottles, or it is mottled in these colors. The Bt horizon is sandy loam or sandy clay loam.

Bonneau Series

The Bonneau series consists of well drained soils that formed in sandy and loamy marine sediments on the Coastal Plain. The soils are on low ridges and side slopes. Slopes range from 0 to 4 percent. The Bonneau series is a member of the loamy, siliceous, thermic family of Arenic Paleudults.

Bonneau soils are on the same landscape with Goldsboro, Lucy, and Noboco soils. Goldsboro and Noboco soils have an argillic horizon within 20 inches of the surface. Lucy soils have a redder argillic horizon than that of the Bonneau soils.

Typical pedon of Bonneau sand, 0 to 4 percent slopes; about 3 miles east of Eutawville, 0.25 mile south on South Carolina Highway 1582 from junction with South Carolina Highway 6, 85 feet north of private drive, and 50 feet west of road.

Ap—0 to 8 inches; dark grayish brown (2.5Y 4/2) sand; weak fine granular structure; very friable; common fine and medium roots; strongly acid; abrupt smooth boundary.
E1—8 to 21 inches; light yellowish brown (10YR 6/4) loamy sand; weak medium granular structure; loose; few fine and medium roots; strongly acid; clear smooth boundary.
E2—21 to 35 inches; light yellowish brown (10YR 6/4) loamy sand; few coarse faint very pale brown (10YR 7/3) mottles; single grained; loose; few fine roots; strongly acid; abrupt wavy boundary.
Bt1—35 to 43 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct yellowish red (5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few very fine pores; few faint clay films on faces of peds; strongly acid; clear smooth boundary.
Bt2—43 to 55 inches; mottled gray (10YR 6/1), yellowish brown (10YR 5/6), pale brown (10YR 6/3), reddish yellow (7.5YR 6/6), and yellowish red (5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few fine pores; few distinct clay films on faces of peds; very strongly acid; clear smooth boundary.
Bt3—55 to 69 inches; mottled gray (10YR 6/1), yellowish brown (10YR 5/6), yellowish red (5YR 5/6), and light reddish brown (5YR 6/3) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; few very fine pores; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.
Btg—69 to 80 inches; mottled gray (10YR 6/1), light gray (10YR 7/2), yellowish brown (10YR 5/6), and red (2.5YR 5/6) sandy clay; weak medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid.

The solum ranges in thickness from 60 to more than 80 inches. The soil is very strongly acid to medium acid in the A and E horizons and very strongly acid or strongly acid in the Bt horizon.

The A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 to 3.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 6. The texture is dominantly loamy sand but includes loamy fine sand and sand.

The upper part of the Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 8, and has mottles in shades of red, brown, or yellow. It is sandy loam or sandy clay loam. The lower part of the Bt horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 to 6; or it is mottled with these colors. It is sandy clay loam or sandy clay.

Byars Series

The Byars series consists of very poorly drained soils that formed in clayey marine sediment on the Coastal Plain. The soils are in depressions and Carolina Bays. Slopes are less than 2 percent. The Byars series is a member of the clayey, kaolinitic, thermic family of Umbric Paleaquults.

Byars soils are on the same landscape with Coxville, Lynchburg, Pantego, and Rains soils. Except for the Pantego soils, these soils do not have an umbric epipedon. Lynchburg soils have a deeper seasonal high water table than that of the Byars soils. Pantego and Lynchburg soils have a fine-loamy particle-size control section.

Typical pedon of Byars loam; about 22 miles east of Orangeburg, 1 mile south on U.S. Highway 15 from junction with Interstate 95, 50 feet north of drainage ditch, and 2,000 feet from road.

A—0 to 9 inches; black (10YR 2/1) loam; weak fine granular structure; friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.
Btg1—9 to 16 inches; black (10YR 2/1) clay loam; moderate fine subangular blocky structure; firm; common fine, medium, and large roots; extremely acid; clear smooth boundary.
Btg2—16 to 30 inches; very dark gray (10YR 3/1) clay loam; moderate medium subangular blocky structure; firm; few faint clay films on faces of most peds; common fine, medium, and large roots; extremely acid; clear wavy boundary.
Btg3—30 to 45 inches; grayish brown (10YR 5/2) clay; many coarse distinct very dark gray (10YR 3/1) mottles and common fine distinct dark yellowish brown (10YR 4/4) mottles; strong medium subangular blocky structure; very firm; common distinct clay films on faces of peds; few fine roots; extremely acid; gradual wavy boundary.
Btg4—45 to 63 inches; dark gray (10YR 4/1) clay loam; many coarse faint very dark gray (10YR 3/1) mottles and few fine distinct dark yellowish brown (10YR 4/4) mottles; weak coarse subangular blocky structure parting to moderate medium subangular blocky; very firm; common distinct clay films on faces of larger peds and few faint clay films on faces of smaller peds; few fine roots; extremely acid; clear smooth boundary.
BCg—63 to 70 inches; dark gray (10YR 4/1) sandy loam; weak medium subangular blocky structure; firm; slightly sticky; extremely acid.

The solum ranges in thickness from 60 to more than 70 inches. The soil is extremely acid to strongly acid throughout.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1; or it is neutral and has value of 2 or 3.

The Btg horizon has hue of 10YR, value of 2 to 6, and chroma of 1 or 2. Mottles in shades of yellow, brown, gray, or red are in some pedons. This horizon is clay loam, sandy clay, or clay.

Clarendon Series

The Clarendon series consists of moderately well drained soils that formed in loamy marine sediment on the Coastal Plain. The soils are in broad upland areas. Slopes range from 0 to 2 percent. The Clarendon series is a member of the fine-loamy, siliceous, thermic family of Plinthaquic Paleudults.

Clarendon soils are on the same landscape with Coxville, Dothan, Goldsboro, Lynchburg, and Rains soils. Coxville, Lynchburg, and Rains soils have a shallower seasonal high water table than that of the Clarendon soils. Dothan soils have a deeper seasonal high water table. Except for the Dothan soils, these soils do not have plinthite.

Typical pedon of Clarendon loamy sand, 0 to 2 percent slopes; about 19 miles east of Orangeburg, 3.7 miles east on U.S. Highway 301 from junction with U.S. Highway 176, 0.4 mile north on county road, 50 feet east of road, and 80 feet north of culvert.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; common fine roots; strongly acid; abrupt smooth boundary.

E—8 to 15 inches; light yellowish brown (10YR 6/4) loamy sand; few medium distinct very dark gray (10YR 3/2) mottles in upper part and few fine faint pale brown mottles in lower part; weak coarse granular structure parting to single grained; very friable; common fine roots; few ironstone nodules; medium acid; abrupt wavy boundary.

Bt1—15 to 21 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable, mottles are firm; few fine roots; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—21 to 27 inches; yellowish brown (10YR 5/4) sandy clay loam; common medium distinct gray (10YR 5/1) mottles, common medium faint yellowish brown (10YR 5/6) mottles, and few medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; common faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Btg—27 to 40 inches; yellowish brown (10YR 5/4) sandy clay loam; common medium distinct gray (10YR 7/1) mottles, coarse prominent yellowish red (5YR 5/6) mottles, and common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; common faint clay films on faces of peds; 4 percent plinthite occurring as firm 2 to 22 mm irregular nodules; extremely acid; clear wavy boundary.

Btv—40 to 69 inches; gray (10YR 5/1) sandy clay loam; many coarse prominent red (2.5YR 5/6) mottles and common medium distinct brownish yellow (10YR 6/8) mottles; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; 15 percent plinthite occurring as firm 2 to 48 mm irregular nodules; very strongly acid; clear wavy boundary.

Btgv—69 to 88 inches; gray (10YR 6/1) sandy clay loam; many coarse prominent red (2.5YR 5/6) and yellowish red (5YR 5/6) mottles and common coarse distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; common distinct clay films on faces of most peds; 10 percent plinthite occurring as firm 2 to 50 mm irregular nodules; very strongly acid.

The solum ranges in thickness from 60 to more than 90 inches. The soil is very strongly acid to slightly acid in the A and E horizons and extremely acid to strongly acid in the Bt horizon. Depth to horizons that have more than 5 percent plinthite ranges from 30 to 56 inches.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 or 2.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 or 4. It is loamy sand or loamy fine sand. Some pedons do not have an E horizon.

The upper part of the Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 8. It is sandy clay loam. The lower part is mottled in shades of red, brown, yellow, and gray; or it has hue of 10YR, value of 5 or 6, and chroma of 1 or 2, and mottles in shades of red, brown, or yellow. It is sandy clay or sandy clay loam.

Coxville Series

The Coxville series consists of poorly drained soils that formed in deposits of clayey marine sediment on the Coastal Plain. The soils are in Carolina Bays and on low, broad interstream divides. Slopes are less than 2 percent. The Coxville series is a member of the clayey, kaolinitic, thermic family of Typic Paleaquults.

Coxville soils are on the same landscape with Byars, Dunbar, Goldsboro, Lynchburg, Noboco, and Rains soils. Byars soils have an umbric epipedon. Dunbar, Goldsboro, Lynchburg, and Noboco soils have a deeper seasonal high water table than that of the Coxville soils. The Goldsboro, Lynchburg, Noboco, and Rains soils have a fine-loamy particle-size control section.

Typical pedon of Coxville sandy loam; in a wooded area about 24 miles southeast of Orangeburg, 1.7 miles south on U.S. Highway 15 from junction with U.S. Highway 176, 0.4 mile west on South Carolina Highway 613, 800 feet north of road, and 100 feet east of open field.

A—0 to 5 inches; very dark gray (N 3/0) sandy loam; moderate medium granular structure; friable; common fine and few medium roots; very strongly acid; clear smooth boundary.

Btg1—5 to 9 inches; gray (10YR 5/1) sandy clay loam; common medium faint yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common medium and few large roots; very strongly acid; clear smooth boundary.

Btg2—9 to 21 inches; gray (10YR 5/1) clay; common medium prominent brownish yellow (10YR 6/6) mottles and few medium prominent red (2.5YR 4/6) mottles; weak coarse subangular blocky structure; firm; few fine roots; very strongly acid; gradual smooth boundary.

Btg3—21 to 50 inches; gray (10YR 6/1) clay; common medium prominent brownish yellow (10YR 6/6) mottles; weak coarse subangular blocky structure; very firm; few fine pores; fine sand coatings along ped faces in lower part; very strongly acid; gradual smooth boundary.

Btg4—50 to 60 inches; gray (10YR 6/1) and dark gray (N 4/0) clay; common medium prominent yellow (10YR 7/6) mottles; moderate coarse subangular blocky structure; firm; common fine pockets of white fine sand; strongly acid.

The solum is more than 60 inches thick. The soil is extremely acid to strongly acid throughout except where lime has been added.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1; or it is neutral and has value of 2 to 4.

Some pedons have an E horizon that has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. The E horizon is sandy loam.

The Btg horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2; or it is neutral and has value of 4 to 7. Mottles are in shades of red, yellow, and brown. This horizon is sandy clay or clay. Thin layers of sandy clay loam are in most pedons.

Dothan Series

The Dothan series consists of well drained soils that formed in deposits of loamy marine sediment on the Coastal Plain. The soils are on uplands and gentle side slopes. Slopes range from 0 to 6 percent. The Dothan series is a member of the fine-loamy, siliceous, thermic family of Plinthic Paleudults.

Dothan soils are on the same landscape with Coxville, Fuquay, Neeses, Noboco, and Rains soils. Except for the Fuquay soils, these soils do not contain more than 5 percent plinthite within 60 inches of the surface. Fuquay soils have an arenic epipedon. Coxville and Rains soils have a shallower seasonal high water table than that of the Dothan soils. Neeses soils have a clayey particle-size control section.

Typical pedon of Dothan loamy sand, 0 to 2 percent slopes; about 3.5 miles north of Holly Hill, 1.6 miles east on South Carolina Highway 45 from junction with South Carolina Highway 310, 100 feet north of South Carolina Highway 45, and 50 feet east of county road.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; few fine roots; few 6 to 18 mm ironstone nodules; slightly acid; abrupt smooth boundary.

E—7 to 14 inches; yellowish brown (10YR 5/4) sandy loam; common medium distinct dark grayish brown (10YR 4/2) mottles in upper 2 inches and few medium distinct firm strong brown (7.5YR 5/6) mottles in lower 3 inches; weak fine granular structure; very friable; few fine roots; few 6 to 18 mm ironstone nodules; slightly acid; clear wavy boundary.

Bt1—14 to 26 inches; strong brown (7.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct clay films on faces of peds; few 6 to 18 mm ironstone nodules; strongly acid; clear smooth boundary.

Bt2—26 to 37 inches; yellowish brown (10YR 5/8) sandy clay loam; few medium distinct strong brown (7.5YR 5/8) mottles and few medium prominent red (2.5YR 4/6) mottles; weak medium subangular blocky structure; friable, mottles are firm; few fine roots; common distinct clay films in pores and common faint clay films on ped faces; few 4 to 12 mm ironstone nodules; strongly acid; clear wavy boundary.

Btv1—37 to 48 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium prominent yellowish red (5YR 5/6), strong brown (7.5YR 5/6), red (2.5YR 4/8), and light gray (10YR 7/2) mottles; weak medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; few 4 to 16 mm ironstone nodules; few 2 to 8 mm quartz gravel; about 6 percent 2 to 20 mm firm irregular nodular and spherical plinthite; very strongly acid; clear wavy boundary.

Btv2—48 to 66 inches; reticulately mottled yellowish brown (10YR 5/6), yellowish red (5YR 4/8), and red (10R 4/8) sandy clay loam and light gray (10YR 7/2) and white (10YR 8/1) sandy clay; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; few 4 to 12 mm ironstone nodules; few 2 to 8 mm quartz gravel; about 15 percent 2 to 40 mm firm irregular nodular and platy plinthite; very strongly acid.

The solum is more than 65 inches thick. The soil is very strongly acid or strongly acid throughout except where lime has been added. Depth to horizons that contain more than 5 percent plinthite ranges from 35 to 56 inches.

The A horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4.

The E horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 or 4. It is loamy sand or sandy loam. Some pedons do not have an E horizon.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 to 8. Mottles in shades of red, brown, gray, or yellow are in the lower part of this horizon. This horizon is sandy loam or sandy clay loam.

The Btv horizon has the same colors as those of the Bt horizon, or it is reticulately mottled in hue of 10R to 10YR, value of 4 to 8, and chroma of 1 to 8. It has 5 to 30 percent plinthite. The Btv horizon is sandy clay loam or sandy clay.

Dunbar Series

The Dunbar series consists of somewhat poorly drained soils that formed in clayey marine sediment on the Coastal Plain. The soils are on broad interstream divides. Slopes are less than 2 percent. The Dunbar series is a member of the clayey, kaolinitic, thermic family of Aeric Paleaquults.

Dunbar soils are on the same landscape with Byars, Coxville, Duplin, Goldsboro, Lynchburg, and Noboco soils. Byars and Coxville soils have a shallower seasonal high water table than that of the Dunbar soils. Goldsboro, Lynchburg, and Noboco soils have a fine-loamy particle-size control section. Duplin, Goldsboro, and Noboco soils have a deeper seasonal high water table.

Typical pedon of Dunbar sandy loam; about 7 miles east of Holly Hill, 0.4 mile north on South Carolina Highway 174 from junction with U.S. Highway 176, 3.1 miles east on South Carolina Highway 640, 0.5 mile north on county road, 400 feet east on private dirt road, 60 feet north of road, and 54 feet east of ditch.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) sandy loam; few medium distinct yellowish brown (10YR 5/6) mottles in lower 2 inches; weak fine granular structure; very friable; few fine and medium roots; strongly acid; clear smooth boundary.

Bt—8 to 14 inches; mottled brown (10YR 5/3), grayish brown (10YR 5/2), yellowish brown (10YR 5/6), and yellowish red (5YR 5/6) clay loam and very dark grayish brown (10YR 3/2) sandy loam; moderate medium subangular blocky structure; friable, sticky and plastic; common fine roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Btg1—14 to 26 inches; gray (10YR 5/1) clay loam; many medium faint brown (10YR 5/3) mottles, common medium distinct yellowish brown (10YR 5/6) mottles, and few medium distinct yellowish red (5YR 5/6) mottles; moderate medium angular blocky structure; firm, sticky and plastic; few fine roots; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg2—26 to 40 inches; gray (10YR 5/1) sandy clay; many medium faint brown (10YR 5/3) mottles, common medium distinct yellowish brown (10YR 5/6) mottles, and few medium distinct yellowish red (5YR 5/6) mottles; moderate medium angular blocky structure; firm, slightly sticky and slightly plastic, yellowish red mottles are very firm; few fine roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Btg3—40 to 54 inches; gray (10YR 5/1) clay; common medium distinct yellowish red (5YR 5/6) and dark reddish gray (5YR 4/2) mottles, few medium prominent reddish brown (2.5YR 5/4) mottles, and few medium distinct yellowish brown (10YR 5/6) mottles; moderate coarse prismatic structure parting to strong coarse angular blocky; firm, yellowish red mottles are very firm; few fine roots; few faint clay films on faces of peds; very strongly acid; gradual smooth boundary.

Btg4—54 to 70 inches; gray (10YR 5/1) clay; common medium distinct yellowish red (5YR 5/6) and dark reddish gray (5YR 4/2) mottles, few medium prominent reddish brown (2.5YR 5/4) mottles, and few medium distinct yellowish brown (10YR 5/6) mottles; moderate coarse prismatic structure parting to strong coarse angular blocky; firm; few fine roots; common faint clay films on faces of peds; very strongly acid.

The solum is more than 60 inches thick. The soil is very strongly acid or strongly acid throughout except where lime has been added.

The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6; or it is mottled in shades of brown, red, or yellow. The Btg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. The Bt and Btg horizons are sandy clay, clay loam, or clay.

Duplin Series

The Duplin series consists of moderately well drained soils that formed in clayey marine sediment on the Coastal Plain. The soils are on broad interstream divides. Slopes range from 0 to 2 percent. The Duplin series is a member of the clayey, kaolinitic, thermic family of Aquic Paleudults.

Duplin soils are on the same landscape with Coxville, Dunbar, Goldsboro, Lynchburg, Noboco, and Rains soils. Coxville, Dunbar, Lynchburg, and Rains soils have a shallower seasonal high water table than that of the Duplin soils. Goldsboro, Lynchburg, Noboco, and Rains soils have a fine-loamy particle-size control section. Noboco soils have a deeper seasonal high water table.

Typical pedon of Duplin loamy sand, 0 to 2 percent slopes; about 3 miles southeast of Bowman, 2.5 miles southeast on U.S. Highway 178 from junction with South Carolina Highway 210, 1.2 miles northeast on unpaved county road, 0.2 mile north on field road, 160 feet west of road, 50 feet west of pecan tree.

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) loamy sand; moderate fine granular structure; very friable; common fine roots; slightly acid; clear wavy boundary.

E—6 to 13 inches; light yellowish brown (10YR 6/4) loamy sand; weak fine granular structure; very friable; medium acid; clear wavy boundary.

Bt1—13 to 18 inches; brownish yellow (10YR 6/6) sandy clay loam; many fine distinct strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; friable; strongly acid; clear wavy boundary.

Bt2—18 to 28 inches; brownish yellow (10YR 6/6) sandy clay; many medium prominent strong brown (7.5YR 5/6) mottles and common fine distinct light gray (10YR 7/2) mottles; moderate medium subangular blocky structure; firm; few distinct very pale brown clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt3—28 to 38 inches; mottled light gray (10YR 7/1), yellowish red (5YR 4/6), and brownish yellow (10YR 6/6) sandy clay; moderate medium subangular blocky structure; firm; few distinct very pale brown clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg—38 to 62 inches; light gray (10YR 7/1) clay; common medium prominent yellowish red (5YR 4/6) mottles, common fine prominent brownish yellow (10YR 6/6) mottles, and few fine prominent strong brown (7.5YR 5/6) coarser textured mottles; moderate medium subangular blocky structure; firm; common distinct very pale brown clay films on faces of peds; few black (10YR 2/1) root stains on faces of peds in the lower part; very strongly acid.

The solum ranges in thickness from 60 to more than 80 inches. The soil is strongly acid to neutral in the A and E horizons and very strongly acid or strongly acid in the Bt horizon.

The A horizon has hue of 10YR or 2.5Y, value of 2 to 5, and chroma of 1 or 2.

The E horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 to 4. It is sand, loamy sand, sandy loam, or fine sandy loam. Some pedons do not have an E horizon.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8; or it is mottled. The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. The Bt and Btg horizons are clay loam, sandy clay, or clay with thin layers of sandy clay loam.

Elloree Series

The Elloree series consists of poorly drained soils that formed in sandy and loamy marine and fluvial sediments on the middle and lower Coastal Plain. The soils are on flood plains. Slopes are less than 2 percent. The Elloree series is a member of the loamy, siliceous, thermic family of Arenic Ochraqualfs.

Elloree soils are on the same landscape with Lynchburg, Mouzon, Ocilla, Rains, and Stallings soils. Lynchburg, Ocilla, Rains, and Stallings soils are not subject to flooding. The Lynchburg, Ocilla, and Stallings soils have a deeper seasonal high water table than that of the Elloree soils. Goldsboro, Lynchburg, Mouzon, and Rains soils have an argillic horizon within 20 inches of the surface and are more acid.

Typical pedon of Elloree loamy sand, frequently flooded; about 7.5 miles north of Holly Hill, 1.4 miles northeast on South Carolina Secondary Highway 202 from junction with U.S. Highway 15, 0.3 mile south on county road, 350 feet west of road along ditch, 50 feet north of ditch.

A—0 to 6 inches; black (10YR 2/1) loamy sand; moderate medium granular structure; friable; many fine, medium, and large roots; medium acid; abrupt smooth boundary.

E—6 to 23 inches; light brownish gray (10YR 6/2) sand; common coarse uncoated sand grains, few strong brown coarse sand grains; single grained; very friable; few fine and medium roots; neutral; clear smooth boundary.

Btg1—23 to 27 inches; grayish brown (10YR 5/2) sandy loam; few fine faint dark grayish brown mottles; moderate medium subangular blocky structure; friable; common fine roots along faces of peds; very few faint clay films on faces of peds; neutral; clear wavy boundary.

Btg2—27 to 42 inches; gray (10YR 5/1) sandy loam; few fine faint dark grayish brown mottles; moderate medium subangular blocky structure; friable; many fine roots along faces of peds; few coarse strong brown sand grains; few faint clay films on faces of peds; neutral; clear smooth boundary.

BCg1—42 to 53 inches; gray (10YR 6/1) loamy sand; many coarse distinct light brownish gray (2.5Y 6/2) pockets of sand; weak medium subangular blocky structure; very friable; few fine roots; neutral; clear wavy boundary.

BCg2—53 to 69 inches; light gray (2.5Y 7/2) sandy loam; common fine distinct yellow (2.5Y 6/6) mottles; weak coarse subangular blocky structure; very friable; neutral; gradual smooth boundary.

Cg—69 to 80 inches; light gray (2.5Y 7/2) sandy loam; few fine distinct olive yellow (2.5Y 6/6) mottles; massive; firm; neutral.

The solum is more than 40 inches thick. The soil is strongly acid to slightly acid in the A horizon, medium acid to neutral in the E horizon, and neutral to moderately alkaline throughout the rest of the profile.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 to 3; or it is neutral and has value of 2 or 3.

The E horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It is loamy sand, sand, or fine sand.

The Btg horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 to 2; or it is neutral and has value of 4 to 7. It has mottles in shades of brown or yellow. This horizon dominantly is sandy loam but ranges to sandy clay loam.

The BCg horizon has the same colors as those of the Btg horizon. It is loamy sand, sandy loam, or sandy clay loam.

The Cg horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2. In some pedons, it ranges to a hue of 5GY. The Cg horizon is loamy sand, sandy loam, sandy clay loam, or clay.

Faceville Series

The Faceville series consists of well drained soils that formed in clayey marine sediment on the Coastal Plain. The soils are on level to rolling uplands. Slopes range from 0 to 6 percent. The Faceville series is a member of the clayey, kaolinitic, thermic family of Typic Paleudults.

Faceville soils are on the same landscape with Dothan, Fuquay, Lucy, Neeses, Noboco, and Orangeburg soils. Dothan, Noboco, and Orangeburg soils have a fine-loamy particle-size control section. Neeses soils have a firm and slightly cemented subsoil. Fuquay and Lucy soils have an arenic epipedon. In addition, Dothan and Fuquay soils are plinthic.

Typical pedon of Faceville loamy sand, 2 to 6 percent slopes; about 4 miles east of Springfield, 1 mile southeast on South Carolina Highway 332 from junction with South Carolina Highway 4, 900 feet north on South Carolina Highway 1167, and 50 feet east of road.

Ap—0 to 6 inches; dark brown (7.5YR 4/4) loamy sand; weak fine granular structure; very friable; common fine roots; strongly acid; abrupt wavy boundary.

Bt1—6 to 26 inches; red (2.5YR 4/8) sandy clay; weak medium subangular blocky structure; friable; common fine roots; few distinct clay films on vertical faces of peds; few faint clay films on horizontal faces of peds; strongly acid; abrupt wavy boundary.

Bt2—26 to 44 inches; red (2.5YR 4/6) sandy clay; few fine distinct brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

Bt3—44 to 62 inches; yellowish red (5YR 5/8) sandy clay; many medium faint red (2.5YR 4/6) mottles and common medium distinct brownish yellow (10YR 6/6) mottles; friable; few fine roots; few faint clay films on faces of peds; very strongly acid.

The solum is more than 60 inches thick. The soil is very strongly acid or strongly acid throughout except where lime has been added.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4.

The upper part of the Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. Mottles in shades of red, brown, or yellow are in some pedons. The lower part of the Bt horizon has the same colors as those of the upper part, or it is coarsely mottled in shades of red, yellow, and brown. The Bt horizon is clay loam, sandy clay, or clay.

Fuquay Series

The Fuquay series consists of well drained soils that formed in sandy and loamy marine sediments on the Coastal Plain. The soils are on uplands and gentle side slopes. Slopes range from 0 to 6 percent. The Fuquay series is a member of the loamy, siliceous, thermic family of Arenic Plinthic Paleudults.

Fuquay soils are on the same landscape with Ailey, Bonneau, Dothan, and Troup soils. Ailey soils have a hard, compact, and slightly cemented subsoil. Bonneau soils do not have more than 5 percent plinthite. Dothan soils have an argillic horizon within 20 inches of the surface. Troup soils have a grossarenic epipedon.

Typical pedon of Fuquay sand, 0 to 6 percent slopes; about 20 miles east of Orangeburg, 1.3 miles south on South Carolina Secondary Highway 754 from junction with U.S. Highway 176 where South Carolina Secondary Highway 754 turns east, 100 feet south of road.

A1—0 to 2 inches; very dark gray (10YR 3/1) sand; single grained; loose; many fine and medium roots; many clean sand grains; very strongly acid; abrupt smooth boundary.

A2—2 to 8 inches; dark grayish brown (2.5Y 4/2) sand; weak fine granular structure; loose; common fine and medium roots; medium acid; clear wavy boundary.

E—8 to 24 inches; light yellowish brown (10YR 6/4) sand; many medium faint very pale brown (10YR 7/3) mottles and common fine faint yellowish brown mottles; weak fine granular structure; loose; common fine and medium roots; medium acid; clear smooth boundary.

Bt1—24 to 29 inches; yellowish brown (10YR 5/8) sandy clay loam; few medium distinct yellowish red (5YR 4/8) mottles; weak fine subangular blocky structure; friable; common fine and medium roots; few faint clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—29 to 45 inches; yellowish brown (10YR 5/6) sandy clay loam; few medium distinct yellowish red (5YR 4/6) mottles; weak fine subangular blocky structure; friable; common fine and medium roots; few faint clay films on faces of peds; few ironstone nodules; strongly acid; clear wavy boundary.

Btv1—45 to 55 inches; mottled yellowish brown (10YR 5/6), pale brown (10YR 6/3), light gray (10YR 7/2), yellowish red (5YR 5/6), and red (2.5YR 4/8) sandy clay; weak fine subangular blocky structure; friable; few fine roots; common faint clay films on faces of peds; about 6 percent plinthite occurring as firm and brittle 2 to 3 mm platy bodies with horizontal orientation; strongly acid; clear wavy boundary.

Btv2—55 to 74 inches; reticulately mottled pale brown (10YR 6/3), gray (10YR 6/1), strong brown (7.5YR 5/8), yellowish red (5YR 5/6), and red (2.5YR 4/8) sandy clay; weak fine subangular blocky structure; friable; few fine roots; common faint clay films on faces of peds; about 12 percent plinthite occurring as very firm and brittle 2 to 5 mm platy bodies with horizontal orientation; strongly acid.

The solum ranges from 70 to more than 80 inches in thickness. The soil is very strongly acid to medium acid throughout. Depth to horizons that have more than 5 percent plinthite ranges from 45 to 60 inches.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 or 2.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 6. It is sand or loamy sand.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. It has mottles in shades of red. This horizon is sandy clay loam.

The Btv horizon is mottled in hue of 2.5YR to 10YR, value of 4 to 8, and chroma of 1 to 8. It contains from 5 to 20 percent plinthite and is sandy clay loam or sandy clay.

Goldsboro Series

The Goldsboro series consists of moderately well drained soils that formed in loamy marine sediment on the Coastal Plain. The soils are on broad interstream divides. Slopes are less than 2 percent. The Goldsboro series is a member of the fine-loamy, siliceous, thermic family of Aquic Paleudults.

Goldsboro soils are on the same landscape with Coxville, Duplin, Lynchburg, Noboco, and Rains soils. Coxville and Duplin soils have a clayey particle-size control section. Coxville, Lynchburg, and Rains soils have a shallower seasonal high water table than that of the Goldsboro soils, and the Noboco soils have a deeper seasonal high water table.

Typical pedon of Goldsboro sandy loam, 0 to 2 percent slopes; about 3.5 miles northwest of Holly Hill, 0.9 mile southeast of the intersection of U.S. Highways 176 and 15, 1.3 miles northeast of U.S. Highway 176 on county road, and 380 feet southeast of road.

Ap—0 to 8 inches; dark grayish brown (2.5Y 4/2) sandy loam; weak medium granular structure; very friable; common fine and medium roots; medium acid; abrupt smooth boundary.

E—8 to 16 inches; light yellowish brown (2.5Y 6/4) sandy loam; few medium distinct dark grayish brown (2.5Y 4/2) mottles in upper part; weak medium granular structure; very friable; common fine and medium roots; few very fine pores; medium acid; abrupt wavy boundary.

Bt1—16 to 25 inches; yellowish brown (10YR 5/6) sandy clay loam; few medium distinct yellowish red (5YR 5/6) mottles and few medium faint strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable, mottles are firm; common fine roots; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—25 to 32 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct yellowish red (5YR 5/6) mottles, common medium faint pale brown (10YR 6/3) mottles, and common fine distinct light gray (10YR 7/2) mottles; weak medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt3—32 to 45 inches; yellowish brown (10YR 5/6) sandy clay loam; many medium distinct light gray (10YR 7/2) and yellowish red (5YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine roots and few medium and large roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt4—45 to 56 inches; yellowish brown (10YR 5/6) sandy clay loam; many coarse distinct light gray (10YR 7/2) mottles, common coarse distinct red (2.5YR 5/6) mottles, and few medium distinct pale brown (10YR 6/3) mottles; weak coarse subangular blocky structure; friable; few fine roots; common distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

Btg1—56 to 68 inches; gray (10YR 6/1) sandy clay loam; many coarse distinct yellowish brown (10YR 5/6) mottles and common coarse distinct red (2.5YR 4/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; very strongly acid.

The solum ranges from 60 to more than 80 inches thick. The soil is very strongly acid or strongly acid throughout except where lime has been added.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 or 2.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 or 4. It is sandy loam or loamy sand. Some pedons do not have an E horizon.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 8. Mottles are in shades of red, brown, yellow, or gray. This horizon is sandy loam or sandy clay loam.

The Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. Mottles are in shades of red, brown, or yellow. This horizon is sandy clay loam or sandy clay.

Johns Series

The Johns series consists of soils that formed in sandy and loamy marine and fluvial sediments on the Coastal Plain. The soils are on stream terraces. Slopes are less than 2 percent. The Johns series is a member of the fine-loamy over sandy or sandy-skeletal, siliceous, thermic family of Aquic Hapludults.

Johns soils are on the same landscape with Johnston, Lumbee, and Rains soils. Johnston and Rains soils do not have a sandy substratum within 40 inches of the surface. Lumbee and Rains soils have a shallower seasonal high water table than that of the Johns soils. Johnston soils have a cumulic surface layer.

Typical pedon of Johns loamy sand; about 19 miles southwest of Orangeburg and 3 miles south of Cope, 0.5 mile southeast on South Carolina Highway 193 from junction with U.S. Highway 301, 0.5 mile south on woods trail, 20 feet west of trail.

A—0 to 4 inches; very dark gray (10YR 3/1) loamy sand; moderate fine granular structure; very friable; many fine and medium roots and few large roots; very strongly acid; abrupt wavy boundary.

E—4 to 14 inches; light yellowish brown (10YR 6/4) loamy sand; common medium faint brown (10YR 5/3) mottles; weak fine granular structure; very friable; common fine and medium roots and few large roots; very strongly acid; gradual wavy boundary.

Bt1—14 to 21 inches; light yellowish brown (10YR 6/4) sandy clay loam; common medium faint light brownish gray (10YR 6/2) mottles and few fine faint yellowish red mottles; weak medium subangular blocky structure; friable; common fine and medium roots; very strongly acid; clear wavy boundary.

Bt2—21 to 28 inches; pale brown (10YR 6/3) sandy clay loam; many medium distinct brownish yellow (10YR 6/6) mottles and many coarse faint light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; common faint clay films on faces of most peds; common fine roots on faces of peds; very strongly acid; gradual wavy boundary.

2C1—28 to 35 inches; light brownish gray (10YR 6/2) and brownish yellow (10YR 6/6) sand; few fine distinct red (2.5YR 4/6) mottles; weak coarse subangular blocky structure; very friable; very strongly acid; clear smooth boundary.

2C2—35 to 44 inches; brownish yellow (10YR 6/6) sand; common coarse distinct reddish brown (5YR 4/4) mottles; single grained; loose; very strongly acid; gradual smooth boundary.

2C3—44 to 62 inches; white (10YR 8/1) sand; single grained; loose; strongly acid.

The solum ranges in thickness from 26 to 40 inches. The soil is very strongly acid or strongly acid throughout.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 or 4. It is loamy sand. Some pedons do not have an E horizon.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. Mottles are in shades of yellow or brown. This horizon is sandy clay loam.

The 2C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 or 2; the subhorizons have higher chroma. This horizon is sand or loamy sand.

Johnston Series

The Johnston series consists of very poorly drained soils that formed in loamy marine and fluvial sediments on the Coastal Plain. These soils are on flood plains and in large depressional bays. Slopes are less than 2 percent. The Johnston series is a member of the coarse-loamy, siliceous, acid, thermic family of Cumulic Humaquepts.

Johnston soils are on the same landscape with Bibb, Elloree, and Ocilla soils. Elloree and Ocilla soils have an argillic horizon and have more clay in the control section than the Johnston soils. Bibb soils do not have a cumulic surface layer. Ocilla soils are Ultisols, have a deeper seasonal high water table, and are not on flood plains. Elloree soils are Alfisols.

Typical pedon of Johnston sandy loam, frequently flooded; about 15 miles southeast of Orangeburg and 4 miles west of Bowman, 2.6 miles southwest on South Carolina Highway 210 from junction with U.S. Highway 178, 1 mile north on county road, 250 feet west of road.

Oi—3 to 0 inches; undecomposed fibric material consisting of leaves, twigs, and stems; 80 percent fiber content rubbed; very dark brown (10YR 2/2); extremely acid; abrupt smooth boundary.

A1—0 to 12 inches; black (N 2/0) sandy loam; massive; very friable; many fine, medium, and large roots; very strongly acid; abrupt smooth boundary.

A2—12 to 26 inches; black (10YR 2/1) sandy loam; massive; very friable; many fine, medium, and large roots; very strongly acid; clear smooth boundary.

Cg1—26 to 36 inches; dark gray (10YR 4/1) sandy loam; common coarse distinct black (10YR 2/1) mottles and common medium faint dark grayish brown (10YR 4/2) mottles; massive; friable; common fine and medium roots; very strongly acid; clear smooth boundary.

Cg2—36 to 44 inches; light brownish gray (10YR 6/2) sandy loam; common coarse dark gray (10YR 4/1) loamy fine sand mottles; massive; very friable; common fine roots; very strongly acid; gradual smooth boundary.

Cg3—44 to 64 inches; brown (7.5YR 5/2) loamy sand; common medium distinct dark gray (10YR 4/1) mottles; massive; very friable; very strongly acid; gradual smooth boundary.

Cg4—64 to 72 inches; grayish brown (10YR 5/2) sandy loam; massive; friable; very strongly acid.

Most pedons have a few inches of fibric material on the surface. The Johnston soils are very strongly acid or strongly acid throughout.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2; or it is neutral and has value of 2 or 3.

The Cg horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 1 or 2. It is loamy sand, loamy fine sand, sandy loam, or fine sandy loam. Thin layers of sand and sandy clay loam are in some pedons.

Lucy Series

The Lucy series consists of well drained soils that formed in sandy and loamy sediments on the Coastal Plain. The soils are on broad ridges and side slopes. Slopes range from 0 to 10 percent. The Lucy series is a member of the loamy, siliceous, thermic family of Arenic Paleudults.

Lucy soils are on the same landscape with Ailey, Dothan, Fuquay, Neeses, Orangeburg, and Troup soils. Ailey soils have a dense and compact subsoil. Dothan, Neeses, and Orangeburg soils have an argillic horizon within 20 inches of the surface. In addition, Neeses soils have a clayey particle-size control section. Fuquay soils are plinthic. Troup soils have a grossarenic epipedon.

Typical pedon of Lucy loamy sand, 0 to 6 percent slopes; in a wooded area on the U.S. Air Force North Field, about 16 miles northwest of Orangeburg, 150 feet southwest on a woodland trail from the southeast corner of the runway complex, 10 feet east of trail.

Ap—0 to 8 inches; brown (10YR 5/3) loamy sand; weak medium granular structure; very friable; strongly acid; abrupt smooth boundary.

E1—8 to 17 inches; brownish yellow (10YR 6/6) sand; weak fine granular structure; loose; very strongly acid; gradual smooth boundary.

E2—17 to 29 inches; yellow (10YR 7/6) sand; few medium distinct red (2.5YR 4/6) mottles; weak fine granular structure; loose; very strongly acid; clear smooth boundary.

Bt1—29 to 38 inches; red (2.5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; common very coarse sand grains; very strongly acid; gradual smooth boundary.

Bt2—38 to 62 inches; red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; common quartz pebbles up to 0.25 inch in diameter; very strongly acid.

The solum ranges in thickness from 60 to more than 80 inches. The soil is very strongly acid or strongly acid throughout except where lime has been added.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3.

The E horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 8. In some pedons, it has mottles in shades of red or brown. This horizon is sand or loamy sand.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. It is sandy loam or sandy clay loam.

Lumbee Series

The Lumbee series consists of poorly drained soils that formed in sandy and loamy sediments on the Coastal Plain. The soils are on low stream terraces. Slopes are less than 2 percent. The Lumbee series is a member of the fine-loamy over sandy or sandy-skeletal, siliceous, thermic family of Typic Ochraquults.

Lumbee soils are on the same landscape with Elloree, Johnston, Mouzon, and Rains soils. These soils do not have a sandy substratum within 40 inches of the surface. Elloree soils have an arenic epipedon. Johnston soils have a cumulic surface layer, and Mouzon soils are Alfisols.

Typical pedon of Lumbee loamy sand; in a wooded area about 4.8 miles northwest of Branchville, 0.5 mile southwest on U.S. Highway 78 from junction with U.S. Highway 21, 4.3 miles northwest on South Carolina Highway 63, 100 feet north on woodland trail (150 feet northwest of old homestead), 250 feet west of trail.

A—0 to 8 inches; dark gray (10YR 4/1) loamy sand; moderate medium granular structure; very friable; many fine and common medium roots; strongly acid; clear irregular boundary.

Btg1—8 to 13 inches; light brownish gray (10YR 6/2) sandy clay loam; few medium faint brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; friable; common distinct dark gray (10YR 4/1) clay films on faces of peds; few fine roots; very strongly acid; clear wavy boundary.

Btg2—13 to 23 inches; gray (10YR 6/1) sandy clay loam; common medium distinct brownish yellow (10YR 6/8) mottles; moderate medium subangular blocky structure; firm; few distinct clay films on faces of peds; few fine roots; very strongly acid; clear wavy boundary.

2Cg1—23 to 32 inches; light gray (10YR 7/1) sand; common medium faint brownish yellow (10YR 6/6) mottles; single grained; loose; strongly acid; clear wavy boundary.

2Cg2—32 to 61 inches; light gray (N 6/0) sand; single grained; loose; fine flakes of mica; strongly acid.

The solum ranges in thickness from 20 to 40 inches. The soil is very strongly acid or strongly acid throughout.

The A horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2.

The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. Mottles in shades of red, brown, or yellow are in most pedons. This horizon is sandy clay loam.

The 2Cg horizon has hue of 10YR, value of 6 or 7, and chroma of 1; or it is neutral and has value of 6 or 7. It is sand. In some pedons, this horizon has a few fine flakes of mica.

Lynchburg Series

The Lynchburg series consists of somewhat poorly drained soils that formed in thick deposits of loamy sediment on the Coastal Plain. The soils are on broad interstream divides and upland flats. Slopes are less than 2 percent. The Lynchburg series is a member of the fine-loamy, siliceous, thermic family of Aeric Paleaquults.

Lynchburg soils are on the same landscape with Coxville, Dunbar, Goldsboro, Noboco, Ocilla, and Rains soils. Coxville and Rains soils have a shallower seasonal high water table than that of the Lynchburg soils. Coxville and Dunbar soils have a clayey particle-size control section. Goldsboro and Noboco soils have a deeper seasonal high water table. Ocilla soils have an arenic epipedon.

Typical pedon of Lynchburg fine sandy loam; about 6 miles northwest of Holly Hill, 0.1 mile southwest on South Carolina Highway 613 from junction with U.S. Highway 15, 710 feet northeast of road parallel to ditch, 55 feet south of ditch.

A—0 to 6 inches; black (10YR 2/1) fine sandy loam; weak fine granular structure; very friable; many fine, medium, and large roots; extremely acid; clear smooth boundary.

E—6 to 9 inches; dark grayish brown (10YR 4/2) sandy loam; many medium distinct black (10YR 2/1) mottles in upper part and many medium distinct brown (10YR 5/3) mottles in lower part; weak fine granular structure; very friable; many fine, medium, and large roots; few very fine pores; very strongly acid; abrupt smooth boundary.

Bt—9 to 15 inches; brown (10YR 5/3) sandy loam; common medium distinct yellowish brown (10YR 5/6) mottles and common fine distinct gray (10YR 6/1) mottles; weak fine subangular blocky structure; friable; many fine, medium, and large roots; common fine pores; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Btg1—15 to 28 inches; gray (10YR 6/1) sandy loam; common medium prominent yellowish brown (10YR 5/8) mottles and common medium faint brown (10YR 5/3) mottles; weak medium subangular blocky structure; friable; common fine roots; common fine pores; common faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Btg2—28 to 44 inches; mottled gray (10YR 6/1), yellowish brown (10YR 5/6), brown (10YR 4/3), and yellowish red (5YR 5/3) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; common medium pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg3—44 to 71 inches; mottled gray (10YR 5/1), strong brown (7.5YR 5/6), and red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; few fine pores; common distinct clay films on faces of peds; very strongly acid.

The solum ranges in thickness from 60 to more than 70 inches. The soil is extremely acid to strongly acid throughout.

The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2.

The E horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 or 3. It is loamy sand or sandy loam. Some pedons do not have an E horizon.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6. The Btg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. The Bt and Btg horizons have mottles in shades of yellow, red, or brown. These horizons are sandy clay loam but can range to sandy clay below a depth of 40 inches.

Mouzon Series

The Mouzon series consists of poorly drained soils that formed in clayey marine and fluvial sediments on the Coastal Plain. The soils are on flood plains and in large depressional areas. Slopes are less than 2 percent. The Mouzon series is a member of the fine-loamy, siliceous, thermic family of Typic Albaqualfs.

Mouzon soils are on the same landscape with Elloree, Lynchburg, Ocilla, Rains, and Stallings soils. These soils contain less clay in the particle-size control section than the Mouzon soils. Elloree and Ocilla soils have an arenic epipedon.

Typical pedon of Mouzon fine sandy loam, frequently flooded; about 8 miles east of Holly Hill, 0.4 mile north on South Carolina Highway 174 from junction with U.S.

Highway 176, 3.1 miles east on South Carolina Secondary Highway 640, 1.2 miles east on county road, and 100 feet south of road.

A—0 to 4 inches; very dark brown (10YR 2/2) fine sandy loam; moderate medium granular structure; friable; many fine, medium, and large roots; very strongly acid; clear smooth boundary.

E—4 to 11 inches; light brownish gray (10YR 6/2) loamy sand; few fine distinct brownish yellow (10YR 6/6) mottles in lower part; weak coarse subangular blocky structure; common fine and medium roots; strongly acid; clear wavy boundary.

Btg1—11 to 26 inches; mottled dark grayish brown (10YR 4/2), gray (10YR 5/1), and yellowish brown (10YR 5/8) sandy clay loam; strong coarse prismatic structure parting to strong coarse angular blocky; firm; common fine roots; few very fine pores; few distinct clay films on faces of peds; slightly acid; clear wavy boundary.

Btg2—26 to 38 inches; grayish brown (10YR 5/2) clay loam; many medium distinct yellowish brown (10YR 5/8) mottles and common medium faint pale yellow (2.5Y 7/4) mottles; moderate coarse prismatic structure parting to moderate coarse angular blocky; firm; common fine roots; few very fine pores; few distinct clay films on faces of peds; neutral; clear wavy boundary.

Btg3—38 to 50 inches; gray (10YR 6/1) sandy clay loam; many coarse distinct yellowish brown (10YR 5/8) mottles and common medium faint pale yellow (2.5Y 7/4) mottles; strong coarse angular blocky structure; firm; few fine roots; common fine and medium pores; few distinct clay films in pores; few faint clay films on faces of peds; few 0.5 to 3 cm calcium carbonate concretions; few 0.5 to 1 cm manganese concretions; neutral; clear wavy boundary.

BCg—50 to 61 inches; light gray (10YR 7/1) sandy clay loam; many medium distinct yellowish brown (10YR 5/6) mottles and common medium faint pale yellow (2.5Y 7/4) mottles; moderate fine subangular blocky structure; friable; few fine pores; silt and sand coatings on faces of peds; neutral; clear smooth boundary.

2Cg—61 to 74 inches; light brownish gray (10YR 6/2) sandy loam; massive; friable; mildly alkaline.

The solum ranges in thickness from 40 to 80 inches. The soil is very strongly acid to slightly acid in the A horizon and strongly acid to moderately alkaline in the rest of the profile.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2.

The E horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. It is loamy sand or fine sandy loam. Some pedons do not have an E horizon.

The Btg horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2; or it is neutral and has value of 4 to 6. It has mottles in shades of brown, yellow, or gray. This horizon is sandy clay loam or clay loam.

The 2Cg horizon has the same colors as those of the Btg horizon. It is sandy loam, loamy sand, or sand.

Neeses Series

The Neeses series consists of well drained soils that formed in clayey and loamy sediments on the Coastal Plain. The soils are on broad to narrow ridges and in long narrow areas parallel to streams and drainageways. Slopes range from 2 to 15 percent. The Neeses series is a member of the clayey, kaolinitic, thermic family of Typic Hapludults.

Neeses soils are on the same landscape with Ailey, Dothan, Faceville, Lucy, and Orangeburg soils. Ailey, Dothan, Lucy, and Orangeburg soils have less clay in the particle-size control section than the Neeses soils. In addition, Ailey and Lucy soils have an arenic epipedon. Faceville soils do not have as firm a subsoil or a clay decrease within 60 inches of the surface.

Typical pedon of Neeses loamy sand, 2 to 6 percent slopes; about 3 miles northwest of North, 1.3 miles north on South Carolina Highway 1504 from U.S. Highway 178, 20 feet west of road.

A—0 to 5 inches; yellowish brown (10YR 5/4) loamy sand; moderate fine granular structure; very friable; many fine and medium roots; very strongly acid; clear wavy boundary.

E—5 to 8 inches; light yellowish brown (10YR 6/4) loamy sand; weak fine granular structure; very friable; many fine and common medium and coarse roots; very strongly acid; clear wavy boundary.

Bt1—8 to 14 inches; strong brown (7.5YR 5/6) sandy clay; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; common fine and few medium roots; few small quartz pebbles; strongly acid; clear wavy boundary.

Bt2—14 to 28 inches; strong brown (7.5YR 5/8) sandy clay; common medium distinct red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; few ironstone nodules; few fine and medium roots; strongly acid; gradual wavy boundary.

Bt3—28 to 37 inches; mottled red (2.5YR 4/8) sandy clay loam and yellowish brown (10YR 5/6) and pale brown (10YR 6/3) sandy clay; sandy clay loam is massive, dense, and slightly cemented in about 50 percent of the mass and firm in the remainder; sandy clay has moderate fine subangular blocky structure and is friable; few faint clay films on faces of peds; few fine roots; thin (2 mm) discontinuous horizontal ironstone sheets; common ironstone nodules; very strongly acid; gradual wavy boundary.

BC—37 to 54 inches; mottled red (2.5YR 5/6) and reddish yellow (7.5YR 6/8) sandy clay loam; weak coarse subangular blocky structure; firm; common fine uncoated sand grains; very strongly acid; diffuse wavy boundary.

2C—54 to 85 inches; red (2.5YR 5/8) sandy clay loam; few medium pockets of brownish yellow (10YR 6/8) sandy clay; massive; friable; very strongly acid.

The solum is more than 40 inches thick. The soil is extremely acid to strongly acid throughout. Depth to a horizon that is dense, compact, and slightly cemented ranges from 20 to 35 inches. Content of ironstone and gravel ranges from 0 to 5 percent.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 4.

The E horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. It is loamy sand.

The upper part of the Bt horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 6 or 8. The hue can range to 2.5YR in some pedons. This part of the Bt horizon has mottles in shades of red or brown. It is generally sandy clay or clay; however, some pedons have thin transitional horizons that are sandy loam.

The lower part of the Bt horizon is dense and compact. It has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 6 or 8, and has mottles in shades of red, brown, or yellow; or it is coarsely mottled in these colors. In some pedons, the mottles can range to chroma of 2. This part of the Bt horizon is sandy clay or clay in the firm or friable yellow parts and sandy clay loam or sandy clay in the dense and slightly cemented red parts.

The BC horizon has the same range of colors as those of the lower part of the Bt horizon. It is sandy loam or sandy clay loam.

The C or 2C horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. It is sandy loam or sandy clay loam that has pockets of heavier-textured material.

Noboco Series

The Noboco series consists of well drained soils that formed in loamy marine sediment on the Coastal Plain. The soils are on upland flats and gentle side slopes. Slopes range from 0 to 6 percent. The Noboco series is a member of the fine-loamy, siliceous, thermic family of Typic Paleudults.

Noboco soils are on the same landscape with Bonneau, Dothan, Goldsboro, Lynchburg, Orangeburg, and Rains soils. Bonneau soils have an arenic epipedon. Goldsboro, Lynchburg, and Rains soils have a shallower seasonal high water table than that of the Noboco soils. Dothan soils have more than 5 percent plinthite. Orangeburg soils have a redder Bt horizon.

Typical pedon of Noboco loamy sand, 0 to 2 percent slopes; 6.3 miles northwest of Holly Hill, 1.3 miles north on U.S. Highway 15 from junction with U.S. Highway 176, 250 feet east on South Carolina Highway 607, 60 feet south of center line of Highway 607, 20 feet east of the cemetery.

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

E—7 to 13 inches; light yellowish brown (10YR 6/4) loamy sand; common coarse distinct dark grayish brown (10YR 4/2) mottles in upper part; weak fine granular structure; very friable; few fine roots; medium acid; clear wavy boundary.

Bt1—13 to 25 inches; yellowish brown (10YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt2—25 to 41 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium faint strong brown (7.5YR 5/6) mottles in lower part; weak medium subangular blocky structure; friable; common distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt3—41 to 47 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium prominent red (2.5YR 4/8) mottles, few medium distinct pale brown (10YR 6/3) mottles, and few medium distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; common distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.

Bt4—47 to 58 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium faint brown (10YR 5/3) mottles, few medium prominent red (2.5YR 4/8) mottles, and common medium distinct light gray (10YR 7/1) mottles; weak medium subangular blocky structure; friable; few distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt5—58 to 72 inches; mottled light gray (10YR 7/1), yellowish brown (10YR 5/6), red (10YR 4/8), and brown (10YR 5/3) sandy clay loam; moderate medium subangular blocky structure; firm (red part), friable (gray, yellowish brown, and brown parts); lenses and pockets of loamy sand in lower part; very strongly acid.

The solum ranges in thickness from 64 to more than 80 inches. The soil is very strongly acid or strongly acid throughout except where lime has been added.

The A horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3.

The E horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 or 4. It is loamy sand or loamy fine sand. Some pedons do not have an E horizon.

The upper part of the Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. The lower part has the same colors as the upper part and has mottles in shades of red, brown, yellow, or gray; or it is mottled in shades of red, brown, yellow, or gray. The Bt horizon is sandy clay loam but can range to sandy clay below a depth of about 40 inches.

Ocilla Series

The Ocilla series consists of somewhat poorly drained soils that formed in sandy and loamy marine sediments on the Coastal Plain. The soils are on broad interstream divides and on the edges of Carolina Bays. Slopes range from 0 to 2 percent. The Ocilla series is a member of the loamy, siliceous, thermic family of Aquic Arenic Paleudults.

Ocilla soils are on the same landscape with Bonneau, Coxville, Goldsboro, Lynchburg, and Rains soils. Bonneau soils have a deeper seasonal high water table than that of the Ocilla soils. Coxville, Goldsboro, Lynchburg, and Rains soils have an argillic horizon less than 20 inches from the surface. Coxville and Rains soils have a shallower seasonal high water table. In addition, Coxville soils have a clayey particle-size control section.

Typical pedon of Ocilla loamy sand, 0 to 2 percent slopes; about 23 miles east of Orangeburg, 2 miles south on South Carolina Highway 210 from junction with U.S. Highway 176, 700 feet west of road, 85 feet south of field.

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

A2—3 to 7 inches; dark grayish brown (2.5Y 4/2) loamy sand; weak fine granular structure; very friable; many fine, medium, and large roots; very strongly acid; abrupt smooth boundary.

E1—7 to 13 inches; yellowish brown (10YR 5/4) loamy sand; weak fine granular structure; very friable; many fine, medium, and large roots; strongly acid; clear smooth boundary.

E2—13 to 24 inches; light yellowish brown (10YR 6/4) loamy sand; common medium faint very pale brown (10YR 7/3) mottles; weak medium granular structure; very friable; common fine and medium roots; few fine pores; strongly acid; gradual wavy boundary.

Bt1—24 to 28 inches; yellowish brown (10YR 5/6) sandy loam; weak fine subangular blocky structure; friable; few fine and medium roots; few fine pores; sand grains bridged and coated with clay; very few faint clay films on faces of peds and in pores; medium acid; gradual smooth boundary.

Bt2—28 to 37 inches; mottled yellowish brown (10YR 5/6), yellowish red (5YR 5/6), strong brown (7.5YR 5/6), and light brownish gray (10YR 6/2) sandy loam; weak fine subangular blocky structure; friable; few fine roots; few fine pores; common faint clay films on faces of peds; few fine pockets of clean sand grains; very strongly acid; diffuse wavy boundary.

Btg1—37 to 62 inches; gray (10YR 6/1) sandy clay loam; many coarse distinct yellowish brown (10YR 5/6) mottles, common coarse prominent red (2.5YR 4/6) mottles, and few medium faint white (10YR 8/1) mottles; weak medium subangular blocky structure; friable; few fine roots; few very fine pores; common faint clay films on faces of peds; white mottles are clean sand grains; very strongly acid; gradual wavy boundary.

Btg2—62 to 70 inches; gray (10YR 6/1) sandy clay loam; many coarse distinct yellowish brown (10YR 5/6) mottles, many coarse prominent red (2.5YR 4/6) mottles, and common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; common faint clay films on faces of peds; few pockets of white (10YR 8/1) clean sand; few fine mica flakes; strongly acid.

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

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 or 4. It is loamy fine sand or loamy sand.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6; or it is mottled. Mottles are in shades of brown, yellow, or gray. This horizon is sandy loam or sandy clay loam.

The Btg horizon has the same hue and value as that of the Bt horizon and chroma of 1 or 2; or it is neutral and has value of 5 or 6. It has mottles in shades of red, brown, yellow, gray, or white. The Btg horizon is sandy loam or sandy clay loam.

Orangeburg Series

The Orangeburg series consists of well drained soils that formed in loamy marine sediment on the Coastal Plain. The soils are on ridges and side slopes. Slopes range from 0 to 10 percent. The Orangeburg series is a member of the fine-loamy, siliceous, thermic family of Typic Paleudults.

Orangeburg soils are on the same landscape with Ailey, Dothan, Neeses, Rains, and Troup soils. Ailey and Neeses soils have a firm and brittle subsoil. Dothan soils are plinthic. Rains soils have a shallower seasonal high water table than that of the Orangeburg soils. Troup soils have a grossarenic epipedon.

Typical pedon of Orangeburg loamy sand, 0 to 2 percent slopes; about 1.5 miles north of Elloree, 2.3 miles north on South Carolina Highway 267 from junction with South Carolina Highway 47, 0.5 mile east on South Carolina Highway 1639, 0.2 mile north on South Carolina Highway 1270, 900 feet east of road.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine roots; slightly acid; abrupt wavy boundary.

E—8 to 11 inches; yellowish brown (10YR 5/4) loamy sand; weak fine granular structure; very friable; common fine roots and many very fine roots; medium acid; gradual smooth boundary.

Bt1—11 to 30 inches; yellowish red (5YR 5/8) sandy clay loam; weak coarse subangular blocky structure parting to weak fine subangular blocky; friable; common fine roots; few faint clay films on faces of peds; few hard 1 cm concretions; strongly acid; clear wavy boundary.

Bt2—30 to 48 inches; yellowish red (5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; common hard 1 to 3 cm concretions; strongly acid; gradual wavy boundary.

Bt3—48 to 60 inches; yellowish red (5YR 5/8) sandy clay loam; common medium prominent yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; few hard 1 to 3 cm concretions; strongly acid; gradual wavy boundary.

Bt4—60 to 72 inches; yellowish red (5YR 5/8) sandy clay; common medium prominent brownish yellow (10YR 6/8) mottles; firm; few fine roots; few faint clay films on faces of peds; few hard 1 to 3 cm concretions; strongly acid.

The solum ranges in thickness from 65 to more than 85 inches. The soil is very strongly acid or strongly acid throughout except where lime has been added.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. It is loamy sand or sandy loam. Some pedons do not have an E horizon.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. Mottles in shades of brown or yellow are in the lower part of this horizon. The Bt horizon is sandy clay loam but can range to sandy clay below a depth of about 40 inches.

Pantego Series

The Pantego series consists of very poorly drained soils that formed in loamy marine sediment on the Coastal Plain. The soils are in depressional bays. Slopes are less than 2 percent. The Pantego series is a member of the fine-loamy, siliceous, thermic family of Umbric Paleaquults.

Pantego soils are on the same landscape with Byars, Coxville, Lynchburg, and Rains soils. Byars and Coxville soils have a clayey particle-size control section. Lynchburg soils have a deeper seasonal high water table than that of the Pantego soils. Except for the Byars soils, these soils do not have an umbric epipedon.

Typical pedon of Pantego fine sandy loam; about 9 miles east of Holly Hill, 0.4 mile north on South Carolina Highway 174 from junction with U.S. Highway 176, 3.1 miles east on South Carolina Highway 640, 1.6 miles east on county road, 400 feet north of road, on north side of drainage ditch.

A1—0 to 12 inches; black (N 2/0) fine sandy loam; weak fine granular structure; very friable; many fine, medium, and large roots; extremely acid; clear smooth boundary.

A2—12 to 18 inches; very dark gray (10YR 3/1) sandy loam; weak fine subangular blocky structure; very friable; many fine, medium, and large roots; extremely acid; clear wavy boundary.

Bt1—18 to 28 inches; very dark gray (10YR 3/1) sandy clay loam; common fine distinct dark brown (7.5YR 4/4) mottles; moderate medium subangular blocky structure; firm; common fine, medium, and large roots; many fine pores; few faint clay films on faces of peds; few fine pockets of grayish brown (10YR 5/2) clean sand grains; extremely acid; clear wavy boundary.

Btg1—28 to 42 inches; mottled gray (10YR 6/1) and very dark gray (10YR 3/1) sandy clay loam; moderate medium subangular blocky structure; firm; common fine, medium, and large roots; common faint clay films on faces of peds; few fine pockets of light gray (10YR 7/1) uncoated sand grains; extremely acid; gradual wavy boundary.

Btg2—42 to 59 inches; mottled gray (10YR 6/1) and yellowish brown (10YR 5/8) sandy clay loam; weak coarse prismatic structure parting to moderate coarse subangular blocky; firm; common fine, medium, and large roots; common distinct very dark gray (10YR 3/1) clay films on faces of larger peds; very strongly acid; clear wavy boundary.

Btg3—59 to 67 inches; mottled gray (10YR 6/1), yellowish brown (10YR 5/8), and very dark gray (10YR 3/1) sandy clay; strong coarse prismatic structure parting to strong coarse subangular blocky; firm; common fine and medium roots; common distinct very dark gray (10YR 3/1) clay films on faces of larger peds; very strongly acid.

The solum ranges in thickness from 60 to more than 75 inches. The soil is extremely acid to strongly acid throughout.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2; or it is neutral and has value of 2 or 3.

The Bt horizon has hue of 10YR, value of 3 to 6, and chroma of 1 or 2, and has mottles in shades of brown or yellow; or it is mottled in shades of gray, brown, or yellow. This horizon is sandy clay loam but can range from sandy loam to sandy clay below a depth of about 40 inches.

Pelham Series

The Pelham series consists of poorly drained soils that formed in sandy and loamy marine sediments on the Coastal Plain. The soils are in slight depressions or poorly defined drainageways. Slopes are less than 2 percent. The Pelham series is a member of the loamy, siliceous, thermic family of Arenic Paleaquults.

Pelham soils are on the same landscape with Bonneau, Goldsboro, Ocilla, and Rains soils. Bonneau, Goldsboro, and Ocilla soils have a deeper seasonal high water table than that of the Pelham soils. Goldsboro and Rains soils have an argillic horizon within 20 inches of the surface.

Typical pedon of Pelham loamy sand; about 20 miles southeast of Orangeburg, 4,500 feet northeast of the intersection of Interstate 95 and Interstate 26, 0.4 mile northeast on unpaved road from end of pavement, 50 feet northwest of road.

A—0 to 7 inches; very dark gray (10YR 3/1) loamy sand; weak fine granular structure; friable; many fine and common medium roots; strongly acid; clear smooth boundary.

E1—7 to 12 inches; gray (10YR 5/1) loamy sand; single grained; loose; common fine roots; strongly acid; clear smooth boundary.

E2—12 to 24 inches; light gray (10YR 7/1) sand; single grained; loose; common fine roots; strongly acid; clear smooth boundary.

Btg1—24 to 37 inches; gray (10YR 5/1) sandy loam; common coarse distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine roots; strongly acid; gradual smooth boundary.

Btg2—37 to 63 inches; gray (10YR 5/1) and yellowish brown (10YR 5/4) sandy clay loam; common medium distinct brownish yellow (10YR 6/8) mottles; weak medium subangular blocky structure; friable; few faint coatings of sand grains on faces of some peds; few medium pockets of loamy sand in lower part; strongly acid.

The solum is more than 60 inches thick. The soil is very strongly acid or strongly acid throughout except where lime has been added.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. Mottles in shades of yellow or brown are in some pedons. This horizon is sand or loamy sand.

The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2; or it is neutral and has value of 5 to 7. It has mottles in shades of brown or yellow, or it is mottled in shades of gray, brown, and yellow. The Btg horizon is sandy loam or sandy clay loam.

Rains Series

The Rains series consists of poorly drained soils that formed in thick deposits of loamy marine sediment on the Coastal Plain. The soils are on flats or in slight depressions. Slopes are less than 2 percent. The Rains series is a member of the fine-loamy, siliceous, thermic family of Typic Paleaquults.

Rains soils are on the same landscape with Byars, Coxville, Goldsboro, Lynchburg, Noboco, and Pantego soils. Byars and Coxville soils have a clayey particle-size control section. Goldsboro, Lynchburg, and Noboco soils have a deeper seasonal high water table than that of the Rains soils. Pantego and Byars soils have an umbric epipedon.

Typical pedon of Rains sandy loam; about 18 miles east of Orangeburg, 1.8 miles north of South Carolina Highway 47 from junction with U.S. Highway 301, 1.6 miles east on county road, 500 feet south on private dirt road, 20 feet east of road, on east bank of ditch.

A—0 to 5 inches; very dark gray (10YR 3/1) sandy loam; weak fine granular structure; friable; many fine and medium roots; very strongly acid; clear smooth boundary.

E—5 to 8 inches; grayish brown (10YR 5/2) sandy loam; weak medium granular structure; very friable; common fine and medium roots; few fine pores; very strongly acid; abrupt wavy boundary.

BE—8 to 12 inches; grayish brown (10YR 5/2) sandy loam; common coarse faint brown (10YR 5/3) mottles and few fine distinct yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable; common fine roots; common fine pores; sand grains coated and bridged with clay; very strongly acid; clear wavy boundary.

Btg1—12 to 21 inches; grayish brown (10YR 5/2) sandy loam; common coarse distinct brown (10YR 5/3) mottles and few fine distinct yellowish brown mottles; weak medium subangular blocky structure; friable; few fine roots; common fine pores; few distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

Btg2—21 to 28 inches; gray (10YR 6/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; common fine pores; few distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

Btg3—28 to 51 inches; gray (10YR 5/1) sandy clay loam; many coarse distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; few very fine pores; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg4—51 to 70 inches; mottled light gray (10YR 7/1), gray (10YR 5/1), and yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; few fine roots; few very fine pores; common distinct clay films on faces of peds; very strongly acid.

The solum is more than 60 inches thick. The soil is very strongly acid or strongly acid throughout except where lime has been added.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2.

The E horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. It is dominantly sandy loam but can range to loamy sand. Some pedons do not have an E horizon.

The Btg horizon has hue of 10YR or 2.5YR, value of 4 to 7, and chroma of 1 or 2; or it is neutral and has value of 4 to 7. It has mottles in shades of brown or yellow; or it is mottled in shades of gray, brown, or yellow. This horizon is dominantly sandy clay loam or sandy loam, but it can range to sandy clay below a depth of 40 inches.

Rimini Series

The Rimini series consists of excessively drained soils that formed in sandy marine sediment on the Coastal Plain. The soils are on the edges of Carolina Bays and on undulating ridges along the Edisto River below Branchville. Slopes range from 0 to 4 percent. The Rimini series is a member of the sandy, siliceous, thermic family of Grossarenic Entic Haplohumods.

Rimini soils are on the same landscape with Blanton, Johns, and Lumbee soils. These soils have an argillic horizon. Johns and Lumbee soils also have a shallower seasonal high water table than that of the Rimini soils.

Typical pedon of Rimini sand, 0 to 4 percent slopes; about 4 miles south of Branchville, 0.9 mile south on U.S. Highway 21 from junction with South Carolina Highway 204, 0.3 mile west on private road, 85 feet north of road, and 40 feet east of power line pole.

A—0 to 4 inches; dark gray (10YR 4/1) sand; many uncoated light gray (10YR 7/1) sand grains; single grained; loose; common fine roots; very strongly acid; abrupt smooth boundary.

E1—4 to 19 inches; light gray (10YR 7/1) sand; single grained; loose; common fine roots; strongly acid; gradual smooth boundary.

E2—19 to 57 inches; white (10YR 8/1) sand; single grained; loose; few fine roots; strongly acid; abrupt wavy boundary.

Bh1—57 to 62 inches; dark reddish brown (5YR 2/2) sand; massive; friable; weakly cemented; sand grains coated with organic matter; very strongly acid; clear wavy boundary.

Bh2—62 to 74 inches; dark reddish brown (5YR 3/2) sand; common medium faint black (5YR 2/1) mottles; single grained; very friable; sand grains coated with organic matter; strongly acid; diffuse irregular boundary.

BC—74 to 83 inches; brown (10YR 5/3) sand; common medium distinct very dark brown (10YR 2/2) mottles; single grained; loose; strongly acid.

The solum is 60 to more than 80 inches thick. It is extremely acid to medium acid throughout.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1. It has common to many uncoated sand grains.

The E horizon has hue of 10YR to 5Y, value of 7 or 8, and chroma of 1 or 2; or it is neutral and has value of 7 or 8. This horizon is sand or fine sand.

The Bh horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. It does not have sufficient iron to turn redder upon ignition. This horizon is sand or fine sand.

Stallings Series

The Stallings series consists of somewhat poorly drained soils that formed in loamy marine sediment on the Coastal Plain. The soils are on broad interstream divides. Slopes are less than 2 percent. The Stallings series is a member of the coarse-loamy, siliceous, thermic family of Aeric Paleaquults.

The Stallings soils in Orangeburg County are taxadjuncts to the Stallings series because they have a sandy clay loam texture in the lower part of the subsoil and they have a weak, organic stained Bh horizon. Laboratory data indicates that this is not a spodic horizon. The use and interpretations of these soils do not differ significantly from that of the Stallings series.

Stallings soils are on the same landscape with Elloree, Goldsboro, Lynchburg, and Rains soils. Except for the Elloree soils, these soils have a fine-loamy particle-size control section. Goldsboro soils have a deeper seasonal high water table than that of the Stallings soils. Elloree and Rains soils have a shallower seasonal high water table.

Typical pedon of Stallings loamy sand; about 21 miles east of Orangeburg, 2.7 miles southeast on South

Carolina Highway 754 from junction with U.S. Highway 176, 460 feet east of ditch, and 100 feet north of road.

A—0 to 5 inches; black (10YR 2/1) loamy sand; weak fine granular structure; very friable; many fine and medium roots and few large roots; many clean sand grains; extremely acid; clear wavy boundary.

Bh—5 to 10 inches; brown (10YR 5/3) loamy sand; common medium faint reddish brown (5YR 3/2) mottles and common medium distinct strong brown (7.5YR 5/6) mottles; massive parting to weak medium granular structure; friable; common fine and medium roots; very strongly acid; clear wavy boundary.

Bt1—10 to 19 inches; light yellowish brown (10YR 6/4) sandy loam; few fine faint very pale brown mottles and few medium distinct strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; very friable; common fine and medium roots; strongly acid; gradual smooth boundary.

Btg1—19 to 34 inches; gray (10YR 6/1) sandy loam; common medium distinct strong brown (7.5YR 5/6) mottles, common medium faint light yellowish brown (10YR 6/4) mottles, and few medium distinct yellowish red (5YR 5/6) mottles; weak fine subangular blocky structure; friable; few fine and medium roots; very strongly acid; gradual wavy boundary.

Btg2—34 to 68 inches; gray (10YR 5/1) sandy clay loam; common medium prominent red (2.5YR 4/6) and yellowish brown (10YR 5/4) mottles, common coarse faint light gray (10YR 7/1) mottles in lower 15 inches; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; very strongly acid.

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

The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2; or it is neutral and has value of 2 to 4.

Some pedons have an E horizon that has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2; or that is neutral and has value of 2 or 3. The E horizon is sand or loamy sand.

The Bh horizon has hue of 5YR to 10YR, value of 2 to 5, and chroma of 2 to 4; or it is mottled with these colors. This horizon is loamy sand or sandy loam.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 8. Mottles are in shades of brown, yellow, or gray. This horizon is sandy loam.

The Btg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. Mottles are in shades of red, brown, yellow, or gray. This horizon is sandy loam or sandy clay loam.

Troup Series

The Troup series consists of well drained soils that formed in sandy and loamy marine sediments on the Coastal Plain. The soils are on broad ridges and side slopes. Slopes range from 0 to 10 percent. The Troup series is a member of the loamy, siliceous, thermic family of Grossarenic Paleudults.

Troup soils are on the same landscape with Ailey, Alpin, Bonneau, Blanton, Fuquay, and Lucy soils. Ailey, Bonneau, Fuquay, and Lucy soils have an arenic epipedon. Ailey soils have a firm and compact subsoil, and Fuquay soils are plinthic. Alpin soils are sandy throughout. Blanton soils have a more yellow argillic horizon than that of the Troup soils and have a shallower seasonal high water table.

Typical pedon of Troup sand, 0 to 6 percent slopes; about 6 miles southwest of North, 5.3 miles west on South Carolina Highway 394 from junction with U.S. Highway 178, 400 feet west of junction with unpaved county road, 150 feet south of road.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) sand; weak fine granular structure; very friable; few fine roots; many uncoated sand grains in the upper 1 inch; strongly acid; clear smooth boundary.

E1—6 to 32 inches; brownish yellow (10YR 6/6) sand; weak fine granular structure; very friable; strongly acid; gradual smooth boundary.

E2—32 to 50 inches; yellow (10YR 7/6) sand; few medium distinct reddish yellow (7.5YR 6/8) mottles; weak fine granular structure; very friable; few fine clean sand pockets; strongly acid; gradual smooth boundary.

E3—50 to 63 inches; strong brown (7.5YR 5/8) loamy sand; weak fine granular structure; very friable; strongly acid; gradual smooth boundary.

Bt1—63 to 70 inches; red (2.5YR 4/6) sandy loam; common medium prominent strong brown (7.5YR 5/8) mottles and common medium faint dark reddish brown (2.5YR 3/4) mottles; weak medium subangular blocky structure; friable; strongly acid; gradual smooth boundary.

Bt2—70 to 80 inches; red (2.5YR 4/6) sandy clay loam; common coarse prominent strong brown (7.5YR 5/8) mottles and common coarse faint dark reddish brown (2.5YR 4/6) mottles; weak medium subangular blocky structure; friable; strongly acid.

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

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3.

The E horizon has hue of 5YR to 10YR, value of 5 to 7, and chroma of 4 to 8. It is sand or loamy sand.

The Bt horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 6 to 8. It is sandy loam or sandy clay loam.

Formation of the Soils

This section describes the factors of soil formation as they relate to the soils in the county and explains the processes of soil formation.

Factors of Soil Formation

Soil is a collection of natural bodies on the earth's surface that contains living matter and supports or is capable of supporting plants. It is the product of five important factors of soil formation: parent material, climate, living organisms (plants and animals), topography, and time.

Climate and living organisms are the active factors in soil formation. Their effect on the parent material is modified by the topography and the length of time the parent material has been in place. The relative importance of each factor differs, however, from one place to another. In some places one factor dominates in the formation and determines most of the properties of the soil, but generally it is the interaction of all five factors that determines the kind of soil formed.

Although soil formation is complex, some understanding of the soil-forming processes can be gained by considering each of the five factors separately. It should be remembered, however, that each of the five factors is affected by and also affects each of the other factors.

Parent Material

Parent material is the unconsolidated mass from which a soil is formed. It has much to do with the mineral and chemical composition of the soil. In Orangeburg County, the parent material of all the soils is marine or fluvial deposits. The soils have developed in material distinctly removed from its place of origin. The deposits differ widely in their content of sand, silt, and clay.

All the soils in the county were deposited or formed during the Pleistocene, or glacial, epoch. During this period, the ocean moved over the area, perhaps several times. As the ocean retreated, it left formations and terraces indicating former shorelines and soils of different ages. The terraces in Orangeburg County, in sequence from the youngest to the oldest, are the Wicomico, Sunderland, Coharie, and Brandywine Terraces.

The Wicomico Terrace ranges from about 70 to 100 feet above sea level. The upper end of this terrace extends into Orangeburg County in the vicinity of the Four Holes Swamp area. The soils on this terrace are younger than most of the soils at higher elevations. Some of the more common soils in this area include the Mouzon, Elloree, Lynchburg, and Rains soils.

The Sunderland Terrace ranges from about 100 to 170 feet above sea level and parallels the Atlantic coast shoreline. It extends from the Wicomico Terrace northeastward to a line running approximately from Elloree to Cope. Some of the more common soils in this area include the Goldsboro, Lynchburg, Noboco, and Rains soils.

The Coharie Terrace ranges from about 170 to 215 feet above sea level. In Orangeburg County, this terrace is a relatively narrow band that parallels the Atlantic coast shoreline and passes just below the city of Orangeburg. The soils on this terrace are generally similar to those on the Sunderland Terrace.

The Brandywine Terrace ranges from about 215 to 270 feet above sea level. As with the Coharie Terrace, the Brandywine Terrace is a relatively narrow band that passes just northwest of the city of Orangeburg and also along the North and South Forks of the Edisto River. The soils of this terrace are generally older than the soils on terraces at lower elevations. Some of the more common soils include the Faceville, Dothan, and Noboco soils.

Climate

The climate of Orangeburg County has been important in the formation of soils. It is temperate, and rainfall is fairly well distributed throughout the year.

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 throughout the soil profile. Large amounts of rainwater promote leaching of the soluble bases and promote 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, the topography, and the permeability of the soil material.

Weathering of the parent material is accelerated by moist conditions and warm temperature. The growth and activity of living organisms is also increased by a warm, humid climate.

The high rainfall, warm temperatures, and long frost-free growing season have had a marked effect on the characteristics of the soils that have developed in Orangeburg County.

Living Organisms

The number and kinds of plants and animals that live in and on the soil are determined mainly by the climate and, to a lesser extent, the parent material, topography, and age of the soil.

Bacteria, fungi, and other micro-organisms are indispensable in 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 fungi, bacteria, and micro-organisms are in the upper few inches of the soil. The activity of earthworms and other small invertebrates is chiefly in the A horizon and upper part of the B horizon. 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, but their influence is very great. By eating plants they perform one step in returning plant material to the soil.

In Orangeburg 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, blackgum, yellow poplar, maple, tupelo, ash, and cypress. Large trees affect soil formation by bringing nutrients up from varying depths and by providing large openings to be filled by material from above as large roots decay.

Topography

Topography, or lay of the land, influences soil formation because it affects moisture, vegetation, temperature, and erosion. Because of this, several different kinds of soil may form from similar parent material. Most of the soils in Orangeburg County southeast of the city of Orangeburg are nearly level. This area has shallow depressions and drainageways and gently sloping low ridges. The area northwest of Orangeburg is better drained and has steeper slopes.

Time

The length of time required for a soil to develop depends largely on the intensity of the other soil-forming factors. The soils of Orangeburg County range from immature, or young, to mature. Most soils in higher areas of uplands have well-developed horizons that are easily recognized. Where the parent material is very sandy or flooded, little horizonation has taken place. Most alluvial soils deposited along streams have not been in place long enough for distinct horizon development.

Morphology of the Soils

If a vertical cut is dug into a soil, several layers or horizons are evident. This differentation of horizons is the result of many soil-forming processes. These include the accumulation of organic matter, the leaching of soluble salts, the reduction and translocation of iron, the formation of soil structure, the physical weathering caused by freezing and thawing, and the 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 have four major horizons, the A, E, B, and C. These major horizons can be further subdivided by the use of subscripts and letters to indicate changes within one horizon. An example would be the Bt horizon, which is a layer within the B horizon that contains translocated clay from the A horizon.

The A horizon is the surface layer and has the largest accumulation of organic matter. Where it is undisturbed and thick enough to be subdivided, it is designated as A1 in the upper part and A2 in the lower part. Where the soil has been cleared and plowed, that portion of the surface layer that is disturbed is called the Ap horizon. The Byars and Pantego soils are examples of soils that have a thick, distinctive, dark A horizon. Dothan and Orangeburg soils are examples of soils that typically have been plowed and have an Ap horizon.

The E horizon is the zone of maximum leaching, or eluviation, of clay and iron in the profile. Where considerable leaching has taken place, an E horizon is formed generally below the A horizon. Normally, the E horizon is the lightest color horizon in the soil. It is well expressed in such soils as the Bonneau, Fuquay, and Troup soils.

The B horizon is below the A or E horizon and is commonly called the subsoil. It is the horizon of maximum accumulation, or illuviation, of the clay, iron, aluminum, or other compounds that have been leached from the A horizon. Dothan, Noboco, and Orangeburg soils are among the soils that have a well expressed B horizon. Some soils, such as Bibb and Johnston soils, have not formed a B horizon, and the C horizon lies immediately under the A horizon.

The C horizon is made up of material that has been little altered by the soil-forming processes but may be modified by weathering.

Well drained and moderately well drained soils in Orangeburg County have a yellowish brown or reddish subsoil. These colors are mainly 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 (those that have chroma of 2 or less) to a depth of at least 30 inches. The Orangeburg and Faceville soils are well drained. Moderately well drained soils are wet for short periods and are generally free of gray mottles to a depth of about 15 to 29 inches. Goldsboro and Clarendon soils are examples of moderately well drained soils *(7)*.

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Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well-aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

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	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. The normal flood plain of a stream, subject to flooding.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

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, i.e., clay coating, clay skin.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

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.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

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.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazingland for a prescribed period.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Erosion. The wearing away of the land surface by 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, such as fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay are in the soil. The soil is not a source of gravel or sand for construction purposes.

Fast intake (in tables). The movement of water into the soil is rapid.

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.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, and clay.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual.* The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon 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.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have 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 in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Infiltration. The downward entry of water into the immediate surface of soil or other material. This contrasts with percolation, which is movement of water through soil layers or material.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

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.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

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).

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.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Parent material. The unconsolidated organic and mineral material in which soil forms.

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.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water to move through the profile. Permeability is measured as the number of inches per hour that water moves through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Subsurface tunnels or pipelike cavities are formed by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on 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. It is a form of laterite.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor filter (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of the 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.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rooting depth (in tables). There is a shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

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 (in tables). The movement of water through the soil adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

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.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It 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.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally it is indicative of an old weathered surface. In a cross section, thickness of the line can be one fragment or more. It generally overlies material that weathered in place, and it is overlain by recent sediment of variable thickness.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or 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).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Breaking up a compact subsoil by pulling a special chisel through the soil.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in organic matter content than the overlying surface layer.

Surface layer. 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."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed on the contour or at a slight angle to the contour across sloping soils. The terrace intercepts surface runoff, so that water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or 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 loam, silt, 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 (in tables). Otherwise suitable soil material is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Weathering. All physical and chemical changes produced by atmospheric agents in rocks or other deposits at or near the earth's surface. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. This contrasts with poorly graded soil.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Data recorded in the period 1953-79 at Orangeburg, South Carolina]

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*	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	Units	In	In	In		In
January----	55.7	32.9	74.3	78	14	81	4.00	2.26	5.54	8	0.1
February---	59.1	35.3	47.2	80	17	92	4.05	2.17	5.70	7	0.2
March------	67.1	42.5	54.8	86	25	212	4.40	2.65	5.96	7	0.0
April------	76.8	51.1	64.0	92	34	420	3.38	1.32	5.10	5	0.0
May--------	83.3	59.4	71.4	97	42	663	4.25	1.92	6.24	7	0.0
June-------	87.7	66.1	76.9	100	53	807	4.63	2.71	6.34	8	0.0
July-------	90.4	69.9	80.2	99	59	936	5.42	2.95	7.59	9	0.0
August-----	90.1	69.3	79.7	99	59	921	5.41	2.92	7.60	7	0.0
September--	85.1	64.0	74.6	96	48	738	4.15	2.03	5.98	6	0.0
October----	76.4	51.2	63.8	90	31	428	2.44	0.60	3.92	4	0.0
November---	67.7	41.6	54.7	84	23	174	2.28	0.95	3.40	4	0.0
December---	58.8	34.7	46.8	79	15	81	3.34	2.03	4.51	7	0.0
Yearly:											
Average--	74.9	51.5	63.2	---	---	---	---	---	---	---	---
Extreme--	---	---	---	101	11	---	---	---	---	---	---
Total----	---	---	---	---	---	5,553	47.75	42.31	55.54	79	0.3

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 °F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Data recorded in the period 1953-79 at Orangeburg, South Carolina]

Probability	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	April 1	April 11
2 years in 10 later than--	March 2	March 24	April 4
5 years in 10 later than--	February 13	March 8	March 24
First freezing temperature in fall:			
1 year in 10 earlier than--	November 16	October 29	October 24
2 years in 10 earlier than--	November 23	November 5	October 29
5 years in 10 earlier than--	December 6	November 20	November 8

TABLE 3.--GROWING SEASON

[Data recorded in the period 1953-79 at Orangeburg, South Carolina]

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	265	229	206
8 years in 10	275	238	214
5 years in 10	295	256	228
2 years in 10	315	274	243
1 year in 10	325	284	250

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AeB	Ailey sand, 2 to 6 percent slopes	10,850	1.5
AeC	Ailey sand, 6 to 10 percent slopes	13,240	1.9
AlA	Albany sand, 0 to 2 percent slopes	1,380	0.2
ApB	Alpin sand, 0 to 6 percent slopes	7,850	1.1
ApC	Alpin sand, 6 to 10 percent slopes	620	0.1
Bb	Bibb sandy loam, frequently flooded	14,420	2.0
BlB	Blanton sand, 0 to 6 percent slopes	2,640	0.4
BlC	Blanton sand, 6 to 10 percent slopes	900	0.1
BoB	Bonneau sand, 0 to 4 percent slopes	35,740	5.1
By	Byars loam	15,240	2.2
CdA	Clarendon loamy sand, 0 to 2 percent slopes	9,980	1.4
Cx	Coxville sandy loam	34,030	4.8
DaA	Dothan loamy sand, 0 to 2 percent slopes	34,450	4.9
DaB	Dothan loamy sand, 2 to 6 percent slopes	27,070	3.8
Dn	Dunbar sandy loam	5,280	0.7
DpA	Duplin loamy sand, 0 to 2 percent slopes	2,670	0.4
Eo	Elloree loamy sand, frequently flooded	5,960	0.8
FaA	Faceville loamy sand, 0 to 2 percent slopes	6,270	1.0
FaB	Faceville loamy sand, 2 to 6 percent slopes	6,980	1.0
FuB	Fuquay sand, 0 to 6 percent slopes	43,670	6.2
GoA	Goldsboro sandy loam, 0 to 2 percent slopes	52,650	7.4
Jo	Johns loamy sand	4,530	0.6
Js	Johnston sandy loam, frequently flooded	30,430	4.3
LcB	Lucy loamy sand, 0 to 6 percent slopes	14,660	2.1
LcC	Lucy loamy sand, 6 to 10 percent slopes	4,950	0.7
Lm	Lumbee loamy sand	2,000	0.3
Lu	Lumbee loamy sand, frequently flooded	15,040	2.1
Ly	Lynchburg fine sandy loam	34,380	4.9
Mo	Mouzon fine sandy loam, frequently flooded	35,090	5.0
NeB	Neeses loamy sand, 2 to 6 percent slopes	11,520	1.6
NeC	Neeses loamy sand, 6 to 10 percent slopes	18,920	2.7
NeD	Neeses loamy sand, 10 to 15 percent slopes	950	0.1
NoA	Noboco loamy sand, 0 to 2 percent slopes	42,760	6.0
NoB	Noboco loamy sand, 2 to 6 percent slopes	15,860	2.2
OcA	Ocilla loamy sand, 0 to 2 percent slopes	8,930	1.3
OrA	Orangeburg loamy sand, 0 to 2 percent slopes	13,770	1.9
OrB	Orangeburg loamy sand, 2 to 6 percent slopes	11,360	1.6
OrC	Orangeburg loamy sand, 6 to 10 percent slopes	2,260	0.3
Pa	Pantego fine sandy loam	3,660	0.5
Ph	Pelham loamy sand	5,650	0.8
Ra	Rains sandy loam	43,510	6.2
RmB	Rimini sand, 0 to 4 percent slopes	310	*
Sa	Stallings loamy sand	6,800	1.0
TrB	Troup sand, 0 to 6 percent slopes	35,100	5.0
TrC	Troup sand, 6 to 10 percent slopes	6,000	0.9
Ud	Udorthents, loamy	2,900	0.4
	Water	3,770	0.5
	Total	707,000	100.0

* Less than 0.1 percent.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map symbol and soil name	Land capability	Soybeans	Corn	Wheat	Cotton lint	Grass hay	Bahiagrass	Improved bermuda-grass
		Bu	Bu	Bu	Lbs	Tons	AUM*	AUM*
AeB------------- Ailey	IIIs	20	50	20	400	---	6.0	6.0
AeC------------- Ailey	IVs	---	---	---	---	---	5.0	5.0
AlA------------- Albany	IIIw	25	65	25	400	4.5	6.5	7.0
ApB------------- Alpin	IVs	15	35	10	---	---	7.0	8.0
ApC------------- Alpin	VIs	---	---	---	---	---	7.0	8.0
Bb-------------- Bibb	Vw	---	---	---	---	3.0	---	---
BlB------------- Blanton	IIIs	20	60	---	---	---	6.5	8.0
BlC------------- Blanton	IVs	15	50	---	---	---	6.5	7.5
BoB------------- Bonneau	IIs	30	85	---	700	---	8.0	8.5
By-------------- Byars	IIIw	40	110	---	---	---	12.0	---
CdA------------- Clarendon	IIw	45	125	45	700	---	10.0	10.5
Cx-------------- Coxville	IIIw	40	110	50	---	---	---	---
DaA------------- Dothan	I	40	120	---	900	6.0	9.0	---
DaB------------- Dothan	IIe	35	120	---	900	6.0	9.0	---
Dn-------------- Dunbar	IIw	45	115	55	600	6.5	10.0	---
DpA------------- Duplin	IIw	50	110	60	750	---	---	---
Eo-------------- Elloree	VIw	---	---	---	---	---	---	---
FaA------------- Faceville	I	45	115	---	875	5.8	7.0	10.0
FaB------------- Faceville	IIe	40	110	---	875	5.8	7.0	10.0

See footnote at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Soybeans	Corn	Wheat	Cotton lint	Grass hay	Bahiagrass	Improved bermuda-grass
		Bu	Bu	Bu	Lbs	Tons	AUM*	AUM*
FuB------------- Fuquay	IIs	30	85	---	650	---	---	---
GoA------------- Goldsboro	IIw	42	125	60	700	---	---	---
Jo-------------- Johns	IIw	45	120	50	650	---	---	---
Js-------------- Johnston	VIIw	---	---	---	---	---	---	---
LcB------------- Lucy	IIs	25	70	---	650	5.5	8.5	8.0
LcC------------- Lucy	IIIs	20	60	---	---	4.0	7.5	---
Lm-------------- Lumbee	IIIw	45	110	---	---	---	---	---
Lu-------------- Lumbee	VIw	---	---	---	---	---	---	---
Ly-------------- Lynchburg	IIw	45	115	---	675	---	10.0	---
Mo-------------- Mouzon	VIw	---	---	---	---	---	---	---
NeB------------- Neeses	IIIe	30	65	---	500	---	---	8.0
NeC------------- Neeses	IVe	20	60	---	400	---	---	7.0
NeD------------- Neeses	VIe	---	---	---	---	---	---	7.0
NoA------------- Noboco	I	45	115	60	700	---	---	---
NoB------------- Noboco	IIe	40	110	55	700	---	---	---
OcA------------- Ocilla	IIIw	30	75	---	---	---	7.5	8.5
OrA------------- Orangeburg	I	40	120	---	900	---	8.5	10.5
OrB------------- Orangeburg	IIe	45	120	---	900	---	8.5	10.5
OrC------------- Orangeburg	IVe	30	85	---	650	---	7.0	9.0
Pa-------------- Pantego	IIIw	50	135	50	---	---	---	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Soybeans	Corn	Wheat	Cotton lint	Grass hay	Bahiagrass	Improved bermuda-grass
		Bu	Bu	Bu	Lbs	Tons	AUM*	AUM*
Ph--------------- Pelham	IIIw	30	75	---	---	---	6.0	---
Ra--------------- Rains	IIIw	40	110	---	450	---	10.0	---
RmB-------------- Rimini	VIs	---	---	---	---	---	---	---
Sa--------------- Stallings	IIw	35	100	---	550	---	---	---
TrB-------------- Troup	IIIs	25	60	---	500	4.0	7.2	7.5
TrC-------------- Troup	IVs	---	---	---	---	3.0	5.0	6.5
Ud. Udorthents								

* 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 30 days.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	97,250	---	---	---
II	271,630	61,270	116,290	94,070
III	179,460	11,520	114,400	53,540
IV	49,170	21,180	---	27,990
V	14,420	---	14,420	---
VI	57,970	950	56,090	930
VII	30,430	---	30,430	---
VIII	---	---	---	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Map symbol and soil name	Management concerns				Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
AeB, AeC: Ailey	Slight	Moderate	Moderate	---	Slash pine	70	114	Longleaf pine.
					Longleaf pine	60	57	
AlA: Albany	Slight	Moderate	Moderate	Slight	Loblolly pine	95	129	Loblolly pine.
					Slash pine	85	157	
					Longleaf pine	80	100	
ApB, ApC: Alpin	Slight	Moderate	Moderate	Slight	Loblolly pine	85	114	Longleaf pine, loblolly pine.
					Slash pine	90	157	
					Longleaf pine	70	86	
					Turkey oak	---	---	
					Post oak	---	---	
					Blackjack oak	---	---	
					Bluejack oak	---	---	
Bb: Bibb	Slight	Severe	Severe	Slight	Loblolly pine	90	129	Eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.
					Sweetgum	90	100	
					Water oak	90	86	
					Blackgum	---	---	
BlB, BlC: Blanton	Slight	Moderate	Moderate	Slight	Slash pine	90	157	Loblolly pine, longleaf pine.
					Loblolly pine	80	114	
					Longleaf pine	70	86	
					Bluejack oak	---	---	
					Turkey oak	---	---	
					Southern red oak	---	---	
					Live oak	---	---	
BoB: Bonneau	Slight	Moderate	Moderate	Slight	Loblolly pine	86	129	Loblolly pine, longleaf pine.
					Longleaf pine	75	86	
					White oak	---	---	
					Hickory	---	---	
By: Byars	Slight	Severe	Severe	Slight	Loblolly pine	95	129	Loblolly pine, American sycamore.
					Sweetgum	90	100	
					Water tupelo	90	143	
					Slash pine	92	172	
					Water oak	90	86	
CdA: Clarendon	Slight	Moderate	Slight	Slight	Loblolly pine	90	129	Loblolly pine, American sycamore, yellow-poplar, sweetgum.
					Slash pine	90	157	
					Sweetgum	85	86	
Cx: Coxville	Slight	Severe	Moderate	---	Loblolly pine	90	129	Loblolly pine.
					Longleaf pine	---	---	
					Sweetgum	---	---	
					Blackgum	---	---	
					Water oak	---	---	
					Willow oak	---	---	
					Water tupelo	---	---	
					Elm	---	---	
					Hickory	---	---	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Management concerns				Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
DaA, DaB------- Dothan	Slight	Slight	Slight	Slight	Slash pine----------	92	172	Loblolly pine, longleaf pine.
					Longleaf pine-------	84	114	
					Loblolly pine-------	88	129	
Dn------------- Dunbar	Slight	Moderate	Moderate	--------	Loblolly pine-------	90	129	Loblolly pine, sweetgum, yellow-poplar.
					Slash pine----------	85	157	
					Longleaf pine-------	70	86	
					Water oak-----------	---	---	
					Water tupelo--------	---	---	
					Yellow-poplar-------	---	---	
					Sweetgum------------	90	100	
DpA------------ Duplin	Slight	Moderate	Moderate	--------	Loblolly pine-------	90	129	Loblolly pine, yellow-poplar, American sycamore, sweetgum.
					Slash pine----------	90	157	
					Sweetgum------------	---	---	
					Blackgum------------	---	---	
					Southern red oak----	---	---	
					White oak-----------	---	---	
					Yellow-poplar-------	100	114	
Eo------------- Elloree	Slight	Severe	Severe	Slight	Sweetgum------------	---	---	Sweetgum, yellow-poplar.
					Yellow-poplar-------	---	---	
					Red maple-----------	---	---	
					Water oak-----------	---	---	
FaA, FaB------- Faceville	Slight	Slight	Slight	--------	Loblolly pine-------	82	114	Loblolly pine.
					Slash pine----------	80	143	
					Longleaf pine-------	65	72	
FuB------------ Fuquay	Slight	Moderate	Moderate	--------	Loblolly pine-------	83	114	Longleaf pine, loblolly pine.
					Longleaf pine-------	67	72	
GoA------------ Goldsboro	Slight	Moderate	Slight	--------	Loblolly pine-------	90	129	Loblolly pine, yellow-poplar, American sycamore, sweetgum.
					Slash pine----------	93	172	
					Longleaf pine-------	77	100	
					Sweetgum------------	90	100	
					Southern red oak----	---	---	
					White oak-----------	---	---	
					Water oak-----------	---	---	
					Red maple-----------	---	---	
Jo------------- Johns	Slight	Moderate	Slight	--------	Loblolly pine-------	86	129	Loblolly pine.
					Sweetgum------------	90	100	
					Slash pine----------	86	157	
Js------------- Johnston	Slight	Severe	Severe	--------	Water tupelo--------	---	---	Baldcypress, American sycamore, sweetgum, green ash.
					Swamp tupelo--------	---	---	
					Water oak-----------	---	---	
					Pond pine-----------	---	---	
					Baldcypress---------	---	---	
LcB, LcC------- Lucy	Slight	Moderate	Moderate	Slight	Slash pine----------	84	157	Slash pine, longleaf pine, loblolly pine.
					Longleaf pine-------	70	86	
					Loblolly pine-------	80	114	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Management concerns				Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
Lm, Lu---------- Lumbee	Slight	Severe	Severe	--------	Loblolly pine-------	94	129	Loblolly pine, water tupelo, sweetgum.
					Slash pine----------	91	172	
					Pond pine-----------	---	---	
					Water tupelo--------	---	---	
					Sweetgum------------	---	---	
					White oak-----------	---	---	
Ly------------- Lynchburg	Slight	Moderate	Slight	Slight	Slash pine----------	91	172	Loblolly pine, American sycamore, sweetgum, yellow-poplar.
					Loblolly pine-------	86	129	
					Longleaf pine-------	74	86	
					Yellow-poplar-------	92	86	
					Sweetgum------------	90	100	
					Southern red oak----	---	---	
					White oak-----------	---	---	
					Blackgum------------	---	---	
Mo------------- Mouzon	Slight	Severe	Severe	Slight	Sweetgum------------	100	143	Sweetgum, water oak.
					Water oak-----------	---	---	
					Baldcypress---------	---	---	
					Water tupelo--------	---	---	
					Pond pine-----------	75	---	
NeB, NeC, NeD--- Neeses	Moderate	Slight	Slight	Moderate	Loblolly pine-------	75	100	Loblolly pine, longleaf pine.
					Longleaf pine-------	65	72	
NoA, NoB-------- Noboco	Slight	Slight	Slight	Slight	Loblolly pine-------	90	129	Loblolly pine, American sycamore, sweetgum.
					Longleaf pine-------	80	100	
					Southern red oak----	---	---	
					Sweetgum------------	---	---	
OcA------------ Ocilla	Slight	Moderate	Moderate	--------	Loblolly pine-------	85	114	Loblolly pine.
					Slash pine----------	90	157	
					Longleaf pine-------	77	100	
OrA, OrB, OrC--- Orangeburg	Slight	Slight	Slight	--------	Loblolly pine-------	80	114	Loblolly pine, longleaf pine.
					Slash pine----------	86	157	
					Longleaf pine-------	77	100	
Pa------------- Pantego	Slight	Severe	Severe	--------	Loblolly pine-------	95	143	Loblolly pine, sweetgum, American sycamore, water tupelo.
					Slash pine----------	95	172	
					Pond pine-----------	73	57	
					Baldcypress---------	---	---	
					Water tupelo--------	---	---	
					Water oak-----------	---	---	
					Willow oak----------	---	---	
					Blackgum------------	---	---	
					Sweetgum------------	---	---	
					Red maple-----------	---	---	
Ph------------- Pelham	Slight	Severe	Severe	--------	Slash pine----------	90	157	Loblolly pine.
					Loblolly pine-------	90	129	
					Longleaf pine-------	80	100	
					Sweetgum------------	80	86	
					Blackgum------------	80	114	
					Water oak-----------	80	72	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Management concerns				Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
Ra-------------- Rains	Slight	Severe	Severe	--------	Loblolly pine-------	94	143	Loblolly pine, sweetgum, American sycamore.
					Slash pine----------	91	172	
					Sweetgum------------	90	100	
RmB------------- Rimini	Slight	Severe	Severe	Slight	Loblolly pine-------	65	86	Longleaf pine, sand pine.
					Slash pine----------	65	114	
					Longleaf pine-------	55	43	
Sa-------------- Stallings	Slight	Moderate	Slight	--------	Loblolly pine-------	79	114	Loblolly pine, yellow poplar, American sycamore, sweetgum.
					Slash pine----------	---	---	
					Longleaf pine-------	---	---	
					Sweetgum------------	---	---	
					Yellow poplar-------	---	---	
					Water oak-----------	---	---	
TrB, TrC-------- Troup	Slight	Slight	Moderate	Slight	Loblolly pine-------	82	114	Loblolly pine, longleaf pine.
					Longleaf pine-------	74	86	
Ud. Udorthents								

* Productivity class is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AeB: Ailey	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
AeC: Ailey	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: slope, droughty.
AlA: Albany	Severe: wetness.	Severe: too sandy.	Severe: too sandy, wetness.	Severe: too sandy.	Severe: droughty.
ApB: Alpin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty, too sandy.
ApC: Alpin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy, slope.	Severe: too sandy.	Severe: droughty, too sandy.
Bb: Bibb	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, flooding.
BlB: Blanton	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
BlC: Blanton	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
BoB: Bonneau	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
By: Byars	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
CdA: Clarendon	Moderate: wetness.	Moderate: wetness.	Moderate: small stones.	Slight	Moderate: droughty.
Cx: Coxville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
DaA: Dothan	Slight	Slight	Slight	Slight	Moderate: droughty.
DaB: Dothan	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Dn: Dunbar	Moderate: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
DpA: Duplin	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Slight	Slight.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Eo------------------- Elloree	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
FaA------------------ Faceville	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
FaB------------------ Faceville	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
FuB------------------ Fuquay	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
GoA------------------ Goldsboro	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight---------	Slight.
Jo------------------- Johns	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
Js------------------- Johnston	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
LcB------------------ Lucy	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
LcC------------------ Lucy	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight---------	Moderate: droughty, slope.
Lm------------------- Lumbee	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Lu------------------- Lumbee	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Ly------------------- Lynchburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Mo------------------- Mouzon	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
NeB------------------ Neeses	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight---------	Moderate: droughty.
NeC, NeD------------- Neeses	Moderate: percs slowly, slope.	Moderate: percs slowly, slope.	Severe: slope.	Slight---------	Moderate: droughty, slope.
NoA------------------ Noboco	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
NoB------------------ Noboco	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
OcA: Ocilla	Moderate: wetness, too sandy.	Moderate: wetness, too sandy.	Moderate: wetness, too sandy.	Moderate: wetness, too sandy.	Moderate: wetness, droughty.
OrA: Orangeburg	Slight	Slight	Slight	Slight	Slight.
OrB: Orangeburg	Slight	Slight	Moderate: slope.	Slight	Slight.
OrC: Orangeburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
Pa: Pantego	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ph: Pelham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ra: Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
RmB: Rimini	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Sa: Stallings	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
TrB: Troup	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
TrC: Troup	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope.
Ud. Udorthents.					

TABLE 9.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	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
AeB----------------- Ailey	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
AeC----------------- Ailey	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
AlA----------------- Albany	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor.
ApB, ApC------------ Alpin	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Bb------------------ Bibb	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
BlB, BlC------------ Blanton	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
BoB----------------- Bonneau	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
By------------------ Byars	Fair	Good	Good	Good	Good	Poor	Good	Good	Good	Fair.
CdA----------------- Clarendon	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Cx------------------ Coxville	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
DaA, DaB------------ Dothan	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Dn------------------ Dunbar	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
DpA----------------- Duplin	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Eo------------------ Elloree	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
FaA----------------- Faceville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FaB----------------- Faceville	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FuB----------------- Fuquay	Fair	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
GoA----------------- Goldsboro	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Jo------------------ Johns	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	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
Js: Johnston	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
LcB: Lucy	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
LcC: Lucy	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Lm: Lumbee	Fair	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
Lu: Lumbee	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
Ly: Lynchburg	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Mo: Mouzon	Very poor.	Very poor.	Very poor.	Fair	Fair	Good	Good	Very poor.	Poor	Good.
NeB, NeC, NeD: Neeses	Fair	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Good	Very poor.
NoA: Noboco	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
NoB: Noboco	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
OcA: Ocilla	Fair	Fair	Good	Fair	Good	Fair	Fair	Fair	Good	Fair.
OrA, OrB: Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OrC: Orangeburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Pa: Pantego	Fair	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
Ph: Pelham	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Ra: Rains	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
RmB: Rimini	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
Sa: Stallings	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
TrB, TrC: Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Ud. Udorthents										

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AeB: Ailey	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
AeC: Ailey	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, droughty.
AlA: Albany	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Severe: droughty.
ApB: Alpin	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Severe: droughty, too sandy.
ApC: Alpin	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty, too sandy.
Bb: Bibb	Severe: wetness, cutbanks cave.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
BlB: Blanton	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Severe: droughty.
BlC: Blanton	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope.	Severe: droughty.
BoB: Bonneau	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty, too sandy.
By: Byars	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding.	Severe: ponding.
CdA: Clarendon	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: droughty.
Cx: Coxville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
DaA: Dothan	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
DaB: Dothan	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: droughty.
Dn: Dunbar	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
DpA: Duplin	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Slight.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Eo: Elloree	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness.
FaA: Faceville	Moderate: too clayey.	Slight	Slight	Slight	Moderate: low strength.	Slight.
FaB: Faceville	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
FuB: Fuquay	Slight	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty, too sandy.
GoA: Goldsboro	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Slight.
Jo: Johns	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
Js: Johnston	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: ponding, flooding.
LcB: Lucy	Moderate: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
LcC: Lucy	Moderate: cutbanks cave, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Lm: Lumbee	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.
Lu: Lumbee	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
Ly: Lynchburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Mo: Mouzon	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
NeB: Neeses	Moderate: too clayey, dense layer.	Slight	Slight	Moderate: slope.	Severe: low strength.	Moderate: droughty.
NeC, NeD: Neeses	Moderate: too clayey, dense layer.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: droughty, slope.
NoA: Noboco	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
NoB: Noboco	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: droughty.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
OcA------ Ocilla	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
OrA------ Orangeburg	Slight------	Slight------	Slight------	Slight------	Slight------	Slight.
OrB------ Orangeburg	Slight------	Slight------	Slight------	Moderate: slope.	Slight------	Slight.
OrC------ Orangeburg	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Pa------ Pantego	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ph------ Pelham	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ra------ Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
RmB------ Rimini	Severe: cutbanks cave.	Slight------	Slight------	Slight------	Slight------	Severe: droughty.
Sa------ Stallings	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
TrB------ Troup	Severe: cutbanks cave.	Slight------	Slight------	Slight------	Slight------	Moderate: droughty.
TrC------ Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Ud. Udorthents						

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AeB: Ailey	Severe: percs slowly.	Severe: seepage.	Slight	Severe: seepage.	Good.
AeC: Ailey	Severe: percs slowly.	Severe: seepage, slope.	Moderate: slope.	Severe: seepage.	Fair: slope.
AlA: Albany	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, wetness.
ApB: Alpin	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
ApC: Alpin	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
Bb: Bibb	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: seepage, flooding, wetness.	Poor: wetness.
BlB: Blanton	Moderate: wetness.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
BlC: Blanton	Moderate: wetness, slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
BoB: Bonneau	Severe: wetness.	Severe: seepage.	Severe: wetness.	Severe: seepage.	Good.
By: Byars	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
CdA: Clarendon	Severe: wetness, percs slowly.	Severe: wetness, seepage.	Severe: wetness.	Severe: wetness, seepage.	Fair: wetness.
Cx: Coxville	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: wetness.
DaA: Dothan	Severe: wetness, percs slowly.	Moderate: seepage.	Moderate: wetness.	Slight	Good.
DaB: Dothan	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Moderate: wetness.	Slight	Good.
Dn: Dunbar	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
DpA----------------- Duplin	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, hard to pack, wetness.
Eo------------------ Elloree	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: seepage, flooding, wetness.	Poor: wetness.
FaA----------------- Faceville	Slight-----------	Moderate: seepage.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
FaB----------------- Faceville	Slight-----------	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
FuB----------------- Fuquay	Moderate: percs slowly.	Moderate: slope.	Slight-----------	Slight-----------	Poor: too sandy.
GoA----------------- Goldsboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
Jo------------------ Johns	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
Js------------------ Johnston	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: ponding.
LcB----------------- Lucy	Slight-----------	Severe: seepage.	Slight-----------	Severe: seepage.	Good.
LcC----------------- Lucy	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Severe: seepage.	Fair: slope.
Lm------------------ Lumbee	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
Lu------------------ Lumbee	Severe: wetness, flooding.	Severe: seepage, flooding, wetness.	Severe: seepage, wetness, flooding.	Severe: seepage, wetness, flooding.	Poor: wetness.
Ly------------------ Lynchburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Mo------------------ Mouzon	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: hard to pack, wetness.
NeB----------------- Neeses	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
NeC, NeD: Neeses	Severe: percs slowly.	Severe: slope.	Moderate: too clayey, slope.	Moderate: slope.	Fair: too clayey, slope.
NoA, NoB: Noboco	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Slight.
OcA: Ocilla	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
OrA: Orangeburg	Slight	Moderate: seepage.	Slight	Slight	Good.
OrB: Orangeburg	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
OrC: Orangeburg	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Pa: Pantego	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Ph: Pelham	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness, seepage.	Poor: wetness.
Ra: Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
RmB: Rimini	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Sa: Stallings	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: thin layer.
TrB: Troup	Slight	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
TrC: Troup	Moderate: slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Ud. Udorthents					

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
AeB, AeC: Ailey	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
AlA: Albany	Fair: wetness.	Improbable: thin layer.	Improbable: excess fines.	Poor: too sandy.
ApB, ApC: Alpin	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Bb: Bibb	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
BlB, BlC: Blanton	Good	Probable	Improbable: too sandy.	Poor: too sandy.
BoB: Bonneau	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
By: Byars	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
CdA: Clarendon	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
Cx: Coxville	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
DaA, DaB: Dothan	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, thin layer.
Dn: Dunbar	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
DpA: Duplin	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Eo: Elloree	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
FaA, FaB: Faceville	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
FuB: Fuquay	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
GoA: Goldsboro	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Jo: Johns	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too sandy, thin layer.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Js-------------------- Johnston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
LcB------------------- Lucy	Good------------------	Improbable: excess fines, thin layer.	Improbable: excess fines.	Fair: too sandy.
LcC------------------- Lucy	Good------------------	Improbable: excess fines, thin layer.	Improbable: excess fines.	Fair: too sandy, slope.
Lm, Lu---------------- Lumbee	Poor: wetness.	Probable-------------	Improbable: too sandy.	Poor: wetness.
Ly-------------------- Lynchburg	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Mo-------------------- Mouzon	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
NeB, NeC, NeD--------- Neeses	Good------------------	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
NoA, NoB-------------- Noboco	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
OcA------------------- Ocilla	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
OrA, OrB-------------- Orangeburg	Good------------------	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
OrC------------------- Orangeburg	Good------------------	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
Pa-------------------- Pantego	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ph-------------------- Pelham	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ra-------------------- Rains	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
RmB------------------- Rimini	Good------------------	Probable-------------	Improbable: too sandy.	Poor: too sandy.
Sa-------------------- Stallings	Fair: wetness.	Probable-------------	Improbable: too sandy.	Fair: too sandy.
TrB, TrC-------------- Troup	Good------------------	Probable-------------	Improbable: too sandy.	Poor: too sandy.
Ud. Udorthents				

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Map symbol and soil name	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
AeB: Ailey	Moderate: seepage, slope.	Slight	Deep to water	Droughty, percs slowly, slope.	Too sandy, percs slowly.	Droughty, rooting depth.
AeC: Ailey	Severe: slope.	Slight	Deep to water	Droughty, percs slowly, slope.	Slope, too sandy, percs slowly.	Slope, droughty, rooting depth.
AlA: Albany	Severe: seepage.	Severe: seepage, piping, wetness.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
ApB: Alpin	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, soil blowing.	Too sandy, soil blowing.	Droughty.
ApC: Alpin	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
Bb: Bibb	Severe: seepage.	Severe: piping, wetness.	Flooding	Wetness, flooding.	Erodes easily, wetness.	Erodes easily, wetness.
BlB: Blanton	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
BlC: Blanton	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
BoB: Bonneau	Severe: seepage.	Severe: thin layer.	Deep to water	Droughty, fast intake, soil blowing.	Soil blowing	Droughty.
By: Byars	Slight	Severe: hard to pack, ponding.	Ponding, percs slowly.	Ponding, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
CdA: Clarendon	Moderate: seepage.	Severe: piping.	Favorable	Wetness, fast intake, droughty.	Wetness, soil blowing.	Droughty.
Cx: Coxville	Slight	Severe: wetness.	Favorable	Wetness	Wetness	Wetness.
DaA: Dothan	Moderate: seepage.	Moderate: piping.	Deep to water	Fast intake, droughty.	Favorable	Droughty.
DaB: Dothan	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Fast intake, slope, droughty.	Favorable	Droughty.
Dn: Dunbar	Slight	Severe: wetness.	Favorable	Wetness	Wetness	Wetness.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
DpA: Duplin	Slight	Moderate: piping, hard to pack, wetness.	Favorable	Wetness, fast intake.	Wetness	Favorable.
Eo: Elloree	Severe: seepage.	Severe: wetness, seepage, piping.	Flooding	Wetness, fast intake, droughty.	Wetness	Wetness, droughty.
FaA: Faceville	Moderate: seepage.	Slight	Deep to water	Fast intake	Favorable	Favorable.
FaB: Faceville	Moderate: seepage.	Slight	Deep to water	Fast intake, slope.	Favorable	Favorable.
FuB: Fuquay	Slight	Slight	Deep to water	Droughty, fast intake, slope.	Too sandy	Droughty.
GoA: Goldsboro	Moderate: seepage.	Moderate: piping, wetness.	Favorable	Wetness	Wetness	Favorable.
Jo: Johns	Severe: seepage.	Severe: seepage, piping, wetness.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Droughty.
Js: Johnston	Severe: seepage.	Severe: piping, ponding.	Ponding, flooding.	Ponding, droughty, flooding.	Ponding	Wetness, droughty.
LcB: Lucy	Severe: seepage.	Moderate: piping.	Deep to water	Droughty, fast intake, slope.	Too sandy	Droughty.
LcC: Lucy	Severe: seepage.	Moderate: piping.	Deep to water	Droughty, fast intake, slope.	Too sandy, slope.	Slope, droughty.
Lm: Lumbee	Severe: seepage.	Severe: wetness.	Cutbanks cave	Wetness, fast intake.	Wetness	Wetness.
Lu: Lumbee	Severe: seepage.	Severe: wetness.	Cutbanks cave, flooding.	Wetness, fast intake, flooding.	Wetness	Wetness.
Ly: Lynchburg	Moderate: seepage.	Severe: piping, wetness.	Favorable	Wetness	Wetness	Wetness.
Mo: Mouzon	Moderate: seepage.	Severe: wetness.	Percs slowly, flooding.	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
NeB: Neeses	Moderate: seepage, slope.	Severe: piping.	Deep to water	Droughty, fast intake, soil blowing.	Soil blowing, percs slowly.	Droughty, rooting depth.
NeC, NeD: Neeses	Severe: slope.	Severe: piping.	Deep to water	Droughty, fast intake, soil blowing.	Slope, soil blowing, percs slowly.	Slope, droughty, rooting depth.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
NoA: Noboco	Moderate: seepage.	Severe: piping.	Favorable	Wetness, droughty.	Wetness	Droughty, rooting depth.
NoB: Noboco	Moderate: seepage, slope.	Severe: piping.	Favorable	Slope, wetness, droughty.	Wetness	Droughty, rooting depth.
OcA: Ocilla	Severe: seepage.	Severe: piping, wetness.	Favorable	Wetness, droughty, fast intake.	Wetness	Droughty.
OrA: Orangeburg	Moderate: seepage.	Moderate: piping.	Deep to water	Fast intake	Favorable	Favorable.
OrB: Orangeburg	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Fast intake, slope.	Favorable	Favorable.
OrC: Orangeburg	Severe: slope.	Moderate: piping.	Deep to water	Fast intake, slope.	Slope	Slope.
Pa: Pantego	Moderate: seepage.	Severe: wetness.	Favorable	Wetness	Wetness	Wetness.
Ph: Pelham	Severe: seepage.	Severe: piping, wetness.	Favorable	Fast intake, wetness.	Wetness, soil blowing.	Wetness.
Ra: Rains	Moderate: seepage.	Severe: piping, wetness.	Favorable	Wetness	Wetness, soil blowing.	Wetness.
RmB: Rimini	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
Sa: Stallings	Severe: seepage.	Severe: piping, wetness.	Cutbanks cave	Wetness, fast intake.	Wetness	Wetness.
TrB: Troup	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, slope.	Too sandy	Droughty.
TrC: Troup	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy.	Slope, droughty.
Ud. Udorthents						

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated. Some soils may have Unified classifications and USDA textures in addition to those shown. In general, the dominant classifications and textures are shown]

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
AeB, AeC: Ailey	0-25	Sand	SP-SM	A-2, A-3	85-100	75-95	50-75	5-12	---	NP
	25-31	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	90-100	75-100	60-90	30-40	20-40	3-16
	31-64	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	90-100	75-100	55-90	20-40	20-40	3-15
AlA: Albany	0-68	Sand	SM, SP-SM	A-2	100	100	75-90	10-20	---	NP
	68-82	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM, SM-SC	A-2, A-4, A-6	97-100	95-100	70-100	20-50	<40	NP-17
ApB, ApC: Alpin	0-4	Sand	SP-SM, SM	A-3, A-2-4	95-100	90-100	60-100	5-20	---	NP
	4-46	Fine sand, sand	SP-SM	A-3, A-2-4	95-100	90-100	60-100	5-20	---	NP
	46-80	Fine sand, sand	SP-SM, SM	A-2-4	95-100	90-100	60-100	11-20	---	NP
Bb: Bibb	0-15	Sandy loam	SM, SM-SC, ML, CL-ML	A-2, A-4	95-100	90-100	60-90	30-60	<25	NP-7
	15-62	Sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	60-100	50-100	40-100	30-90	<30	NP-7
BlB, BlC: Blanton	0-61	Sand	SP-SM, SM	A-3, A-2-4	100	90-100	65-100	5-20	---	NP
	61-64	Sandy loam, loamy sand, loamy coarse sand.	SM	A-2-4	100	95-100	65-96	13-30	<25	NP-3
	64-82	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, SM	A-4, A-2-4, A-2-6, A-6	100	95-100	69-100	25-50	16-45	3-22
BoB: Bonneau	0-35	Sand	SM, SP-SM	A-2, A-3	100	95-100	60-95	8-20	---	NP
	35-69	Sandy loam, sandy clay loam, fine sandy loam.	SC, SM-SC	A-2, A-6, A-4	100	95-100	60-100	30-50	21-40	4-21
	69-80	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SM-SC, CL-ML	A-4, A-6, A-2	100	95-100	60-95	25-60	20-40	4-18
By: Byars	0-9	Loam	CL	A-6, A-7-6	98-100	98-100	90-100	70-95	32-50	11-23
	9-63	Clay, clay loam, sandy clay.	CL, CH	A-7-5, A-7-6, A-6	98-100	98-100	90-100	60-95	39-75	17-42
CdA: Clarendon	0-15	Loamy sand	SM, SP-SM	A-2	98-100	85-100	65-90	10-30	<20	NP-3
	15-40	Sandy clay loam	SC, CL, SM-SC, CL-ML	A-4, A-6, A-2	98-100	85-100	75-95	30-55	20-40	5-15
	40-88	Sandy clay loam, sandy loam, sandy clay.	SC, CL, SM-SC, CL-ML	A-2, A-4, A-6	99-100	96-100	80-95	25-55	<40	NP-15
Cx: Coxville	0-5	Sandy loam	SM, ML, CL-ML, CL	A-4, A-6, A-7	100	100	85-97	46-75	20-46	3-15
	5-60	Clay loam, sandy clay, clay.	CL, CH	A-6, A-7	100	100	85-98	50-85	30-55	12-35

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
DaA-------------- Dothan	0-14	Loamy sand-------	SM	A-2	95-100	92-100	60-80	13-30	---	NP
	14-37	Sandy clay loam, sandy loam, fine sandy loam.	SM-SC, SC, SM	A-2, A-4, A-6	95-100	92-100	68-90	23-49	<40	NP-16
	37-66	Sandy clay loam, sandy clay.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6, A-7	95-100	92-100	70-95	30-53	25-45	4-23
DaB-------------- Dothan	0-14	Loamy sand-------	SM	A-2	95-100	92-100	60-80	13-30	---	NP
	14-37	Sandy clay loam, sandy loam, fine sandy loam.	SM-SC, SC, SM	A-2, A-4, A-6	95-100	92-100	68-90	23-49	<40	NP-16
	37-62	Sandy clay loam, sandy clay.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6, A-7	95-100	92-100	70-95	30-53	25-45	4-23
Dn--------------- Dunbar	0-8	Sandy loam-------	SM-SC, SC, SM	A-2, A-4	100	100	50-95	20-50	20-35	3-15
	8-70	Loam, sandy clay loam, clay loam.	CL-ML, CL, SC	A-4, A-6	95-100	90-100	65-98	45-85	24-40	8-22
DpA-------------- Duplin	0-13	Loamy sand-------	SM, SP-SM	A-2, A-3	100	90-100	65-95	5-35	---	NP
	13-62	Sandy clay, clay loam, clay.	CL, CH, SC	A-6, A-7	100	98-100	80-100	45-75	24-54	13-35
Eo--------------- Elloree	0-6	Loamy sand-------	SM	A-2	100	98-100	70-90	15-35	<25	NP-4
	6-23	Sand, fine sand, loamy sand.	SP-SM, SM	A-2, A-3	100	98-100	65-90	9-27	---	NP
	23-42	Sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2	100	98-100	60-90	15-35	<30	NP-12
	42-80	Loamy sand, sandy loam, sandy clay loam.	SM, SM-SC, SC	A-2, A-4, A-6	100	98-100	60-90	15-45	<40	NP-18
FaA, FaB--------- Faceville	0-6	Loamy sand-------	SM	A-2	90-100	85-100	72-97	13-25	---	NP
	6-62	Sandy clay, clay, clay loam.	CL, SC, CH, ML	A-6, A-7	98-100	95-100	75-99	45-72	25-52	11-25
FuB-------------- Fuquay	0-24	Sand-------------	SP-SM, SM	A-1, A-2, A-3	95-100	90-100	45-80	5-20	---	NP
	24-45	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	85-100	85-100	70-90	23-45	<25	NP-13
	45-74	Sandy clay loam	SC, SM-SC, CL-ML	A-2, A-4, A-6, A-7-6	95-100	90-100	58-90	28-49	20-49	4-12
GoA-------------- Goldsboro	0-16	Sandy loam-------	SM, SM-SC, SC	A-2, A-4, A-6	95-100	95-100	50-100	15-45	<25	NP-14
	16-45	Sandy clay loam, sandy loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	98-100	95-100	60-100	25-55	16-37	4-18
	45-68	Sandy clay loam, clay loam, sandy clay.	SC, CL, CL-ML, CH	A-4, A-6, A-7-6	95-100	90-100	65-95	36-70	25-55	6-32
Jo--------------- Johns	0-14	Loamy sand-------	SM	A-2, A-4	100	95-100	60-90	15-45	---	NP
	14-28	Sandy clay loam, sandy loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6, A-7	100	95-100	60-98	30-65	20-45	5-25
	28-62	Sand, loamy sand, coarse sand.	SM, SP-SM, SP	A-2, A-3	95-100	95-100	51-90	4-25	---	NP

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
Js--------------- Johnston	0-26	Sandy loam-------	ML, SM	A-2, A-4	100	100	60-100	18-65	<35	NP-10
	26-72	Stratified fine sandy loam to sandy loam.	SM	A-2, A-4	100	100	50-100	25-49	<35	NP-10
LcB, LcC--------- Lucy	0-29	Loamy sand-------	SM, SP-SM	A-2	98-100	95-100	50-87	10-30	---	NP
	29-62	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, SM	A-2, A-6, A-4	100	95-100	60-95	20-50	20-40	3-20
Lm, Lu----------- Lumbee	0-8	Loamy sand-------	SM, SM-SC	A-2, A-4	100	85-100	65-98	15-45	<20	NP-7
	8-23	Sandy clay loam, sandy loam, clay loam.	SC, CL	A-4, A-6, A-7	100	90-100	65-98	36-60	19-45	7-25
	23-61	Loamy sand, sand, fine sand.	SP, SM, SP-SM	A-2, A-3	90-100	85-100	50-90	4-25	---	NP
Ly--------------- Lynchburg	0-9	Fine sandy loam	SM, ML, SM-SC, CL-ML	A-2, A-4	92-100	90-100	75-100	25-55	<30	NP-7
	9-71	Sandy clay loam, sandy loam, clay loam.	SM-SC, SC, CL, CL-ML	A-2, A-4, A-6	92-100	90-100	70-100	25-67	16-40	4-18
Mo--------------- Mouzon	0-11	Fine sandy loam	SM	A-2, A-4	100	90-100	85-100	13-41	---	NP
	11-61	Sandy clay loam, clay loam.	SC, CL	A-6	100	90-100	65-85	40-55	30-40	16-23
	61-74	Sandy loam, loamy sand.	SM, SM-SC, SP-SM	A-4, A-2	100	90-100	75-100	10-45	<30	NP-7
NeB, NeC, NeD---- Neeses	0-8	Loamy sand-------	SM, SM-SC	A-2	90-100	90-100	60-92	15-35	<20	NP-7
	8-28	Sandy clay, clay	CL, SC, SM, CH	A-6, A-7-5, A-7-6	95-100	95-100	82-98	48-70	30-65	11-30
	28-54	Sandy clay loam, sandy clay, clay.	CL-ML, SC, CL, SM	A-4, A-6, A-7	95-100	92-100	45-98	40-75	25-50	8-30
	54-85	Sandy loam, sandy clay loam.	SM, SM-SC, CL-ML, SC	A-4, A-1-B, A-2-4	95-100	92-100	45-98	20-60	<30	NP-10
NoA, NoB--------- Noboco	0-13	Loamy sand-------	SM	A-2	95-100	92-100	50-95	13-30	<20	NP
	13-41	Sandy loam, sandy clay loam, clay loam.	SM-SC, SC, CL, CL-ML	A-2, A-4, A-6	95-100	95-100	70-96	30-63	20-38	4-10
	41-72	Sandy clay loam, clay loam, sandy clay.	SM-SC, SC, CL	A-4, A-6, A-7-6	98-100	98-100	70-98	36-72	20-52	4-23
OcA-------------- Ocilla	0-24	Loamy sand-------	SM, SP-SM	A-2, A-3	100	95-100	75-100	8-35	---	NP
	24-70	Sandy loam, sandy clay loam, fine sandy loam.	SM, CL, SC, ML	A-2, A-4, A-6	100	95-100	80-100	20-55	20-40	NP-18
OrA, OrB, OrC---- Orangeburg	0-11	Loamy sand-------	SM	A-2	98-100	95-100	60-87	14-28	---	NP
	11-60	Sandy clay loam, sandy loam.	SC, CL, SM, SM-SC	A-6, A-4	98-100	95-100	71-96	38-58	22-40	3-19
	60-72	Sandy clay loam, sandy clay, sandy loam.	SC, CL	A-6, A-4, A-7	98-100	95-100	70-97	40-65	24-46	8-21

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
Pa---------------- Pantego	0-12	Fine sandy loam	SM, SM-SC, CL, ML	A-2, A-4	100	95-100	60-95	25-75	<35	NP-10
	12-59	Sandy clay loam, sandy loam, clay loam.	SC, CL, SM-SC, CL-ML	A-4, A-6, A-2	100	95-100	60-100	30-80	20-40	4-16
	59-67	Clay loam, sandy clay, sandy clay loam.	CL, SC	A-6, A-7	100	95-100	80-100	36-80	25-49	11-24
Ph---------------- Pelham	0-24	Loamy sand--------	SM	A-2	100	95-100	75-100	15-30	---	NP
	24-63	Sandy clay loam, sandy loam, fine sandy loam.	SM, SC, SM-SC	A-2, A-4, A-6	100	95-100	65-100	27-50	16-30	2-12
Ra---------------- Rains	0-8	Sandy loam--------	SM, ML	A-2, A-4	100	95-100	50-85	25-56	<35	NP-10
	8-51	Sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	100	95-100	55-98	30-70	18-40	4-20
	51-70	Sandy clay loam, clay loam, sandy clay.	SC, SM-SC, CL, CL-ML	A-4, A-6, A-7	100	98-100	60-98	36-72	18-45	4-28
RmB--------------- Rimini	0-57	Sand--------------	SP, SP-SM	A-3	100	98-100	60-98	2-5	---	NP
	57-74	Sand, fine sand	SP, SP-SM	A-3	100	98-100	75-100	3-10	---	NP
	74-83	Sand, fine sand	SP, SP-SM	A-3	100	98-100	75-100	2-5	---	NP
Sa---------------- Stallings	0-10	Loamy sand--------	SM	A-2	100	95-100	51-100	15-35	---	NP
	10-68	Sandy loam, fine sandy loam, sandy clay loam.	SM	A-2, A-4	100	95-100	51-100	15-50	<25	NP-3
TrB, TrC---------- Troup	0-63	Sand--------------	SM, SP-SM	A-2	95-100	90-100	50-75	10-30	---	NP
	63-94	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2, A-6	95-100	90-100	60-90	24-55	19-40	4-20
Ud. Udorthents										

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH					Pct
AeB, AeC---------	0-25	3-8	1.40-1.55	6.0-20	0.03-0.05	4.5-6.5	Low-----------	0.10	4	2	<1
Ailey	25-31	15-35	1.55-1.70	0.6-2.0	0.09-0.12	4.5-5.5	Low-----------	0.24			
	31-64	18-32	1.70-1.80	0.06-0.2	0.06-0.10	4.5-5.5	Low-----------	0.17			
AlA--------------	0-68	1-10	1.40-1.55	6.0-20	0.02-0.04	4.5-6.5	Low-----------	0.10	5	1	1-2
Albany	68-82	13-35	1.55-1.65	0.6-2.0	0.10-0.16	4.5-6.0	Low-----------	0.24			
ApB, ApC---------	0-4	1-12	1.35-1.55	2.0-6.0	0.05-0.10	4.5-6.5	Low-----------	0.10	5	2	0-2
Alpin	4-46	1-7	1.40-1.55	6.0-20.0	0.03-0.09	4.5-6.5	Low-----------	0.10			
	46-80	5-8	1.45-1.65	2.0-6.0	0.06-0.09	4.5-6.5	Low-----------	0.10			
Bb---------------	0-15	2-18	1.25-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Low-----------	0.20	5	---	.5-2
Bibb	15-62	2-18	1.30-1.60	0.6-2.0	0.12-0.20	4.5-5.5	Low-----------	0.37			
BlB, BlC---------	0-61	1-7	1.30-1.60	6.0-20	0.03-0.07	4.5-6.0	Low-----------	0.10	5	2	.5-1
Blanton	61-64	10-18	1.53-1.65	2.0-6.0	0.10-0.15	4.5-5.5	Low-----------	0.15			
	64-82	12-30	1.60-1.70	0.6-2.0	0.10-0.15	4.5-5.5	Low-----------	0.20			
BoB--------------	0-35	2-8	1.30-1.70	6.0-20	0.04-0.08	4.5-6.0	Low-----------	0.15	5	1	.5-2
Bonneau	35-69	18-35	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	Low-----------	0.20			
	69-80	15-40	1.40-1.60	0.6-2.0	0.10-0.16	4.5-5.5	Low-----------	0.20			
By---------------	0-9	15-35	1.20-1.50	0.6-2.0	0.15-0.20	3.6-5.5	Low-----------	0.28	5	6	2-9
Byars	9-63	35-45	1.30-1.60	0.06-0.2	0.14-0.18	3.6-5.5	Moderate-----	0.32			
CdA--------------	0-15	2-10	1.40-1.60	2.0-6.0	0.08-0.12	4.5-6.5	Low-----------	0.15	5	2	.5-3
Clarendon	15-40	18-35	1.40-1.60	0.6-2.0	0.10-0.15	4.0-5.5	Low-----------	0.20			
	40-88	15-40	1.40-1.70	0.2-0.6	0.08-0.12	4.0-5.5	Low-----------	0.15			
Cx---------------	0-5	5-27	1.45-1.65	0.6-2.0	0.12-0.17	3.6-5.5	Low-----------	0.24	5	---	2-4
Coxville	5-60	35-60	1.25-1.45	0.2-0.6	0.14-0.18	3.6-5.5	Moderate-----	0.32			
DaA--------------	0-14	5-15	1.30-1.60	2.0-6.0	0.06-0.10	4.5-6.0	Very low-----	0.15	5	---	<.5
Dothan	14-37	18-35	1.40-1.60	0.6-2.0	0.12-0.16	4.5-6.0	Low-----------	0.28			
	37-66	18-40	1.45-1.70	0.2-0.6	0.08-0.12	4.5-6.0	Low-----------	0.28			
DaB--------------	0-14	5-15	1.30-1.60	2.0-6.0	0.06-0.10	4.5-6.0	Very low-----	0.15	5	---	<.5
Dothan	14-37	18-35	1.40-1.60	0.6-2.0	0.12-0.16	4.5-6.0	Low-----------	0.28			
	37-62	18-40	1.45-1.70	0.2-0.6	0.08-0.12	4.5-6.0	Low-----------	0.28			
Dn---------------	0-8	5-27	1.45-1.65	2.0-6.0	0.10-0.15	4.5-5.5	Low-----------	0.32	5	---	2-4
Dunbar	8-70	18-35	1.35-1.50	0.2-0.6	0.14-0.19	4.5-5.5	Low-----------	----			
DpA--------------	0-13	10-15	1.45-1.65	2.0-6.0	0.06-0.10	4.5-5.5	Low-----------	0.28	5	---	.5-2
Duplin	13-62	35-60	1.25-1.40	0.2-0.6	0.13-0.18	4.5-5.5	Moderate-----	----			
Eo---------------	0-6	2-8	1.40-1.60	6.0-20	0.06-0.11	4.5-6.5	Low-----------	0.15	5	---	2-8
Elloree	6-23	1-6	1.50-1.70	6.0-20	0.02-0.10	5.1-7.3	Low-----------	0.10			
	23-42	9-25	1.30-1.60	2.0-6.0	0.10-0.15	5.1-8.4	Low-----------	0.15			
	42-80	5-25	1.30-1.50	2.0-6.0	0.10-0.17	5.1-8.4	Low-----------	0.17			
FaA, FaB---------	0-6	2-10	1.45-1.65	6.0-20	0.06-0.09	4.5-5.5	Low-----------	0.17	5	---	.5-1
Faceville	6-62	35-55	1.25-1.60	0.6-2.0	0.12-0.18	4.5-6.0	Low-----------	0.37			

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH					Pct
FuB---------------	0-24	1-7	1.60-1.70	>6.0	0.03-0.07	4.5-6.0	Low-----------	0.10	5	---	.5-2
Fuquay	24-45	10-35	1.40-1.60	0.6-2.0	0.12-0.15	4.5-6.0	Low-----------	0.20			
	45-74	20-35	1.40-1.60	0.06-0.2	0.10-0.13	4.5-6.0	Low-----------	0.20			
GoA---------------	0-16	5-15	1.40-1.60	2.0-6.0	0.08-0.12	3.6-6.0	Low-----------	0.20	5	---	.5-2
Goldsboro	16-45	18-30	1.30-1.50	0.6-2.0	0.11-0.15	3.6-5.5	Low-----------	0.24			
	45-68	20-34	1.30-1.40	0.6-2.0	0.11-0.15	3.6-5.5	Low-----------	0.24			
Jo----------------	0-14	4-12	1.60-1.75	2.0-6.0	0.06-0.11	4.5-5.5	Low-----------	0.15	5	---	.5-2
Johns	14-28	18-35	1.40-1.60	0.6-2.0	0.12-0.15	4.5-5.5	Low-----------	0.24			
	28-62	2-10	1.60-1.75	6.0-20	0.03-0.06	4.5-5.5	Low-----------	0.10			
Js----------------	0-26	5-18	1.30-1.55	2.0-6.0	0.10-0.20	4.5-5.5	Low-----------	0.20	5	---	3-8
Johnston	26-72	5-20	1.45-1.65	6.0-20	0.06-0.12	4.5-5.5	Low-----------	0.17			
LcB, LcC----------	0-29	1-12	1.30-1.70	6.0-20	0.06-0.10	4.5-6.0	Low-----------	0.15	5	---	.5-1
Lucy	29-62	15-35	1.40-1.60	0.6-2.0	0.12-0.14	4.5-5.5	Low-----------	0.28			
Lm, Lu------------	0-8	4-18	1.55-1.70	2.0-6.0	0.08-0.12	4.5-5.5	Low-----------	0.24	5	---	2-4
Lumbee	8-23	18-35	1.30-1.45	0.6-2.0	0.12-0.16	4.5-5.5	Low-----------	0.32			
	23-61	1-10	1.60-1.75	6.0-20	0.03-0.06	4.5-5.5	Low-----------	0.10			
Ly----------------	0-9	5-20	1.30-1.60	2.0-6.0	0.09-0.13	3.6-5.5	Low-----------	0.20	5	3	.5-5
Lynchburg	9-71	18-35	1.30-1.50	0.6-2.0	0.12-0.16	3.6-5.5	Low-----------	0.20			
Mo----------------	0-11	5-22	1.30-1.50	2.0-6.0	0.10-0.15	4.5-6.5	Low-----------	0.17	5	2	.5-4
Mouzon	11-61	18-35	1.30-1.50	0.06-0.2	0.10-0.15	5.1-8.4	Low-----------	0.20			
	61-74	8-18	1.30-1.60	2.0-6.0	0.06-0.12	6.1-8.4	Low-----------	0.15			
NeB, NeC, NeD-----	0-8	5-15	1.45-1.55	2.0-6.0	0.05-0.08	4.5-5.5	Low-----------	0.24	3	2	<1
Neeses	8-28	35-50	1.30-1.60	0.6-2.0	0.10-0.18	4.5-5.5	Low-----------	0.28			
	28-54	25-50	1.70-1.90	0.06-0.6	0.08-0.12	4.5-5.5	Low-----------	0.28			
	54-85	15-35	1.55-1.75	0.6-2.0	0.05-0.12	4.5-5.5	Low-----------	0.24			
NoA, NoB----------	0-13	2-8	1.55-1.75	6.0-20	0.06-0.11	4.5-6.0	Low-----------	0.17	5	---	.5-2
Noboco	13-41	18-35	1.30-1.45	0.6-2.0	0.10-0.20	4.5-5.5	Low-----------	0.24			
	41-72	20-43	1.10-1.40	0.6-2.0	0.10-0.20	4.5-5.5	Low-----------	0.24			
OcA---------------	0-24	4-10	1.45-1.65	2.0-20	0.05-0.08	4.5-5.5	Low-----------	0.10	5	2	1-2
Ocilla	24-70	15-35	1.55-1.70	0.6-2.0	0.09-0.12	4.5-5.5	Low-----------	0.24			
OrA, OrB, OrC-----	0-11	4-10	1.35-1.55	2.0-6.0	0.06-0.09	4.5-6.0	Low-----------	0.10	5	---	.5-1
Orangeburg	11-60	18-35	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	Low-----------	0.24			
	60-72	20-45	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	Low-----------	0.24			
Pa----------------	0-12	5-15	1.40-1.60	2.0-6.0	0.10-0.20	3.6-5.5	Low-----------	0.15	5	---	4-10
Pantego	12-59	18-35	1.30-1.40	0.6-2.0	0.12-0.20	3.6-5.5	Low-----------	0.28			
	59-67	18-40	1.25-1.40	0.6-2.0	0.15-0.20	3.6-5.5	Low-----------	0.28			
Ph----------------	0-24	5-10	1.50-1.70	6.0-20	0.05-0.08	3.6-5.5	Low-----------	0.10	5	---	1-2
Pelham	24-63	15-30	1.30-1.60	0.6-2.0	0.10-0.13	3.6-5.5	Low-----------	0.24			
Ra----------------	0-8	5-20	1.30-1.60	2.0-6.0	0.10-0.14	3.6-6.5	Low-----------	0.20	5	3	1-6
Rains	8-51	18-35	1.30-1.50	0.6-2.0	0.11-0.15	3.6-5.5	Low-----------	0.24			
	51-70	18-40	1.30-1.50	0.6-2.0	0.10-0.15	3.6-5.5	Low-----------	0.28			
RmB---------------	0-57	<3	1.40-1.60	>20	0.02-0.05	3.6-6.0	Low-----------	0.10	5	1	<1
Rimini	57-74	1-5	1.50-1.70	6.0-20	0.03-0.07	3.6-6.0	Low-----------	0.10			
	74-83	<3	1.40-1.70	>20	0.02-0.05	3.6-6.0	Low-----------	0.10			
Sa----------------	0-10	2-10	1.50-1.60	6.0-20	0.06-0.11	3.6-5.5	Low-----------	0.10	5	---	1-4
Stallings	10-68	5-20	1.40-1.60	2.0-6.0	0.10-0.15	3.6-5.5	Low-----------	0.17			

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH					Pct
TrB, TrC--------- Troup	0-63 63-94	1-10 15-35	1.30-1.70 1.40-1.60	6.0-20 0.6-2.0	0.05-0.10 0.10-0.13	4.5-6.0 4.5-5.5	Very low----- Low----------	0.10 0.20	5	---	<1
Ud. Udorthents											

TABLE 16.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Map symbol and soil name	Hydro-logic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
AeB, AeC----------- Ailey	B	None---------	---	---	>6.0	---	---	Moderate	Moderate.
AlA---------------- Albany	C	None---------	---	---	1.0-2.5	Apparent	Dec-Mar	High-----	High.
ApB, ApC----------- Alpin	A	None---------	---	---	>6.0	---	---	Low------	High.
Bb----------------- Bibb	D	Frequent----	Brief-----	Dec-May	0.5-1.5	Apparent	Dec-Apr	High-----	Moderate.
BlB, BlC----------- Blanton	A	None---------	---	---	5.0-6.0	Perched	Dec-Mar	High-----	High.
BoB---------------- Bonneau	A	None---------	---	---	3.5-5.0	Apparent	Dec-Mar	Low------	High.
By----------------- Byars	D	None---------	---	---	+1-1.0	Apparent	Nov-Apr	High-----	High.
CdA---------------- Clarendon	C	None---------	---	---	2.0-3.0	Apparent	Dec-Mar	Moderate	High.
Cx----------------- Coxville	D	None---------	---	---	0-1.5	Apparent	Nov-Apr	High-----	High.
DaA, DaB----------- Dothan	B	None---------	---	---	3.0-5.0	Perched	Jan-Apr	Moderate	Moderate.
Dn----------------- Dunbar	D	None---------	---	---	1.0-2.5	Apparent	Nov-May	High-----	High.
DpA---------------- Duplin	C	None---------	---	---	2.0-3.0	Apparent	Dec-Apr	High-----	High.
Eo----------------- Elloree	D	Frequent----	Brief to long.	Dec-Apr	0-1.0	Apparent	Nov-Apr	High-----	Moderate.
FaA, FaB----------- Faceville	B	None---------	---	---	>6.0	---	---	Low------	Moderate.
FuB---------------- Fuquay	B	None---------	---	---	4.0-6.0	Perched	Jan-Mar	Low------	High.
GoA---------------- Goldsboro	B	None---------	---	---	2.0-3.0	Apparent	Dec-Apr	Moderate	High.
Jo----------------- Johns	C	None---------	---	---	1.5-3.0	Apparent	Dec-Apr	Moderate	High.
Js----------------- Johnston	D	Frequent----	Brief to long.	Nov-Jul	+1-1.5	Apparent	Nov-Jun	High-----	High.
LcB, LcC----------- Lucy	A	None---------	---	---	>6.0	---	---	Low------	High.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydro-logic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
Lm------------------ Lumbee	B/D	Rare--------	---	---	0-1.5	Apparent	Nov-Apr	High-----	High.
Lu------------------ Lumbee	B/D	Frequent----	Long------	Dec-Apr	0-1.5	Apparent	Nov-Apr	High-----	High.
Ly------------------ Lynchburg	C	None--------	---	---	0.5-1.5	Apparent	Nov-Apr	High-----	High.
Mo------------------ Mouzon	D	Frequent----	Long------	Dec-Apr	0-1.0	Apparent	Nov-Apr	High-----	Moderate.
NeB, NeC, NeD----- Neeses	C	None--------	---	---	>6.0	---	---	High-----	Moderate.
NoA, NoB---------- Noboco	B	None--------	---	---	2.5-4.0	Apparent	Dec-Mar	Moderate	High.
OcA--------------- Ocilla	C	None--------	---	---	1.0-2.5	Apparent	Dec-Apr	High-----	Moderate.
OrA, OrB, OrC----- Orangeburg	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
Pa------------------ Pantego	B/D	None--------	---	---	0-1.5	Apparent	Dec-May	High-----	High.
Ph------------------ Pelham	B/D	None--------	---	---	0.5-1.5	Apparent	Jan-Apr	High-----	High.
Ra------------------ Rains	B/D	None--------	---	---	0-1.0	Apparent	Nov-Apr	High-----	High.
RmB---------------- Rimini	A	None--------	---	---	>6.0	---	---	Low------	Low.
Sa------------------ Stallings	C	None--------	---	---	1.0-2.5	Apparent	Dec-Apr	High-----	High.
TrB, TrC---------- Troup	A	None--------	---	---	>6.0	---	---	Low------	Moderate.
Ud. Udorthents									

TABLE 17.--CHEMICAL ANALYSES OF SELECTED SOILS

Soil name	Horizon	Depth	Exchangeable bases Ca	Exchangeable bases Mg	Exchangeable bases K	Exchangeable bases Na	Extractable acidity	Cation-exchange capacity (sum)	Exchangeable Al	Base saturation (sum)	Aluminum saturation	pH 1:1 H_2O
		In	Meq/100g							Pct	Pct	
Bibb	A	0-10	1.85	0.26	0.13	0.10	14.82	17.16	0.89	13.6	27.5	4.8
	Cg1	10-15	0.45	0.06	0.03	0.08	2.73	3.35	0.22	18.5	26.4	5.1
	Cg2	15-26	1.08	0.08	0.05	0.09	1.95	3.25	0.11	39.9	7.9	5.2
	Cg3	26-39	1.40	0.07	0.07	0.07	1.17	2.79	0.11	58.1	6.4	5.2
	Cg4	39-62	0.10	0.02	0.03	0.11	0.39	0.59	0.00	33.7	0.0	5.5
Johns 1/	A	0-4	0.68	0.15	0.09	0.09	12.09	13.08	2.22	7.7	58.9	4.4
	E	4-14	0.08	0.02	0.04	0.07	6.24	6.45	0.89	3.3	80.8	4.7
	Bt1	14-21	0.14	0.07	0.04	0.10	6.63	6.98	3.55	5.1	90.9	4.4
	Bt2	21-28	0.10	0.03	0.04	0.09	5.85	6.11	3.55	4.2	93.3	4.4
	2Cg1	28-35	0.04	0.01	0.02	0.07	1.17	1.30	0.67	10.1	83.5	4.6
	2Cg2	35-44	0.00	0.01	0.01	0.09	0.78	0.89	0.56	12.7	83.0	4.6
	2Cg3	44-62	0.00	0.01	0.00	0.07	0.78	0.86	0.11	9.2	58.5	5.2
Lucy	A	0-7	0.19	0.02	0.04	0.07	2.73	3.05	0.44	10.5	58.2	5.3
	E1	7-13	0.21	0.07	0.03	0.05	0.78	1.14	0.22	31.6	38.1	5.2
	E2	13-30	1.20	0.24	0.04	0.07	1.56	3.12	0.22	50.0	12.5	5.1
	Bt1	30-41	0.65	0.83	0.08	0.04	2.73	4.33	0.11	37.0	6.5	5.1
	Bt2	41-61	0.45	0.12	0.02	0.04	3.90	4.54	0.56	14.0	46.6	5.0
Lumbee 2/	A	0-8	0.61	0.19	0.03	0.09	3.51	4.43	1.22	20.8	57.0	4.4
	Btg1	8-13	0.38	0.44	0.02	0.18	8.19	9.21	2.66	11.1	72.3	4.3
	Btg2	13-23	0.30	0.36	0.03	0.11	7.41	8.21	3.11	9.7	79.4	4.3
	2Cg1	23-32	0.05	0.02	0.07	0.10	0.78	1.02	0.22	23.5	47.8	4.6
	2Cg2	32-61	0.03	0.02	0.04	0.09	0.78	0.96	0.07	18.6	28.0	5.0
Neeses	A	0-5	0.61	0.21	0.05	0.18	8.58	9.63	1.22	10.9	53.7	4.6
	E	5-10	0.14	0.06	0.05	0.12	3.12	3.49	0.33	10.6	47.1	4.6
	Bt1	10-17	0.14	0.42	0.09	0.10	6.63	7.38	1.00	10.2	57.1	4.2
	Bt2	17-43	0.05	0.11	0.03	0.12	5.07	5.38	1.07	5.8	77.5	4.4
	BC	43-80	0.04	0.03	0.00	0.12	3.12	3.31	0.64	5.7	77.1	4.3

1/ The pH of the A, Bt1, and Bt2 horizons are slightly outside the range of the series. This difference is within the allowable error of laboratory determination.

2/ The pH of the A, Btg1, and Btg2 horizons are slightly outside the range of the series. This difference is within the allowable error of laboratory determination.

TABLE 18.--ENGINEERING INDEX TEST DATA

[Dashes indicate data were not available. NP means nonplastic]

Soil name, report number, horizon and depth (in inches)	Classification		Grain-size distribution					Liquid limit	Plasticity index
	AASHTO	Unified	Percentage passing sieve--				Percentage smaller than--		
			No. 4	No. 10	No. 60	No. 200	.002 mm		
								Pct	
Bonneau: 1/ S77SC75-19									
Ap ---- 0-8	A-2-4(0)	SM	100	100	75	17	6	---	NP
E2 ---- 21-35	A-2-4(0)	SM	100	99	73	20	9	---	NP
Bt1 ---- 35-43	A-2-4(0)	SM-SC	100	98	76	34	25	21	5
Byars: 1/ S77SC75-3									
Btg3 ---- 30-45	A-6(13)	CL	100	100	94	79	60	39	17
Clarendon: 1/ S77SC75-14									
Ap ---- 0-8	A-2-4(0)	SM	100	99	75	18	8	---	NP
Bt2 ---- 21-27	A-2-4(0)	SC	100	98	75	35	27	31	10
Btg ---- 27-40	A-2-4(0)	SC	100	100	72	31	23	30	8
Elloree: 2/ S77SC75-3									
A ---- 0-6	A-2-4(0)	SM	100	100	84	27	13	---	NP
E1 ---- 6-13	A-2-4(0)	SM	100	100	87	21	7	---	NP
Btg1 ---- 25-37	A-2-4(0)	SM	100	100	81	32	21	---	NP
Elloree: 1/ S77SC75-20									
A ---- 0-6	A-2-4(0)	SM	100	100	71	18	9	---	NP
E ---- 6-23	A-3(0)	SP-SM	100	98	57	9	4	---	NP
Btg2 ---- 27-42	A-2-4(0)	SM	100	99	68	24	16	---	NP
Faceville: 1/ S77SC75-6									
Ap ---- 0-6	A-2-4(0)	SM	100	99	69	21	10	---	NP
Bt1 ---- 6-26	A-7-6(7)	CL	100	99	81	54	46	42	16
Ocilla: 1/ S77SC75-7									
E2 ---- 13-24	A-2-4(0)	SM	100	99	60	18	8	---	NP
Bt2 ---- 28-37	A-2-4(0)	SC	100	98	64	30	24	27	10
Btg1 ---- 37-62	A-2-4(0)	SC	100	100	70	30	27	32	13

1/ Sample site is same as that of the series typical pedon given in "Soil Series and Their Morphology."

2/ Sample site is located 1.5 miles southwest of Santee; 0.8 mile southwest of the junction of U.S. Highway 301 and U.S. Highway 15; 0.3 mile northwest on unpaved road; and 400 feet south of unpaved road.

TABLE 19.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
*Ailey	Loamy, siliceous, thermic Arenic Hapludults
Albany	Loamy, siliceous, thermic Grossarenic Paleudults
Alpin	Thermic, coated Typic Quartzipsamments
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Blanton	Loamy, siliceous, thermic Grossarenic Paleudults
Bonneau	Loamy, siliceous, thermic Arenic Paleudults
Byars	Clayey, kaolinitic, thermic Umbric Paleaquults
Clarendon	Fine-loamy, siliceous, thermic Plinthaquic Paleudults
Coxville	Clayey, kaolinitic, thermic Typic Paleaquults
Dothan	Fine-loamy, siliceous, thermic Plinthic Paleudults
Dunbar	Clayey, kaolinitic, thermic Aeric Paleaquults
Duplin	Clayey, kaolinitic, thermic Aquic Paleudults
Elloree	Loamy, siliceous, thermic Arenic Ochraqualfs
Faceville	Clayey, kaolinitic, thermic Typic Paleudults
Fuquay	Loamy, siliceous, thermic Arenic Plinthic Paleudults
Goldsboro	Fine-loamy, siliceous, thermic Aquic Paleudults
Johns	Fine-loamy over sandy or sandy-skeletal, siliceous, thermic Aquic Hapludults
Johnston	Coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts
Lucy	Loamy, siliceous, thermic Arenic Paleudults
Lumbee	Fine-loamy over sandy or sandy-skeletal, siliceous, thermic Typic Ochraquults
Lynchburg	Fine-loamy, siliceous, thermic Aeric Paleaquults
Mouzon	Fine-loamy, siliceous, thermic Typic Albaqualfs
Neeses	Clayey, kaolinitic, thermic Typic Hapludults
Noboco	Fine-loamy, siliceous, thermic Typic Paleudults
Ocilla	Loamy, siliceous, thermic Aquic Arenic Paleudults
Orangeburg	Fine-loamy, siliceous, thermic Typic Paleudults
Pantego	Fine-loamy, siliceous, thermic Umbric Paleaquults
Pelham	Loamy, siliceous, thermic Arenic Paleaquults
Rains	Fine-loamy, siliceous, thermic Typic Paleaquults
Rimini	Sandy, siliceous, thermic Grossarenic Entic Haplohumods
*Stallings	Coarse-loamy, siliceous, thermic Aeric Paleaquults
Troup	Loamy, siliceous, thermic Grossarenic Paleudults

* The soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series.

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