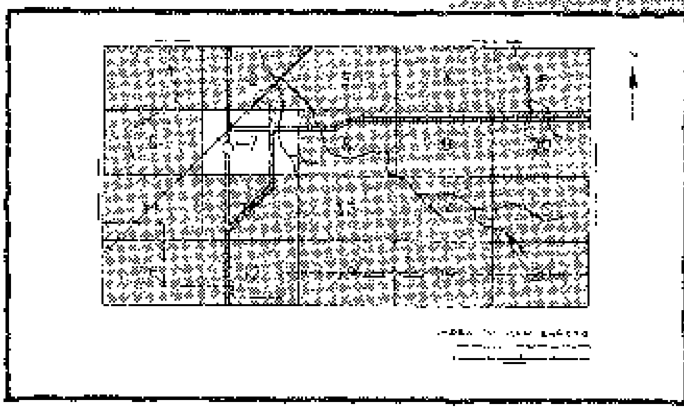
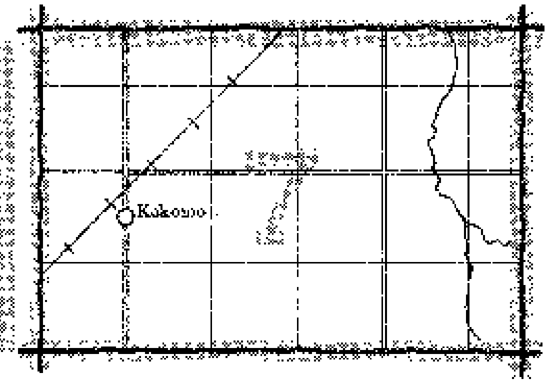
SOIL SURVEY OF
Richland County, South Carolina

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

HOW TO USE

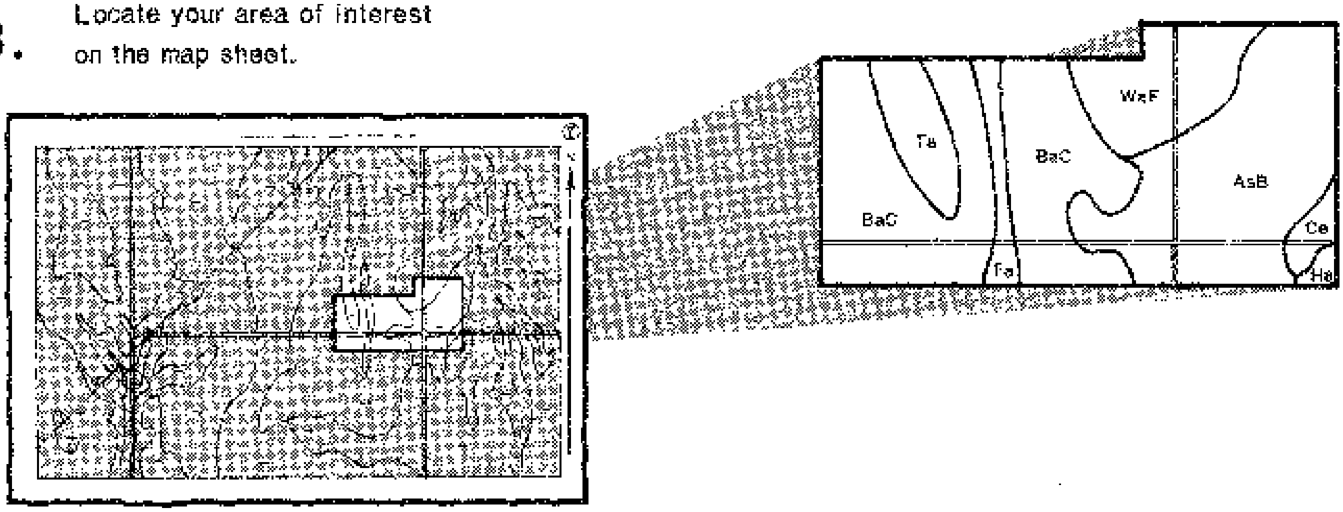
1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).



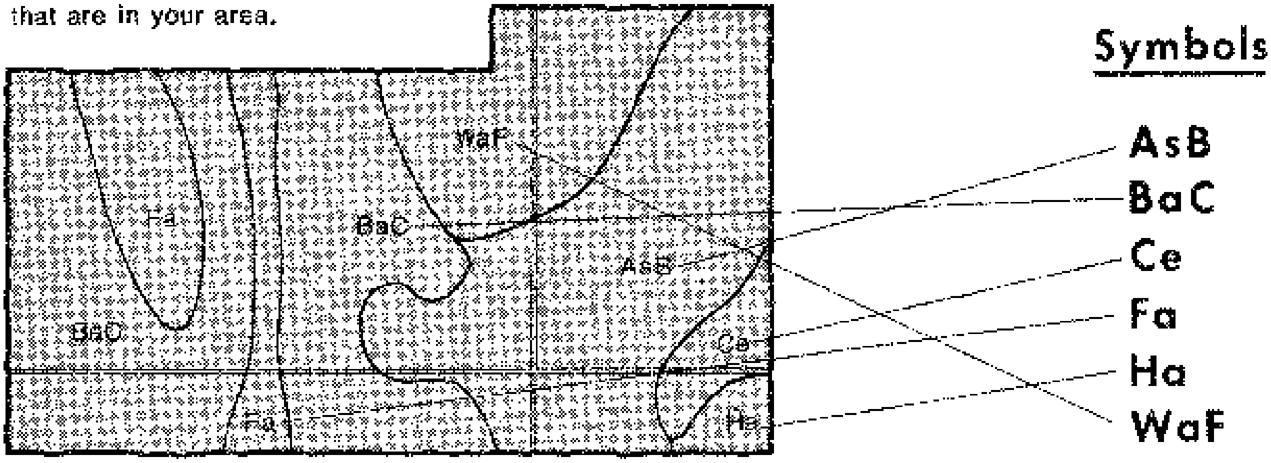


2. Note the number of the map sheet and turn to that sheet.

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

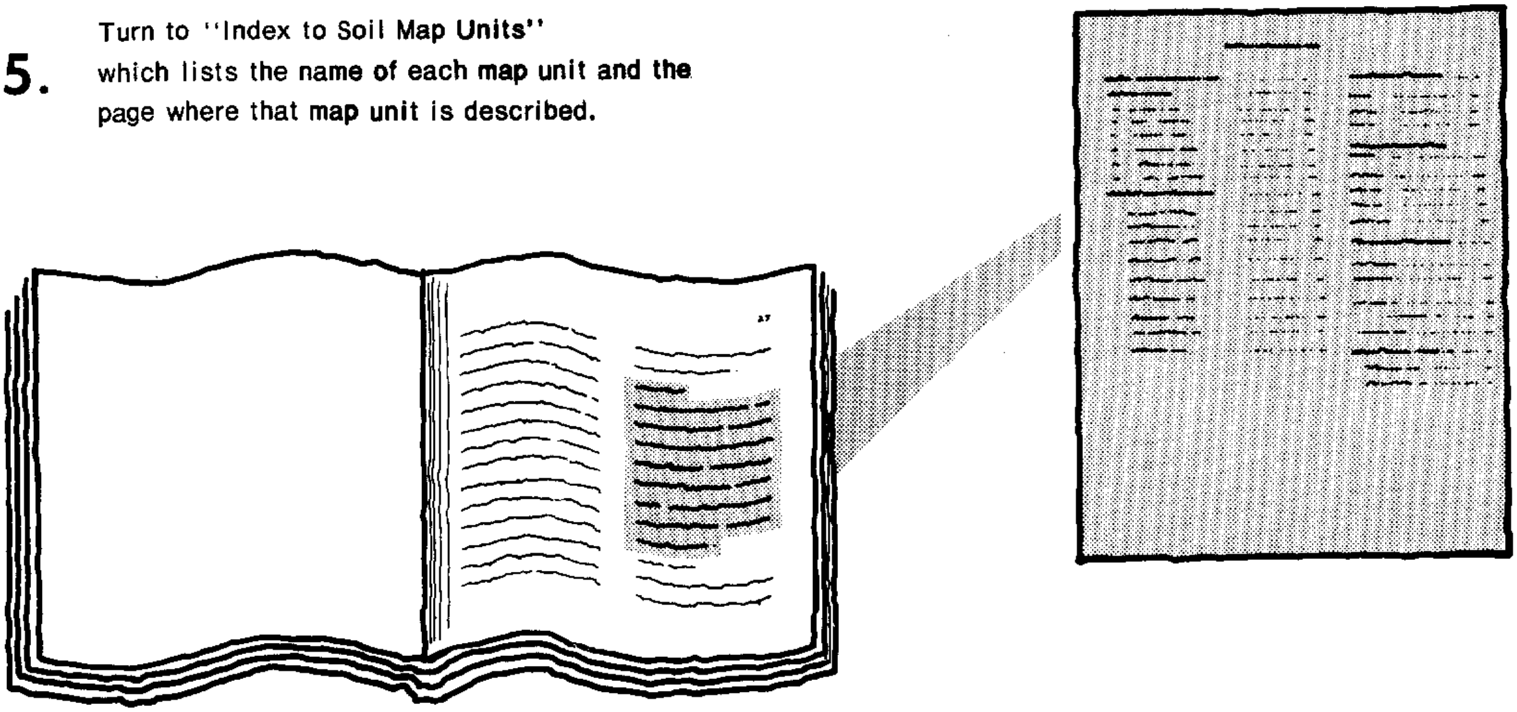


4. List the map unit symbols that are in your area.

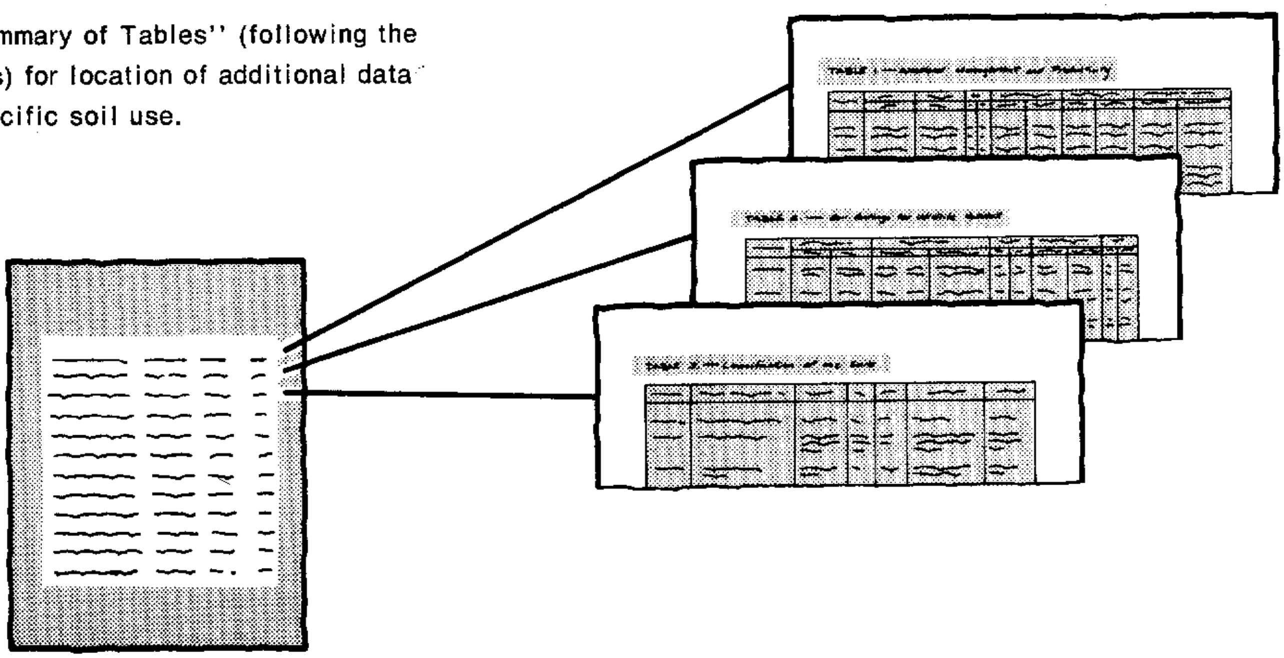


THIS SOIL SURVEY

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



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



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

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

Major fieldwork for this soil survey was completed in the period 1970-76. Soil names and descriptions were approved in 1976. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1976. This 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 Richland Soil and Water Conservation District.

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

Cover: Coastal bermudagrass hay cut from an area of Fuquay sand, 2 to 6 percent slopes.

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Issued September 1978

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Foreword

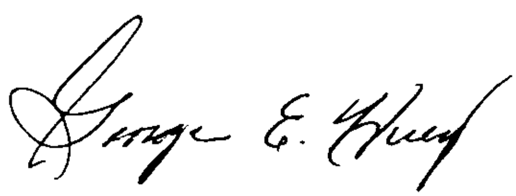
The soil survey of Richland County, South Carolina, contains much information useful in any land-planning program. Of prime importance are the predictions of soil behavior for selected land uses. Also highlighted are limitations or hazards to land uses that are inherent in the soil, improvements needed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

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

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

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

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



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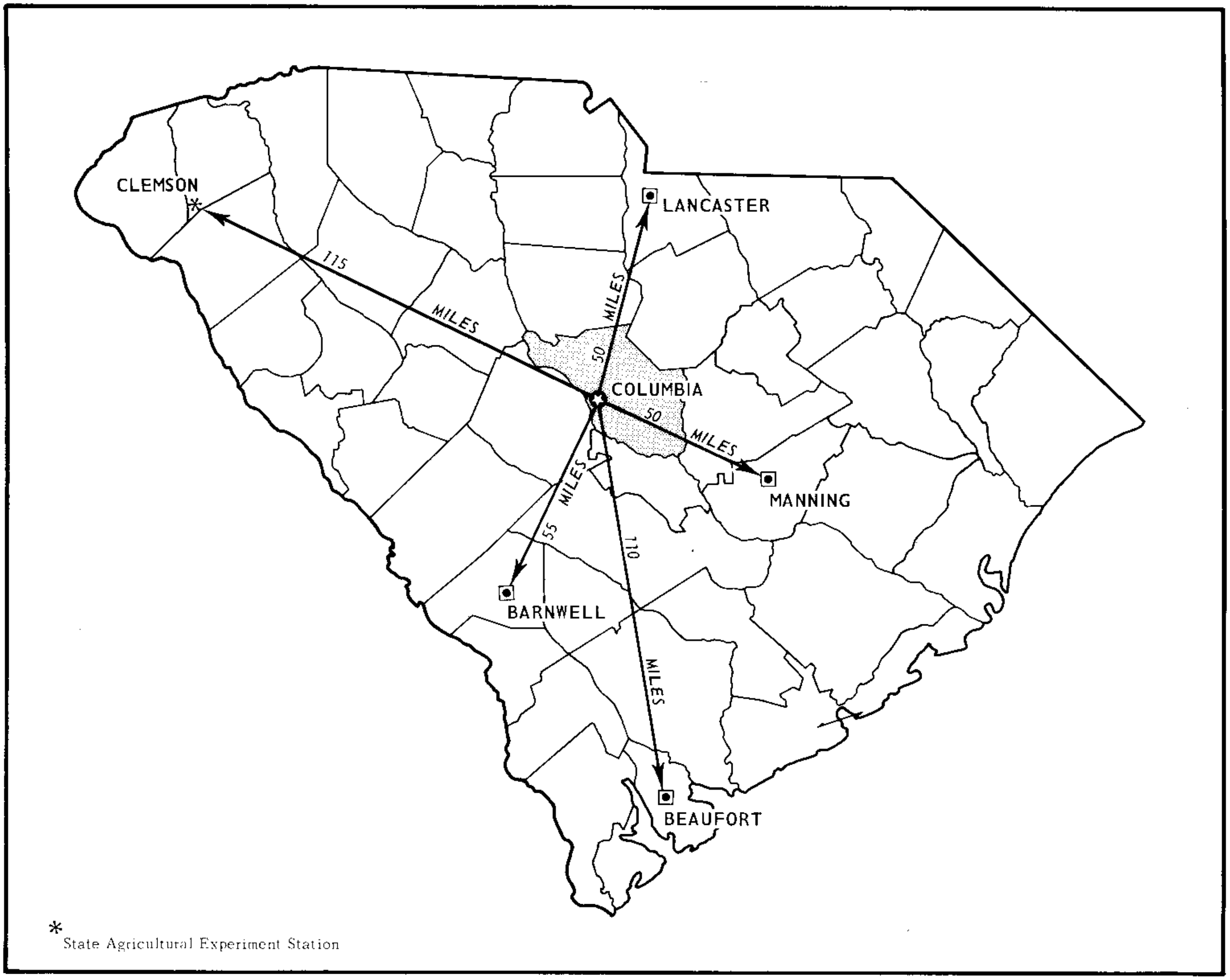

Location of Richland County in South Carolina.

SOIL SURVEY OF RICHLAND COUNTY, SOUTH CAROLINA

By Carl B. Lawrence, Soil Conservation Service

Fieldwork by Carl B. Lawrence, Gilbert Wade Hurt, Daniel D. Monts, and James H. Allen, Soil Conservation Service

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

RICHLAND COUNTY is in the approximate center of South Carolina (See map on opposite page.) It has a population of 233,868. Columbia, the capital of South Carolina and county seat of Richland County, has a population of 113,542. The total land area of Richland County is about 748 square miles, or 479,000 acres. Fort Jackson occupies about 55,000 acres of this area. The county is rapidly becoming urbanized as farm acreage decreases (fig. 1), and urban and other built-up areas cover more than 84,000 acres.

The northwestern third of the county is in the Southern Piedmont province. It is a rolling to hilly, dissected plateau, and it is drained by numerous creeks. The Broad River flows southeasterly through this province and joins the Saluda River at Columbia. These two tributaries form the Congaree River. The lower two-thirds of the county is in the Coastal Plain province. The upper half is the rolling Sand Hills, and the lower half is a smooth plain that has mostly gentle slopes. The southeastern boundary of the county is the Wateree River. The southwestern and southern boundary of the county is the Congaree River.

Elevation ranges from a low of about 80 feet at the confluence of the Congaree and Wateree Rivers in the southern part of the county to a high of about 550 feet in the northern part. In the lower half of the Coastal Plain province, the elevation of the upland ranges from 100 to about 250 feet. In the Sand Hills of the Coastal Plain province and in the Piedmont province, elevation of the ridges commonly ranges from 300 to 400 feet.

General nature of the county

The earliest farming in the county was by more or less permanent hunters and trappers or owners of herds of cattle and sheep (*7*). These early settlers grew vegetables for their own use in small clearings in the pine woods. The first settlements began about the middle of the 18th century; this was the beginning of agricultural development. Raising stock continued to be important, but gradually, as markets developed for crops, cotton became a cash crop. Wheat was grown both for market and home use. Indigo and tobacco were at one time important crops.

Prior to the Civil War the better farming of the county was on the large plantations. The war was followed by a long period of depression, but eventually farming and other phases of agriculture again became the leading occupations. Markets and transportation developed. As cotton became higher priced other crops were reduced in acreage, and a one-crop system developed. Turpentine and lumber industries also became important during this period, but farming continued to develop after these industries declined.

Since World War II farm operations in the county have declined. Presently, most of the intensive, full-time farming is concentrated in the southern part of the county. Urban land and other built-up areas increased from 48,577 acres in 1958 to 84,127 acres at the end of 1967—an increase of about 73 percent in the 10-year period.

Climate

Richland County is hot and generally humid in summer because of moist air from the ocean. Winter is moderately cold but short, because cold waves from the north are impeded by the mountains to the northwest of the county. 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 Columbia, South Carolina, for the period 1951 to 1973. 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 48 degrees F, and the average daily minimum temperature is 38 degrees. The lowest temperature on record, which occurred at Columbia on January 9, 1970, is 7 degrees. In summer the average temperature is 80 degrees, and the average daily maximum temperature is 91 degrees. The highest recorded temperature, which occurred on June 27, 1954, is 107 degrees.

Growing degree days, shown in table 1, 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.

Of the total annual precipitation, 27 inches, or 57 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 22 inches. The heaviest 1-day rainfall during the period of record was 5.90 inches at Columbia on September 30, 1960. Thunderstorms occur about 54 times each year, and about 32 of these occur in summer.

Snowfall is rare; in 38 percent of the winters, there is no measureable snowfall. In 55 percent, the snowfall is less than 2 inches. The heaviest 1-day snowfall on record was more than 14 inches.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The percentage of possible sunshine is 65 in summer and 60 in winter. The prevailing wind is from the southwest. Average windspeed is highest, 9 miles per hour, in April.

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

Climatic data in this section were specially prepared for the Soil Conservation Service by the National Climatic Center, Asheville, North Carolina.

Physiography, geology, relief, and drainage

Richland County lies in two physiographic provinces: the Piedmont Plateau and the Atlantic Coastal Plain. About one-third of the county is in the Piedmont province and two-thirds is in the Coastal Plain province. These two provinces join along an irregular line that extends north from the vicinity of Columbia and runs west of U.S. Highway 21 to Blythewood. From Blythewood this line extends southeast and crosses the Kershaw County line at the confluence of Twenty-Five Mile Creek and Rice Creek.

The Piedmont province has numerous streams and drainageways that have dissected it in a dendritic pattern. Its main divides and ridgetops are fairly broad and are gently sloping to moderately sloping toward the streams. The flood plains along streams are narrow. In many places along the small branches there are no flood plains. Along the major branches and creeks, the side slopes are strongly sloping to moderately steep. Steep slopes prevail close to and along the Broad River. Elevation of the ridgetops is commonly 300 to 400 feet but ranges up to 500 feet. Elevation along the streams is commonly 200 to 300 feet.

In Richland County, all of the rocks in the Piedmont Plateau are grouped in a geologic belt known as the Carolina Slate Belt (*4*). This rock is shale and schist, not true slate. The principal rock type in this belt is argillite. It is fine grained and is high in silica and alumina. Many similar rock types and volcanic intrusions are included. Slate rock underlies the soils in the Nason-Georgeville map unit (described in the section "General soil map for broad land use planning"). The parent material of most soils in this unit is weathered from this rock.

Two intrusions of coarse grained granite occur in the county. One is along the Broad River north of Columbia, just south of Cedar Creek; the other is on the steep slopes adjacent to the forks of the Broad and Saluda Rivers. This coarse grained granite underlies Wedowee soils.

The northern half of the Coastal Plain province in Richland County is known as the "Sand Hills." It joins the Piedmont province, which is to the north and west. The southern boundary of the Sand Hills extends from Columbia southeast to the Wateree River and Colonels Creek. The Sand Hills has many springs, and the numerous streams which originate here are fed by ground water and have a strong flow throughout the year. These streams flow through the more level part of the Coastal Plain in narrow valleys, and they have few tributaries. Elevations along the streams dissecting this region range from about 200 to 300 feet.

The tops of the main ridges of the Sand Hills are part of a plain that has mostly gentle slopes and elevations of 350 to 500 feet. The side slopes and smaller ridges have elevations ranging approximately from 300 to 400 feet. Slopes are gentle to strong.

The principal geologic formation in the Sand Hills and underlying the more level parts of the Coastal Plain is the Tuscaloosa (*3*). It consists of unconsolidated marine deposits of light colored sands and kaolin clays. Most of the soils of the Sand Hills (see descriptions of Sand Hill soils in section "General soil map for broad land use planning") are formed in sediment of this formation.

The lower or southern half of the Coastal Plain, between the flood plain of the Congaree River and the Sand Hills, is smooth and has broad stream divides and nearly level to gentle slopes. Many shallow depressions have an apparent water table. Streams cross this region, but very few originate within it. Elevations of the upland range from 100 feet to about 250 feet.

In the geologic past much of the lower Coastal Plain has been altered by three invasions of the sea which formed three terraces and formations—the Brandywine, the Coharie, and the Sunderland. Leveling off of the surface by the sea during these invasions has affected the topography and sedimentation of this part of the Coastal Plain. This region includes soils such as Dothan, Marlboro, Norfolk, Faceville, and Orangeburg.

The region also includes a large area of flood plain, 1/2 mile to 5 miles wide, that extends along the Congaree River. The dominantly silty and clayey alluvial sediment of this flood plain overlies the marine sediment of the Coastal terraces and formations. This flood plain sediment is largely derived from soil materials washed from the higher Piedmont province.

How this survey was made

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

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

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

The areas shown on a soil map are called soil map units. Some map units are made up of one kind of soil, others are made up of two or more kinds of soil, and a few have little or no soil material at all. Map units are discussed in the sections "General soil map for broad land use planning" and "Soil maps for detailed planning."

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

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

General soil map for broad land use planning

The general soil map at the back of this publication shows, in color, map units that have a distinct pattern of soils and of relief and drainage. Each map unit 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 provides a broad perspective of the soils and landscapes in the survey area. It provides a basis for comparing the potential of large areas for general kinds of land use. Areas that are, for the most part, suited to certain kinds of farming or to other land uses can be identified on the map. Likewise, areas of soils having properties that are distinctly unfavorable for certain land uses can be located.

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

The soils in the survey area vary widely in their potential for major land uses. Table 4 shows the extent of the map units shown on the general soil map and gives general ratings of the potential of each, in relation to the other map units, for major land uses. Soil properties that pose limitations to the use are indicated. The ratings of soil potential are based on the assumption that practices in common use in the survey area are being used to overcome soil limitations. These ratings reflect the ease of overcoming the soil limitations and the probability of soil problems persisting after such practices are used.

Each map unit is rated for *cultivated farm crops*, *woodland*, *urban uses*, and *recreation uses*. Cultivated farm crops are those grown extensively by farmers in the survey area. Woodland refers to land that is producing either trees native to the area or introduced species. Urban uses include residential, commercial, and industrial developments. Recreation uses include campsites, picnic areas, ballfields, and other areas that are subject to heavy foot traffic.

Map units and delineations on the general soil map in this soil survey do not fully agree with those of the general soil maps in adjacent counties published at a different date. Differences in the maps are the result of improvements in the classification of soils, particularly in the modifications or refinements in soil series concepts. In addition, more precise and detailed maps are needed because the uses of the general soil map have expanded in recent years. The more modern maps meet this need. Still another difference is caused by the range in slope that is permitted within units in different surveys.

Gently sloping to steep soils on the Southern Piedmont

One map unit is in this group. It is mostly on ridges where the soils are gently sloping to moderately sloping but gradually grade to steep near the streams. Elevation ranges from about 200 to 400 feet. For the most part soils in this unit are well drained. They have a loamy surface layer and a clayey subsoil. They are underlain by slate bedrock.

1. Nason-Georgeville

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

This map unit consists of deep, gently sloping to steep, well drained soils. The soils in this unit formed in residuum weathered from fine textured rocks such as phyllites or Carolina slates. They are in the northern part of the county.

The soils of this map unit occupy 28 percent of the county. About 36 percent of the unit is Nason soils, and 30 percent is Georgeville soils. The remaining 34 percent is minor soils.

Nason soils have a silt loam surface layer and a reddish yellow to yellowish red, friable, clayey subsoil. Rippable rock is at a depth of 40 to 60 inches. Georgeville soils have a silt loam surface layer and a red, friable, clayey subsoil. Hard rock is at a depth of more than 60 inches.

Among the minor soils in this unit are Herndon, Chewacla, and Congaree. Herndon soils are similar to Georgeville soils and are in similar positions on the landscape. They have a yellower subsoil than Georgeville soils. Chewacla and Congaree soils are on the nearly level flood plains. Chewacla and Congaree soils are frequently flooded.

This map unit is used mainly for woodland, but some tracts are used for cultivated crops and pasture. Most of the acreage was cleared but has been largely reforested. A large acreage is idle. Slope is the main limitation to use of these soils for farming. Urban use is limited by permeability, depth to rock, and slope.

If erosion is controlled, the soils have medium potential for cultivated crops. They have medium potential for pine timber and medium potential for urban use.

Nearly level to strongly sloping soils on the Sand Hills

Four map units are in this group. These units are on the upper Coastal Plain at elevations of 200 to 500 feet and are underlain by the Tuscaloosa Formation. The soils in these units are nearly level to strongly sloping. They are dominantly well drained on the higher plains and side slopes and somewhat poorly drained in the valleys. They have a sandy surface layer and a dominantly loamy subsoil.

2. Lakeland

Excessively drained soils that are sandy throughout

This map unit consists of deep, gently sloping to strongly sloping, excessively drained soils that formed in sandy marine sediment. These soils are in the eastern and northeastern parts of the county. They are on ridgetops and side slopes in the Sand Hill region.

The soils of this unit occupy about 11 percent of the county. About 70 percent of the unit is Lakeland soils, and the remaining 30 percent is minor soils.

Lakeland soils have a dark gray sandy surface layer. The underlying material is sandy to a depth of more than 80 inches.

Among the minor soils in this unit are moderately well drained Blanton and Pelion soils, excessively drained Kershaw soils, and well drained Vaucluse soils.

This unit is used mainly for unimproved woodland. Very low available water capacity and low inherent fertility are the main limitations of these soils for farming. The very rapid permeability of the soils can cause contamination of water supply and limit urban uses.

The soils have medium potential for pine timber and low potential for cultivated crops. They have high potential for urban development if the hazard of water contamination is overcome.

3. Vaucluse-Ailey-Pelion

Well drained and moderately well drained soils that have a sandy surface layer and a loamy subsoil; many have a fragipan in the subsoil

This unit consists of deep, mostly sloping to strongly sloping, well drained and moderately well drained soils that formed in loamy Coastal Plain sediment. These soils are in the eastern part of the county. They are on side slopes.

The soils of this unit occupy about 10 percent of the county. About 40 percent of the unit is Vaucluse soils, 20 percent is Ailey soils, and 10 percent is Pelion soils. The remaining 30 percent is minor soils.

Vaucluse soils are on the upper part of side slopes and on slope breaks. They are well drained. They have a loamy sand surface layer and a loamy subsoil. These soils have a firm, slowly permeable fragipan in the subsoil. Ailey soils are mostly on toe slopes. They are well drained. These soils have thick, sandy surface and subsurface layers and a loamy subsoil. They have a firm, slowly permeable fragipan in the subsoil. Pelion soils are mostly on low toe slopes and in gently sloping stream valleys. They are moderately well drained. These soils have a loamy sand surface layer and a firm, slowly permeable, loamy subsoil.

Among the minor soils in this unit are very poorly drained Johnston soils along the streams and, mostly on the ridges, excessively drained Lakeland soils, well drained Troup and Fuquay soils, and moderately well drained Blanton soils. Troup and Blanton soils have sandy surface and subsurface layers that extend to a depth of 40 to 80 inches.

This unit is used mostly for pine. Much of this acreage is abandoned cropland. A few areas, mostly of the minor soils, are used for crops and pasture. The slowly permeable, firm subsoil and strong slopes are the main limitations of these soils for farming and urban uses.

The soils have low potential for cultivated crops. They have medium potential for pine timber and for urban uses.

4. Fuquay-Troup-Vaucluse

Well drained soils that have sandy surface and subsurface layers and a loamy subsoil; some have a fragipan in the subsoil

This map unit consists of deep, nearly level to strongly sloping, well drained soils that formed in sandy and loamy Coastal Plain sediment. These soils are in the east-central part of the county. They are on ridgetops and side slopes in the Sand Hill region.

The soils of this unit occupy about 4 percent of the county. About 32 percent of the unit is Fuquay soils, 13 percent is Troup soils, and 13 percent is Vaucluse soils. The remaining 42 percent is minor soils.

Fuquay soils are nearly level to gently sloping and are on ridgetops. They have sandy surface and subsurface layers that extend to a depth of 20 to 40 inches. Troup soils are gently sloping to nearly level and are on ridgetops. They have sandy surface and subsurface layers that extend to a depth of 40 to 80 inches. Vaucluse soils are sloping to strongly sloping and are on side slopes that are parallel to drainageways. They have sandy surface and subsurface layers that extend to a depth of less than 20 inches. They have a fragipan in the subsoil.

Among the minor soils in this unit are moderately well drained Blanton soils, well drained Ailey and Lakeland soils, and the very poorly drained Johnston soils.

This unit is used mainly for timber, but some large tracts have been cleared and are used for cultivated crops and pasture. Low available water capacity and low inherent fertility are the main limitations of these soils for farming and for most other uses.

The soils have medium potential for cultivated crops if water management is good and if crops are fertilized. They have medium potential for woodland and high potential for urban uses.

5. Pelion-Johnston-Vaucluse

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

This unit consists of deep, gently sloping to strongly sloping, moderately well drained and well drained soils and nearly level, very poorly drained soils. These soils formed in loamy Coastal Plain sediment. They are in the eastern part of the county in valleys in the Sand Hill region.

The soils of this unit occupy about 10 percent of the county. About 55 percent of the unit is Pelion soils, 17 percent is Johnston soils, and 11 percent is Vaucluse soils. The remaining 17 percent is minor soils.

Pelion soils are mostly on lower parts of side slopes and in gently sloping stream valleys. They are moderately well drained. They have a loamy sand surface layer and a firm, slowly permeable loamy subsoil. Johnston soils are on flood plains. They are nearly level, are very poorly drained, and are frequently flooded. They have a thick, dark, loamy surface layer. Vaucluse soils are on higher parts of side slopes and slope breaks. They are well drained. They have a loamy sand surface layer and a loamy subsoil. These soils have a firm, slowly permeable fragipan in the subsoil.

Minor in this unit are excessively drained Lakeland soils, well drained Troup and Fuquay soils, moderately well drained Blanton soils, and Urban land. These soils are on ridgetops.

This unit is used mainly for woodland, but some tracts have been cleared and are used for pasture and cultivated crops. The slowly permeable, firm subsoil of Pelion and Vaucluse soils and the hazard of flooding on Johnston soils are the main limitations for farming and urban uses.

The soils have low potential for cultivated crops. They have medium to high potential for woodland and wildlife habitat. If limitations of Pelion and Vaucluse soils are overcome, these soils are generally satisfactory for urban uses. The very poorly drained Johnston soils are not suited to urban uses.

Nearly level to sloping soils on the Coastal Plain

Three map units are in this group. They are on smooth ridges and on stream terraces of the Coastal Plain. The soils are nearly level to sloping. Elevations are 100 to 250 feet. Most of the soils in these units are well drained and moderately well drained, but some are poorly drained. The soils have a sandy or loamy surface layer and a loamy or clayey subsoil.

6. Orangeburg-Norfolk-Marlboro

Well drained soils that have a sandy or loamy surface layer and a loamy or clayey subsoil

This map unit consists of deep, nearly level to sloping, well drained soils that formed in loamy and clayey Coastal Plain sediment. These soils occur in the southeastern part of the county. They are on broad ridges of the Coastal Plain (fig. 2).

The soils of this map unit occupy about 13 percent of the county. About 29 percent of this unit is Orangeburg soils, 23 percent is Norfolk soils, 12 percent is Marlboro soils, and the remaining 36 percent is minor soils.

Orangeburg soils have a yellowish red and red sandy clay loam subsoil. They are nearly level to sloping. Norfolk soils have a yellowish brown sandy clay loam subsoil, and Marlboro soils have a yellowish brown sandy clay subsoil. Both Norfolk and Marlboro soils are nearly level to gently sloping.

Among the minor soils in this unit are the well drained Dothan, Faceville, and Fuquay soils on the ridges, the well drained Ailey and Vaucluse soils on the side slopes, the poorly drained Coxville and Rains soils in depressions, and the very poorly drained Johnston soils along the streams.

This map unit is used mainly for cultivated crops, such as soybeans, small grains, cotton, and corn. Some of it is urban land. Most of the city of Columbia is in this unit. Slope is the main limitation of these soils for farming and most nonagricultural uses.

The soils have high potential for cultivated crops, pasture and hay grasses, timber, and residential and other urban uses.

7. Dothan-Clarendon

Well drained and moderately well drained soils that have a sandy or loamy surface layer and a loamy subsoil

This map unit consists of deep, nearly level to gently sloping, well drained and moderately well drained soils that formed in loamy Coastal Plain sediment. These soils are in the southeastern part of the county. They are on broad ridges and flats of the Coastal Plain.

The soils of this map unit occupy about 5 percent of the county. About 64 percent of this unit is Dothan soils, 10 percent is Clarendon soils, and the remaining 26 percent is minor soils.

Dothan soils are slightly higher in elevation than Clarendon soils. Dothan soils are nearly level to gently sloping and well drained. Clarendon soils are nearly level and moderately well drained.

Among the minor soils in this unit are the poorly drained Coxville and Rains soils, the very poorly drained Johnston soils, and the well drained Fuquay soils. Coxville and Rains soils are in nearly level, oval depressions and Johnston soils are on flood plains. Fuquay soils and Dothan soils are in similar positions on the landscape.

This map unit is used mainly for cultivated crops, such as soybeans, small grain, cotton, corn, and pasture. Most of the acreage has been cleared, and some has been drained.

If adequately drained where required, these soils have high potential for cultivated farm crops, pasture grasses, and timber. They have high potential for urban uses, but some soils are moderately limited by a seasonal high water table and slow permeability.

8. Persanti-Cantey-Goldsboro

Moderately well drained soils that have a loamy surface layer and a clayey or loamy subsoil and poorly drained soils that have a loamy surface layer and a clayey subsoil

This map unit consists of deep, nearly level, moderately well drained and poorly drained soils that formed in loamy and clayey Coastal Plain sediment. These soils are in the southern and eastern parts of the county. They parallel the flood plains of the Congaree and Wateree Rivers.

This map unit occupies about 5 percent of the county. It is about 29 percent Persanti soils, 22 percent Cantey soils, and 13 percent Goldsboro soils. The remaining 36 percent is minor soils.

Persanti soils are slightly higher in elevation than Cantey soils. They are moderately well drained. They have a clayey subsoil. Cantey soils are on lower parts of the landscape. They are poorly drained. They, too, have a clayey subsoil. Goldsboro soils are also slightly higher in elevation than Cantey soils. They are moderately well drained, and they have a loamy subsoil. All of these soils—Persanti, Cantey, and Goldsboro—have a seasonal high water table.

Among the minor soils in this unit are the somewhat poorly drained Smithboro soils, the poorly drained Rains soils, and the very poorly drained Johnston soils.

This map unit is used mainly for improved timber production. Some tracts have been cleared and drained and are used for cultivated crops and pasture. Wetness is the main limitation of these soils for farming and for most other uses.

Where adequately drained, these soils have medium potential for cultivated crops and pasture. They have high potential for woodland. They have low potential for urban development because the combination of slow permeability and wetness is a severe limitation.

Nearly level soils on flood plains

One map unit is in this group. This unit is mostly on broad flood plains of the Congaree and Wateree Rivers. Elevations are less than 100 feet. These soils are nearly level and are well drained to poorly drained. No surface drainage pattern is established. Flooding is frequent. The soils have a loamy surface layer and a loamy or clayey subsoil.

9. Congaree-Tawcaw-Chastain

Well drained to moderately well drained soils that are loamy throughout and somewhat poorly drained and poorly drained soils that have a loamy surface layer and a clayey subsoil

This map unit consists of deep, nearly level, well drained to poorly drained soils that formed in alluvial sediment from Piedmont soils. These soils are on flood plains of the Broad, Congaree, and Wateree Rivers.

The soils of this map unit occupy about 14 percent of the county. The unit is about 37 percent Congaree soils, 31 percent Tawcaw soils, and 14 percent Chastain soils. The remaining 18 percent is minor soils.

The Congaree soils are at higher elevations and are closer to the streams than Tawcaw soils. They are well drained to moderately well drained. The Tawcaw soils are somewhat poorly drained. Chastain soils are in depressions and sloughs and are flooded most of the year. They are poorly drained.

Among the minor soils in this unit are the well drained Toccoa soils, the somewhat poorly drained Chewacla soils, and the very poorly drained Dorovan and Johnston soils.

Most of this map unit is used for woodland, and on many tracts along the Wateree River the woodland is grazed. This unit is cultivated in a large area, 4 or 5 miles wide, that is below Columbia. Crops are soybeans, corn, hay, and pasture grasses.

Flooding and wetness are the main limitations of the soils. Because of these limitations, most of the soils have a low potential for crops and urban uses. Establishing adequate drainage and flood control for crop production is difficult. These soils have high potential for timber production and generally have medium potential for wildlife habitat.

Soil maps for detailed planning

The map units shown on the detailed soil maps at the back of this publication represent the kinds of soil in the survey area. They are described in this section. The descriptions together with the soil maps can be useful in determining the potential of a soil and in managing it for food and fiber production; in planning land use and developing soil resources; and in enhancing, protecting, and preserving the environment. More information for each map unit, or soil, is given in the section "Use and management of the soils."

Preceding the name of each map unit is the symbol that identifies the soil on the detailed soil maps. Each soil description includes general facts about the soil and a brief description of the soil profile. In each description, the principal hazards and limitations are indicated, and the management concerns and practices needed are discussed.

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

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

Soils of one series can differ in texture of the surface layer or in the underlying substratum and in slope, erosion, stoniness, salinity, wetness, or other characteristics that affect their use. On the basis of such differences, a soil series is divided into phases. The name of a *soil phase* commonly indicates a feature that affects use or management. For example, Orangeburg loamy sand, 2 to 6 percent slopes, is one of several phases within the Orangeburg series.

Some map units are made up of two or more dominant kinds of soil. Such map units are called soil complexes.

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

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

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

The acreage and proportionate extent of each map unit are given in table 5, and additional information on properties, limitations, capabilities, and potentials for many soil uses is given for each kind of soil in other tables in this survey. (See "Summary of tables.") Many of the terms used in describing soils are defined in the Glossary.

AeC—Ailey loamy sand, 2 to 10 percent slopes. This deep, well drained, gently sloping to sloping soil is on side slopes and toe slopes in the Coastal Plain uplands. Slopes are generally smooth, but some are irregular.

Typically, the surface layer is dark grayish brown loamy sand about 5 inches thick. The subsurface layer is light yellowish brown loamy sand about 25 inches thick. The subsoil extends to a depth of 81 inches. The upper 8 inches of the subsoil is yellowish brown sandy clay loam; the next 31 inches is a firm, compact, brittle fragipan of mottled yellowish red, strong brown, and yellowish brown sandy clay loam; and the lower 12 inches is friable, mottled, light gray sandy clay loam.

Included with this soil in mapping are small areas of Pelion, Vaucluse, Fuquay, Lakeland, and Lucy soils. Also included are small areas of soils that have slopes of more than 10 percent and small areas of soils that have sand surface and subsurface layers more than 40 inches thick. Inclusions make up about 10 to 15 percent of the map unit.

This soil is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed. Organic matter content is low. In the thick, sandy surface and subsurface layers, permeability is rapid; in the firm, brittle fragipan, permeability is slow. Available water capacity is low. In the lower part of the subsoil the downward movement of water is retarded, but tree roots and roots of deep-rooted perennials are not restricted. Most of the acreage is wooded.

This soil has low potential for cultivated crops. It has medium potential for pasture and hay. Low available water capacity in the sandy surface and subsurface layers contributes to droughtiness and to excessive leaching of plant nutrients. Gullies form where water concentrates from seepage over the fragipan. Terracing, annual cover crops, and cropping systems that include frequent close-growing crops are needed if this soil is cultivated. Coastal bermudagrass and bahiagrass are suitable for pasture or hay. They must be properly managed to prevent overharvesting or overgrazing.

This soil has medium potential for loblolly and slash pine.

This soil has high potential for urban development. Limitations are moderate for most urban uses and can be overcome by careful planning and installation procedures. Slow permeability in the fragipan severely limits the use of this soil for septic tank filter fields. Capability subclass IVs; woodland group 3s.

AtA—Altavista silt loam, 0 to 2 percent slopes. This moderately well drained, nearly level soil is on stream terraces in the Piedmont province of the county. It overlies bedrock of Carolina slate.

Typically, the surface layer is grayish brown silt loam about 7 inches thick. The subsoil extends to a depth of 39 inches. In sequence from the top, the upper 17 inches is dominantly brownish yellow silt loam; the next 16 inches is brownish yellow loam and has light gray mottles; and the lower 6 inches is strong brown and light gray loam. The underlying material, to a depth of 49 inches, is light gray and strong brown loam. Slate rock is below this depth.

Included with this soil in mapping are small areas of State, Chewacla, and Congaree soils; a few soils that have dominantly gray colors in the surface layer; a few soils that do not have gray mottles in the subsoil; and a few soils in which bedrock is above a depth of 40 inches or is deeper than 6 feet. Also included are a few areas along Crane Creek of a soil that is similar to this Altavista soil except that it has a clayey subsoil.

This soil is very strongly acid to medium acid throughout. Organic matter content is low. Permeability is moderate, and available water capacity is medium to high. Runoff is slow. This soil is flooded rarely for very brief periods. A water table is at a depth of 20 to 30 inches in wet seasons.

This soil has high potential for corn, soybeans, small grain, hay, and pasture. Wetness is the main hazard to farming. This hazard can be overcome and tilth can be improved by draining this soil. Open ditches, tile drains, or a combination of both of these is suitable. Diversion of runoff water from adjacent higher land is desirable in places. Tall fescue, dallisgrass, and Coastal bermudagrass are suited grasses for hay or pasture.

This soil has high potential for loblolly pine and bottomland hardwoods, such as sweetgum, poplar, cherrybark oak, and sycamore.

This soil has low potential for urban development. Wetness causes severe limitations for urban use, but this limitation can be overcome by properly designed drainage systems and appropriate building construction. Flooding is severe in some areas where land use on higher uplands has caused increase in runoff. Prior planning and special designs are needed to help overcome this hazard. Capability subclass IIw; woodland group 2w.

BaB—Blanton sand, 0 to 6 percent slopes. This deep, moderately well drained, nearly level to gently sloping soil is on convex side slopes in the Coastal Plain uplands.

Typically, the surface layer is dark grayish brown sand about 9 inches thick. The subsurface layer is pale yellow or very pale brown sand about 41 inches thick. The subsoil to a depth of 96 inches is 11 inches of brownish yellow sandy clay loam over 35 inches of mottled light gray, brownish yellow, reddish yellow, yellowish red, and red sandy clay loam.

Included with this soil in mapping are small areas of Fuquay, Lakeland, Lucy, and Troup soils. Also included are areas of soils that have a loamy sand surface layer and a few areas of soils that have more than 5 percent nodules of plinthite between depths of 40 and 60 inches. Small wet areas are included and are shown by a wet spot symbol.

This soil is very strongly acid to medium acid in the surface and subsurface layers and very strongly acid or strongly acid in the subsoil. Organic matter content is low. Permeability is rapid in the sandy surface and subsurface layers and is moderate in the subsoil. Available water capacity is low. After prolonged or heavy rains this soil has a perched water table at the top of the subsoil. This soil has good tilth and a deep rooting zone.

This soil has low potential for row crops. It is limited because the thick sandy surface and subsurface layers are droughty and allow plant nutrients to leach rapidly. For good crop production this soil requires more than average amounts of fertilizer. Lime and fertilizer are more efficient when applied frequently and in small amounts. This soil has medium potential for deep-rooted perennials, such as Coastal bermudagrass for hay and pasture. Cropping practices which supply a large amount of organic residue conserve moisture and reduce leaching.

This soil has medium potential for slash and loblolly pine.

This soil has high potential for urban uses. Except for those uses adversely affected by the deep sandy surface and subsurface layers, this soil has few limitations for urban development. Capability subclass IIIs; woodland group 3s.

Ca—Cantey loam. This deep, poorly drained, nearly level soil is on flats and in slight depressions on the terraces in the valley of the Congaree and Wateree Rivers.

Typically, the surface layer is very dark gray loam about 5 inches thick. The subsoil to a depth of 81 inches is 3 inches of light brownish gray sandy loam that has brownish yellow mottles, 49 inches of gray clay mottled with yellowish brown, and 24 inches of mottled brownish yellow, pale brown, and light gray sandy clay loam.

Included with this soil in mapping are small areas of Persanti, Smithboro, Coxville, and Johnston soils. Also included are some areas of soils that have a sandy loam or silt loam surface layer; a few areas that have a black, very dark gray, or very dark grayish brown surface layer more than 10 inches thick; and a few areas of soils that have a sandy layer below a depth of 40 inches.

This soil is very strongly acid or strongly acid throughout. Permeability is slow, and available water capacity is medium. This soil has poor tilth. It has a high water table for 4 to 6 months in most years, and water ponds on the surface after rains.

This soil has low potential for row crops. Poor drainage, or wetness, is the main hazard. Drainage is not economically feasible in many fields. When drained, this soil has high potential for pasture and hay. Corn can be grown, but planting dates are delayed in some years because of wet field condition.

This soil has high potential for swamp-type hardwoods and loblolly and slash pine. Drainage improves the site quality for pines and reduces seedling mortality.

This soil has low potential for urban development. Wetness, flooding, and high content of clay severely limit this soil for most urban uses. Capability subclass IVw; woodland group 2w.

Cd—Chastain silty clay loam. This deep, poorly drained, nearly level soil is in depressional sloughs on flood plains of the Wateree and Congaree Rivers. This soil is commonly flooded. Areas are 10 to 400 acres in size.

Typically, the surface layer is grayish brown silty clay loam about 4 inches thick. The subsoil extends to a depth of 41 inches. The upper 14 inches is greenish gray silty clay loam mottled with yellowish brown, and the lower 23 inches is greenish gray silty clay mottled with dark yellowish brown and yellowish brown. The underlying material to a depth of 65 inches is greenish gray clay that has olive and yellowish brown mottles. Below this, to a depth of 82 inches, it is light brownish gray loamy sand.

Included with this soil in mapping is an area of soils that is approximtely 500 acres in size and is in the southeastern part of the county, west of U.S. Highway 601 and between the Congaree River and S.C. Highway 48. These soils are less frequently flooded than this Chastain soil and they have a nonacid subsoil. Also included are a few small areas of Tawcaw and Chewacla soils.

This soil is very strongly acid or strongly acid throughout. Permeability is slow, and available water capacity is high. This soil is flooded for very long periods throughout the year. All of the areas are in woodland.

This soil has low potential for row crops and pasture. It is severely limited by flooding and wetness. Drainage is very difficult to accomplish and is limited by slow permeability and lack of adequate outlets for the drainage system.

This soil has high potential for adapted swamp hardwoods.

The potential for urban uses is low. Extreme designs and modifications are needed to overcome the severe limitations caused by flooding, wetness, and slow permeability of the subsoil. Capability subclass VIIw; woodland group 2w.

Ce—Chewacla loam. This deep, somewhat poorly drained, nearly level soil is mostly on flood plains of the Congaree and Wateree Rivers. It is also in small narrow areas along the creeks and branches throughout the northern part of the county.

Typically, the surface layer is brown loam about 7 inches thick. The subsoil extends to a depth of 58 inches. The upper 6 inches of the subsoil is yellowish brown clay loam and has yellowish brown and black mottles; the next 7 inches is mottled yellowish brown, strong brown, pale brown, and black clay loam; the next 18 inches is yellowish brown loam and has yellowish red, black, and light gray mottles; the next 12 inches is dark yellowish brown loam and has pale brown, light gray, and black mottles; and the lower 8 inches is dark yellowish brown clay loam and has light gray and black mottles. The underlying material, to a depth of 75 inches or more, is mottled dark yellowish brown and light gray loam.

Included with this soil in mapping are small areas of Tawcaw, Congaree, and Chastain soils and some areas of soils that have a silt loam surface layer. Also included on the flood plains of the Wateree River are some areas of soils that overlie clayey Coastal Plain material at a depth of 50 to 80 inches.

This soil is strongly acid to slightly acid throughout. Permeability is moderate, and available water capacity is high. This soil is commonly flooded for brief periods and has a high water table at a depth of 6 to 18 inches from November through April.

This soil has medium potential for row crops, pasture, and hay. The water table and the flooding are the main hazards to farming. A complete drainage system that includes protection from flooding is needed if the potential of this soil for crops or pasture is to be realized.

This soil has high potential for bottom-land hardwoods and loblolly pine.

This soil has low potential for urban development. Wetness and flooding severely limit this soil for most urban uses. These limitations can be compensated for by proper design and construction procedures for certain specific urban uses. Capability subclass IVw; woodland group 1w.

CH—Chewacla soils. These somewhat poorly drained, nearly level soils are on flood plains and low terrraces along small streams and creeks. These soils formed in alluvial sediment washed from the Piedmont province section of the county.

Soils of the Chewacla series make up about 60 percent of this mapping unit. Soils that have a clayey subsoil and are similar to Chewacla soils, soils that have a well developed subsoil, and soils that have bedrock above a depth of 4 feet make up about 20 percent of the unit. Small areas of Chastain, Congaree, Toccoa, and Johnston soils make up the remaining 20 percent. Small areas of wet soils are shown by a wet spot symbol.

Typically, the surface layer is brown loam about 7 inches thick. The subsoil extends to a depth of 58 inches. The upper 6 inches is yellowish brown clay loam and has yellowish brown and black mottles; the next 7 inches is mottled yellowish brown, strong brown, pale brown, and black clay loam; the next 18 inches is yellowish brown loam and has yellowish red, black, and light gray mottles; the next 12 inches is dark yellowish brown and has pale brown, light gray, and black mottles; and the lower 8 inches is dark yellowish brown clay loam and has light gray and black mottles. The underlying material, to a depth of 75 inches or more, is mottled dark yellowish brown and light gray loam.

These soils are strongly acid to slightly acid throughout. Permeability is moderate, and available water capacity is high. Runoff is slow. Most areas are commonly flooded for brief periods from November through April, and the water table during this period is at a depth of 6 to 18 inches.

These soils have medium potential for row crops, pasture, and hay. The high water table and the flooding are the main hazards to farming. If drained by properly installed open ditches, tile drains, or both, these soils are suited to corn, soybeans, and pasture grasses. Planting dates are delayed by flooding or wetness in some years.

These soils have high potential for bottom-land hardwoods and loblolly pine.

These soils have low potential for urban development. Flooding and wetness are severe limitations that must be overcome for most urban uses. Capability subclass IVw; woodland group 1w.

Cn—Clarendon sandy loam. This deep, moderately well drained, nearly level soil is on flats and in slightly depressional areas on the Coastal Plain uplands to the east of Columbia between U.S. Highway 76 and S.C. Highway 48.

Typically, the surface layer is dark grayish brown sandy loam about 6 inches thick. The subsurface layer is pale brown sandy loam about 4 inches thick. The subsoil to a depth of 72 inches is 9 inches of pale brown sandy loam; 6 inches of mottled brown and red sandy clay loam; 26 inches of mottled yellowish brown, red, and gray sandy clay loam which contains 25 to 30 percent nodules of plinthite; 10 inches of mottled light gray sandy clay loam which contains 5 to 10 percent nodules of plinthite; and 11 inches of mottled light gray, white, light red, and brownish yellow sandy clay loam.

Included with this soil in mapping are small areas of Dothan, Goldsboro, and Fuquay soils. Also included are a few areas of soils that have slopes of more than 2 percent, a few areas of soils that have a clayey subsoil, and a few areas of soils that have a sandy clay loam, loam, or loamy sand surface layer. Small wet areas less than 2 acres in size are shown by a wet spot symbol.

This soil is strongly acid or very strongly acid thoughout except in areas where the surface is limed. Organic matter content is medium. Permeability is moderate in the upper part of the subsoil and is moderately slow in the lower part of it. Available water capacity is medium. In places this soil may have a perched water table on top of the layer containing plinthite after prolonged rains.

This soil has high potential for farming. It is well suited to corn, cotton, soybeans, wheat and other small grain, hay, and pasture, if the moderate limitation of wetness is overcome. Wetness can be controlled by open ditches or tile, or both, and sometimes by diverting seepage water from surrounding higher lying soils. Bahiagrass and bermudagrass are well suited for hay or pasture on this soil.

This soil has high potential for loblolly and slash pine. Sweetgum and sycamore are suited hardwoods.

This soil has medium potential for urban development. Wetness is the chief limitation for most urban uses. This limitation can be overcome by well planned drainage and construction designs for specific areas. Capability subclass IIw; woodland group 2w.

Co—Congaree loam. This deep, well drained to moderately well drained, nearly level soil is mostly on flood plains of the Congaree and Wateree Rivers. It is also in smaller areas along the Broad and Saluda Rivers and along creeks and branches in the northern part of the county.

Typically, the surface layer is dark brown loam about 8 inches thick. The underlying material to a depth of 80 inches is 14 inches of dark brown loam; 10 inches of dark brown very fine sandy loam; 6 inches of very dark grayish brown loam; 24 inches of brown silty clay loam; and 18 inches of mottled strong brown, brown, and pale brown clay loam.

Included with this soil in mapping are areas of Tawcaw, Chewacla, Toccoa, and Chastain soils. Also included are areas of soils that have a sandy loam or silt loam surface layer.

This soil is strongly acid to neutral throughout. Permeability is moderate, and available water capacity is medium to high. Flooding is frequent from November through April, and the water table is between depths of 30 and 48 inches during this period. Runoff is slow in some areas. This soil has good tilth. It has a deep, easily penetrated root zone. About 15 percent of the acreage of this soil is cleared for row crops or pasture; the rest is woodland.

This soil has high potential for row crops, hay, and pasture. Frequent flooding is the main hazard of this soil. Dikes are used to protect some areas of cropland from flooding. Crop production is above average if this soil is well managed.

This soil has high potential for bottom-land hardwoods and loblolly pine.

This soil has medium potential for urban development. Flooding causes severe limitations for most urban uses, but this can be overcome by careful planning, design, and construction methods. Capability subclass IIw; woodland group 1o.

Cx—Coxville fine sandy loam. This deep, poorly drained, nearly level soil is in concave elliptical depressions on broad ridges on the Coastal Plain.

Typically, the surface layer is dark gray fine sandy loam about 7 inches thick. The subsurface layer is light brownish gray fine sandy loam about 2 inches thick. The subsoil to a depth of 80 inches is 56 inches of gray sandy clay that has brownish and reddish mottles and 15 inches of gray sandy clay loam that has yellowish red mottles.

Included with this soil in mapping are small areas of Cantey, Clarendon, Rains, and Johnston soils, and a few areas of Coxville soils in which the surface layer is sandy loam, loam, or clay loam. Also included are some areas of soils that are more than 45 percent clay in the upper 20 inches of the subsoil and a few areas of soils that have a very dark gray combined surface and subsurface layer that is more than 10 inches thick.

This soil is very strongly acid or strongly acid throughout. Organic matter content is medium. Permeability is moderately slow, and available water capacity is medium. The water table is high most of the year if this soil is undrained. The root zone is deep and readily penetrated by plant roots. This soil is used for crops, pasture, and woodland, and most areas have been drained.

This soil has medium potential for row crops, pasture, and hay. To reach the potential of this soil for crops, pasture, or hay, adequate drainage by ditching, tile drains, or a combination of both is needed to lower the water table and remove surface accumulation of water.

This soil has high potential for loblolly and slash pine and for wetland hardwoods such as sweetgum, sycamore, and oaks. Drainage reduces equipment hazards and seedling mortality and improves the tree root environment.

This soil has low potential for urban use. Wetness is a severe limitation for most urban uses. Most wetness can be reduced or overcome by properly designed and carefully installed drainage. Consideration to future maintenance and functioning of a drainage system is important in planning for urban development. Capability subclass IVw undrained, IIIw drained; woodland group 2w.

Dn—Dorovan muck. This deep, very poorly drained, organic soil is on flood plains and tributaries of the Congaree and Wateree Rivers.

Typically the upper 3 inches is dark reddish brown decomposed roots, moss, leaves, and twigs. Next, to a depth of 58 inches, is black muck. The underlying material is very dark grayish brown loam to a depth of 76 inches.

Included with this soil in mapping are small areas of Cantey, Chastain, and Johnston soils. In a few places are soils in which the organic material is less than 50 inches thick. These soils are on flood plains of tributaries of the Wateree River. Also included are some areas of soils that have less than 5 percent fiber.

The organic layer of this soil is extremely acid to strongly acid, and the underlying material is strongly acid or very strongly acid. Available water capacity is very high. Permeability is moderately slow to moderately rapid. Water covers the surface or the water table is at a depth of less than 6 inches most of the year. All the acreage of this soil is in woodland.

This soil has very low potential for crops or pasture. Subsidence of the organic material is extreme if this soil is drained. Extensive drainage systems that include deep, long ditches are required to drain this soil and to reach suitable outlets.

This soil has low potential for woodland. Swamp blackgum, sweetbay, and water tupelo are some of the principal trees. Cypress grows naturally in some places.

This soil has very low potential for urban development. The high water table, flooding, and very low bearing strength severely limit this soil for all urban uses. To overcome these limitations, major alterations, special designs, and drainage are needed. Capability subclass VIIw; woodland group 4w.

DoA—Dothan loamy sand, 0 to 2 percent slopes. This deep, nearly level, well drained soil is on smooth broad ridges throughout the Coastal Plain part of the county.

Typically, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsurface layer is pale brown loamy sand about 10 inches thick. The subsoil to a depth of 78 inches is 20 inches of yellowish brown sandy clay loam; 11 inches of yellowish brown sandy clay loam that has brown and red mottles; and 30 inches of mottled red, strong brown, yellowish brown, and light gray sandy clay. The lower 30 inches of the subsoil contains 10 to 30 percent nodules of plinthite.

Included with this soil in mapping are small areas of Clarendon, Fuquay, Marlboro, and Norfolk soils; some long narrow areas of Dothan loamy sand, 2 to 6 percent slopes, adjacent to drainageways; and a few areas of soils in which the horizon containing plinthite is deeper than 50 inches.

This soil is strongly acid or very strongly acid throughout. Organic matter content is low. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Runoff is slow, and good tilth is easy to maintain. Available water capacity is medium. Rooting and the downward movement of water is retarded in the lower part of the subsoil, which contains plinthite. Most of the acreage of this soil is used for crops; some of the acreage has been planted to pine.

This soil has high potential for corn, cotton, soybeans, and peach trees. Bahiagrass, Coastal bermudagrass, and sericea lespedeza are well suited for hay and pasture. Additions of plant residues help maintain good tilth.

This soil has high potential for slash and loblolly pine.

This soil has high potential for urban development. It has slight to moderate limitations for most urban uses. The limitations can be overcome by simple designs and construction modifications. Capability class I; woodland group 2o.

DoB—Dothan loamy sand, 2 to 6 percent slopes. This deep, gently sloping, well drained soil is on smooth, broad ridges throughout the Coastal Plain part of the county.

Typically, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsurface layer is pale brown loamy sand about 10 inches thick. The subsoil to a depth of 78 inches is 20 inches of yellowish brown sandy clay loam; 11 inches of yellowish brown sandy clay loam that has brown and red mottles; and 30 inches of mottled red, strong brown, yellowish brown, and light gray sandy clay. This lower 30 inches of the subsoil contains 10 to 30 percent nodules of plinthite.

Included with this soil in mapping are small areas of Fuquay, Marlboro, and Norfolk soils; a few areas of Dothan loamy sand, 0 to 2 percent slopes; a few areas of soils that have slopes of more than 6 percent; and a few areas of soils that do not have plinthite at a depth of less than 50 inches. Some small wet areas are also included.

This soil is strongly acid or very strongly acid throughout. Organic matter content is low. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is medium. Runoff is medium. Rooting and downward movement of water are retarded where plinthite is in the lower part of the subsoil. Good tilth is easy to maintain. Most of the acreage of this soil is used for crops, pasture, or hay; some of the acreage has been planted to pine.

This soil has high potential for corn, cotton, soybeans, and peach trees. Bahiagrass, Coastal bermudagrass, and sericea lespedeza are well suited for hay and pasture. Additions of plant residue help to maintain good tilth. Erosion is a moderate hazard if this soil is cultivated. Contour cultivation, terracing, and crop rotation help to reduce runoff and control erosion.

This soil has high potential for slash and loblolly pine.

This soil has high potential for urban development. It has slight to moderate limitations for most urban uses. The limitations can be overcome in most areas by simple designs and construction modifications. Capability subclass IIe; woodland group 2o.

DuB—Dothan-Urban land complex, 0 to 6 percent slopes. This complex consists of Dothan soils and Urban land in such an intricate pattern that it was not practical to separate them in mapping.

About 60 percent of this complex consists of Dothan soils. Some areas are relatively undisturbed; other areas have been altered by cutting, filling, or grading. Typically, in undisturbed areas, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsurface layer is pale brown loamy sand about 10 inches thick. The subsoil to a depth of 78 inches is 20 inches of yellowish brown sandy clay loam; 11 inches of yellowish brown sandy clay loam that has brown and red mottles; and 30 inches of mottled, red, strong brown, yellowish brown, and light gray sandy clay, 10 to 30 percent of which is nodules of plinthite. In disturbed areas the surface layer has been covered by as much as 20 inches of fill material, or as much as two-thirds of the original profile has been removed.

About 40 percent of the complex is Urban land, in which the soils are largely covered by concrete, asphalt, buildings, or other impervious surfaces.

Included with this complex in mapping are small areas of Clarendon, Fuquay, Marlboro, and Norfolk soils. Also included are areas in which the soils have been covered by more than 20 inches of fill material or most or all of the profile has been cut away. The fill material is most commonly from adjacent areas of Dothan soils that have been cut or graded.

In areas of this complex where the soils are relatively undisturbed, the soil is strongly acid or very strongly acid throughout. Organic matter content is low. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part; available water capacity is medium. Runoff is medium to rapid, and the hazard of erosion is moderate to severe.

In areas that are dominated by cuts, fills, and Urban land, soil properties are variable.

Areas that have not been drastically altered include yards and open spaces around and between buildings. In these areas, the soil has medium potential for lawn grasses, shade trees, and ornamental plants common to the area. Areas that have been drastically altered require special attention before vegetation can be established. Onsite investigation is needed to determine the potentials and limitations of this complex for any proposed land use.

The areas of this complex that have not been urbanized have high potential for continued urban development. During development, the areas undergoing construction have a severe hazard of erosion and are sources of sediment unless special precautions are used. Capability subclass not assigned; Dothan part in woodland group 2o, Urban land part not assigned to a woodland group.

FaA—Faceville sandy loam, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on broad ridgetops on the Coastal Plain.

Typically, the surface layer is brown sandy loam about 7 inches thick. The upper 5 inches of the subsoil is yellowish red sandy clay loam. Below this to a depth of 84 inches the subsoil is red sandy clay.

Included with this soil in mapping are small areas of Lucy, Marlboro, and Orangeburg soils. Also included are a few narrow areas along drainageways of soils that have slopes of 2 to 6 percent.

This soil is strongly acid or very strongly acid throughout. Organic matter content is low. Permeability is moderate, available water capacity is medium to high, and runoff is slow. This soil has good tilth and has a very deep root zone that is easily penetrated by plant roots. Most of the acreage is in row crops.

This soil has high potential for all row crops, small grain, and hay and pasture grasses that are common to the county. Returning plant residue to the soil helps to maintain good tilth and adequate organic matter content. Large areas are well adapted to the use of large farm machinery.

This soil has medium potential for loblolly, slash, and longleaf pine.

This soil has high potential for urban development. Limitations are slight for urban uses. Surface drainage to hasten the removal of rainwater accumulation in low areas is needed in a few places. Capability class I; woodland group 3o.

FaB—Faceville sandy loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on broad ridgetops and narrow side slopes on the Coastal Plain.

Typically, the surface layer is brown sandy loam about 7 inches thick. The upper 5 inches of the subsoil is yellowish red sandy clay loam. Below this to a depth of 84 inches the subsoil is red sandy clay.

Included with this soil in mapping are small areas of Lucy, Marlboro, and Orangeburg soils. Also included are small areas that have slopes of 2 percent or less.

This soil is strongly acid or very strongly acid throughout. Organic matter content is low. Permeability is moderate, available water capacity is medium to high, and runoff is medium. Slopes are smooth and regular. This soil has good tilth and has a very deep root zone that is easily penetrated by plant roots. Most of the acreage is in row crops.

This soil has high potential for all row crops, small grain, hay, and pasture common to the county. Erosion is the principal hazard to row crops. Cropping practices and rotations that return plant residue to the soil and contour cultivation maintain good tilth and organic matter content. These practices also greatly reduce soil loss by erosion.

This soil has medium potential for loblolly, slash, and longleaf pine.

This soil has high potential for urban development. Limitations for practically all urban uses are slight. Capability subclass IIe; woodland group 3o.

FuA—Fuquay sand, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on broad ridgetops on the Sand Hills and Coastal Plain uplands.

Typically, the surface layer is grayish brown sand about 8 inches thick. The subsurface layer is light yellowish brown sand about 27 inches thick. The subsoil to a depth of 75 inches is sandy clay loam. The upper 9 inches of the subsoil is dominantly yellowish brown; the next 4 inches is yellowish brown, has red and brown mottles, and is 10 to 15 percent nodules of plinthite; the next 10 inches is mottled brown, red, and gray and is 20 to 30 percent nodules of plinthite; and the lower 17 inches is mottled with red, brown, and gray and is less than 2 percent nodules of plinthite.

Included with this soil in mapping are some small areas of Ailey, Blanton, Clarendon, Dothan, and Troup soils. Also included are some areas of soils that do not have plinthite above a depth of 60 inches and some areas of soils that have loamy sand surface and subsurface layers.

This soil is strongly acid or very strongly acid throughout. Organic matter content is low. Permeability is rapid in the sandy surface and subsurface layers and slow in the part of the subsoil containing plinthite. Available water capacity is low. Runoff is slow. Root penetration and the downward movement of water are retarded in the part of the subsoil that contains plinthite. In places, after long heavy rains, free water perches above the plinthite layer (fig. 3). Most areas of this soil have been row cropped in the past, but many areas are now used to grow pine trees.

This soil has medium potential for row crops, small grain, pasture, and hay. Yields are limited by the low available water capacity of the sandy surface and subsurface layers. This limitation contributes to droughtiness and to excessive leaching of plant nutrients. Crops on this soil need more than an average amount of fertilizer. Cropping practices that supply large amounts of organic residue conserve moisture and reduce the leaching of fertilizer elements. Deep-rooted perennials, such as sericea lespedeza, bahiagrass, and Coastal bermudagrass, are well suited for hay and pasture.

This soil has medium potential for loblolly, slash, and longleaf pine.

This soil has high potential for urban development. Limitations are slight or moderate for most urban uses. Simple modifications in design and construction of septic tank filter fields overcome the hazards of slow subsoil permeability and low absorption capacity of the sandy surface and subsurface layers. Capability subclass IIs; woodland group 3s.

FuB—Fuquay sand, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on narrow to broad ridgetops and on narrow side slopes parallel to streams and drainageways. It is on the Sand Hills and Coastal Plain uplands. Slopes are smooth and convex.

Typically, the surface layer is grayish brown sand about 8 inches thick. The subsurface layer is light yellowish brown sand about 27 inches thick. The subsoil to a depth of 75 inches is sandy clay loam. The upper 9 inches of the subsoil is dominantly yellowish brown; the next 4 inches is yellowish brown, has red and brown mottles, and is 10 to 15 percent nodules of plinthite; the next 10 inches is mottled brown, red, and gray and is 20 to 30 percent nodules of plinthite; and the lower 17 inches is mottled red, brown, and gray and is less than 2 percent nodules of plinthite.

Included with this soil in mapping are small areas of Ailey, Blanton, Dothan, and Troup soils. Also included are a few areas of soils that have a loamy sand surface layer, soils that have a clayey subsoil, and soils that are less than 5 percent plinthite above a depth of 60 inches.

This soil is strongly acid or very strongly acid throughout. Organic matter content is low. Permeability is rapid in the sandy surface and subsurface layers and slow in the part of the subsoil containing plinthite. Available water capacity is low. Runoff is slow. Root penetration and the downward movement of water are retarded in the part of the subsoil that contains plinthite. In places, after long, heavy rains, free water perches above the plinthite. Most areas of this soil have been farmed in the past, but now many areas are used to grow pine trees.

This soil has medium potential for row crops, small grain, and pasture and hay. Low available water capacity in the sandy surface and subsurface layers contributes to droughtiness and limits crop production. Returning large amounts of crop residue to the soil will help to conserve moisture and reduce leaching of plant nutrients. Contour cultivation reduces soil erosion in fields that have long slopes. Deep rooted perennials, such as sericea lespedeza, bahiagrass, and Coastal bermudagrass, are well suited for hay and pasture.

This soil has medium potential for loblolly, slash, and longleaf pine.

This soil has high potential for urban development. Limitations are slight or moderate for most urban uses. Simple modifications of design and construction in septic tank filter fields overcome the hazards of slow permeability in the plinthite layer and low absorption capacity in the sandy surface and subsurface layers. Capability subclass IIs; woodland group 3s.

FyB—Fuquay-Urban land complex, 0 to 6 percent slopes. This complex consists of Fuquay soils and Urban land in such an intricate pattern that it was not practical to separate them in mapping.

About 60 percent of this complex consists of Fuquay soils. Some areas are relatively undisturbed; other areas have been altered by cutting, filling, or grading. Typically, in undisturbed areas, the surface layer is grayish brown sand about 8 inches thick. The subsurface layer is light yellowish brown sand about 27 inches thick. The subsoil to a depth of 75 inches is sandy clay loam. The upper 9 inches of the subsoil is dominantly yellowish brown; the next 4 inches is yellowish brown, has red and brown mottles, and is 10 to 15 percent nodules of plinthite; the next 10 inches is mottled brown, red, and gray and is 20 to 30 percent nodules of plinthite; and the lower 17 inches is mottled red, brown, and gray and is less than 2 percent nodules of plinthite. In disturbed areas, the surface layer has been covered by as much as 20 inches of fill material, or as much as two-thirds of the original profile has been removed.

About 40 percent of the complex is Urban land in which the soils are largely covered by concrete, asphalt, buildings, or other impervious materials or objects.

Included with this complex in mapping are small areas of Ailey, Blanton, Dothan, and Troup soils. Also included are areas in which soils have been covered by more than 20 inches of fill material or most or all of the profile has been cut away. The fill material is most commonly from adjacent areas of Fuquay soils that have been cut or graded.

In areas of this complex where the soils are relatively undisturbed, the soils are strongly acid or very strongly acid throughout. Organic matter content is low. Permeability is rapid in the surface and subsurface layers and slow in the part of the subsoil that contains plinthite. Available water capacity is low. Runoff is medium to rapid, and the hazard of erosion is moderate to severe.

In areas that are dominated by cuts, fills, and Urban land, soil properties are variable.

Areas that have not been drastically altered include yards and open spaces around and between buildings. In these areas, the soil has medium potential for lawn grasses, shade trees, and ornamental plants common to the area. Areas that have been drastically altered require special attention before vegetation can be established. Onsite investigation is needed to determine the potentials and limitations of this complex for any proposed land use.

The areas of this complex that have not been urbanized have high potential for continued urban development. During development, the areas undergoing construction have a severe hazard of erosion and are subject to sediment losses unless special precautions are taken (fig. 4). Capability subclass not assigned; Fuquay part in woodland group 3s, Urban land part not assigned to a woodland group.

GeB—Georgeville silt loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on smooth, convex ridgetops on the Piedmont Plateau.

Typically, the surface layer is reddish brown silt loam about 6 inches thick. The subsoil to a depth of 72 inches is 3 inches of red loam; 27 inches of red silty clay; 16 inches of red silty clay loam; and 20 inches of weak red silt loam that has red and yellow mottles.

Included with this soil in mapping are small areas of Herndon, Nason, and Orange soils. Also included are some areas of soils that have bedrock at a depth of 4 to 6 feet, some areas of soils that have slopes of more than 6 percent, and some areas of eroded soils that have a yellowish red silty clay loam surface layer about 2 to 3 inches thick.

This soil is very strongly acid or strongly acid throughout, except in areas where the surface layer is limed. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is medium. The root zone is deep and easily penetrated by plant roots.

This soil has high potential for farming. Erosion is the principal hazard to the use of this soil for row crops. Contour cultivation, terracing, and stripcropping help to control erosion, and one or more of these practices is generally needed. Sericea lespedeza, tall fescue, bahiagrass, and bermudagrass are well suited for hay and pasture.

This soil has medium potential for loblolly, slash, and Virginia pine. Existing stands of hardwood respond to good management. Limitations for woodland uses are slight. Pines reseed well on this soil.

This soil has high potential for urban uses. The limitation for most urban uses is slight. The clayey subsoil has moderate permeability that causes a moderate limitation for septic tank absorption fields. This can be overcome by increasing the size of the field. Capability subclass IIe; woodland group 3o.

GeC—Georgeville silt loam, 6 to 10 percent slopes. This deep, well drained, sloping soil is on smooth ridgetops and side slopes on the Piedmont Plateau.

Typically, the surface layer is reddish brown loam about 6 inches thick. The subsoil to a depth of 72 inches is 3 inches of red loam; 27 inches of red silty clay; 16 inches of red silty clay loam; and 20 inches of weak red silt loam that has red and yellow mottles.

Included with this soil in mapping are small areas of Herndon, Nason, and Orange soils. Also included are small areas of soils that have slopes of less than 6 percent or more than 10 percent, a few areas of soils that have bedrock at a depth of 4 to 6 feet, and some eroded areas of soils that have red silty clay loam exposed on the surface.

This soil is very strongly acid or strongly acid throughout, except in areas where the surface layer is limed. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is rapid, and this soil is subject to erosion. The root zone is deep and easily penetrated by plant roots.

This soil has medium potential for the row crops commonly grown in the county. It has high potential for hay and pasture. Erosion limits the use of this soil for cultivation. If row crops are grown, contour cultivation, terracing, stripcropping, and maintaining crop residue on the surface are needed to control erosion. Sericea lespedeza, tall fescue, bahiagrass, and bermudagrass are well suited for hay and pasture.

This soil has medium potential for loblolly, slash, and Virginia pine. Existing stands of upland hardwoods respond to good woodland management. Limitations for woodland use are slight. Pines reseed well on this soil.

This soil has medium potential for urban uses. Limitations for most urban uses are moderate. The clayey subsoil has moderate permeability that causes moderate limitations for septic tank absorption fields. This limitation can be overcome by increasing the size of the absorption area. Modification of design, construction, and installation can overcome other moderate limitations. Capability subclass IIIe; woodland group 3o.

GoA—Goldsboro sandy loam, 0 to 2 percent slopes. This deep, moderately well drained, nearly level soil is on interstream divides of marine terraces in the Coastal Plain part of the county. Areas are 5 to 50 acres in size.

Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The subsurface layer is pale brown sandy loam about 6 inches thick. The subsoil extends to a depth of 65 inches. In sequence from the top, the upper 5 inches is pale brown sandy loam; the next 16 inches is dominantly pale brown sandy clay loam and has gray mottles in the lower 9 inches; the next 11 inches is mottled sandy clay loam; and the lower 20 inches is mottled sandy clay. The underlying material to a depth of 80 inches is light gray sandy loam.

Included with this soil in mapping are some areas of soils that have a loamy sand surface layer and a few areas of Clarendon and Rains soils. Small wet spots are shown by a wet spot symbol, and small sandy areas are shown by a sand spot symbol.

This soil is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed. Organic matter content is medium. Permeability is moderate, and available water capacity is medium. Runoff is slow. This soil has good tilth. It has a deep root zone that is easily penetrated by roots. The water table is generally at a depth of 2.5 to 3.5 feet from December through March.

This soil has high potential for row crops, hay, and pasture. Wetness is not a severe limitation for crops, but drainage generally is needed to remove excess water from the surface after rains and to control the water table. Grasses such as bermudagrass and bahiagrass are well suited for hay and pasture.

This soil has high potential for loblolly and slash pine and for hardwoods, such as yellow-poplar, sweetgum, and sycamore.

This soil has medium potential for urban use. Wetness causes moderate limitations to most urban uses. It can be overcome in most areas by carefully planned and well maintained drainage systems. For septic tank absorption fields, the wetness and high water table are severe limitations. Capability subclass IIw; woodland group 2w.

HeB—Herndon silt loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on ridgetops and side slopes in the Piedmont Plateau part of the county. Areas are 5 to 200 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 5 inches thick. The subsurface layer is very pale brown loam about 4 inches thick. The subsoil extends to a depth of 52 inches. The upper 4 inches of the subsoil is brownish yellow silt loam; the next 25 inches is strong brown silty clay; and the lower 14 inches is mottled yellowish brown, yellowish red, and pale yellow silty clay loam. The underlying material is red, light gray, brownish yellow, and yellowish red highly weathered slate that crushes to silt loam.

Included with this soil in mapping are some areas of soils that have a loam and sandy loam surface layer; small areas of Georgeville, Kirksey, and Nason soils; areas of soils that have slopes of less than 2 percent; and areas of soils in which the surface layer has been eroded and is less than 3 inches thick.

This soil is very strongly acid to slightly acid in the surface layer and extremely acid to strongly acid in the subsoil. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is medium. Most of the acreage is used for crops, hay, or pasture.

This soil has high potential for row crops, hay, and pasture. Erosion is the main hazard if this soil is used for row crops. Maintaining crop residue on the surface, contour cultivation, terracing, and stripcropping help to control erosion, and one or more of these practices is needed. Cover crops add organic matter and help to maintain good tilth.

This soil has medium potential for loblolly, slash, shortleaf, and Virginia pine. Existing stands of hardwoods respond to good management.

This soil has high potential for urban development. Limitations are slight or moderate for most urban uses. The limitations can be overcome with good designs and good construction. The moderate permeability of the clayey subsoil can be overcome by increasing the area for absorption of septic effluent. If the subsoil is exposed by grading or other construction this soil is subject to erosion, and runoff contributes to sedimentation on lower levels unless precautions are taken. Capability subclass IIe; woodland group 3o.

HeC—Herndon silt loam, 6 to 10 percent slopes. This deep, well drained, sloping soil is on ridgetops and side slopes in the Piedmont province part of the county. Areas are 5 to 200 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 4 inches thick. The subsurface layer is very pale brown loam about 5 inches thick. The subsoil extends to a depth of 52 inches. The upper 4 inches of the subsoil is brownish yellow silt loam; the next 25 inches is strong brown silty clay; and the lower 14 inches is mottled yellowish brown, yellowish red, and pale yellow silty clay loam. The underlying material to a depth of 75 inches is red, yellowish red, brownish yellow, and light gray highly weathered slate that crushes to silt loam.

Included with this soil in mapping are some areas of soils that have a loam or sandy loam surface layer and small areas of Georgeville, Kirksey, and Nason soils. Also included are areas of Herndon silt loam, 2 to 6 percent slopes; areas of soils that have slopes of more than 10 percent; and small areas of soils in which the surface layer has been eroded and the texture is silty clay loam.

This soil is very strongly acid to slightly acid in the surface layer and extremely acid to strongly acid in the subsoil. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is rapid, and on cultivated areas erosion is a severe hazard. Most of the acreage is in woods or pasture.

This soil has medium potential for row crops and high potential for hay and pasture. Maintaining crop residue on the surface, contour cultivation, terracing, and stripcropping are needed to control erosion if this soil is cultivated. Close-growing crops in the rotation help to maintain tilth, increase organic matter content, and reduce runoff and erosion.

This soil has medium potential for loblolly, slash, shortleaf, and Virginia pine and for upland hardwoods. Limitations to seedling mortality and equipment use are slight.

This soil has medium potential for urban uses. Limitations for most urban uses are moderate and can be overcome by proper design and good construction. The moderate permeability of the subsoil can be overcome by increasing the area for absorption of septic effluent. If the subsoil is exposed by construction this soil is subject to erosion and becomes a source of sediment on lower levels unless special precautions are taken. Capability subclass IIIe; woodland group 3o.

HnB—Herndon-Urban land complex, 2 to 6 percent slopes. This complex consists of Herndon soils and Urban land in such an intricate pattern that it was not practical to separate them in mapping.

About 55 percent of this complex consists of Herndon soils. Some areas are relatively undisturbed; other areas have been altered by cutting, filling, or grading. Typically in undisturbed areas, the surface layer is dark grayish brown silt loam about 4 inches thick. The subsurface layer is very pale brown loam about 5 inches thick. The subsoil extends to a depth of 52 inches. The upper 4 inches of the subsoil is brownish yellow silt loam; the next 25 inches is strong brown silty clay; and the lower 14 inches is mottled yellowish brown, yellowish red, and pale yellow silty clay loam. The underlying material is red, light gray, brownish yellow, and yellowish red highly weathered slate that crushes to silt loam. In disturbed areas the surface layer has been covered by as much as 20 inches of fill material or as much as two thirds of the original profile has been removed.

About 45 percent of the complex is Urban land in which the soils are largely covered by concrete, asphalt, buildings, or other impervious surfaces.

Included with this complex in mapping are small areas of Kirksey and Nason soils. Also included are areas in which the soils have been covered by more than 20 inches of fill material, or most or all of the profile has been cut away. The fill material is commonly from adjacent areas of Herndon soils that have been cut or graded.

In areas of this complex where the soils are relatively undisturbed, the soils are slightly acid to very strongly acid in the surface layer and strongly acid to extremely acid in the subsoil. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is medium to rapid, and the hazard of erosion is moderate to severe.

In areas that are dominated by cuts, fills, and Urban land, soil properties are variable.

Areas that have not been drastically altered include yards and open spaces around and between buildings. In these areas, the soil has medium potential for lawn grasses, shade trees, and ornamental plants common to the area. Areas that have been drastically altered require special attention before vegetation can be established. Onsite investigation is needed to determine the potentials and limitations of this complex for any proposed land use.

The areas of this complex that have not been urbanized have high potential for continued urban development. During development, the areas undergoing construction have a severe hazard of erosion and are sources of sediment unless special precautions are used. Capability subclass not assigned; Herndon part in woodland group 3o, Urban land part not assigned to a woodland group.

Jo—Johnston loam. This deep, very poorly drained, nearly level soil is on the flood plains of streams in the Coastal Plain. Areas are generally long and narrow and continuous along the streams.

Typically, the surface layer is about 38 inches thick. The upper 9 inches of the surface layer is black loam, and the lower 29 inches is black mucky loam. The underlying material to a depth of 54 inches is dark gray sandy loam. Below this to a depth of 66 inches is gray sandy clay loam.

Included with this soil in mapping are small areas of Rains, Coxville, and Cantey soils. Also included are some areas of soils that have a black or very dark gray surface layer less than 24 inches thick, areas of soils that have a silt loam or sandy surface layer, areas of soils that have clayey underlying material, and areas of soils that have more than 20 percent organic matter in the surface layer.

This soil has moderately rapid permeability in the surface layer and rapid permeability in the underlying material. Available water capacity is medium. Organic matter content is high. This soil has a high water table most of the year, and water covers the surface in wet seasons. It floods frequently and for long durations. Nearly all of the acreage of this soil is in water-tolerant hardwoods.

This soil has very low potential for crops. It is saturated most of the year and drainage is difficult to establish.

This soil has high potential for water-tolerant hardwoods. Surface drainage is needed where trees are planted.

This soil has very low potential for urban development. The flooding, high water table, and other wetness characteristics cause severe limitations for urban uses. Capability subclass VIIw; woodland group 1w.

KeC—Kershaw sand, 2 to 10 percent slopes. This deep, excessively drained, gently sloping to sloping sandy soil is on smooth, convex ridges at higher elevations on the Sand Hills.

Typically, the surface layer is very dark gray sand about 3 inches thick. The underlying material is sand to a depth of 80 inches or more. The upper 7 inches of the underlying material is brown; the next 10 inches is brownish yellow; the next 24 inches is light yellowish brown; and the lower 36 inches is white.

Included with this soil in mapping are small areas of Lakeland soils and small areas of soils that are similar to this Kershaw soil but that have thin horizons of loamy sand or thin bands (lamellae) of yellowish red loamy sand. Also included are a few pedons that are slightly acid.

This soil is very strongly acid to medium acid throughout. Organic matter content is very low. Permeability is very rapid, and available water capacity is very low. Runoff is low. This soil is droughty, and plant nutrients leach readily from the deep rooting zone. Almost all of the acreage of this soil is in sparse scrubby growth consisting mainly of blackjack and turkey oaks and a few scattered longleaf pine. A few areas have housing developments.

This soil has very low potential for crops. Very low available water capacity and low retention of plant nutrients limit the use of this soil for farming.

This soil has low potential for pines. If planted to slash or longleaf pine, high seedling mortality is common and growth rate is slow.

This soil has medium potential for urban development. Limitations are slight for many urban uses except those uses affected by strong slopes, seepage, or ability of the soil to hold water. Such vegetation as lawns, shrubs, and trees requires heavy fertilization and intensive moisture conserving practices or irrigation. Capability subclass VIIs; woodland group 5s.

KrB—Kirksey loam, 2 to 6 percent slopes. This deep, moderately well drained, gently sloping soil is on saddles and lower slopes of the Piedmont Plateau. Areas are 5 to 50 acres in size.

Typically, the surface layer is light brownish gray loam about 6 inches thick. The subsurface layer is pale yellow loam about 3 inches thick. The subsoil extends to a depth of 31 inches. The upper 12 inches of the subsoil is very pale brown silty clay loam, and the lower 10 inches is mottled very pale brown, yellowish red, and light gray silt loam. The underlying material is about 20 inches of mottled light gray and reddish yellow, partly weathered slate rock. Rippable slate bedrock is at a depth of 51 inches.

Included with this soil in mapping are some soils in which the combined surface layer and subsoil are less than 30 inches thick or more than 40 inches thick. Also included are a few areas of Georgeville and Nason soils. The included soils make up about 20 to 25 percent of this mapping unit.

This soil is strongly acid or very strongly acid in the surface layer and subsoil, except in areas where the surface layer is limed. The underlying material is strongly acid to extremely acid. Organic matter content is low. Permeability is moderately slow, and available water capacity is medium. The root zone is moderately deep. Most of the acreage of this soil is in woodland.

This soil has medium potential for crops. Erosion is the main concern in management of this soil. Terracing, contour cultivation, and maintaining crop residue on the surface are practices which help to control erosion if these soils are cultivated.

This soil has medium potential for woodland. The moderately deep rooting zone restricts growth rate of trees.

This soil has medium potential for urban uses; slope and depth to rock are the main hazards. Depth to rock causes severe limitation for septic tank absorption fields and sanitary landfills. Prior planning and good designs should consider these limitations. Capability subclass IIIe; woodland group 4w.

LaB—Lakeland sand, 2 to 6 percent slopes. This deep, excessively drained, gently sloping, sandy soil is on smooth, convex ridgetops in the Sand Hills.

Typically, the surface layer is dark gray sand about 3 inches thick. The underlying material to a depth of 107 inches is 26 inches of yellowish brown sand; 32 inches of brownish yellow sand; and 46 inches of very pale brown sand.

Included with this soil in mapping are small areas of Ailey, Blanton, Fuquay, and Troup soils. Also included, along narrow drainageways, are small areas of poorly drained soils that have a black surface layer and a gray subsoil. In addition to these, a few areas of soils that have slopes of less than 2 percent or slopes of 6 to 10 percent are also included.

This soil is very strongly acid to medium acid throughout. Organic matter content is very low. Permeability is very rapid, and available water capacity is low. Runoff is slow. The root zone is deep and easily penetrated by tree roots. Most of the acreage of this soil is in scrubby growth of turkey and blackjack oaks and a few scattered longleaf pine (fig. 5).

This soil has low potential for row crops, pasture, and hay. Farming is limited by droughtiness and excessive leaching of plant nutrients from the rooting zone. If this soil is in pasture or hay, grazing or harvesting should be limited.

This soil has medium potential for slash, loblolly, and longleaf pine. Many acres have been cleared and planted in slash pine or loblolly pine.

This soil has medium potential for urban uses. Limitations are slight for most construction purposes and severe for uses affected by seepage or low available water capacity. The limitation for septic tank absorption fields is slight, but there is a possibility of pollution of ground water. Also, in landscape planning, consideration should be given to overcoming the low available water capacity and low natural fertility. Capability subclass IVs; woodland group 4s.

LaD—Lakeland sand, 10 to 15 percent slopes. This deep, excessively drained, strongly sloping soil is on side slopes along well defined drainageways in the Sand Hills.

Typically, the surface layer is dark gray sand about 3 inches thick. The underlying material to a depth of 107 inches is 26 inches of yellowish brown sand; 32 inches of olive yellow sand; and 46 inches of very pale brown sand.

Included with this soil in mapping are small areas of Ailey, Blanton, Fuquay, Troup, and Vaucluse soils. Also included are some areas along drainageways of poorly drained soils that have a black surface layer and a gray subsoil and have a water table just below the surface. Small areas of soils that have slopes of 6 to 10 percent or slopes of more than 15 percent are also included.

This soil is very strongly acid to medium acid throughout. Organic matter content is low. Permeability is very rapid, and available water capacity is low. Runoff is medium. The root zone is deep and easily penetrated by tree roots. Most of the acreage of this soil is in scrubby growth of turkey and blackjack oaks and a few scattered longleaf pine.

This soil has very low potential for row crops and low potential for hay and pasture. Farming is limited by the droughtiness and excessive leaching of plant nutrients from the rooting zone. If this soil is in pasture or hay, grazing or harvesting must be limited.

This soil has medium potential for pine. Some areas have been cleared of scrub oaks and planted to slash or loblolly pine.

This soil has medium potential for urban uses. Limitations are moderate for most residential uses. Slope and low absorption rates are the main limitations. Consideration should be given to possible pollution of ground water by septic tank effluent. In landscape planning the low available water capacity and low natural fertility are limitations. Capability subclass VIs; woodland group 4s.

LkB—Lakeland-Urban land complex, 2 to 6 percent slopes. This complex consists of Lakeland soils and Urban land in such an intricate pattern that it was not practical to separate them in mapping.

About 55 percent of this complex consists of Lakeland soils. Some areas are relatively undisturbed; other areas have been altered by cutting, filling, or grading. Typically, in undisturbed areas, the surface layer is dark gray sand about 3 inches thick. The underlying material to a depth of 107 inches is yellowish brown sand; 32 inches of olive yellow sand; and 46 inches of very pale brown sand. In disturbed areas the surface layer has been covered by as much as 20 inches of fill material, or as much as two-thirds of the original profile has been removed.

About 45 percent of the complex is Urban land, where the soils are largely covered by concrete, asphalt, buildings, or other impervious surfaces.

Included with this complex in mapping are small areas of Ailey, Blanton, Fuquay, Troup, and Vaucluse soils. Also included are areas in which the soils have been covered by more than 20 inches of fill material or most or all of the profile has been cut away. The fill material is commonly from adjacent areas of Lakeland soils that have been cut or graded.

In areas of this complex in which the soils are relatively undisturbed, the soils are very strongly acid to medium acid throughout. Organic matter content is very low. Permeability is very rapid, and available water capacity is low. Runoff is medium to rapid.

In areas that are dominated by cuts, fills, and Urban land, soil properties are variable.

Areas that have not been drastically altered include yards and open spaces around and between buildings. In these areas, the soil has low potential for lawn grasses, shade trees, and ornamental plants common to the area. Areas that have been drastically altered require special attention before vegetation can be established. Onsite investigation is needed to determine the potentials and limitations of this complex for any proposed land use.

The areas of this complex that have not been urbanized have high potential for continued urban development. Capability subclass not assigned; Lakeland part in woodland group 4s, Urban land part not assigned to a woodland group.

LuB—Lucy loamy sand, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on smooth ridges on the Coastal Plain.

Typically, the surface layer is brown loamy sand about 9 inches thick. The subsurface layer is strong brown loamy sand about 17 inches thick. The subsoil to a depth of 75 inches is red sandy clay loam.

Included with this soil in mapping are small areas of Ailey, Blanton, Fuquay, Orangeburg, and Troup soils. Also included are narrow areas of soils that have slopes of more than 6 percent and some areas of soils that have a yellowish brown or strong brown subsoil.

This soil is strongly acid in the surface and subsurface layers, except in areas where the surface layer is limed. The subsoil is strongly acid or very strongly acid. Organic matter content is low. Permeability is rapid in the thick sandy surface layer and moderate in the subsoil. Available water capacity is low. Runoff is slow. This soil has good tilth and is worked throughout a wide range of moisture conditions. The root zone is deep and easily penetrated by plant roots. The acreage of this soil is small. Either cultivated crops or pine trees have been planted in most areas.

This soil has medium potential for row crops, small grain, pasture, and hay. Crop growth and yields are affected by the droughty nature of the sandy surface layer and the leaching of plant nutrients from this layer. Additions of large amounts of organic matter from plant residue are needed to conserve moisture. Fertilizer is more effective if it is applied frequently in small amounts. Contour cultivation is needed where erosion is a problem. Deep-rooted perennials, such as sericea lespedeza, bahiagrass, and Coastal bermudagrass, are well suited to hay and pasture.

This soil has medium potential for slash, loblolly, and longleaf pine. The growth rate is somewhat limited by low available water capacity.

This soil has high potential for urban development. Limitations are slight for urban uses. Capability subclass IIs; woodland group 3s.

MaA—Marlboro sandy loam, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on smooth broad ridgetops on the Coastal Plain.

Typically, the surface layer is dark grayish brown sandy loam about 8 inches thick. The subsoil to a depth of 80 inches is 25 inches of yellowish brown clay loam; 9 inches of mottled yellowish brown and yellowish red sandy clay loam; 22 inches of yellowish red sandy clay that has brownish yellow and light gray mottles; and 16 inches of mottled red, brownish yellow, very pale brown, and light gray clay.

Included with this soil in mapping are small areas of Lucy, Faceville, and Orangeburg soils. Also included along drainageways are a few narrow areas of soils that have slopes of 2 to 6 percent.

This soil is strongly acid to medium acid in the surface layer, except in areas where the surface layer is limed. It is strongly acid to slightly acid in the upper part of the subsoil and very strongly acid to medium acid in the lower part of the subsoil. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is slow. This soil has good tilth. The root zone is deep, and roots easily penetrate it (fig. 6). Almost all of the acreage is in cultivated crops.

This soil has high potential for all row crops and hay and pasture grasses common to the county. Returning plant residue to the soil helps to maintain tilth and organic matter content.

This soil has medium potential for slash and lcblolly pine. Management limitations are slight.

This soil has high potential for urban development. Limitations are slight or moderate for most urban uses. The moderate limitations are readily overcome by slight modification of designs and construction. Capability class I; woodland group 3o.

MaB—Marlboro sandy loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on smooth broad ridges on the Coastal Plain.

Typically, the surface layer is dark grayish brown sandy loam about 8 inches thick. The subsoil to a depth of 80 inches is 25 inches of yellowish brown clay loam; 9 inches of mottled yellowish brown and yellowish red sandy clay loam; 22 inches of yellowish red sandy clay that has brownish yellow and light gray mottles; and 16 inches of mottled red, brownish yellow, very pale brown, and light gray clay.

Included with this soil in mapping are small areas of Lucy, Faceville, and Orangeburg soils. Also included are small areas where slopes are 2 percent or less.

This soil is strongly acid to medium acid in the surface layer, except in areas where the surface layer is limed. It is strongly acid to slightly acid in the upper part of the subsoil and very strongly acid to medium acid in the lower part of the subsoil. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is medium, and, in places, the soil erodes. The root zone is deep and is easily penetrated by roots. Almost all of the acreage is in cultivated crops.

This soil has high potential for all row crops, hay, and pasture plants commonly grown in the county. Controlling erosion and maintaining organic matter are the chief concerns in good management. Cultivation on the contour, terracing, and strip crop rotations help to control erosion. Crop residue left on the surface helps to control erosion, maintain organic matter content, and promote good tilth.

This soil has medium potential for slash and loblolly pine. Management limitations are slight for pine.

This soil has high potential for urban development. Limitations are slight or moderate for most urban uses. The moderate limitations can readily be overcome by slight modifications of designs and construction. Capability subclass IIe; woodland group 3o.

NaB—Nason silt loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on broad and narrow ridges in the Slate Belt of the Piedmont province.

Typically, the surface layer is grayish brown silt loam about 5 inches thick. The subsurface layer is light yellowish brown silt loam about 6 inches thick. The subsoil extends to a depth of 41 inches. The upper 8 inches of the subsoil is reddish yellow silty clay, the next 15 inches is yellowish red silty clay that has yellow and strong brown mottles, and the lower 7 inches is yellowish red silty clay that has brownish yellow and light gray mottles. Below this is rippable slate bedrock (fig. 7).

Included with this soil in mapping are small areas of Georgeville, Herndon, Kirksey, and Orange soils. Also included are small areas of soils in which bedrock is above a depth of 40 inches and small areas of soils that have slopes of less than 2 percent or more than 6 percent.

This soil is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed. Permeability is moderate, and available water capacity is medium to high. Runoff is rapid. The root zone is deep and easily penetrated by plant roots.

This soil has medium potential for row crops and high potential for hay and pasture. Erosion is a moderate hazard to row crops. Contour cultivation, terracing, and stripcropping help to control erosion, and one or more of these practices is generally needed. Maintaining crop residue on the surface helps to maintain tilth and reduce erosion.

This soil has medium potential for loblolly, slash, and Virginia pine and for hardwoods in areas where established stands can be managed.

This soil has medium potential for urban development. Moderate to severe limitations for most urban uses can be overcome by modifying construction and installation procedures to suit the clayey subsoil and depth to rock. Capability subclass IIe; woodland group 3o.

NaC—Nason silt loam, 6 to 10 percent slopes. This deep, well drained, sloping soil is on side slopes and narrow ridges in the Slate Belt of the Piedmont province.

Typically, the surface layer is grayish brown silt loam about 5 inches thick. The subsurface layer is light yellowish brown silt loam about 6 inches thick. The subsoil extends to a depth of 41 inches. The upper 8 inches of the subsoil is reddish yellow silty clay, the next 15 inches is yellowish red silty clay and has yellow and brown mottles, and the lower 7 inches is yellowish red silty clay and has brownish yellow and light gray mottles. Below this is rippable slate bedrock.

Included with this soil in mapping are small areas of Georgeville, Herndon, Kirksey, and Orange soils. Also included are small areas of soils in which bedrock is above a depth of 40 inches, a few areas of soils that have a mostly red subsoil, and small areas of soils that have slopes of less than 6 percent or more than 10 percent.

This soil is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is rapid. Erosion is a hazard where this soil is in row crops. The root zone is deep and easily penetrated by plant roots.

This soil has low potential for row crops and high potential for hay and pasture. Maintaining crop residue on the surface, cultivating on the contour, terracing, and stripcropping are needed to control erosion if these soils are used for cultivated crops.

This soil has medium potential for loblolly, slash, and Virginia pine and for hardwoods in areas where stands can be managed.

This soil has medium potential for urban development. Moderate and severe limitations for most urban uses can be overcome by design, construction, and installation procedures that are suited to such soil features as clayey subsoil, depth to rock, and slope. Capability subclass IIIe; woodland group 3o.

NaE—Nason complex, 10 to 30 percent slopes. This complex consists of strongly sloping to steep, well drained, deep to shallow soils. These soils are on side slopes, toe slopes, and narrow ridges in the Slate Belt of the Piedmont province. They are in such an intricate pattern that it was not practical to separate them in mapping. Areas are dissected by numerous small streams and drainageways; small, steep ravines are common.

About 50 percent of this complex consists of Nason soils or soils that are similar to Nason soils; about 40 percent is soils that are similar to Nason soils but are slightly shallower to bedrock; and about 10 percent is soils that are shallow to bedrock.

Typically, the surface layer of Nason soils is grayish brown silt loam about 5 inches thick. The subsurface layer is light yellowish brown silt loam about 6 inches thick. The subsoil extends to a depth of 41 inches. The upper 8 inches of the subsoil is reddish yellow silty clay, the next 15 inches is yellowish red silty clay and has yellow and brown mottles, and the lower 7 inches is yellowish red silty clay and has brownish yellow and light gray mottles. Below this is rippable slate bedrock.

Included with this complex in mapping are some areas of soils that have a red subsoil and some areas of soils that are somewhat poorly drained or poorly drained and have gray colors in the subsoil. Also included are small areas in which bedrock crops out or directly underlies the surface layer.

The soils of this complex have low organic matter content. Permeability is moderate, and available water capacity is medium. Runoff is rapid. The root zone ranges from deep to shallow and is easily penetrated by plant roots down to the rock. Most of the acreage is in woodland; a few small areas are in pasture.

These soils have low potential and are generally unsuited for crops. Steepness of slope and hazard of erosion limit the use of these soils. If these soils are used for hay or pasture, harvesting and grazing need to be limited.

These soils have medium potential for loblolly, slash, and shortleaf pine. If well managed, present stands of hardwood can be productive. The steep slopes and shallow rooting depths are moderate hazards to woodland management.

These soils have low potential for urban development. The steep slope and closeness of bedrock to the surface are severe limitations for most urban uses, and are very difficult to overcome. Prior planning and much onsite investigation are needed if this complex is used for building. Capability subclass VIe; woodland group 3r.

NoA—Norfolk loamy sand, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on smooth broad interstream divides on the Coastal Plain uplands. Areas are 50 to 700 acres in size.

Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsurface layer is yellowish brown loamy sand about 7 inches thick. The subsoil to a depth of 75 inches is yellowish brown sandy clay loam.

Included with this soil in mapping are some areas of soils that have sandy surface and subsurface layers more than 20 inches thick; a few narrow areas adjacent to drainageways of Norfolk loamy sand, 2 to 6 percent slopes; and some small areas of Dothan, Coxville, Marlboro, Orangeburg, and Rains soils. Also included are narrow areas along small depressions of this Norfolk soil overlain with sandy or loamy alluvial sediment.

This soil is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed. Organic matter content is low. Permeability is moderate, and available water capacity is medium. The root zone is deep and easily penetrated by plant roots. Runoff is slow. This soil has good tilth and can be worked throughout a wide range of moisture conditions. Most of the acreage of this soil is in cropland.

This soil has high potential for row crops, small grain, hay, and pasture. Crop response is above average when this soil is heavily fertilized and well managed. Crop residue left on the surface helps to maintain good tilth and organic matter content. Bahiagrass and Coastal bermudagrass are well suited to hay and pasture.

This soil has high potential for loblolly and slash pine. A few areas have been planted to these pines.

This soil has high potential for urban development. Limitations for most urban uses are slight. Capability class I; woodland group 2o.

NoB—Norfolk loamy sand, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on smooth, broad ridges and side slopes of interstream divides on the Coastal Plain uplands. Areas are 30 to 500 acres in size.

Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsurface layer is yellowish brown loamy sand about 7 inches thick. The subsoil to a depth of 75 inches is yellowish brown sandy clay loam.

Included with this soil in mapping are some areas of soils that have sandy surface and subsurface layers which are more than 20 inches thick; a few narrow areas along drainageways of Norfolk loamy sand, 6 to 10 percent slopes, and areas of Norfolk loamy sand, 0 to 2 percent slopes, on small upland flats. Also included are small areas of Dothan, Coxville, Marlboro, Orangeburg, and Rains soils and narrow areas along drainageways of this Norfolk soil overlain with sandy or loamy alluvial sediment.

This soil is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed. Organic matter content is low. Permeability is moderate, and available water capacity is medium. The root zone is deep and easily penetrated by plant roots. Runoff is medium, and erosion is a hazard. This soil has good tilth and can be worked throughout a wide range of moisture conditions. Most of the acreage is in cropland.

This soil has high potential for row crops, small grain, hay, and pasture. Crop response is above average when this soil is heavily fertilized and well managed. Crop residue left on the surface helps to maintain good tilth and organic matter content. Contour cultivation, terracing, and stripcropping help to control erosion in cultivated areas, and one or more of these practices is generally needed. Bahiagrass, Coastal bermudagrass, and sericea lespedeza are well suited to hay and pasture.

This soil has high potential for loblolly and slash pine, and management problems are slight. Pines are grown on a small acreage of this soil.

This soil has high potential for urban development. Limitations for most urban uses are slight. Capability subclass IIe; woodland group 2o.

OaB—Orange loam, 0 to 4 percent slopes. This soil is deep, somewhat poorly drained, nearly level and gently sloping. It is in shallow draws, saddles, and smooth convex ridges in the Slate Belt of the Piedmont province. It has a very firm, very plastic subsoil.

Typically, the surface layer is dark grayish brown loam about 9 inches thick. The subsurface layer is light brownish gray loam about 2 inches thick. The subsoil extends to a depth of 40 inches. The upper 4 inches of the subsoil is yellowish brown silt loam; the next 22 inches is light olive brown clay that has brown and gray mottles in the lower part; and the lower 3 inches is mottled gray and brown clay. Below this is gray and brown hard slate bedrock.

Included with this soil in mapping are small areas of Georgeville, Kirksey, and Nason soils and small areas of soils that are similar to this soil except that they have a surface layer of silt loam. Also included are similar soils that have friable clay or silty clay in the upper part of the subsoil and small areas of similar soils that have bedrock at a depth of more than 60 inches.

This soil is strongly acid or medium acid in the surface and subsurface layers and medium acid to neutral in the subsoil. Permeability is slow, and available water capacity is medium to high. Runoff is slow in low areas and medium on side slopes. Wetness and the very firm plastic subsoil is the main concern in management for farming. Erosion is a hazard on sloping areas. Most of the acreage is in woodland, hay, or pasture.

This soil has low potential for row crops and medium potential for hay or pasture. Drainage is necessary to lower the water table and to remove ponded water after rains if this soil is used for pasture or hay. The very firm, plastic subsoil retards root development and the downward movement of water. Dallisgrass, bermudagrass, and tall fescue are commonly grown for perennial hay and pasture.

This soil has medium potential for woodland. Loblolly pine is a suited species to plant.

This soil has low potential for urban development. It has severe limitations for most urban uses. Excessive wetness, ponding, and slow permeability are the principal hazards that limit the use of this soil. Capability subclass IVw; woodland group 4w.

ObA—Orangeburg loamy sand, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on broad ridgetops and interstream divides in the Coastal Plain.

Typically, the surface layer is brown loamy sand about 8 inches thick. The subsurface layer is yellowish brown loamy sand about 4 inches thick. The subsoil is yellowish red sandy loam to a depth of 18 inches. Below this to a depth of 90 inches, it is yellowish red and red sandy clay loam.

Included with this soil in mapping are small areas of Faceville, Lucy, Marlboro, and Norfolk soils. Also included are some areas of Orangeburg loamy sand, 2 to 6 percent slopes, and areas of soils that have a sandy loam surface layer. Small wet areas less than 2 acres in size are included and shown by a wet spot symbol.

This soil is strongly acid or medium acid in the surface and subsurface layers and strongly acid or very strongly acid in the subsoil. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is slow. This soil has good tilth and can be worked throughout a wide range of moisture conditions. The root zone is deep and easily penetrated by plant roots. Most of the acreage is used for row crops.

This soil has high potential for row crops, hay, and pasture. Leaving crop residue on this surface helps maintain good tilth and organic matter content. Stripcropping or windbreaks reduce soil loss and damage to young plants where soil blowing is a hazard.

This soil has high potential for loblolly, slash, and longleaf pine. Management limitations are slight if pine are grown on this soil.

This soil has high potential for urban development. Limitations are slight for all urban uses. Capability class I; woodland group 2o.

ObB—Orangeburg loamy sand, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on the tops and sides of broad ridges and interstream divides in the Coastal Plain.

Typically, the surface layer is brown loamy sand about 8 inches thick. The subsurface layer is yellowish brown loamy sand about 4 inches thick. The subsoil to a depth of 18 inches is yellowish red sandy loam. Below this it is yellowish red and red sandy clay loam to a depth of 90 inches.

Included with this soil in mapping are small areas of Faceville, Lucy, Marlboro, and Norfolk soils. Also included are small areas of soils that have slopes of less than 2 percent or more than 6 percent, a few areas along narrow drainageways that have overlying sandy and loamy alluvial sediment, and some areas of soils that have a sandy loam surface layer.

This soil is strongly acid or medium acid in the surface and subsurface layers and strongly acid or very strongly acid in the subsoil. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is medium, and in places the surface layer erodes. This soil has good tilth and can be worked throughout a wide range of moisture conditions. The root zone is deep and easily penetrated by plant roots. Most of the acreage is used for row crops.

This soil has high potential for row crops, hay, and pasture. Maintaining crop residue on the surface, cultivating on the contour, terracing, and stripcropping will help to control erosion in cultivated areas, and one or more of these practices is generally needed.

This soil has high potential for loblolly, slash, and longleaf pine. Management limitations are slight if pines are grown on this soil.

This soil has high potential for urban development. Limitations are slight for all urban uses. Capability subclass IIe; woodland group 2o.

ObC—Orangeburg loamy sand, 6 to 10 percent slopes. This deep, well drained, sloping soil is on narrow sides of broad ridges and on narrow ridges in the Coastal Plain.

Typically, the surface layer is brown loamy sand about 8 inches thick. The subsurface layer is yellowish brown loamy sand about 4 inches thick. The subsoil to a depth of 18 inches is yellowish red sandy loam. Below this it is yellowish red and red sandy clay loam to a depth of 90 inches.

Included with this soil in mapping are small areas of Ailey, Lucy, Norfolk, Troup, and Vaucluse soils. Also included are small areas of soils that have slopes of less than 6 percent or more than 10 percent, a few areas of soils along narrow drainageways that have overlying sandy and loamy alluvial sediment, and a few areas of soils that have a sandy loam surface layer.

This soil has low organic matter content. Permeability is moderate, and available water capacity is medium. Runoff is rapid, and erosion is a hazard. The root zone is deep and easily penetrated by plant roots.

This soil has medium potential for row crops, hay, and pasture. The small size and narrow shape of the areas and the erosion hazard limit farming. If this soil is used for row crops, terracing, contour cultivation, cover crops, and a cropping system that includes frequent close-growing crops are needed.

This soil has high potential for loblolly, slash, and longleaf pine.

This soil has high potential for urban development. Slope is a moderate limitation for most urban uses. This limitation can be overcome for most uses by applying suitable plans, designs, and installation procedures. Capability subclass IIIe; woodland group 2o.

OgB—Orangeburg-Urban land complex, 2 to 6 percent slopes. This complex consists of Orangeburg soils and Urban land in such an intricate pattern that it was not practical to separate them in mapping.

About 60 percent of this complex consists of Orangeburg soils. Some areas are relatively undisturbed; other areas have been altered by cutting, filling, or grading. Typically, in undisturbed areas, the surface layer is brown loamy sand about 8 inches thick. The subsurface layer is yellowish brown loamy sand about 4 inches thick. The subsoil to a depth of 18 inches is yellowish red sandy loam. Below this, to a depth of 90 inches, it is yellowish red and red sandy clay loam. In disturbed areas the surface layer has been covered by as much as 20 inches of fill material, or as much as two-thirds of the original profile has been removed.

About 40 percent of the complex is Urban land, in which the soils are largely covered by concrete, asphalt, buildings, or other impervious surfaces.

Included with this complex in mapping are small areas of Faceville, Lucy, and Marlboro soils. Also included are areas in which the soils have been covered by more than 20 inches of fill material or most or all of the profile has been cut away. The fill material is commonly from adjacent areas of Orangeburg soils that have been cut or graded.

In areas of this complex where the soils are relatively undisturbed, the soils are strongly acid or medium acid in the surface and subsurface layers and strongly acid or very strongly acid in the subsoil. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is medium to rapid, and the hazard of erosion is moderate to severe.

In areas that are dominated by cuts, fills, and Urban land, soil properties are variable.

Areas that have not been drastically altered include yards and open spaces around and between buildings. In these areas the soil has medium potential for lawn grasses, shade trees, and ornamental plants common to the area. Areas that have been drastically altered require special attention before vegetation can be established. Onsite investigation is needed to determine the potentials and limitations of this complex for any proposed land use.

The areas of this complex that have not been urbanized have high potential for continued urban development. During development, the areas undergoing construction have a severe hazard of erosion and are sources of sediment unless special precautions are used. Capability subclass not assigned; Orangeburg part in woodland group 2o, Urban land part not assigned to a woodland group.

OgD—Orangeburg-Urban land complex, 6 to 15 percent slopes. This complex consists of Orangeburg soils and Urban land in such an intricate pattern that it was not practical to separate them in mapping.

About 55 percent of this complex consists of Orangeburg soils. Some areas are relatively undisturbed; other areas have been altered by cutting, filling, or grading. Typically, in undisturbed areas, the surface layer is brown loamy sand about 8 inches thick. The subsurface layer is yellowish brown loamy sand about 4 inches thick. The subsoil to a depth of 18 inches is yellowish red sandy loam. Below this, to a depth of 90 inches, it is yellowish red and red sandy clay loam. In disturbed areas the surface layer has been covered by as much as 20 inches of fill material, or as much as two-thirds of the original profile has been removed.

About 45 percent of the complex is Urban land in which the soils are largely covered by concrete, asphalt, buildings, or other impervious surfaces.

Included with this complex in mapping are small areas of Faceville, Lucy, and Marlboro soils. Also included are areas in which the soils have been covered by more than 20 inches of fill material or most or all of the profile has been cut away. The fill material is most commonly from adjacent areas of Orangeburg soils that have been cut or graded.

In areas of this complex where the soils are relatively undisturbed, the soils are strongly acid or medium acid in the surface and subsurface layers and strongly acid or very strongly acid in the subsoil. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is medium to rapid, and the hazard of erosion is moderate to severe.

In areas that are dominated by cuts, fills, and Urban land, soil properties are variable.

Areas that have not been drastically altered include yards and open spaces around and between buildings. In these areas the soil has medium potential for lawn grasses, shade trees, and ornamental plants common to the area. Areas that have been drastically altered require special attention before vegetation can be established. Onsite investigation is needed to determine the potentials and limitations of this complex for any proposed land use.

The areas of this complex that have not been urbanized have high potential for continued urban development. During development soils in the areas undergoing construction have a severe hazard of erosion and are a source of sediment unless special precautions are taken. Capability subclass not assigned; Orangeburg part in woodland group 2o, Urban land part not assigned to a woodland group.

PeB—Pelion loamy sand, 2 to 6 percent slopes. This deep, moderately well drained, gently sloping soil is on side slopes and toe slopes, mainly in the Sand Hills. Slopes are both smooth and broken, but most of the lower toe slopes are smooth.

Typically, the surface layer is very dark gray loamy sand about 5 inches thick. The subsurface layer is pale brown loamy sand about 5 inches thick. The subsoil extends to a depth of 48 inches. The upper 8 inches of the subsoil is light yellowish brown firm sandy clay loam; the next 8 inches is pale yellow firm sandy clay loam that has reddish yellow, strong brown, and a few light gray mottles; and the lower 22 inches is very firm sandy clay loam mottled in various shades of yellow, gray, brown, and red. The underlying material to a depth of 75 inches is 9 inches of light gray sandy clay loam that has mottles in various shades of yellow and red and 18 inches of light gray loamy sand that has brownish yellow mottles.

Included with this soil in mapping are a few intermingled areas of Ailey, Fuquay, Johnston, and Rains soils. Also included are a few areas of soils that have slopes of 6 to 10 percent or slopes of less than 2 percent; a few areas of soils that have sandy clay within the upper 20 inches of the subsoil; and a few areas of soils that do not have gray mottles within the upper 24 inches of the subsoil.

This soil is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed. Permeability is moderately slow or slow, and available water capacity is low. Runoff is medium, and erosion is a hazard in cultivated areas. Tilth is poor, and the surface layer remains too wet to cultivate for long periods after rains. The root zone is deep and easily penetrated by tree roots, but the firm, moderately slowly permeable to slowly permeable subsoil retards the rooting of annual plants and the downward movement of water. Most of the acreage is in woodland or abandoned cropland.

This soil has low potential for row crops and medium potential for hay and pasture. Annual plants suffer from droughtiness. Contour farming and leaving crop residue on the surface help to control erosion and improve tilth.

This soil has high potential for loblolly and slash pine.

This soil has medium potential for urban development. Wetness, slow percolation, and low strength are severe limitations for urban uses. These limitations can be overcome by well planned systems for drainage and for the interception of seepage and runoff water. Designs to increase the area of septic tank absorption fields or to provide other alternatives are necessary. Capability subclass IIe; woodland group 2w.

PeD—Pelion loamy sand, 6 to 15 percent slopes. This deep, moderately well drained, sloping to strongly sloping soil is on irregular side slopes and knolls, mainly on the Sand Hills.

Typically, the surface layer is very dark gray loamy sand about 5 inches thick. The subsurface layer is pale brown loamy sand about 5 inches thick. The subsoil extends to a depth of 48 inches. The upper 8 inches of the subsoil is light yellowish brown firm sandy clay loam; the next 8 inches is pale yellow firm sandy clay loam that has mottles of reddish yellow, strong brown, and light gray (few light gray mottles); and the lower 22 inches is very firm sandy clay loam mottled in various shades of yellow, gray, brown, and red. The underlying material to a depth of 75 inches is 9 inches of light gray sandy clay loam that has mottles in various shades of yellow and red and 18 inches of light gray loamy sand that has brownish yellow mottles.

Included with this soil in mapping are some areas of Ailey, Dothan, Fuquay, and Vaucluse soils. Also included are some small areas of soils that have a hard, brittle layer in the subsoil; small areas of soils that have light gray or white kaolin clay extending into the upper part of the subsoil; and small areas of soils that have slope of less than 6 percent.

This soil is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed. Organic matter content is low. Permeability is moderately slow or slow, and available water capacity is low. Runoff is rapid, and erosion is a hazard. Tilth is poor. Tree roots penetrate the root zone, but the firm hard subsoil retards plant roots and downward movement of water. Most of the acreage is in woodland.

The soil has low potential for row crops. Plants suffer from the low available water capacity in the growing season. Erosion is most easily controlled in wooded areas. Where grasses or perennial legumes are desired, strong erosion control measures that include diversions and contouring are needed.

This soil has high potential for loblolly and slash pine. It is better suited to woodland than to most other uses.

This soil has medium potential for urban development. Limitations are severe for urban uses. Major soil alterations, special designs, or intensive maintenance are needed to overcome the limitations of slope, wetness, slow percolation rates, seepage, and low strength of the soil material. Capability subclass VIe; woodland group 2w.

PnC—Pelion-Urban land complex, 2 to 10 percent slopes. This complex consists of Pelion soils and Urban land in such an intricate pattern that it was not practical to separate them in mapping.

About 60 percent of this complex consists of Pelion soils. Some areas are relatively undisturbed; others have been altered by cutting, filling, or grading. Typically, in undisturbed areas, the surface layer is very dark gray loamy sand about 5 inches thick. The subsurface layer is pale brown loamy sand about 5 inches thick. The subsoil extends to a depth of 38 inches. The upper 8 inches of the subsoil is light yellowish brown, firm sandy clay loam; the next 8 inches is pale yellow, firm sandy clay loam that has yellow, strong brown, and a few light gray mottles; and the lower 22 inches is very firm sandy clay loam mottled in shades of yellow, gray, brown, and red. The underlying material to a depth of 75 inches is 9 inches of light gray sandy clay loam mottled in various shades of yellow and red, and 18 inches of light gray loamy sand that has brownish yellow mottles. In disturbed areas the surface layer has been covered by as much as 20 inches of fill material, or as much as two-thirds of the original profile has been removed.

About 40 percent of the complex is Urban land, in which the soils are largely covered by concrete, asphalt, buildings, or other impervious surfaces.

Included with this complex in mapping are small areas of Dothan, Fuquay, Lakeland, and Orangeburg soils and small low areas of soils that are poorly drained, have a high water table, and are frequently flooded (fig. 8). Also included are areas in which the soils have been covered by more than 20 inches of fill material or most or all of the profile has been cut away. The fill material is commonly from adjacent areas of Pelion soils that have been cut or graded.

In areas of this complex where the soils are relatively undisturbed, the soils are strongly acid or very strongly acid throughout. Organic matter content is low. Permeability is moderately slow or slow, and available water capacity is low. Runoff is medium to rapid, and the hazard of erosion is moderate to severe.

In areas that are dominated by cuts, fills, and Urban land, soil properties are variable.

Areas that have not been drastically altered include yards and open spaces around and between buildings. In these areas, the soil has medium potential for lawn grasses, shade trees, and ornamental plants common to the area. Areas that have been drastically altered require special attention before vegetation can be established. Onsite investigation is needed to determine the potentials and limitations of this complex for any proposed land use.

The areas of this complex that have not been urbanized have high potential for continued urban development. During development, the areas undergoing construction have a severe hazard of erosion and are sources of sediment unless special precautions are used. Capability subclass not assigned; Pelion part in woodland group 2w, Urban land part not assigned to a woodland group.

Ps—Persanti very fine sandy loam. This deep, moderately well drained, nearly level soil is on terraces in the valleys of the Congaree and Wateree Rivers in the Coastal Plain part of the county.

Typically, the surface layer is brown very fine sandy loam about 5 inches thick. The subsoil to a depth of 75 inches is 5 inches of yellowish brown sandy clay loam; 9 inches of mottled red and strong brown clay loam; 6 inches of firm, plastic clay mottled red, brownish yellow, yellowish brown, and pale yellow; and 50 inches of very firm, very plastic clay mottled in various shades of gray, red, and yellow.

Included with this soil in mapping are some areas of Smithboro, Cantey, and Goldsboro soils. Also included are some areas of soils that have slopes of more than 2 percent.

This soil is slightly acid to very strongly acid in the surface layer and strongly acid to extremely acid in the subsoil. Organic matter content is low. Permeability is slow, and available water capacity is medium. Runoff is slow, and water ponds on the surface after rains. This soil has poor tilth. Most of the acreage is in woodland; a few areas are in crops, hay, or pasture.

This soil has medium potential for row crops, hay, and pasture. Wetness, poor tilth, and seasonal high water table limit tillage and delay planting dates. Open ditches, surface drains, or a combination of both are needed for crop production. Surface drainage is needed for maximum grass production.

This soil has high potential for loblolly and slash pine and high potential for hardwoods.

This soil has low potential for urban development. Wetness, slow permeability, and a plastic, clayey subsoil severely limit this soil for most urban uses. These limitations can be overcome by proper design and good construction. Capability subclass IIw; woodland group 2w.

Ra—Rains sandy loam. This deep, nearly level, poorly drained soil is on broad flats and in slight depressions near drainageways.

Typically, the surface layer is very dark gray sandy loam about 8 inches thick. The subsurface layer is grayish brown sandy loam about 4 inches thick. The subsoil to a depth of 68 inches is gray sandy clay loam that has yellowish brown mottles.

Included with this soil in mapping are small areas of Coxville, Cantey, and Johnston soils and a few areas of soils that have a loamy sand or fine sandy loam surface layer.

This soil is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed. Organic matter content is medium. Permeability is moderate, and available water capacity is medium. Runoff is slow, and the water table is at a depth of less than 1 foot during most of the year. From December through March, in most years, this soil is commonly flooded for brief periods. The root zone is deep and easily penetrated by plant roots. Most of the acreage is in woodland.

This soil has medium potential for row crops, hay, and pasture. The high water table limits the use of this soil. Drainage ditches are needed for satisfactory crop production and for pasture management.

This soil has high potential for loblolly and slash pine and for wetland hardwoods, such as sweetgum. Drainage decreases seedling mortality and makes the soil more suitable for use of equipment.

This soil has low potential for urban development. Because of wetness and flooding, limitations are severe for most urban uses. The hazard of wetness can be overcome for certain uses, such as septic tank absorption fields, if the soil can be adequately drained. Capability subclass IIIw; woodland group 2w.

Sm—Smithboro loam. This deep, somewhat poorly drained, nearly level soil is on terraces in the valleys of the Congaree and Wateree Rivers. It is in the Coastal Plain part of the county.

Typically, the surface layer is very dark grayish brown loam about 6 inches thick. The subsoil to a depth of 78 inches is 4 inches of mottled very pale brown loam; 10 inches of mottled brownish yellow, light brownish gray, gray, and yellowish red clay loam; 9 inches of gray clay loam that has red and brown mottles; 38 inches of gray clay that has red, brown, and yellow mottles; and 11 inches of mottled gray, strong brown, and reddish brown silty clay.

Included with this soil in mapping are small areas of Cantey and Persanti soils; some areas of soils that have a sandy loam or silt loam surface layer; and some areas of soils that are less than 30 percent silt in the upper 20 inches of the subsoil. These inclusions make up about 20 percent of the area.

This soil is strongly acid or very strongly acid throughout. Organic matter content is medium. Permeability is slow, and available water capacity is medium to high. Runoff is slow. The slowly permeable subsoil restricts movement of water, and water stands on the surface in rainy periods. The root zone is deep and is readily penetrated by tree roots. Most of the acreage of this soil is in woodland or abandoned cropland.

This soil has medium potential for most row crops and for hay and pasture. Wetness and a high seasonal water table are the main limitations of this soil. Open ditches, surface drains, or a combination of the two are needed to drain this soil. If drained, corn, soybeans, and hay and pasture grasses are suited.

This soil has high potential for loblolly pine, slash pine, and sweetgum.

This soil has low potential for urban development. Wetness, slow permeability, and a seasonal high water table severely limit this soil for most urban uses. Capability subclass IIIw; woodland group 2w.

StA—State sandy loam, 0 to 2 percent slopes. This deep, well drained, nearly level soil is mapped on smooth, uniform stream terraces in the Piedmont province and adjacent Coastal Plain sections of the county. Areas are 10 to 200 acres in size.

Typically, the surface is grayish brown sandy loam about 5 inches thick. The subsurface layer is very pale brown sandy loam about 3 inches thick. The subsoil extends to a depth of 48 inches. The upper 17 inches is yellowish brown sandy clay loam, and the lower 23 inches is yellowish brown clay loam. The upper 20 inches of the underlying material is mottled, brownish yellow and yellowish brown very slaty silty clay. Below this, to a depth of 78 inches, is brownish yellow, yellowish brown, and light gray highly weathered slate rock that crushes to loam.

Included with this soil in mapping are small areas of Herndon, Nason, Georgeville, and Altavista soils. Also included are some depressional areas of soils that have dark grayish brown surface and subsurface layers underlain by a dominantly gray clayey subsoil; a few areas of soils that are flooded rarely for brief duration; and areas of soils that have a red and yellowish red subsoil.

This soil is very strongly acid to medium acid throughout. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is medium, but in some places water ponds for short periods after rains. This soil has good tilth and a deep root zone which is easily penetrated by plant roots. Much of the acreage of this soil is used for pasture and hay. A few areas are in row crops or woodland.

This soil has high potential for corn, soybeans, cotton, and hay and pasture grasses.

This soil has high potential for loblolly and slash pine and for hardwoods, such as yellow-poplar and sweetgum.

This soil has high potential for urban development. Capability class I; woodland group 2o.

Tc—Tawcaw silty clay loam. This deep, somewhat poorly drained, nearly level soil is on broad flood plains of the Congaree and Wateree Rivers. Most areas are 100 to several thousand acres in size; a few areas are 10 to 100 acres in size.

Typically, the surface layer is dark brown silty clay loam about 4 inches thick. The subsoil to a depth of 61 inches is 18 inches of reddish brown silty clay; 26 inches of mottled grayish and brownish silty clay loam; and 13 inches of mottled grayish and brownish silty clay.

Included with this soil in mapping are small areas of Chastain and Chewacla soils and commonly long narrow areas of Congaree and Toccoa soils adjacent to streams and sloughs. Also included are some areas of soils that have a silt loam surface layer.

This soil is strongly acid to slightly acid throughout. Permeability is slow, and available water capacity is medium to high. Runoff is slow. The root zone is deep and easily penetrated by plant roots. The water table is between the depths of 18 and 30 inches in most years. This soil is commonly flooded from December through April for long periods. Most of the acreage of this soil is in hardwoods.

This soil has low potential for crops. Common flooding of long duration and a high water table limit farming. If these hazards are overcome, this soil is well suited to corn, soybeans, small grain, and pasture grasses. To establish drainage and control flooding on this soil, as it occurs in this county, is difficult and costly.

This soil has high potential for bottom-land hardwoods.

This soil has low potential for urban development. Common flooding and a high water table severely limit the use of this soil for urban development. Overcoming these limitations is difficult and generally impractical. Capability subclass VIIw; woodland group 1w.

To—Toccoa loam. This deep, well drained, nearly level soil is on flood plains of the Broad, Congaree, Saluda, and Wateree Rivers in the Coastal Plain and Piedmont provinces. It is also along smaller streams and drainageways in the Piedmont province (fig. 9).

Typically, the surface layer is dark yellowish brown loam about 4 inches thick. The underlying material to a depth of 72 inches is 8 inches of strong brown loam, 33 inches of dark yellowish brown fine sandy loam, 15 inches of dark yellowish brown loamy sand, 8 inches of dark yellowish brown fine sand, and 4 inches of dark yellowish brown fine sandy loam.

Included with this soil in mapping are small areas of Congaree soils; areas of soils that have a surface layer of loamy fine sand, fine sandy loam, or silt loam; and some small areas of soils that have sand texture throughout the profile.

This soil is medium acid or slightly acid throughout. Organic matter content is medium. Permeability is moderately rapid, and available water capacity is low to medium. Runoff is slow. Flooding from stream overflow is common along the smaller streams but occurs less than once in 2 years in areas along the rivers. Flooding occurs mostly in the winter and early in spring and generally is of brief duration. The root zone is deep and easily penetrated by plant roots. Most areas of this soil are cultivated or used for hay and pasture.

This soil has medium potential for row crops, hay, and pasture. Dikes are needed to protect this soil from flooding and the crop losses that result from this flooding.

This soil has high potential for loblolly pine and bottomland hardwoods.

This soil has low potential for urban development. Flooding is a severe limitation for most urban uses but can be overcome by diking or elevating single structures above expected flood levels by earth embankment or other means. Capability subclass IIIw; woodland group 1o.

TrB—Troup sand, 0 to 6 percent slopes. This deep, nearly level or gently sloping, well drained soil is on smooth convex ridgetops on the Coastal Plain uplands.

Typically, the surface layer is brown sand about 7 inches thick. The subsurface layer extends to a depth of about 48 inches. The upper 19 inches is yellowish brown sand, and the lower 22 inches is strong brown loamy sand. The subsoil to a depth of 75 inches is yellowish red sandy loam.

Included with this soil in mapping are small areas of Blanton, Fuquay, Lakeland, and Lucy soils. Also included are a few areas of soils that have loamy sand surface and subsurface layers; a few areas of soils that have more than 5 percent plinthite in the subsoil; and a few areas of soils that have slopes of 6 to 10 percent.

This soil is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed. Organic matter content is low. Permeability is rapid in the sandy surface and subsurface layers and moderate in the subsoil. Available water capacity is low. Runoff is slow, and the soil is subject to leaching. This soil has good tilth and a deep root zone which is easily penetrated by plant roots.

This soil has low potential for row crops. The leaching of plant nutrients and the droughtiness of the sandy surface layer are the main hazards to annual crops. This soil has medium potential for deep-rooted perennial legumes and grasses for hay or pasture. Cropping practices that supply large amounts of plant residue will conserve moisture and reduce leaching of fertilizer elements.

This soil has medium potential for loblolly, slash, and longleaf pine.

This soil has high potential for urban development. Limitations for most urban uses are slight. Severe limitations for such uses as lagoons or excavations can be overcome by modification of construction procedures or relocation of installations. Capability subclass IIIs; woodland group 3s.

Ud—Udorthents. This map unit consists of borrow pits or borrow areas from which sand, clay, or loamy materials have been excavated for such uses as roadfill, sand, or ceramic material (fig. 10). Areas are 10 to 40 acres in size. The pits are 4 to 20 feet deep. Areas less than 10 acres in size are shown on the soil map by a special symbol.

The characteristics of the soils in this unit are variable, and the soils are generally not suited to farming. Sediment transfer to lower areas is likely to occur unless runoff is controlled. Vegetation can be established, but investigation of individual sites is needed to determine the types of plants to establish and the treatment thus required. Capability subclass and woodland group not assigned.

Ur—Urban land. This map unit consists of areas in which more than 85 percent of the surface is covered by asphalt, concrete, buildings, or other impervious structures and materials. Examples are parking lots, shopping and business centers, and dwellings (fig. 11). Areas are mainly in the city of Columbia. Orangeburg, Fuquay, Ailey, Pelion, and Vaucluse are the predominant soils that underlie the urban structures.

Included in mapping are areas that are mostly fill material other than soil and a few areas in which the profile has only been slightly altered by cutting, filling, or grading.

Properties of the soils and soillike materials in this unit are variable; therefore; careful onsite investigation is needed to determine the potential and limitations for any proposed use. Capability subclass and woodland group not assigned.

VaC—Vaucluse loamy sand, 6 to 10 percent slopes. This well drained, sloping soil is on irregular, abrupt side slopes on the Coastal Plain uplands.

Typically, the surface layer is dark grayish brown loamy sand about 6 inches thick. The subsurface layer is yellowish brown loamy sand about 9 inches thick. The subsoil to a depth of 72 inches is 14 inches of strong brown sandy clay loam that has mottles of yellowish red; 29 inches of red sandy loam that is a firm, brittle, cemented fragipan that has mottles of strong brown, yellow, and white; and 14 inches of red sandy loam that has mottles of strong brown.

Included with this soil in mapping are small areas of Ailey, Fuquay, Lakeland, Lucy, Orangeburg, and Pelion soils; small areas of soils that have slopes of less than 6 percent or more than 10 percent; and areas of sandy and loamy alluvial sediment along drainageways. Also included are areas of soils that have a sand surface layer; areas of soils that have a reddish sandy clay loam subsoil which has been exposed by erosion; and some areas of soils that have clayey subsoil layers.

This soil is low in organic matter content. Permeability is moderate in the subsoil above the fragipan and is slow in the fragipan. Available water capacity is low. Runoff is rapid. Rooting and the downward movement of water are retarded by the fragipan. Most areas of this soil are either idle or wooded.

This soil has low potential for row crops and medium potential for perennial hay and pasture. The shallow to moderately deep rooting zone is somewhat droughty because of the fragipan. If this soil is cultivated, the erosion hazard is severe. Since most areas are narrow and small, permanent close-growing crops are better suited than others for controlling erosion.

This soil has medium potential for loblolly, slash, and longleaf pine.

This soil has medium potential for urban developments. Slow permeability is a severe limitation for septic tank absorption fields and requires extreme measures to overcome. Slope is a moderate limitation for most other urban uses. This soil is a good source for subgrade and roadfill material. Capability subclass IVe; woodland group 3o.

VaD—Vaucluse loamy sand, 10 to 15 percent slopes. This well drained, strongly sloping soil is on irregular, abrupt side slopes on the Coastal Plain. Slopes are generally narrow.

Typically, the surface layer is dark grayish brown loamy sand about 6 inches thick. The subsurface layer is yellowish brown loamy sand about 9 inches thick. The subsoil to a depth of 72 inches is 14 inches of strong brown sandy clay loam mottled yellowish red; 29 inches of red sandy loam that is a firm, brittle, cemented fragipan, and is mottled strong brown, yellow, and white; and 14 inches of red sandy loam that has mottles of strong brown.

Included with this soil in mapping are small areas of Ailey, Fuquay, Lakeland, Lucy, Orangeburg, and Pelion soils; small areas of soils that have slopes of less than 10 percent or more than 15 percent; and areas of soils that have a sand surface layer. Also included are areas of soils that have a reddish sandy clay loam subsoil which has been exposed by erosion; areas of soils that have a clayey subsoil; and small areas of sandy and loamy alluvial sediment.

This soil is low in organic matter content. Permeability is moderate in the subsoil above the fragipan and slow in the fragipan. Available water capacity is low. Runoff is rapid. Rooting and downward movement of water are retarded by the fragipan. Most areas of this soil are wooded.

This soil has low potential for farming. In cultivated areas, the erosion hazard is severe. Rapid runoff and subsequent drying of the soil above the fragipan cause this soil to be somewhat droughty. This soil is better suited to permanent perennial plant cover than to other uses.

This soil has medium potential for woodland. Loblolly, slash, and longleaf pine are suitable trees. Windthrow occurs in places.

This soil has medium potential for urban development. Slow permeability and slope are severe limitations for septic tank absorption fields, and extreme measures are needed to overcome these limitations. Slope is a moderate limitation for most urban uses and can be overcome by careful construction designs. This soil is a good source of subgrade and roadfill material. Capability subclass VIe; woodland group 3o.

WeB—Wedowee loamy sand, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on ridgetops in the Piedmont province. It is in areas of granitic regolith in the Carolina Slate Belt.

Typically, the surface layer is brown loamy sand about 5 inches thick. The subsoil extends to a depth of 35 inches. The upper 4 inches of the subsoil is brownish yellow sandy loam; the next 9 inches is strong brown sandy clay and has yellowish red and red mottles; and the lower 17 inches is mottled strong brown, yellowish red, brownish yellow, and yellow sandy clay loam. The underlying material to a depth of 80 inches is mottled, highly weathered granite rock that crushes to sandy clay loam.

Included with this soil in mapping are some areas of Wedowee soils that have slopes of more than 6 percent and some small areas of soils that have a red clayey subsoil or have a combined surface layer and subsoil more than 40 inches thick. In a few places bedrock is at a depth of less than 4 feet.

This soil is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed. Organic matter content is low. Permeability is moderate, and available water capacity is low. Runoff is medium. Erosion is a hazard if this soil is cultivated. The root zone is moderately deep and easily penetrated by plant roots. Most roots are in the upper 35 inches of the pedon. This soil is in woodland.

This soil has medium potential for crops, hay, or pasture. The irregular slopes make it difficult to control erosion if this soil is cultivated. This soil is better suited to woodland than to most other uses.

It has medium potential for loblolly, slash, and shortleaf pine. There are few limitations or hazards to woodland management.

This soil has medium potential for urban development. Limitations are moderate for most urban uses. They can be overcome by modifying plans and construction designs to suit the landscape and soil. Capability subclass IIIe; woodland group 3o.

WeE—Wedowee loamy sand, 10 to 30 percent slopes. This deep, well drained, strongly sloping to steep soil is on side slopes in the Piedmont province near the Broad River. It is in areas of granitic regolith in the Carolina Slate Belt.

Typically, the surface layer is brown loamy sand about 5 inches thick. The subsoil extends to a depth of 35 inches. The upper 4 inches of the subsoil is brownish yellow sandy loam; the next 9 inches is strong brown sandy clay that has yellowish red and red mottles; and the lower 17 inches is mottled strong brown, yellowish red, brownish yellow, and yellow sandy clay loam. The underlying material to a depth of 80 inches is mottled, highly weathered granite rock that crushes to sandy clay loam.

Included with this soil in mapping are some narrow ridges of Wedowee loamy sand, 2 to 6 percent slopes; some areas of soils that have outcrops of granite boulders; and areas of soils that have bedrock at a depth of less than 4 feet. Also included are some small areas of soils that are similar to this Wedowee soil but that have a red clayey subsoil or have a combined surface layer and subsoil thicker than 40 inches.

This soil is strongly acid or very strongly acid throughout. Organic matter content is low. Permeability is moderate, and available water capacity is medium. Runoff is rapid and erosion is severe if this soil is cultivated. The root zone is moderately deep and easily penetrated by plant roots. This soil is in woodland.

This soil is unsuited to cultivated crops. Some of the areas where the soil is less sloping can be used for pasture if grazing is limited and the grass cover is maintained.

This soil has medium potential for pines and hardwoods. It has moderate erosion hazard and equipment limitation because of slope.

This soil has low potential for urban development. Slope is a severe limitation for most urban uses. The limitations can be partly overcome for dwellings if the dwelling site includes several acres and if septic facilities other than ordinary absorption lines are provided. Capability subclass VIIe; woodland group 3r.

Use and management of the soils

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

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

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

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

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

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

Crops and pasture

CHARLES A. HOLDEN JR., agronomist, Soil Conservation Service, assisted in writing this section.

The major management concerns in the use of the soils for crops and pasture are described in this section. In addition, the crops or pasture plants best suited to the soil are discussed; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are presented for each soil.

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

In 1967, according to the South Carolina Soil and Water Conservation Needs Inventory (*5*), 14,000 acres was used for permanent pasture, and 62,784 acres for row crops, mainly soybeans, corn, and cotton, and for wheat.

Acreage in crops and pasture has gradually been decreasing as more and more land is used for urban development. In 1958 about 48,577 acres was in urban land; in 1967 about 84,127 acres was in urban land in the county. The acreage being used for urban land has been growing at the rate of about 3,500 acres per year. The use of this soil survey to help make land use decisions that will influence the future role of farming in the county is discussed in the section "General soil map for broad land use planning."

Soil erosion. The major concern for about 30 percent of the cropland and pasture in Richland County is soil erosion. If the slope is more than 2 percent, erosion is a hazard. Dothan, Georgeville, and Nason soils, for example, have slopes of more than 2 percent.

Loss of the surface layer through erosion is damaging for two reasons. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as the Georgeville, Herndon, and Nason soils, and on soils where a layer in or below the subsoil limits the depth of the root zone. Such layers include fragipans, as in Vaucluse soils, or bedrock, as in soils of the Nason complex. Loss of the surface layer also reduces productivity on soils that tend to be droughty, such as Fuquay and Lucy soils. Second, soil erosion on farmland results in sediment entering streams. Controlling erosion minimizes the pollution of streams by sediment and improves quality of water for municipal use, for recreation, and for fish and wildlife.

In many sloping fields, preparing a good seedbed and tilling are difficult on clayey spots because the original friable surface soil has been eroded away. Such spots are common in some areas of Georgeville and Nason soils.

Erosion control practices provide protective surface cover, reduce runoff, and increase infiltration. A cropping system that keeps vegetative cover on the soil for extended periods can hold soil erosion losses sufficiently to prevent loss of productive capacity of the soils. On livestock farms, which require pasture and hay, the legume and grass forage crops in the cropping system curtail erosion on slopes, provide nitrogen, and improve tilth for the crop that follows in the cropping system.

Slopes are so short and irregular that contour tillage or terracing is not practical on some areas of the Georgeville, Herndon, Nason, Orangeburg, and Vaucluse soils. On these soils, if minimum tillage is not practical, a cropping system that provides substantial vegetative cover is required to control erosion. Minimizing tillage and leaving crop residue on the surface help to increase infiltration and reduce the hazards of runoff and erosion. These practices can be adapted to most soils in the survey area.

Terraces and diversions reduce the length of slope and reduce runoff and erosion. They are most practical on deep, well drained soils that have regular slopes. Dothan, Marlboro, Norfolk, and Orangeburg soils are suitable for terraces. Soils less suitable for terraces and diversions are those in areas where slopes are irregular, or those occurring in small fields, such as Pelion soils.

Contouring and contour stripcropping are widespread erosion control practices in the survey area. They are best adapted to soils that have smooth, uniform slopes, including most areas of the sloping Dothan, Marlboro, Norfolk, Orangeburg, and Faceville soils.

Information for the design of erosion control practices for each kind of soil is contained in the Technical Guide, available in local offices of the Soil Conservation Service.

Soil drainage. The major management need on about 15 percent of the acreage used for crops in the survey area is soil drainage. Some soils are naturally so wet that the production of crops commonly grown in the area is generally not possible. In this category are the poorly drained and very poorly drained Chastain, Dorovan, and Johnston soils, which make up about 27,500 acres in the survey area.

Unless artifically drained, the somewhat poorly drained and poorly drained soils are so wet that crops are damaged during most years. In this category are the Cantey, Coxville, Orange, Rains, Smithboro, Tawcaw, and Chewacla soils, which make up about 52,300 acres.

Altavista, Clarendon, Goldsboro, Kirksey, Pelion, and Persanti soils have good natural drainage most of the year, but they tend to dry out slowly after rains. Small areas of wetter soils along drainageways and in swales are commonly included in areas of these moderately well drained soils, especially those that have slopes of 2 to 6 percent. Artificial drainage is needed in some of these areas.

The design of both surface and subsurface drainage systems varies with the kind of soil. A combination of surface drainage and tile drainage is needed in most areas of the poorly drained and somewhat poorly drained soils used for intensive row cropping. Drains have to be more closely spaced in soils that have slow permeability than in the more permeable soils. Tile drainage is very slow in Cantey, Orange, and Smithboro soils. Finding adequate outlets for tile and open drainage systems is difficult in many areas of Cantey, Coxville, Chastain, Smithboro, and Tawcaw soils.

Organic soils oxidize and subside when the pore space is filled with air; therefore, special drainage systems are needed to control the depth and the period of drainage. Keeping the water table at the level required by crops during the growing season and then raising it to the surface during other parts of the year minimize the oxidation and subsidence of organic soils. Information on drainage design for each kind of soil is contained in the Technical Guide, available in local offices of the Soil Conservation Service.

Soil fertility and reaction. In most soils of the uplands in the survey area, soil fertility is naturally low. All but Orange soils are naturally acid. The soils on flood plains, such as Congaree, Chewacla, and Tawcaw, are naturally higher in plant nutrients than most upland soils and range from neutral to very strongly acid. Cantey, Chastain, Coxville, and Rains soils, in low swales, depressions, and drainageways, are strongly acid or very strongly acid.

Many upland soils are naturally very strongly acid. If they have never been limed, they require applications of ground limestone to raise the reaction (pH) level sufficiently for good growth of legumes and other crops that grow well on nearly neutral soils. Available phosphorus and potash levels are naturally low in most of these soils. 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 kinds and amounts of fertilizer and lime to apply.

Soil tilth. Soils that have good tilth are granular and porous. Soil tilth is an important factor in the germination of seeds and in the infiltration of water into the soil.

Most of the soils used for crops in the survey area have a sandy loam or loamy sand surface layer that is light in color and low in content of organic matter. Regular additions of crop residue, manure, and other organic material can help to improve soil structure and tilth.

Many *field crops* suited to the soils and climate of the survey area are not now commonly grown. Corn, cotton, and, to an increasing extent, soybeans are the main row crops now being grown. Grain sorghum, sunflowers, peanuts, sweet potatoes, and similar crops can be grown if economic conditions are favorable.

Wheat and oats are the close-growing crops, rye and barley could be grown, and grass seed could be produced from fescue, bahiagrass, and dallisgrass.

Deep soils that have good natural drainage and that warm up early in spring are especially well suited to many vegetables and small fruits. In the survey area, examples of these soils are Dothan, Faceville, Marlboro, Norfolk, and Orangeburg soils on slopes of less than 6 percent. Supplemental irrigation is desirable and can be used to insure good yields.

Most of the well drained soils in the survey area are suitable for orchards and nursery plants. Soils in low positions on the landscape, where frost is frequent and aeration is poor, however, generally are poorly suited to early vegetables, small fruits, and orchards.

Latest information and suggestions for growing special 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 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. Absence of an estimated yield indicates that the crop is not suited to or not commonly grown on the soil.

The estimated yields were based mainly on the experience and records of farmers, conservationists, and extension agents. Results of field trials and demonstrations and available yield data from nearby counties were also considered.

The yields were estimated assuming that the latest soil and crop management practices were used. Hay and pasture yields were estimated for the most productive varieties of grasses and legumes suited to the climate and the soil. A few farmers may be obtaining average yields higher than those shown in table 6.

The management needed to achieve the indicated yields of the various crops depends on the kind of soil and the crop. Such management provides drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate tillage practices, including time of tillage and seedbed preparation and tilling when soil moisture is favorable; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue; harvesting crops with the smallest possible loss; and timeliness of all fieldwork.

The estimated yields reflect the productive capacity of the soils for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not included because the acreage of these crops is small. The local offices of the Soil Conservation Service and the Cooperative Extension Service can provide information about the management concerns and productivity of the soils for these crops.

Capability classes and subclasses

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

In the capability system, all kinds of soil are grouped at three levels: capability class, subclass, and unit. These levels are defined in the following paragraphs. A survey area may not have soils of all classes. This survey classifies soils by capability class and subclass levels.

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 have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and landforms have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

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

The acreage of soils in each capability class and subclass is indicated in table 7. All soils in the survey area except Udorthents, Urban land, and Urban land complexes are included. Some of the soils that are well suited to crops and pasture may be in low-intensity use, for example, soils in capability classes I and II. Data in this table can be used to determine the farming potential of such soils.

The capability subclass is identified in the description of each soil mapping unit in the section "Soil maps for detailed planning."

Woodland management and productivity

NORMAN W. RUNGE, forester, Soil Conservation Service, assisted in writing this section.

This section has been provided to explain how soils affect tree growth and management in the county.

Originally Richland County was mainly wooded. Commercial woodland now covers about 53 percent of the county (5). Good stands of commercial trees are produced. Needleleaf species are more prevalent on the hills, and broadleaf species generally are dominant on the bottom land along the rivers and creeks.

The potential production of the timber in the county is much higher than actual production, which is substantial. In addition to wood products, woodlands in the county provide wildlife habitat, recreation, natural beauty, conservation of soil and water, and other benefits.

Table 8 contains information useful to woodland owners or forest managers planning use of soils for wood crops. Mapping unit symbols for soils suitable for wood crops are listed, and the ordination (woodland suitability) symbol for each soil is given. All soils bearing the same ordination symbol require the same general kinds of woodland management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates insignificant limitations or restrictions. If a soil has more than one limitation, priority in placing the soil into a limitation class is in the following order: x, w, t, d, c, s, f, and r.

In table 8 the soils are also rated for a number of factors to be considered in management. *Slight*, *moderate*, and *severe* are used to indicate the degree of major soil limitations.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if some measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or equipment; *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree that the soil affects expected mortality of planted tree seedlings. Plant competition is not considered in the ratings. Seedlings from good planting stock that are properly planted during a period of sufficient rainfall are rated. A rating of *slight* indicates that the expected mortality of the planted seedlings is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

The *potential productivity* of merchantable or *important trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years: age 30 for eastern cottonwood, age 35 for American sycamore, and age 50 for pine and other species. The site index applies to fully stocked, even-aged, unmanaged stands. Important trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suitable for commercial wood production and that are suited to the soils.

Engineering

JAMES D. MARTIN and HOWARD E. MORRISON, engineers, Soil Conservation Service, assisted in preparing this section.

This section provides information about the use of soils for building sites, sanitary facilities, construction material, and water management. Among those who can benefit from this information are engineers, landowners, community planners, town and city managers, land developers, builders, contractors, and farmers.

The ratings in the engineering tables are based on test data and estimated data in the "Soil properties" section. The ratings were determined jointly by soil scientists and engineers of the Soil Conservation Service using known relationships between the soil properties and the behavior of soils in various engineering uses.

Among the soil properties and site conditions identified by a soil survey and used in determining the ratings in this section were grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock that is within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure or aggregation, in-place soil density, and geologic origin of the soil material. Where pertinent, data about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of absorbed cations were also considered.

On the basis of information assembled about soil properties, ranges of values can be estimated for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, shear strength, compressibility, slope stability, and other factors of expected soil behavior in engineering uses. As appropriate, these values can be applied to each major horizon of each soil or to the entire profile.

These factors of soil behavior affect construction and maintenance of roads, airport runways, pipelines, foundations for small buildings, ponds and small dams, irrigation projects, drainage systems, sewage and refuse disposal systems, and other engineering works. The ranges of values can be used to (1) select potential residential, commercial, industrial, and recreational uses; (2) make preliminary estimates pertinent to construction in a particular area; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for location of sanitary landfills, onsite sewage disposal systems, and other waste disposal facilities; (5) plan detailed onsite investigations of soils and geology; (6) find sources of gravel, sand, clay, and topsoil; (7) plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; (8) relate performance of structures already built to the properties of the kinds of soil on which they are built so that performance of similar structures on the same or a similar soil in other locations can be predicted; and (9) predict the trafficability of soils for cross-country movement of vehicles and construction equipment.

Data presented in this section are useful for land-use planning and for choosing alternative practices or general designs that will overcome unfavorable soil properties and minimize soil-related failures. Limitations to the use of these data, however, should be well understood. First, the data are generally not presented for soil material below a depth of 5 or 6 feet. Also, because of the scale of the detailed map in this soil survey, small areas of soils that differ from the dominant soil may be included in mapping. Thus, these data do not eliminate the need for onsite investigations, testing, and analysis by personnel having expertise in the specific use contemplated.

The information is presented mainly in tables. Table 9 shows, for each kind of soil, the degree and kind of limitations for building site development; table 10, for sanitary facilities; and table 12, for water management. Table 11 shows the suitability of each kind of soil as a source of construction materials.

The information in the tables, along with the soil map, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations and to construct interpretive maps for specific uses of land.

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

Building site development

The degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, and local roads and streets are indicated in table 9. A *slight* limitation indicates that soil properties generally are favorable for the specified use; any limitation is minor and easily overcome. A *moderate* limitation indicates that soil properties and site features are unfavorable for the specified use, but the limitations can be overcome or minimized by special planning and design. A *severe* limitation indicates that one or more soil properties or site features are so unfavorable or difficult to overcome that a major increase in construction effort, special design, or intensive maintenance is required. For some soils rated severe, such costly measures may not be feasible.

Shallow excavations are made for pipelines, sewerlines, communications and power transmission lines, basements, open ditches, and cemetery plots. Such digging or trenching is influenced by soil wetness caused by a seasonal high water table; the texture and consistence of soils; the tendency of soils to cave in or slough; and the presence of very firm, dense soil layers, bedrock, or large stones. In addition, excavations are affected by slope of the soil and the probability of flooding. Ratings do not apply to soil horizons below a depth of 6 feet unless otherwise noted.

In the soil series descriptions, the consistence of each soil horizon is given, and the presence of very firm or extremely firm horizons, usually difficult to excavate, is indicated.

Dwellings and *small commercial buildings* referred to in table 9 are built on undisturbed soil and have foundation loads of a dwelling no more than three stories high. Separate ratings are made for small commercial buildings without basements and for dwellings with and without basements. For such structures, soils should be sufficiently stable that cracking or subsidence of the structure from settling or shear failure of the foundation does not occur. These ratings were determined from estimates of the shear strength, compressibility, and shrink-swell potential of the soil. Soil texture, plasticity and in-place density, potential frost action, soil wetness, and depth to a seasonal high water table were also considered. Soil wetness and depth to a seasonal high water table indicate potential difficulty in providing adequate drainage for basements, lawns, and gardens. Depth to bedrock, slope, and large stones in or on the soil are also important considerations in the choice of sites for these structures and were considered in determining the ratings. Susceptibility to flooding is a serious hazard.

Local roads and streets referred to in table 9 have an all-weather surface that can carry light to medium traffic all year. They consist of a subgrade of the underlying soil material; a base of gravel, crushed rock fragments, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. The roads are graded with soil material at hand, and most cuts and fills are less than 6 feet deep.

The load supporting capacity and the stability of the soil as well as the quantity and workability of fill material available are important in design and construction of roads and streets. The classifications of the soil and the soil texture, density, shrink-swell potential, and potential frost action are indicators of the traffic supporting capacity used in making the ratings. Soil wetness, flooding, slope, depth to hard rock or very compact layers, and content of large stones affect stability and ease of excavation.

Sanitary facilities

Favorable soil properties and site features are needed for proper functioning of septic tank absorption fields, sewage lagoons, and sanitary landfills. The nature of the soil is important in selecting sites for these facilities and in identifying limiting soil properties and site features to be considered in design and installation. Also, those soil properties that affect ease of excavation or installation of these facilities will be of interest to contractors and local officials. Table 10 shows the degree and kind of limitations of each soil for such uses and for use of the soil as daily cover for landfills. It is important to observe local ordinances and regulations.

If the degree of soil limitation is expressed as *slight*, soils are generally favorable for the specified use and limitations are minor and easily overcome; if *moderate*, soil properties or site features are unfavorable for the specified use, but limitations can be overcome by special planning and design; and if *severe*, soil properties or site features are so unfavorable or difficult to overcome that major soil reclamation, special designs, or intensive maintenance is required. Soil suitability is rated by the terms *good*, *fair*, or *poor*, which, respectively, mean about the same as the terms *slight*, *moderate*, and *severe*.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into the natural soil. Only the soil horizons between depths of 18 and 72 inches are evaluated for this use. The soil properties and site features considered are those that affect the absorption of the effluent and those that affect the construction of the system.

Properties and features that affect absorption of the effluent are permeability, depth to seasonal high water table, depth to bedrock, and susceptibility to flooding. Stones, boulders, and shallowness to bedrock interfere with installation. Excessive slope can cause lateral seepage and surfacing of the effluent. Also, soil erosion and soil slippage are hazards if absorption fields are installed on sloping soils.

In some soils, loose sand and gravel or fractured bedrock is less than 4 feet below the tile lines. In these soils the absorption field does not adequately filter the effluent, and ground water in the area may be contaminated.

On many of the soils that have moderate or severe limitations for use as septic tank absorption fields, a system to lower the seasonal water table can be installed or the size of the absorption field can be increased so that performance is satisfactory.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons have a nearly level floor and cut slopes or embankments of compacted soil material. Aerobic lagoons generally are designed to hold sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Soils that are very high in content of organic matter and those that have cobbles, stones, or boulders are not suitable. Unless the soil has very slow permeability, contamination of ground water is a hazard where the seasonal high water table is above the level of the lagoon floor. In soils where the water table is seasonally high, seepage of ground water into the lagoon can seriously reduce the lagoon's capacity for liquid waste. Slope, depth to bedrock, and susceptibility to flooding also affect the suitability of sites for sewage lagoons or the cost of construction. Shear strength and permeability of compacted soil material affect the performance of embankments.

Sanitary landfill is solid waste (refuse) and soil material that is placed in successive layers either in excavated trenches or on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil material. Landfill areas are subject to heavy vehicular traffic. Risk of polluting ground water and trafficability affect the suitability of a soil for this use. The best soils have a loamy or silty texture, have moderate to slow permeability, are deep to a seasonal water table, and are not subject to flooding. Clayey soils are likely to be sticky and difficult to spread. Sandy or gravelly soils generally have rapid permeability, which might allow noxious liquids to contaminate ground water. Soil wetness can be a limitation, because operating heavy equipment on a wet soil is difficult. Seepage into the refuse increases the risk of pollution of ground water.

Ease of excavation affects the suitability of a soil for the trench type of landfill. A suitable soil is deep to bedrock and free of large stones and boulders. If the seasonal water table is high, water will seep into trenches.

Unless otherwise stated, the limitations in table 10 apply only to the soil material within a depth of about 6 feet. If the trench is deeper, a limitation of slight or moderate may not be valid. Site investigation is needed before a site is selected.

Daily cover for landfill should be soil that is easy to excavate and spread over the compacted fill in wet and dry periods. Soils that are loamy or silty and free of stones or boulders are better than other soils. Clayey soils may be sticky and difficult to spread; sandy soils may be subject to soil blowing.

The soils selected for final cover of landfills should be suitable for growing plants. Of all the horizons, the A horizon in most soils has the best workability, more organic matter, and the best potential for growing plants. Thus, for either the area- or trench-type landfill, stockpiling material from the A horizon for use as the surface layer of the final cover is desirable.

Where it is necessary to bring in soil material for daily or final cover, thickness of suitable soil material available and depth to a seasonal high water table in soils surrounding the sites should be evaluated. Other factors to be evaluated are those that affect reclamation of the borrow areas. These factors include slope, erodibility, and potential for plant growth.

Construction materials

The suitability of each soil as a source of roadfill, sand, gravel, and topsoil is indicated in table 11 by ratings of good, fair, or poor. The texture, thickness, and organic-matter content of each soil horizon are important factors in rating soils for use as construction materials. Each soil is evaluated to the depth observed, generally about 6 feet.

Roadfill is soil material used in embankments for roads. Soils are evaluated as a source of roadfill for low embankments, which generally are less than 6 feet high and less exacting in design than high embankments. The ratings reflect the ease of excavating and working the material and the expected performance of the material where it has been compacted and adequately drained. The performance of soil after it is stabilized with lime or cement is not considered in the ratings, but information about some of the soil properties that influence such performance is given in the descriptions of the soil series.

The ratings apply to the soil material between the A horizon and a depth of 5 to 6 feet. It is assumed that soil horizons will be mixed during excavation and spreading. Many soils have horizons of contrasting suitability within their profile. The estimated engineering properties in table 15 provide specific information about the nature of each horizon. This information can help determine the suitability of each horizon for roadfill.

Soils rated *good* are coarse grained. They have low shrink-swell potential, low potential frost action, and few cobbles and stones. They are at least moderately well drained and have slopes of 15 percent or less. Soils rated *fair* have a plasticity index of less than 15 and have other limiting features, such as moderate shrink-swell potential, moderately steep slopes, wetness, or many stones. If the thickness of suitable material is less than 3 feet, the entire soil is rated *poor.*

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 11 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand and gravel. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 15.

Topsoil is used in areas where vegetation is to be established and maintained. Suitability is affected mainly by the ease of working and spreading the soil material in preparing a seedbed and by the ability of the soil material to support plantlife. Also considered is the damage that can result at the area from which the topsoil is taken.

The ease of excavation is influenced by the thickness of suitable material, wetness, slope, and amount of stones. The ability of the soil to support plantlife is determined by texture, structure, and the amount of soluble salts or toxic substances. Organic matter in the A1 or Ap horizon greatly increases the absorption and retention of moisture and nutrients. Therefore, the soil material from these horizons should be carefully preserved for later use.

Soils rated *good* have at least 16 inches of friable loamy material at their surface. They are free of stones and cobbles, are low in content of gravel, and have gentle slopes. They are low in soluble salts that can limit or prevent plant growth. They are naturally fertile or respond well to fertilizer. They are not so wet that excavation is difficult during most of the year.

Soils rated *fair* are loose sandy soils or firm loamy or clayey soils in which the suitable material is only 8 to 16 inches thick or soils that have appreciable amounts of gravel, stones, or soluble salt.

Soils rated *poor* are very sandy soils and very firm clayey soils; soils with suitable layers less than 8 inches thick; soils having large amounts of gravel, stones, or soluble salt; steep soils; and poorly drained soils.

Although a rating of *good* is not based entirely on high content of organic matter, a surface horizon is generally preferred for topsoil because of its organic-matter content. This horizon is designated as A1 or Ap in the soil series descriptions. The absorption and retention of moisture and nutrients for plant growth are greatly increased by organic matter.

Water management

Many soil properties and site features that affect water management practices have been identified in this soil survey. In table 12 the degree of soil limitation and soil and site features that affect use are indicated for each kind of soil. This information is significant in planning, installing, and maintaining water control structures.

Soil and site limitations are expressed as slight, moderate, and severe. *Slight* means that the soil properties and site features are generally favorable for the specified use and that any limitation is minor and easily overcome. *Moderate* means that some soil properties or site features are unfavorable for the specified use but can be overcome or modified by special planning and design. *Severe* means that the soil properties and site features are so unfavorable and so difficult to correct or overcome that major soil reclamation, special design, or intensive maintenance is required.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have a low seepage potential, which is determined by permeability and the depth to fractured or permeable bedrock or other permeable material.

Embankments, dikes, and levees require soil material that is resistant to seepage, erosion, and piping and has favorable stability, shrink-swell potential, shear strength, and compaction characteristics (fig. 12). Large stones and organic matter in a soil downgrade the suitability of a soil for use in embankments, dikes, and levees.

Drainage of soil is affected by such soil properties as permeability; texture; depth to bedrock, hardpan, or other layers that affect the rate of water movement; depth to the water table; slope; stability of ditchbanks; susceptibility to flooding; salinity and alkalinity; and availability of outlets for drainage.

Irrigation is affected by such features as slope, susceptibility to flooding, hazards of water erosion and soil blowing, texture, presence of salts and alkali, depth of root zone, rate of water intake at the surface, permeability of the soil below the surface layer, available water capacity, need for drainage, and depth to the water table.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to intercept runoff. They allow water to soak into the soil or flow slowly to an outlet. Features that affect suitability of a soil for terraces are uniformity and steepness of slope; depth to bedrock, hardpan, or other unfavorable material; large stones; permeability; ease of establishing vegetation; and resistance to water erosion, soil blowing, soil slipping, and piping.

Grassed waterways are constructed to channel runoff to outlets at a nonerosive velocity. Features that affect the use of soils for waterways are slope, permeability, erodibility, wetness, and suitability for permanent vegetation.

Recreation

The soils of the survey area are rated in table 13 according to limitations that affect their suitability for recreation uses. The ratings are based on such restrictive soil features as flooding, wetness, slope, and texture of the surface layer. Not considered in these ratings, but important in evaluating a site, are location and accessibility of the area, size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites available, and either access to public sewerlines or capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degree, for recreation use by the duration and intensity of flooding and the season when flooding occurs. Onsite assessment of height, duration, intensity, and frequency of flooding is essential in planning recreation facilities.

The degree of the limitation of the soils is expressed as slight, moderate, or severe. *Slight* means that the soil properties are generally favorable and that the limitations are minor and easily overcome. *Moderate* means that the limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 13 can be supplemented by information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 10, and interpretations for dwellings without basements and for local roads and streets, given in table 9.

Camp areas require such site preparation as shaping and leveling for tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils for this use have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing camping sites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for use as picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that will increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones or boulders, is firm after rains, and is not dusty when dry. If shaping is required to obtain a uniform grade, the depth of the soil over bedrock or hardpan should be enough to allow necessary grading.

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

Wildlife habitat

WILLIAM W. NEELEY, biologist, Soil Conservation Service, helped in preparing this section.

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover, and they affect the construction of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, and water. If any one of these elements is missing, is inadequate, or is inaccessible, wildlife either are scarce or do not inhabit the area.

If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by helping the natural establishment of desirable plants.

In table 14, the soils in the survey area are rated according to their potential to support the main kinds of wildlife habitat in the area. This information can be used in planning for parks, wildlife refuges, nature study areas, and other developments for wildlife; selecting areas that are suitable for wildlife; selecting soils that are suitable for creating, improving, or maintaining specific elements of wildlife habitat; and determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* means that the element of wildlife habitat or the kind of habitat is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose. A rating of *fair* means that the element of wildlife habitat or kind of habitat can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* means that restrictions for the element of wildlife habitat or kind of wildlife are very severe, and that unsatisfactory results can be expected. Wildlife habitat is impractical or even impossible to create, improve, or maintain on soils having such a rating.

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

Grain and seed crops are seed-producing annuals used by wildlife. The major soil properties that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes that are planted for wildlife food and cover. Major soil properties that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, lovegrass, and clover.

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

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

Coniferous plants are cone-bearing trees, shrubs, or ground cover plants that furnish habitat or supply food in the form of browse, seeds, or fruitlike cones. Soil properties that have a major effect on the growth of coniferous plants are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine and cedar.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites, exclusive of submerged or floating aquatics. They produce food or cover for wildlife that use wetland as habitat. Major soil properties affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, and rushes, sedges, and reeds.

Shallow water areas are bodies of water that have an average depth of less than 5 feet and that are useful to wildlife. They can be naturally wet areas, or they can be created by dams or levees or by water-control structures in marshes or streams. Major soil properties affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. The availability of a dependable water supply is important if water areas are to be developed. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The kinds of wildlife habitat are briefly described in the following paragraphs.

Openland habitat consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The kinds of wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail rabbit, and red fox.

Woodland habitat consists of areas of hardwoods or conifers, or a mixture of both, and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Wetland habitat consists of open, marshy or swampy, shallow water areas where water-tolerant plants grow. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Soil properties

Extensive data about soil properties are summarized on the following pages. The two main sources of these data are the many thousands of soil borings made during the course of the survey and the laboratory analyses of selected soil samples from typical profiles.

In making soil borings during field mapping, soil scientists can identify several important soil properties. They note the seasonal soil moisture condition or the presence of free water and its depth. For each horizon in the profile, they note the thickness and color of the soil material; the texture, or amount of clay, silt, sand, and gravel or other coarse fragments; the structure, or the natural pattern of cracks and pores in the undisturbed soil; and the consistence of the soil material in place under the existing soil moisture conditions. They record the depth of plant roots, determine the pH or reaction of the soil, and identify any free carbonates.

Samples of soil material are analyzed in the laboratory to verify the field estimates of soil properties and to determine all major properties of key soils, especially properties that cannot be estimated accurately by field observation. Laboratory analyses are not conducted for all soil series in the survey area, but laboratory data for many soil series not tested are available from nearby survey areas.

The available field and laboratory data are summarized in tables. The tables give the estimated range of engineering properties, the engineering classifications, and the physical and chemical properties of each major horizon of each soil in the survey area. They also present data about pertinent soil and water features and engineering test data.

Engineering properties

Table 15 gives estimates of engineering properties and classifications for the major horizons of each soil in the survey area.

Most soils have, within the upper 5 or 6 feet, horizons of contrasting properties. Table 15 gives information for each of these contrasting horizons in a typical profile. *Depth* to the upper and lower boundaries of each horizon is indicated. More information about the range in depth and about other properties in each horizon is given for each soil series in the section "Soil series and morphology."

Texture is described in table 15 in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loam." Other texture terms are defined in the Glossary.

The two systems commonly used in classifying soils for engineering use are the Unified Soil Classification System (Unified) (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO) (*1*).

The *Unified* system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter, plasticity index, liquid limit, and organic-matter content. Soils are grouped into 15 classes—eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes have a dual classification symbol, for example, CL-ML.

The *AASHTO* system classifies soils according to those properties that affect their use in highway construction and maintenance. In this system a mineral soil is classified in one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines. At the other extreme, in group A-7, are fine-grained soils. Highly organic soils are classified in group A-8 on the basis of visual inspection.

When laboratory data are available, the A-1, A-2, and A-7 groups are further classified as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As an additional refinement, the desirability of soils as subgrade material can be indicated by a group index number. These numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested in the survey area, with group index numbers in parentheses, is given in table 18. The estimated classification, without group index numbers, is given in table 15.

Also in table 15 the percentage, by weight, of rock fragments more than 3 inches in diameter is estimated for each major horizon. These estimates are determined mainly by observing volume percentage in the field and then converting that, by formula, to weight percentage.

Percentage of the soil material less than 3 inches in diameter that passes each of four sieves (U.S. standard) is estimated for each major horizon. The estimates are based on tests of soils that were sampled in the survey area and in nearby areas and on field estimates from many borings made during the survey.

Liquid limit and *plasticity index* indicate the effect of water on the strength and consistence of soil. These indexes are used in both the Unified and AASHTO soil classification systems. They are also used as indicators in making general predictions of soil behavior. Range in liquid limit and plasticity index are estimated on the basis of test data from the survey area or from nearby areas and on observations of the many soil borings made during the survey.

In some surveys, the estimates are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterburg limits extend a marginal amount across classification boundaries (1 or 2 percent), the classification in the marginal zone is omitted.

Physical and chemical properties

Table 16 shows estimated values for several soil characteristics and features that affect behavior of soils in engineering uses. These estimates are given for each major horizon, at the depths indicated, in the typical pedon of each soil. The estimates are based on field observations and on test data for these and similar soils.

Permeability is estimated on the basis of known relationships among the soil characteristics observed in the field—particularly soil structure, porosity, and gradation or texture—that influence the downward movement of water in the soil (*6*). The estimates are for vertical water movement when the soil is saturated. Not considered in the estimates is lateral seepage or such transient soil features as plowpans and surface crusts. Permeability of the soil is an important factor to be considered in planning and designing drainage systems, in evaluating the potential of soils for septic tank systems and other waste disposal systems, and in many other aspects of land use and management.

Available water capacity is rated on the basis of soil characteristics that influence the ability of the soil to hold water and make it available to plants. Important characteristics are content of organic matter, soil texture, and soil structure. Shallow-rooted plants are not likely to use the available water from the deeper soil horizons. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design of irrigation systems.

Soil reaction is expressed as a range in pH values. The range in pH of each major horizon is based on many field checks. For many soils, the values have been verified by laboratory analyses. Soil reaction is important in selecting the crops, ornamental plants, or other plants to be grown; in evaluating soil amendments for fertility and stabilization; and in evaluating the corrosivity of soils.

Shrink-swell potential depends mainly on the amount and kind of clay in the soil. Laboratory measurements of the swelling of undisturbed clods were made for many soils. For others the swelling was estimated on the basis of the kind and amount of clay in the soil and on measurements of similar soils. The size of the load and the magnitude of the change in soil moisture content also influence the swelling of soils. Shrinking and swelling of some soils can cause damage to building foundations, basement walls, roads, and other structures unless special designs are used. A high shrink-swell potential indicates that special design and added expense may be required if the planned use of the soil will not tolerate large volume changes.

Risk of corrosion pertains to potential soil-induced chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to soil moisture, particle-size distribution, total acidity, and electrical conductivity of the soil material. The rate of corrosion of concrete is based mainly on the sulfate content, texture, and acidity of the soil. Protective measures for steel or more resistant concrete help to avoid or minimize damage resulting from the corrosion. Uncoated steel intersecting soil boundaries or soil horizons is more susceptible to corrosion than an installation that is entirely within one kind of soil or within one soil horizon.

Erosion factors are used to predict the erodibility of a soil and its tolerance to erosion in relation to specific kinds of land use and treatment (*9*). The soil erodibility factor (K) is a measure of the susceptibility of the soil to erosion by water. Soils having the highest K values are the most erodible. K values range from 0.10 to 0.64. To estimate annual soil loss per acre, the K value of a soil is modified by factors representing plant cover, grade and length of slope, management practices, and climate. The soil-loss tolerance factor (T) is the maximum rate of soil erosion, whether from rainfall or soil blowing, that can occur without reducing crop production or environmental quality. The rate is expressed in tons of soil loss per acre per year.

Soil and water features

Table 17 contains information helpful in planning land uses and engineering projects that are likely to be affected by soil and water features.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are placed in one of four groups on the basis of the intake of water after the soils have been wetted and have received precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist chiefly of deep, well drained to excessively drained sands or gravels. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils that have a layer that impedes the downward movement of water or soils that have moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clay soils that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding is the temporary covering of soil with water from overflowing streams, with runoff from adjacent slopes, and by tides. Water standing for short periods after rains or after snow melts is not considered flooding, nor is water in swamps and marshes. Flooding is rated in general terms that describe the frequency and duration of flooding and the time of year when flooding is most likely. The ratings are based on evidence in the soil profile of the effects of flooding, namely thin strata of gravel, sand, silt, or, in places, clay deposited by floodwater; irregular decrease in organic-matter content with increasing depth; and absence of distinctive soil horizons that form in soils of the area that are not subject to flooding. The ratings are also based on local information about floodwater levels in the area and the extent of flooding; and on information that relates the position of each soil on the landscape to historic floods.

The generalized description of flood hazards is of value in land-use planning and provides a valid basis for land-use restrictions. The soil data are less specific, however, than those provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table is the highest level of a saturated zone more than 6 inches thick for a continuous period of more than 2 weeks during most years. The depth to a seasonal high water table applies to undrained soils. Estimates are based mainly on the relationship between grayish colors or mottles in the soil and the depth to free water observed in many borings made during the course of the soil survey. Indicated in table 17 are the depth to the seasonal high water table; the kind of water table, that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. Only saturated zones above a depth of 5 or 6 feet are indicated.

Information about the seasonal high water table helps in assessing the need for specially designed foundations, the need for specific kinds of drainage systems, and the need for footing drains to insure dry basements. Such information is also needed to decide whether or not construction of basements is feasible and to determine how septic tank absorption fields and other underground installations will function. Also, a seasonal high water table affects ease of excavation.

Bedrock is shown for all soils that are underlain by bedrock at a depth of 5 to 6 feet or less. For many soils, the limited depth to bedrock is a part of the definition of the soil series. The depths shown are based on measurements made in many soil borings and on other observations during the mapping of the soils. The kind of bedrock and its hardness as related to ease of excavation is also shown. Rippable bedrock can be excavated with a single-tooth ripping attachment on a 200-horsepower tractor, but hard bedrock generally requires blasting.

Engineering test data

The results of analyses of engineering properties of several typical soils of the survey area are given in table 18.

The data presented are for soil samples that were collected from carefully selected sites. The soil profiles sampled are typical of the series discussed in the section "Soil series and morphology." The soil samples were analyzed by the South Carolina Highway Department, Research and Materials Laboratory.

The methods used in obtaining the data are listed by code in the next paragraph. Most of the codes, in parentheses, refer to the methods assigned by the American Association of State Highway and Transportation Officials. The codes for Unified classification are those assigned by the American Society for Testing and Materials.

The methods and codes are AASHTO classification (M-145-66); Unified classification (D-2487-69); mechanical analysis (T88-57); liquid limit (T89-60); plasticity index (T90-56).

Classification of the soils

In this section the soil series of the survey area are described and the current system of classifying soils is defined.

Soil series and morphology

In this section, each soil series recognized in the survey area is described in detail. The descriptions are arranged in alphabetic order by series name.

Characteristics of the soil and the material in which it formed are discussed for each series. The soil is then compared to similar soils and to nearby soils of other series. Then a pedon, a small three-dimensional area of soil that is typical of the soil series in the survey area, is described. The detailed descriptions of each soil horizon follow standards in the Soil Survey Manual (*8*). Unless otherwise noted, colors described are for moist soil.

Following the pedon description is the range of important characteristics of the soil series in this survey area. Phases, or map units, of each soil series are described in the section "Soil maps for detailed planning."

Ailey series

The Ailey series consists of deep, well drained, gently sloping or sloping soils that formed in loamy marine sediment. These soils have a slowly permeable fragipan. They are on side slopes and toe slopes of the Coastal Plain uplands.

Ailey soils are closely associated on the landscape with Dothan, Fuquay, Lakeland, Orangeburg, Pelion, and Vaucluse soils. Dothan, Lakeland, Orangeburg, and Fuquay soils are generally at higher elevations and on ridgetops and do not have a fragipan. In places Fuquay soils are in similar positions on the landscape to those of Ailey soils, but the Fuquay soils have plinthite in the B horizon. Ailey soils have a thicker sandy A horizon than Pelion and Vaucluse soils and commonly are in similar positions on the landscape.

Typical pedon of Ailey loamy sand, 2 to 10 percent slopes, about 19.5 miles east of Columbia, 0.6 mile east of intersection of S.C. Highway 262 and U.S. Highway 601 on a private road, in cutbank south of road:

A1—0 to 5 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

A2—5 to 30 inches; light yellowish brown (10YR 6/4) loamy sand; single grained; loose; common fine medium and large roots; strongly acid; clear wavy boundary.

B2t—30 to 38 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; thin patchy faint clay films on faces of peds; common fine and medium roots; common fine and medium pores; strongly acid; clear smooth boundary.

Bx1—38 to 51 inches; mottled yellowish red (5YR 5/8), strong brown (7.5YR 5/8), and yellowish brown (10YR 5/6) sandy clay loam; weak coarse blocky structure parting to weak medium subangular blocky; firm, compact, brittle; slightly cemented; strongly acid; clear smooth boundary.

Bx2—51 to 69 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium faint yellowish red (5YR 5/8) and common medium distinct light gray (10YR 7/1) mottles; weak coarse blocky structure parting to weak medium subangular blocky; firm, compact, brittle; slightly cemented; strongly acid; gradual smooth boundary.

B3g—69 to 81 inches; light gray (N 7/0) sandy clay loam; common medium prominent reddish yellow (5YR 6/8), common medium faint pale yellow (2.5Y 7/4), and few medium distinct yellow (2.5Y 7/6) and yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; strongly acid.

The solum ranges from 70 inches to more than 85 inches in thickness. It is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed.

The A horizon is 24 to 38 inches thick. The Ap or A1 horizon is very dark gray, dark grayish brown, or grayish brown and is 3 to 9 inches thick. The A2 horizon is yellowish brown or light yellowish brown loamy sand or sand and is 21 to 31 inches thick.

The B1 horizon, where present, is light yellowish brown sandy loam about 4 inches thick. The B2t horizon is strong brown, brownish yellow, reddish yellow, or yellowish brown and is 6 to 18 inches thick. The Bx horizon is red, yellowish red, reddish yellow, brownish yellow, strong brown, or yellowish brown, or it is mottled in shades of red, yellow, and brown in the upper part and mottled in shades of red, yellow, brown, and gray in the lower part. It is sandy clay loam or sandy loam 15 to 34 inches thick. The B3 horizon, where present, is light gray and has mottles in various shades of red, brown, and yellow, or it is mottled in various shades of red, yellow, gray, and brown. It is sandy clay loam, sandy loam, or loamy sand and is 10 to 17 inches thick.

Altavista series

The Altavista series consists of deep, moderately permeable, moderately well drained soils that formed in loamy sediment on terraces of streams. These soils are in the Slate Belt of the Piedmont province. Slopes are 0 to 2 percent.

Altavista soils are closely associated on the landscape with Chewacla, Congaree, and State soils. State soils are better drained and do not have gray colors in the lower part of the B horizon. Altavista soils are at higher elevations above the stream than Congaree and Chewacla soils, and they have an argillic horizon. Congaree and Chewacla soils are on stream flood plains.

Typical pedon of Altavista silt loam, 0 to 2 percent slopes, about 8 miles north of Columbia, 1.2 miles southwest of intersection of U.S. Highway 321 and secondary road 947, 100 feet south of road 947:

Ap—0 to 7 inches; grayish brown (10YR 5/2) silt loam, moderate fine subangular blocky structure; friable; many fine roots and pores; strongly acid; clear smooth boundary.

B21t—7 to 14 inches; brownish yellow (10YR 6/6) silt loam; few strong brown (7.5YR 5/8) stains along root channels and on faces of peds; moderate medium angular blocky structure; friable; common fine roots; many fine pores; thin discontinuous clay films; very strongly acid; clear smooth boundary.

B22t—14 to 24 inches; brownish yellow (10YR 6/6) silt loam; common medium distinct yellowish red (5YR 4/8) and strong brown (7.5YR 5/6) mottles and few fine prominent red mottles; moderate medium and coarse angular blocky structure; friable, sticky; few fine and medium roots; many fine pores; thin continuous clay films; very strongly acid; gradual wavy boundary.

B23t—24 to 34 inches; brownish yellow (10YR 6/6) loam; common medium faint brownish yellow (10YR 6/8) and common medium distinct light gray (10YR 7/1) mottles; moderate coarse angular blocky structure; friable, sticky; few fine roots; few fine pores; few fine pebbles; thin continuous clay films; strongly acid; clear smooth boundary.

B24t—34 to 40 inches; mottled brownish yellow (10YR 6/8), light gray (10YR 7/1), very pale brown (10YR 7/3), and yellow (10YR 7/6) loam; moderate coarse angular blocky structure; firm, sticky; few fine roots; few fine pores; few fine pebbles; thin continuous clay films; strongly acid; gradual wavy boundary.

B25t—40 to 46 inches; mottled strong brown (7.5YR 5/8) and light gray (N 7/0) loam; moderate coarse angular blocky structure; firm, sticky; thin continuous clay films; few fine roots; few fine pores; few fine pebbles; strongly acid; clear smooth boundary.

C—46 to 49 inches; light gray (N 7/0) and strong brown (7.5YR 5/8) loam; massive; firm, plastic and sticky; few fine roots; common fine and coarse pebbles; very strongly acid.

R—49 inches; slate rock.

The solum ranges from 38 to 50 inches in thickness. It is very strongly acid to medium acid throughout. Bedrock is 40 to 50 inches deep and directly underlies the B2t, B3, or C horizon.

The A horizon is 5 to 8 inches thick. It is brown, dark brown, or grayish brown loam or silt loam.

The B2t horizon is 30 to 40 inches thick. The upper part is brownish yellow, yellowish brown, or light yellowish brown or in some pedons it is mottled with combinations of those colors and also yellowish red, red, and strong brown. The lower part has mottles of light gray, gray, or grayish brown. The B2t horizon is silt loam, loam, silty clay loam, or clay loam. The silt content is more than 30 percent. A B3 horizon is present in some pedons. It is 6 to 9 inches thick and is mottled strong brown, yellowish brown, brownish yellow, and light gray. It is loam or sandy clay loam.

The C horizon, where present, is light gray or is light gray mottled with yellowish brown or strong brown. It is loam, silt loam, sandy clay loam, or clay. Its content of rounded pebbles ranges from 0 to 50 percent. These soils contain slightly more silt than is defined in the range for the series. Behavior, use, and management, however, remained unchanged.

Blanton series

The Blanton series consists of deep, moderately well drained, moderately permeable, nearly level or gently sloping soils that formed in sandy and loamy marine sediment. These soils are on Coastal Plain uplands. They have sandy surface and subsurface layers that extend to a depth of 45 to 80 inches.

Blanton soils are closely associated on the landscape with Lakeland, Troup, Ailey, Fuquay, and Lucy soils. Lakeland soils are sandy to a depth of 80 inches or more. Troup soils do not have gray mottles in the B horizon. Ailey, Fuquay, and Lucy soils have a sandy A horizon less than 40 inches thick. In addition, Ailey soils have a fragipan in the B horizon, and Fuquay soils have plinthite in the lower part of the B horizon.

Typical pedon of Blanton sand, 0 to 6 percent slopes, about 2 miles north of Columbia city limits on secondary road 1560, 400 feet southwest of its intersection with S. C. Highway 83, 200 feet north of road:

A1—0 to 9 inches; dark grayish brown (10YR 4/2) sand; single grained; loose; common fine roots; medium acid; abrupt smooth boundary.

A21—9 to 21 inches; pale yellow (2.5Y 7/4) sand; single grained; loose; common fine roots; many uncoated sand grains; strongly acid; gradual wavy boundary.

A22—21 to 50 inches; very pale brown (10YR 7/4) sand; single grained; loose; few fine roots; strongly acid; gradual wavy boundary.

B21t—50 to 61 inches; brownish yellow (10YR 5/6) sandy clay loam; common medium prominent reddish yellow (5YR 6/6) mottles; weak medium subangular blocky structure; friable; few fine pores; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

B22t—61 to 96 inches; mottled light gray (10YR 7/2), brownish yellow (10YR 6/6), reddish yellow (7.5YR 6/6), yellowish red (5YR 5/6), and red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; firm; patchy faint clay films on faces of peds; very strongly acid.

The solum ranges from 73 to more than 100 inches in thickness. It is medium acid to very strongly acid in the A horizon and is strongly acid or very strongly acid in the B horizon.

The A horizon is 45 to 80 inches thick. The Ap or A1 horizon is yellowish brown, brown, or dark grayish brown and is 3 to 10 inches thick. The A2 horizon is brownish yellow, yellow, pale yellow, very pale brown, yellowish brown, or light yellowish brown sand or loamy sand. It is 40 to 72 inches thick. The A3 horizon, where present, is strong brown loamy sand about 5 inches thick.

The B1 horizon, where present, is pale brown sandy loam and is about 5 inches thick. The B2t horizon is sandy loam or sandy clay loam and is 20 to more than 50 inches thick. It is mottled in various shades of gray, yellow, brown, and red or is brownish yellow.

Cantey series

The Cantey series consists of deep, poorly drained, slowly permeable, nearly level soils that formed in clayey marine sediment. These soils are on stream terraces.

Cantey soils are closely associated on the landscape with Coxville, Goldsboro, Johnston, Persanti, and Smithboro soils. Coxville soils have less than 45 percent clay in the Bt horizon and are on Coastal Plain uplands. Goldsboro soils are at slightly higher elevations on terraces, are better drained, and have a fine-loamy control section. Johnston soils are along streams, are very poorly drained, and have a coarse-loamy control section. Persanti and Smithboro soils are at slightly higher elevations on terraces and are better drained. They do not have dominant gray colors of chroma 2 or less in the upper part of the B horizon.

Typical pedon of Cantey loam, in woods, about 1.0 mile east of Kingville and 2.2 miles west of Wateree, 700 feet north of secondary road 1032 and 200 feet west of a private road:

A1—0 to 5 inches; very dark gray (10YR 3/1) loam; weak medium granular structure; friable; many fine, medium, and large roots; very strongly acid; clear smooth boundary.

B1—5 to 8 inches; light brownish gray (10YR 6/2) sandy loam; many medium distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; firm, slightly sticky; many fine, medium, and large roots; very strongly acid; abrupt smooth boundary.

B21tg—8 to 40 inches; gray (10YR 6/1) clay; many medium distinct yellowish brown (10YR 5/6) and common medium prominent yellowish red (5YR 4/8) mottles; a few medium prominent red (10R 4/8) mottles below a depth of 30 inches; strong coarse angular blocky structure parting to fine angular blocky; very firm, very sticky and very plastic; thick continuous clay films on faces of peds; common fine roots penetrate the peds; very strongly acid; gradual smooth boundary.

B22tg—40 to 57 inches; gray (10YR 6/1) clay; many coarse distinct yellowish brown (10YR 5/8) mottles; strong coarse angular blocky structure parting to fine angular blocky; very firm, very sticky and very plastic; thick continuous clay films on faces of peds; few medium roots; very strongly acid; abrupt smooth boundary.

B3g—57 to 81 inches; coarsely mottled pale brown (10YR 6/3), brownish yellow (10YR 6/8), and light gray (10YR 7/1) sandy clay loam; moderate coarse angular blocky structure; very firm, sticky; thick discontinuous clay films on faces of peds; few old roots and root channels; much dryer than the B22tg horizon; very strongly acid.

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

The A horizon is 4 to 13 inches thick. The A1 horizon is 4 to 8 inches thick and is black, dark gray, very dark gray, dark grayish brown, or very dark grayish brown. The A2 horizon, where present, is 4 to 5 inches thick and is gray, light gray, or light brownish gray loam or sandy loam.

The B1 horizon, where present, is about 3 inches thick and is gray or light brownish gray sandy loam or sandy clay loam. The B2tg horizon is 40 to more than 70 inches thick. It is gray or light gray clay or sandy clay and has few to many mottles in shades of yellowish brown or red. The B3g horizon is sandy clay loam or sandy clay 14 to 28 inches thick. It is gray or is mottled in shades of gray and brown.

Chastain series

The Chastain series consists of deep, nearly level, poorly drained, slowly permeable soils that formed in clayey alluvial sediment. These soils are on broad flood plains of the Wateree and Congaree Rivers. They are commonly flooded and are saturated with water for 5 months or more in most years.

Chastain soils are closely associated on the landscape with the Chewacla, Congaree, Dorovan, Tawcaw, and Toccoa soils. Chewacla, Congaree, Tawcaw, and Toccoa soils are on higher elevations, are better drained, and do not have dominant chroma of 2 or less. Dorovan soils are organic.

Typical pedon of Chastain silty clay loam in woods, approximately 4 miles southeast of Columbia city limits on S.C. Highway 48, 0.4 mile west of intersection of S.C. Highway 48 and secondary road 48:

A1—0 to 4 inches; grayish brown (2.5Y 5/2) silty clay loam; many fine distinct dark yellowish brown and common fine prominent strong brown mottles; weak fine subangular blocky structure; friable, sticky and plastic; many large, medium, and fine roots; strongly acid; abrupt smooth boundary.

B21g—4 to 18 inches; greenish gray (5BG 6/1) silty clay loam; many fine prominent dark yellowish brown and common medium prominent yellowish brown (10YR 5/6) mottles; weak medium angular and subangular blocky structure; friable, sticky and plastic; common medium roots; strongly acid; abrupt smooth boundary.

B22g—18 to 41 inches; greenish gray (5BG 5/1) silty clay; many coarse prominent dark yellowish brown (10YR 4/4) and common medium prominent yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm, very sticky and very plastic; strongly acid; abrupt smooth boundary.

Cg—41 to 65 inches; greenish gray (5BG 5/1) clay; common medium distinct olive (5Y 5/3) and common fine prominent yellowish brown mottles; massive; very firm, very sticky and very plastic; strongly acid; gradual smooth boundary.

IICg—65 to 82 inches; light brownish gray (2.5Y 6/2) loamy sand; few medium distinct greenish gray (5BG 5/1) mottles; structureless; very friable; slightly acid.

The solum ranges from 40 inches to more than 60 inches in thickness. It is strongly acid or very strongly acid throughout.

The A horizon is 4 to 9 inches thick. It is dark grayish brown, grayish brown, brownish gray, or brown.

The Bg horizon is 36 to 52 inches thick. It is gray, light gray, light brownish gray, greenish gray, or grayish brown and has distinct or prominent mottles in shades of brown. It is silty clay loam, clay loam, silty clay, or clay.

The Cg horizon is grayish brown, gray, or greenish gray. Above a depth of about 60 inches, it is clay, silty clay, or silty clay loam, and below this it is sand or loamy sand in 60 percent of the pedons.

Chewacla series

The Chewacla series consists of deep, nearly level, moderately permeable, somewhat poorly drained soils that formed in loamy alluvial sediment washed from the Piedmont province.

Chewacla soils are closely associated on flood plains with Chastain, Congaree, Tawcaw, Toccoa, and Dorovan soils. Chastain soils are at lower elevations and in depressions and have a gray B horizon. Congaree and Toccoa soils are at slightly higher elevations and are better drained; they do not have chroma of 2 or less at a depth of less than 20 inches. In addition, Toccoa soils have a coarse-loamy control section. Tawcaw soils have a clayey control section. Dorovan soils are organic.

Typical pedon of Chewacla loam, approximately 3 miles southeast of Columbia, 1 mile west of the intersection of S.C. Highway 48 and secondary road 48, and 1 mile northeast of a sewage treatment plant:

Ap—0 to 7 inches; brown (10YR 4/3) loam; weak fine granular structure; friable, slightly sticky; common fine roots; few fine pores; many fine flakes of mica; slightly acid; abrupt smooth boundary.

B21—7 to 13 inches; yellowish brown (10YR 5/4) clay loam; common medium distinct black (10YR 2/1), many fine faint yellowish brown (10YR 5/6), and few fine faint light yellowish brown mottles; weak fine subangular blocky structure; friable, slightly sticky; many fine flakes of mica; slightly acid; abrupt smooth boundary.

B22—13 to 20 inches; mottled yellowish brown (10YR 5/4), strong brown (7.5YR 5/6), pale brown (10YR 6/3), and black (10YR 2/1) clay loam; weak medium subangular blocky structure; friable, slightly sticky; brown (10YR 5/3) silt coatings on large vertical cracks; many fine flakes of mica; medium acid; clear smooth boundary.

B23—20 to 38 inches; yellowish brown (10YR 5/4) loam; many coarse distinct yellowish red (5YR 4/8), common medium distinct black (10YR 2/1), and common fine distinct light gray mottles; weak medium subangular blocky structure; friable, nonsticky; thick yellowish brown (10YR 5/4) silt coatings on large vertical cracks; many fine flakes of mica; medium acid; gradual smooth boundary.

B24—38 to 50 inches; dark yellowish brown (10YR 4/4) loam; many coarse distinct pale brown (10YR 6/3), common medium distinct light gray (10YR 7/1), and few fine distinct black mottles; weak medium subangular blocky structure; friable, nonsticky; pale brown (10YR 6/3) mottles fill old cracks; medium acid; gradual smooth boundary.

B3—50 to 58 inches; dark yellowish brown (10YR 4/4) clay loam; many medium distinct light gray (10YR 7/2) and few fine distinct black mottles; massive; friable, slightly sticky; many fine flakes of mica; medium acid; gradual smooth boundary.

C—58 to 75 inches; mottled dark yellowish brown (10YR 4/4) and light gray (10YR 7/2) loam; massive; friable, nonsticky; many fine flakes of mica; medium acid.

The solum ranges from 50 inches to more than 72 inches in thickness. Content of fine flakes of mica ranges from few to many throughout it. The pedon is strongly acid to slightly acid throughout.

The A1 or Ap horizon is brown or dark brown and is 3 to 10 inches thick.

The B horizon is loam, silt loam, clay loam, or silty clay loam and is 47 to more than 70 inches thick. The upper part of it is yellowish brown, brown, dark brown, or reddish brown; or it is mottled in various shades of red, brown, and yellow. The lower part of the B horizon is dark yellowish brown, yellowish brown, or brown and has common to many mottles in various shades of gray; or it is mottled in various shades of red, yellow, brown, and gray; or it is gray, light brownish gray, or grayish brown and has few to many mottles in various shades of red, brown, and yellow.

The C horizon is gray and has common or many mottles in various shades of brown; or it is mottled in various shades of brown and gray. It is loam or sandy loam.

Clarendon series

The Clarendon series consists of deep, nearly level, moderately slowly permeable, moderately well drained soils that formed in loamy marine sediment. These soils are on Coastal Plain uplands. They contain plinthite.

Clarendon soils are closely associated on the landscape with Dothan, Fuquay, Goldsboro, Marlboro, Norfolk, and Rains soils. They are on the same uplands as Dothan, Fuquay, Marlboro, and Norfolk soils but are not so well drained, have chroma of 2 or less above a depth of 30 inches, and are at slightly lower elevations. Fuquay soils have a thicker and sandier A horizon than Clarendon soils. Clarendon soils have plinthite in the Bt horizon and the Goldsboro soils do not. Goldsboro soils are generally at lower elevations on marine terraces. Clarendon soils are better drained than Rains soils, which are dominantly gray in the B horizon and do not have plinthite.

Typical pedon of Clarendon sandy loam, 1.7 miles northeast of Gadsden and 3 miles southwest of Eastover, just north of Toms Creek and 700 feet south of a road connecting secondary roads 84 and 1322:

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; friable, nonsticky; many fine roots; strongly acid; abrupt smooth boundary.

A2—6 to 10 inches; pale brown (10YR 6/3) sandy loam; weak fine granular structure; friable, nonsticky; many fine roots; many fine pores; very strongly acid; abrupt smooth boundary.

B1—10 to 19 inches; pale brown (10YR 6/3) sandy loam; many fine distinct yellowish brown mottles; weak medium subangular blocky structure; friable, slightly sticky; many fine pores; a few of the yellowish brown mottles are brittle; strongly acid; clear smooth boundary.

B21t—19 to 25 inches; mottled yellowish brown (10YR 5/8) and very pale brown (10YR 7/3) sandy clay loam; few medium distinct strong brown (7.5YR 5/8) and yellowish red (5YR 4/8) mottles; weak medium subangular blocky structure; friable, slightly sticky; thin patchy clay films on faces of peds and in pores; many fine pores; very strongly acid; clear smooth boundary.

B22t—25 to 36 inches; mottled yellowish brown (10YR 5/8), very pale brown (10YR 7/3), strong brown (7.5YR 5/8), red (2.5YR 4/8), and light gray (10YR 6/1) sandy clay loam; approximately 30 percent is light gray; moderate medium subangular blocky structure; hard, very firm, slightly sticky; about 25 to 30 percent nodules of plinthite; many thin discontinuous clay films; very strongly acid; gradual smooth boundary.

B23t—36 to 51 inches; coarsely mottled light gray (10YR 6/1), yellowish brown (10YR 5/6), strong brown (7.5YR 5/8), and yellowish red (5YR 4/8) sandy clay loam; approximately 50 percent is light gray; strong coarse subangular blocky structure; hard, very firm, slightly sticky; few thin discontinuous clay films; about 25 to 30 percent nodules of plinthite; very strongly acid; clear smooth boundary.

B24t—51 to 61 inches; light gray (10YR 6/1) sandy clay loam; many coarse prominent yellowish brown (10YR 5/8), strong brown (7.5YR 5/8), red (2.5YR 4/8), and yellowish red (5YR 4/8) mottles; most gray material is sandy clay; moderate coarse subangular blocky structure; hard, firm, sticky; few 10 to 30 millimeter rounded pebbles of quartz; 5 to 10 percent nodules of plinthite; very strongly acid; gradual smooth boundary.

B3g—61 to 72 inches; coarsely mottled light gray (10YR 7/1), white (10YR 8/1), light red (10R 6/6), and brownish yellow (10YR 6/8) sandy clay loam and coarse sandy loam; about 60 percent is light gray and white; weak coarse subangular blocky structure; slightly hard, friable; some firm, sticky sandy clay loam and sandy clay masses; few coarse and many fine (2 to 5 millimeters) uncoated rounded quartz pebbles; many grains of kaolin clay; very strongly acid.

The solum ranges from 60 to more than 80 inches in thickness. It is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed.

The A horizon is 6 to 12 inches thick. The Ap horizon is 5 to 8 inches thick. It is dark grayish brown, very dark grayish brown, brown, or light yellowish brown. The A2 horizon, where present, is 3 to 8 inches thick. It is pale brown, light yellowish brown, or light gray sandy loam or loamy sand.

The B1 horizon, where present, is 5 to 9 inches thick and is pale brown, light yellowish brown, or yellowish brown. The B2t horizon is 40 inches to more than 60 inches thick. The upper part is light yellowish brown, yellowish brown, or light olive brown or is mottled in shades of brown, red, and yellow. The lower part is mottled in various shades of red, yellow, brown, and gray. The B2t horizon is commonly sandy clay loam but in places ranges to sandy clay below a depth of 40 inches. It is 5 to 30 percent nodules of plinthite. The B3 horizon is 8 to 20 inches thick. It is mottled light gray, white, light red, and brownish yellow. It is sandy clay loam, sandy loam, or sandy clay.

Congaree series

The Congaree series consists of deep, well drained or moderately well drained, moderately permeable soils that formed in loamy alluvial sediment washed from soils of the Piedmont province. Slopes range from 0 to 2 percent.

Congaree soils are closely associated on flood plains with Chastain, Chewacla, Tawcaw, and Toccoa soils. They are at slightly higher elevations and are better drained than Chastain, Chewacla, and Tawcaw soils, which have gray colors above a depth of 20 inches. Toccoa soils have a coarse-loamy control section.

Typical pedon of Congaree loam, in a field, 2.5 miles south of Farmers Market, 0.5 mile east of the Congaree River, 100 feet east of a field road:

Ap—0 to 8 inches; dark brown (7.5YR 4/4) loam; weak fine granular structure; friable; many fine roots; common worm casts; many fine flakes of mica; strongly acid; clear smooth boundary.

C1—8 to 18 inches; dark brown (10YR 4/3) loam; massive; friable; many fine roots; many fine pores; few worm casts; many fine flakes of mica; medium acid; gradual wavy boundary.

C2—18 to 22 inches; dark brown (10YR 3/3) loam; massive; friable; many fine roots; few fine pores; few worm casts; common 1/4 inch wide horizontal lenses of light yellowish brown (10YR 6/4) loamy fine sand; few fine flakes of mica; medium acid; clear smooth boundary.

C3—22 to 32 inches; dark brown (10YR 3/3) very fine sandy loam; massive; friable; many fine roots; many fine pores; many fine flakes of mica; few thin lenses of loamy fine sand; few fine fragments of charcoal; medium acid; diffuse wavy boundary.

Ab—32 to 38 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; friable; many fine roots; many fine pores; few worm casts; many fine flakes of mica; medium acid; gradual wavy boundary.

Bb—38 to 62 inches; brown (7.5YR 4/4) silty clay loam; moderate coarse prismatic and subangular blocky structure; friable; few fine roots; many fine and medium pores; patchy silt coatings on vertical ped faces; common fine flakes of mica; medium acid; gradual smooth boundary.

C4—62 to 80 inches; mottled strong brown (7.5YR 5/8), brown (10YR 5/3), and pale brown (10YR 6/3) clay loam; massive; friable; common fine flakes of mica; common 1 to 2 millimeter very dark brown and black concretions; strongly acid.

Bedrock is commonly more than 10 feet deep. Reaction ranges from strongly acid to neutral throughout the pedon but is medium acid to neutral in some part between depths of 10 and 40 inches. Few to many flakes of mica are throughout the pedon. Buried A or B horizons occur in some pedons. Below a depth of 40 inches texture ranges from loamy sand to silty clay.

The Ap or A1 horizon is brown, dark brown, or reddish brown and is 5 to 10 inches thick.

The C horizon is yellowish brown, brown, strong brown, reddish brown, or dark brown, and in some pedons at a depth of more than 20 inches it has few to many mottles with chroma of 2 or less. It is loam, silt loam, fine sandy loam, or silty clay loam but in some pedons has thin strata that are sandier or more clayey. The texture below a depth of 40 inches ranges from loamy sand to silty clay.

Coxville series

The Coxville series consists of deep, nearly level, poorly drained, moderately slowly permeable soils that formed in thick beds of clayey marine sediment. These soils are on the Coastal Plain. They generally are in shallow, elliptical depressions, which are on broad, smooth, interstream divides.

Coxville soils are associated with Dothan, Faceville, Norfolk, and Orangeburg soils. They are in similar positions on the landscape to those soils but are at slightly lower elevations. Coxville soils are more poorly drained than Dothan, Faceville, Norfolk, and Orangeburg soils, and they are lower in chroma.

Typical pedon of Coxville fine sandy loam in woods, approximately 2.5 miles east of Eastover, 1 mile south of a railroad crossing and intersection of S.C. Highway 764 and U.S. Highway 601, 100 feet east of Highway 601:

A1—0 to 7 inches; dark gray (10YR 4/1) fine sandy loam; weak medium granular structure; friable; many fine medium and large roots; very strongly acid; clear smooth boundary.

A2—7 to 9 inches; light brownish gray (10YR 6/2) fine sandy loam; weak fine granular structure; friable; many fine pores; many fine medium and large roots; very strongly acid; abrupt smooth boundary.

B21tg—9 to 18 inches; gray (10YR 6/1) sandy clay; common fine distinct yellowish brown (10YR 5/8) and few medium prominent red (2.5YR 4/8) mottles; weak medium subangular blocky structure; firm; slightly sticky and plastic; common fine pores; many medium roots; few thin discontinuous clay films on faces of peds; very strongly acid; gradual smooth boundary.

B22tg—18 to 32 inches; gray (10YR 6/1) sandy clay; many medium distinct yellowish brown (10YR 5/8), few medium prominent yellowish red (5YR 4/8), and few medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm, sticky and plastic; common medium and fine roots; many old root channels; common fine pores; thick discontinuous clay films on faces of peds; a few plinthite nodules; very strongly acid; gradual smooth boundary.

B23tg—32 to 65 inches; gray (10YR 6/1) sandy clay; many coarse prominent yellowish red (5YR 4/6) mottles; moderate medium angular blocky structure; firm, sticky and plastic; thick discontinuous clay films on faces of peds; common fine roots pressed on faces of peds and in cracks; very strongly acid; gradual smooth boundary.

B3g—65 to 80 inches; gray (10YR 6/1) sandy clay loam; few medium prominent yellowish red (5YR 4/8) mottles; weak coarse angular blocky structure; firm, slightly sticky and nonplastic; few fine pebbles; very strongly acid.

The solum ranges from 63 to 80 inches in thickness. It is very strongly acid or strongly acid throughout.

The A1 or Ap horizon ranges from 3 to 7 inches. It is dark gray or very dark gray sandy loam, fine sandy loam, loam, or clay loam. Where present, the A2 horizon is 2 or 3 inches thick and is gray or light brownish gray sandy loam or fine sandy loam.

The B2tg horizon is 53 to 70 inches thick. It is light gray, gray, and light brownish gray; high chroma mottles of yellowish brown, yellowish red, reddish brown, and red are generally present. The B3g horizon, where present, is 10 to 20 inches thick and extends to depth of 80 inches or more. It is sandy clay loam, loam, or sandy loam.

Dorovan series

The Dorovan series consists of deep, level, very poorly drained, organic soils that formed in sediment of decomposed organic materials. These soils are on stream flood plains. They are generally at the level of the flood plain but are adjacent to the upland. They have moderately slow to moderately rapid permeability.

Dorovan soils are closely associated on the landscape with Chastain, Chewacla, Johnston, and Tawcaw soils. Chastain, Chewacla, Johnston, and Tawcaw soils are mineral soils.

Typical pedon of Dorovan muck, about 21 miles east of Columbia, 1.5 miles north of U.S. Highway 76 and 378, on private road and 1,000 feet northeast of end of road:

Oe—0 to 3 inches; dark reddish brown (5YR 2/2) fibric material consisting of roots, moss, leaves, and twigs in all stages of decomposition; about 80 percent fiber unrubbed, 30 percent rubbed; extremely acid; abrupt wavy boundary.

Oa1—3 to 12 inches; black (N 2/0) sapric material; about 15 percent fiber, less than 5 percent rubbed; massive; nonsticky; many fine medium and large roots; many decomposed stumps, logs, and roots; extremely acid; clear wavy boundary.

Oa2—12 to 58 inches; black (N 2/0) sapric material; about 10 percent fiber, less than 1 percent rubbed; massive; nonsticky; many fine medium and large roots; many decomposed stumps, logs, and roots; extremely acid; clear wavy boundary.

IICg—58 to 76 inches; very dark grayish brown (10YR 3/2) loam; massive; slightly sticky; many fine and medium partially decayed fragments of woody material; few fine mica flakes; very strongly acid.

The organic material ranges from 52 inches to more than 10 feet in thickness. It is extremely acid to strongly acid, and the underlying material is strongly acid or very strongly acid.

The Oe horizon, where present, is 2 to 3 inches of very dark brown or dark reddish brown fibric material that is 80 to 85 percent fiber unrubbed. The Oa horizon is 50 inches to more than 94 inches of very dark gray or black sapric material that is 10 to 20 percent fiber unrubbed.

The IICg horizon is dark grayish brown, very dark grayish brown, grayish brown, or very dark gray loam, sandy loam, sandy clay loam, or sand.

Dothan series

The Dothan series consists of deep, moderately slowly permeable, well drained soils that formed in thick beds of loamy marine sediment. These soils have plinthite in the lower part of the subsoil. They are on broad ridgetops on the Coastal Plain. Slopes are 0 to 6 percent.

Dothan soils are closely associated on the landscape with Blanton, Clarendon, Fuquay, Marlboro, Norfolk, and Pelion soils. Blanton and Fuquay soils have a thicker sandy A horizon than Dothan soils. They generally are at higher elevations. Clarendon soils have chroma of 2 above a depth of 30 inches. They are at lower elevations. Marlboro and Norfolk soils do not have nodules of plinthite in the B horizon. Pelion soils are at lower elevations on the plain. They have mottles with chroma of 2 in the B horizon.

Typical pedon of Dothan loamy sand, 2 to 6 percent slopes, in a field about 6 miles east of Gadsden on the north side of S.C. Highway 48, 1.9 miles northwest of intersection of S.C. Highway 48 and U.S. Highway 601:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.

A2—7 to 17 inches; pale brown (10YR 6/3) loamy sand; weak fine granular structure; very friable; common fine and medium roots; strongly acid; abrupt smooth boundary.

B21t—17 to 37 inches; yellowish brown (10YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable, slightly sticky; sand grains coated and bridged with clay; common fine and medium roots; common fine pores; very strongly acid; gradual smooth boundary.

B22t—37 to 48 inches; yellowish brown (10YR 5/8) sandy clay loam; many medium distinct light yellowish brown (10YR 6/4) and strong brown (7.5YR 5/8) and many medium prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm, slightly sticky; few thin discontinuous clay films on faces of peds; few fine roots; few nodules of plinthite; very strongly acid; gradual smooth boundary.

B23t—48 to 59 inches; coarsely mottled strong brown (7.5YR 5/8), red (2.5YR 4/6), yellowish brown (10YR 5/8), and light gray (10YR 7/2) sandy clay; moderate thick platy structure parting to angular blocky; very firm, slightly sticky; few thin discontinuous clay films on faces of peds; few medium roots; 25 percent nodules of plinthite; very strongly acid; abrupt wavy boundary.

B24t—59 to 78 inches; coarsely mottled light gray (10YR 7/1), red (2.5YR 4/6), strong brown (7.5YR 5/8), light yellowish brown (10YR 6/4), and light reddish brown (5YR 6/4) sandy clay; weak coarse angular blocky structure; very firm, sticky; many coarse angular blocky nodules of plinthite; few discontinuous clay films along the cracks; very strongly acid.

The solum ranges from 60 inches to more than 80 inches in thickness. It is strongly acid or very strongly acid throughout. Depth to a horizon containing more than 5 percent nodules of plinthite ranges from 32 to 50 inches.

The Ap or A1 horizon is dark grayish brown, grayish brown, or brown and is 6 to 10 inches thick. The A2 horizon, where present, is light yellowish brown, pale brown, or very pale brown and is 3 to 10 inches thick.

The B1 horizon, where present, is light yellowish brown, yellowish brown, or brownish yellow sandy loam 2 to 8 inches thick. The B2t horizon is 40 inches to more than 60 inches thick. The upper part is yellowish brown, brownish yellow, or strong brown. The lower part is mottled in various shades of brown, yellow, red, and gray, or it is yellowish brown, brownish yellow, or strong brown and has common to many mottles of various shades of red and gray. The lower part of the B2t horizon is 10 to 30 percent plinthite. The B2t horizon is commonly sandy clay loam throughout, but in places it is sandy clay below a depth of about 38 inches.

Faceville series

The Faceville series consists of deep, well drained, moderately permeable soils that formed in thick, clayey marine sediment. These soils are on broad ridges in the Coastal Plain. Slopes range from 0 to 6 percent.

Faceville soils are closely associated on the same landscape with Dothan, Fuquay, Lucy, Marlboro, Norfolk, Orangeburg, and Troup soils. Dothan soils have plinthite in the Bt horizon. Fuquay, Lucy, and Troup soils have a sandy A horizon more than 20 inches thick, and Fuquay soils contain plinthite. Marlboro and Norfolk soils have hue of 7.5YR or 10YR in the Bt horizon. The Bt horizon of Orangeburg and Norfolk soils contains less than 35 percent clay.

Typical pedon of Faceville sandy loam, 0 to 2 percent slopes, about 3 miles northeast of Eastover, 2 miles south of intersection of U. S. Highway 76 and S. C. Highway 263, in a cultivated field on the east side of a north-south private road between the Wateree River and S. C. Highway 263:

Ap—0 to 7 inches; brown (10YR 4/3) sandy loam; weak very fine granular structure; very friable, nonsticky, soft; many fine and medium roots; strongly acid; abrupt smooth boundary.

B1—7 to 12 inches; yellowish red (5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; common fine roots; very strongly acid; clear smooth boundary.

B2t—12 to 84 inches; red (2.5YR 4/6) sandy clay; weak medium subangular blocky structure; friable; thin patchy clay films on faces of some peds and in pores; common fine and medium roots; many fine pores; strongly acid.

The solum ranges from 65 to more than 80 inches in thickness. It is strongly acid or very strongly acid throughout.

The Ap horizon is 4 to 10 inches thick and is brown, dark yellowish brown, or yellowish red.

The B1 horizon, where present, is 5 to 9 inches thick and is red, yellowish red, or reddish brown. The B2t horizon is 50 inches to more than 70 inches thick and is red or yellowish red clay, sandy clay, or clay loam.

Fuquay series

The Fuquay series consists of deep, well drained, slowly permeable soils that formed in sandy and loamy marine sediment. These soils are on broad and narrow ridgetops on the Coastal Plain. Slopes range from 0 to 6 percent.

Fuquay soils are closely associated on the landscape with Ailey, Blanton, Clarendon, Dothan, Pelion, and Troup soils. Ailey, Blanton, Pelion, and Troup soils do not have plinthite in the Bt horizon. In addition, Blanton and Troup soils have a sandy A horizon 40 to 80 inches thick. Dothan soils have a sandy A horizon less than 20 inches thick. Clarendon and Pelion soils are at slightly lower elevations, have chroma of 2 or less in the upper part of the Bt horizon, and have an A horizon less than 20 inches thick.

Typical pedon of Fuquay sand, 0 to 2 percent slopes, in a field about 2.6 miles southeast of Gadsden, 0.5 mile south of intersection of S.C. Highway 48 and secondary road 489, 30 feet east of road 489:

Ap—0 to 8 inches; grayish brown (2.5Y 5/2) sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

A2—8 to 35 inches; light yellowish brown (10YR 6/4) sand; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear smooth boundary.

B21t—35 to 44 inches; yellowish brown (10YR 5/6) sandy clay loam; few medium prominent yellowish red (5YR 4/8) mottles; the yellowish red material is firm; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; common fine and medium roots; many fine pores; few fine pebbles of quartz; very strongly acid; clear smooth boundary.

B22t—44 to 48 inches; yellowish brown (10YR 5/6) sandy clay loam; many medium prominent yellowish red (5YR 4/8), common medium distinct light yellowish brown (10YR 6/4), and few medium distinct strong brown (7.5YR 5/6) mottles; the yellowish red material is firm and brittle; weak medium subangular blocky structure; friable; thin discontinuous clay films on faces of peds; few medium roots; common fine pores; few fine pebbles of quartz; 10 to 15 percent nodules of plinthite; very strongly acid; abrupt smooth boundary.

B23t—48 to 58 inches; mottled light yellowish brown (10YR 6/4), strong brown (7.5YR 5/6), red (2.5YR 4/8), and light brownish gray (10YR 6/2) sandy clay loam; the red and strong brown material is firm and brittle plinthite; moderate medium subangular blocky structure; firm; thin discontinuous clay films on faces of peds; few medium roots; few fine pores; few fine pebbles of quartz; 20 to 30 percent nodules of plinthite; very strongly acid; gradual smooth boundary.

B24t—58 to 75 inches; mottled red (2.5YR 4/8), yellowish brown (10YR 5/6), and light yellowish brown (10YR 6/4) sandy clay loam and light gray (10YR 7/2) sandy clay; moderate coarse subangular blocky structure; very firm; few pebbles of quartz; less than 2 percent nodules of plinthite; very strongly acid.

The solum ranges from 80 inches to more than 100 inches in thickness. It is very strongly acid or strongly acid throughout, except in areas where the surface layer is limed.

The Ap or A1 horizon is 2 to 10 inches thick and is brown, grayish brown, dark grayish brown, gray, or dark gray. The A2 horizon is 10 to 30 inches thick. It is pale brown, light olive brown, light yellowish brown, brown, yellowish brown, or brownish yellow sand or loamy sand.

The B1 horizon, where present, is 3 to 12 inches thick. It is strong brown or yellowish brown sandy loam. The B2t horizon is 37 inches to more than 70 inches thick. In the upper part it is yellowish brown, strong brown, or brownish yellow sandy loam or sandy clay loam. In the lower part it is mottled in shades of red, yellow, brown, and gray and is sandy loam, sandy clay loam, or sandy clay. It is 5 to 40 percent nodules of plinthite below a depth of about 40 inches.

Georgeville series

The Georgeville series consists of deep, well drained, moderately permeable soils that formed in residuum weathered from Carolina slate. These soils are on uplands in the Piedmont province. Slopes range from 2 to 10 percent.

Georgeville soils are closely associated on the landscape with Herndon, Nason, and Orange soils. Herndon soils are in similar positions on the landscape to Georgeville soils, but Herndon soils have a yellowish red to yellowish brown B horizon. Nason soils are also in similar positions on the landscape. They have steeper slopes than Georgeville soils, have a thinner solum, and have colors in the B horizon that are not so red as those of Georgeville soils. Orange soils have a plastic B horizon, have gray mottles less than 20 inches below the top of the B2t horizon, and generally are at lower elevations in saddles and along shallow drainageways.

Typical pedon of Georgeville silt loam, 2 to 6 percent slopes, in woods, about 4.4 miles north of White Rock and 0.75 mile east of intersection of secondary roads 698 and 592:

A1—0 to 6 inches; reddish brown (5YR 4/4) silt loam; weak medium granular structure; friable; many fine and medium roots; common fine pores; strongly acid; abrupt smooth boundary.

B1—6 to 9 inches; red (2.5YR 5/6) loam; weak medium subangular blocky structure; friable, slightly sticky; thin patchy faint clay films on faces of peds; many fine and medium roots; few fine pores; strongly acid; clear smooth boundary.

B21t—9 to 36 inches; red (2.5YR 4/8) silty clay; strong very fine to medium subangular and angular blocky structure; firm, sticky; thick distinct clay films on faces of peds; common fine roots on faces of peds and in cracks; few fine pores; strongly acid; gradual smooth boundary.

B22t—36 to 52 inches; red (10R 4/8) silty clay loam; moderate fine subangular blocky structure; firm, slightly sticky; thin patchy faint clay films mostly on faces of larger peds and in cracks; common fine and medium roots in cracks and on faces of peds; few fine pores; very strongly acid; gradual irregular boundary.

B3—52 to 72 inches; weak red (10R 5/4) silt loam; many fine and medium faint red (10R 4/8) and few fine yellow mottles; weak thin platy structure resembling parent rock; friable, nonsticky; few thin clay films; few fine roots; very strongly acid.

The solum ranges from 40 inches to more than 70 inches in thickness. This soil is very strongly acid or strongly acid throughout, except in areas where the A horizon is limed.

The A1 or Ap horizon is 4 to 8 inches thick and is yellowish red, brown, reddish brown, or dark grayish brown. The A2 horizon, where present, is 3 to 5 inches thick. It is light yellowish brown silty clay loam or loam.

The B1 horizon is 2 to 4 inches thick. It is yellowish red or red loam or silty clay loam. The B2t horizon is 15 to 45 inches thick. It is clay, silty clay, or silty clay loam. The B3 horizon is 7 to 22 inches thick. It is red or yellowish red silt loam or silty clay loam.

Goldsboro series

The Goldsboro series consists of deep, moderately well drained, moderately permeable soils that formed in loamy sediment on marine and fluvial terraces. Slopes range from 0 to 2 percent.

Goldsboro soils are closely associated on the landscape with Cantey, Clarendon, Dothan, Norfolk, Persanti, Rains, and Smithboro soils. Cantey, Persanti, and Smithboro soils are on the same landscape but are at lower elevations and have a plastic, clayey subsoil. Cantey and Smithboro soils are more poorly drained and have gray colors of chroma of 2 or less in the upper part of the B horizon. Dothan and Clarendon soils are at slightly higher elevations and contain more than 5 percent plinthite. Norfolk and Dothan soils are well drained and do not have gray colors above a depth of 30 inches. Rains soils are at lower elevations and have a dominantly gray B horizon.

Typical pedon of Goldsboro sandy loam, 0 to 2 percent slopes, in a cultivated field about 1.8 miles east of Kingville, 0.7 mile southwest of the intersection of secondary roads 1032 and 56, and 50 feet south of road 1032:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; very friable; many fine roots; many fine pores; strongly acid; abrupt smooth boundary.

A2—7 to 13 inches; pale brown (10YR 6/3) sandy loam; weak fine granular structure; very friable; many fine roots; many fine pores; strongly acid; clear smooth boundary.

B1—13 to 18 inches; pale brown (10YR 6/3) sandy loam; weak medium subangular blocky structure; friable; many fine roots; many fine pores; very strongly acid; clear smooth boundary.

B21t—18 to 25 inches; pale brown (10YR 6/3) sandy clay loam; few fine distinct yellowish brown mottles; moderate medium subangular blocky structure; friable; few thin discontinuous clay films on faces of peds; clay bridging; common fine and medium roots; many fine pores; very strongly acid; clear smooth boundary.

B22t—25 to 34 inches; pale brown (10YR 6/3) sandy clay loam; many medium distinct brownish yellow (10YR 6/8) and common medium distinct gray (10YR 6/1) mottles; moderate medium subangular blocky structure; friable; thin discontinuous clay films on faces of peds; clay bridging; common fine and medium roots; common fine pores; very strongly acid; clear smooth boundary.

B23t—34 to 45 inches; mottled pale brown (10YR 6/3), brownish yellow (10YR 6/8), light brownish gray (10YR 6/2), and red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; many thin discontinuous clay films on faces of peds; few fine roots; few fine pores; very strongly acid; gradual smooth boundary.

B24t—45 to 65 inches; mottled brownish yellow (10YR 6/8), gray (10YR 6/1), and red (2.5YR 4/6) sandy clay; moderate coarse subangular blocky structure; firm; few thin discontinuous clay films on faces of peds; very strongly acid; abrupt smooth boundary.

Cg—65 to 80 inches; light gray (10YR 6/1) sandy loam; structureless; friable; very strongly acid.

The solum ranges from 60 inches to more than 75 inches in thickness. The pedon is very strongly acid to medium acid in the A horizon and is very strongly acid or strongly acid in the B and C horizons.

The A1 or Ap horizon is 6 to 9 inches thick. It is grayish brown or dark grayish brown. The A2 horizon, where present, is 3 to 8 inches thick. It is light yellowish brown, pale brown, or very pale brown sandy loam or loamy sand.

The B1 horizon, where present, is about 5 inches thick. It is pale brown or light yellowish brown sandy loam or fine sandy loam. The Bt horizon is 40 to 60 inches thick. Between depths of 20 and 30 inches, it has mottles that have chroma of 2 or less. The upper part of the Bt horizon is yellowish brown, brownish yellow, pale brown, or light olive brown; the lower part is mottled in shades of brown, red, gray, and yellow or is dominantly gray or light gray. The Bt horizon is commonly sandy clay loam, but in places it is sandy clay below a depth of about 40 inches. The B3g horizon, where present, is 10 to 20 inches thick. It is gray or light gray sandy loam, sandy clay loam, or sandy clay.

The Cg horizon is gray or light gray sandy loam, sandy clay loam, or sandy clay.

Herndon series

The Herndon series consists of deep, well drained, moderately permeable soils that formed in clayey residuum weathered from fine textured Carolina slate. These soils are on smooth ridgetops and side slopes in the Piedmont province. Slopes are 2 to 10 percent.

Herndon soils are associated on the landscape with the Georgeville, Kirksey, and Nason soils. Georgeville soils have a redder B horizon than the one in Herndon soils. Kirksey soils have mottles of chroma of 2 or less 24 inches below the top of the Bt horizon and have a fine-silty control section. Nason soils have a thinner solum than the one in Herndon soils.

Typical pedon of Herndon silt loam, 2 to 6 percent slopes, about 7.0 miles northwest of Columbia city limits, on west bank of secondary road 674, 0.5 mile south of its intersection with U.S. Highway 176:

A1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; weak medium granular structure; friable; many fine roots; common 5 to 30 millimeter subangular pebbles of quartz; strongly acid; abrupt smooth boundary.

A2—4 to 9 inches; very pale brown (10YR 7/4) loam; weak fine subangular blocky structure; friable, nonsticky; many fine roots; common fine pores; common 5 to 30 millimeter subangular pebbles of quartz; medium acid; clear smooth boundary.

B1—9 to 13 inches; brownish yellow (10YR 6/6) silt loam; weak fine subangular blocky structure; friable, nonsticky; many fine and medium roots; common fine pores; strongly acid; abrupt smooth boundary.

B21t—13 to 25 inches; strong brown (7.5YR 5/8) silty clay; strong medium subangular blocky structure; firm, sticky; thick continuous clay films on faces of peds; common fine and medium roots and decayed roots; few fine pores; very strongly acid; gradual smooth boundary.

B22t—25 to 38 inches; strong brown (7.5YR 5/8) silty clay; many medium distinct yellowish red (5YR 5/8) mottles; strong coarse subangular blocky structure; very firm, sticky; thick continuous clay films on faces of peds; common medium roots; few fine pores; very strongly acid; gradual smooth boundary.

B3—38 to 52 inches; coarsely mottled yellowish brown (10YR 5/8), yellowish red (5YR 5/8), and pale yellow (2.5Y 7/4) silty clay loam; moderate coarse angular blocky structure and masses of rock-controlled thin platy structure; firm, slightly sticky; thick discontinuous clay films; very strongly acid; gradual smooth boundary.

C1—52 to 62 inches; coarsely mottled red (2.5YR 5/6), light gray (10YR 7/1), and brownish yellow (10YR 6/8) silt loam and streaks of silty clay loam; rock-controlled medium platy structure; firm, nonsticky; thin discontinuous clay films; few fine roots in cracks and cleavage faces; very strongly acid; abrupt smooth boundary.

C2—62 to 75 inches; mottled red (2.5YR 5/6), yellowish red (5YR 5/6), and light gray (10YR 7/1) fine grained slate saprolite, crushes to silt loam; rock-controlled thin to thick platy structure; very firm; can be cut with a spade; very strongly acid.

The solum ranges from 40 inches to more than 70 inches in thickness. The pedon is very strongly acid to slightly acid in the A horizon and is extremely acid to strongly acid in the B and C horizons. Depth to bedrock is more than 6 feet. Common to many rock fragments are present in some pedons.

The A1 or Ap horizon is 3 to 6 inches thick. It is dark grayish brown, grayish brown, dark brown, brown, or yellowish brown. The A2 horizon is 3 to 9 inches thick. It is very pale brown, dark brown, yellowish brown, or strong brown silt loam, loam, or fine sandy loam.

The B1 horizon, where present, is 3 to 5 inches thick. The B2t horizon is 20 to 40 inches thick. It is strong brown, brownish yellow, yellowish brown, and yellowish red, or it is mottled in combinations of these colors. Texture is silty clay loam, silty clay, or clay. The B3 horizon is 8 to 14 inches thick. It is mottled in combinations of red, light gray, brownish yellow, yellowish red, pale yellow, white, or gray. Texture is clay loam, silty clay loam, silty clay, or clay.

The C horizon is various shades of gray, brown, and red saprolite from shale and slate that crushes to silty clay loam or silt loam and extends to a depth of more than 6 feet.

Johnston series

The Johnston series consists of deep, very poorly drained soils that formed in loamy fluvial and marine sediment. These soils are on flood plains along streams in the Coastal Plain. They have moderately rapid permeability in the surface layer and rapid permeability in the underlying material. They are saturated with water most of the year. Slopes are dominantly less than 1 percent.

Johnston soils are closely associated on the landscape with Cantey, Chastain, Dorovan, Rains, and Coxville soils. Dorovan and Johnston soils are both on the flood plains, but Dorovan soils are organic. Johnston soils are more poorly drained and are at lower elevations than Cantey, Chastain, Coxville, and Rains soils. Cantey, Chastain, and Coxville soils have a clayey B or Bt horizon, and Rains soils have a loamy Bt horizon. The Johnston soils are adjacent to most soils on the Coastal Plain, but their position on flood plains and their wetness contrast sharply with those of the other soils.

Typical pedon of Johnston loam about 11 miles southeast of Columbia, 0.2 mile east of intersection of secondary road 1117 and S.C. Highway 769 near Cedar Creek, 100 feet south of road 1117:

A11—0 to 9 inches; black (10YR 2/1) loam; massive; friable; very strongly acid; abrupt smooth boundary.

A12—9 to 38 inches; black (N 2/0) mucky loam; massive; friable; very strongly acid; abrupt smooth boundary.

C1g—38 to 54 inches; dark gray (10YR 4/1) sandy loam; massive; friable; very strongly acid; clear smooth boundary.

C2g—54 to 66 inches; gray (10YR 6/1) sandy clay loam; massive; firm; strongly acid.

The pedon is very strongly acid or strongly acid throughout. Layers of sandy clay loam are at a depth of about 40 inches in some pedons. The A horizon is 8 to 20 percent organic matter. The A1 horizon is 24 to 46 inches thick. It is black, very dark gray, or very dark grayish brown.

The AC horizon, where present, is about 6 inches thick. It is dark gray or dark grayish brown sandy loam or fine sandy loam.

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

Kershaw series

The Kershaw series consists of deep, excessively drained, very rapidly permeable soils that formed in thick marine or eolian deposits of quartz sand. These soils occupy convex dunelike ridges in the Sand Hills. Slopes range from 2 to 10 percent.

Kershaw soils are closely associated on the landscape with Lakeland soils. They are on ridges at higher elevations than adjoining areas of Lakeland soils. Kershaw soils have less silt and clay than Lakeland soils and have a dominance of uncoated sand grains.

Typical pedon of Kershaw sand, 2 to 10 percent slopes, in woods in Sesqui-Centennial State Park on east side of paved road leading to the lake, 0.6 mile south of U.S. Highway 1, 0.6 mile north of park headquarters:

A1—0 to 3 inches; very dark gray (10YR 3/1) sand; single grained; loose; many fine, medium, and large roots; many clear uncoated grains of quartz sand; thin concentration of uncoated grains of sand on surface; surface has a white color; very strongly acid; abrupt smooth boundary.

C1—3 to 10 inches; brown (10YR 5/3) sand, very pale brown (10YR 7/3) dry; single grained; loose; many medium roots; clear mostly uncoated grains of quartz sand; very strongly acid; clear smooth boundary.

C2—10 to 20 inches; brownish yellow (10YR 6/8) sand, very pale brown (10YR 7/3 and 7/4) dry; single grained; loose; many medium roots; thinly coated grains of sand, more than 50 percent uncoated; very strongly acid; gradual smooth boundary.

C3—20 to 44 inches; light yellowish brown (10YR 6/4) sand, very pale brown (10YR 8/3) dry; single grained; loose; few roots; clear and uncoated grains of sand; few black grains of sand; medium acid; gradual smooth boundary.

C4—44 to 80 inches; white (10YR 8/2) sand, moist and dry; single grained; loose; uncoated and almost clear grains of sand; few thin brownish yellow (10YR 6/6) discontinuous lamellae, 2 to 4 inches apart, about 3 to 4 millimeters thick, approximately 92 percent sand; medium acid.

The sand ranges from 80 inches to more than 10 feet in thickness. It is very strongly acid to medium acid throughout. The profile to a depth of 80 inches is 95 to 99 percent sand.

The A1 horizon is 2 to 4 inches thick and is dark grayish brown or very dark gray.

The C horizon extends to a depth of 80 inches or more. It is brown, light yellowish brown, very pale brown, or brownish yellow. In some pedons the C horizon below a depth of about 45 inches is light gray or white because of the uncoated grains of quartz sand.

Kirksey series

The Kirksey series consists of deep, moderately well drained, moderately slowly permeable soils that formed in material weathered from slate. These soils are in saddles and on lower slopes. Slopes are 2 to 6 percent.

Kirksey soils are closely associated on the landscape with Georgeville, Herndon, Nason, and Orange soils and are in the same or similar positions. Georgeville, Herndon, Nason, and Orange soils have a clayey control section. Georgeville, Herndon, and Nason soils are well drained, and Orange soils have a plastic B2t horizon and a high base saturation.

Typical pedon of Kirksey loam, 2 to 6 percent slopes, in woods, about 3 miles north of city limits of Columbia, east of U.S. Highway 21, 0.3 mile northeast of Moore's Pond:

A1—0 to 6 inches; light brownish gray (2.5Y 6/2) loam; weak fine granular structure; common fine and medium roots; common coarse pebbles of quartz; strongly acid; abrupt smooth boundary.

A2—6 to 9 inches; pale yellow (2.5Y 7/4) loam; weak fine granular structure; very friable; common fine and medium roots; strongly acid; abrupt smooth boundary.

B2t—9 to 21 inches; very pale brown (10YR 7/4) silty clay loam; few fine faint yellowish red mottles; moderate medium subangular blocky structure; friable; few fine and medium roots; thick continuous clay films on faces of peds; very strongly acid; gradual wavy boundary.

B3—21 to 31 inches; mottled very pale brown (10YR 7/4), yellowish red (5YR 5/6), and light gray (10YR 7/1) silt loam; moderate coarse angular blocky structure; friable; few thin discontinuous clay films on faces of some peds; few fine roots; very strongly acid; clear wavy boundary.

C—31 to 51 inches; mottled light gray (10YR 7/2) and reddish yellow (5YR 6/6) saprolite slate bedrock; crushes to silt loam; rock controlled structure; extremely acid.

R—51 inches; rippable slate rock; cannot be dug with spade.

The solum ranges from 30 to 40 inches in thickness. Rippable bedrock is 40 to 60 inches deep. The solum is strongly acid or very strongly acid except in areas where the surface layer is limed. The C horizon is strongly acid to extremely acid.

The A1 or Ap horizon is 5 to 9 inches thick. It is pale brown, very pale brown, light brownish gray, or grayish brown. The A2 horizon, where present, is 2 to 4 inches of pale yellow, pale brown, or very pale brown loam or silt loam.

The B1 horizon, where present, is 5 or 6 inches thick. It is olive yellow, yellow, or brownish yellow loam or silt loam. The B2t horizon is 10 to 21 inches thick. It is yellow, brownish yellow, olive yellow, or very pale brown silty clay loam or clay loam. It has mottles with chroma of 2 or less 5 to 15 inches below the top of the B2t horizon. The B3 horizon is 6 to 12 inches thick. It is mottled yellow, brownish yellow, light olive brown, yellowish brown, very pale brown, yellowish red, or gray loam or silt loam.

The C horizon is partly weathered slate rock that crushes to loam or silt loam.

Lakeland series

The Lakeland series consists of deep, excessively drained, very rapidly permeable soils that formed in thick beds of sandy marine or eolian sediment. They are on broad ridgetops and side slopes in the Sand Hills on the Coastal Plain. Slopes range from 2 to 15 percent.

Lakeland soils are closely associated on the landscape with Ailey, Blanton, Fuquay, Kershaw, Pelion, and Troup soils. Ailey and Fuquay soils have an argillic horizon at a depth of 20 to 40 inches; Ailey soils are mostly on lower side slopes and toe slopes, and Fuquay soils are at slightly lower elevations on the ridges. Pelion soils are on toe slopes and have an argillic horizon above a depth of 20 inches. Blanton and Troup soils have similar positions on the landscape as the Lakeland soils, but have an argillic horizon at a depth of 40 to 80 inches. Kershaw soils are generally on slightly higher dunelike ridges; they have dominantly uncoated sand grains and are less than 5 percent silt and clay between depths of 10 and 40 inches.

Typical pedon of Lakeland sand, 2 to 6 percent slopes, in woods 1.6 miles southwest of Pontiac on the west bank of secondary road 2003, approximately 1.5 miles southeast of Spring Valley School:

A1—0 to 3 inches; dark gray (10YR 4/1) sand; weak fine granular structure; very friable; many matted fine roots; many clear grains of quartz sand on surface; very strongly acid; abrupt smooth boundary.

C1—3 to 29 inches; yellowish brown (10YR 5/6) sand; very weak fine granular structure; very friable; coated grains of sand; many fine and medium roots; very strongly acid; gradual smooth boundary.

C2—29 to 61 inches; brownish yellow (10YR 6/6) sand; single grained; loose; less coatings on the grains of sand than in the C1 horizon; common fine and medium roots; strongly acid; gradual wavy boundary.

C3—61 to 99 inches; very pale brown (10YR 8/3) sand; strong brown (7.5YR 5/6) lamellae of sand; single grained; loose; few roots; the lamellae are firm, 5 to 10 millimeters thick, at intervals of 6 to 10 centimeters; in the upper 8 or 10 inches of this horizon there are some large bodies of yellow (10YR 7/6) sand; strongly acid.

The pedon is very strongly acid to medium acid throughout. Sand content is 90 to 95 percent. The sand is more than 80 inches deep. In many places a very thin layer of light gray, clean, uncoated grains of quartz sand is on the surface.

The A1 horizon is 3 to 4 inches thick and is dark gray, very dark gray, or dark grayish brown.

The C horizon is yellowish brown, brownish yellow, pale brown, strong brown, yellowish red, reddish yellow, light yellowish brown, yellow, or pale yellow. The grains of sand are coated between depths of 10 and 40 inches. At lower depths the coatings are thinner and the percentage of uncoated grains of sand increases.

Lucy series

The Lucy series consists of deep, well drained, moderately permeable soils that formed in loamy marine sediment. These soils are on ridges of the Coastal Plain. Slopes range from 2 to 6 percent.

Lucy soils are closely associated on the landscape with Ailey, Blanton, Fuquay, Norfolk, Orangeburg, Troup, and Vaucluse soils. Ailey and Vaucluse soils have a fragipan in the Bt horizon. Blanton and Troup soils have an A horizon of sand 40 to 80 inches thick, and are in the same positions on the landscape as Lucy soils. Fuquay soils have plinthite in the Bt horizon. Norfolk and Orangeburg soils have an A horizon less than 20 inches thick.

Typical pedon of Lucy loamy sand, 2 to 6 percent slopes, about 9 miles east of Columbia, 0.7 mile north of intersection of secondary road 1198 and U.S. Highway 76, 50 feet west of road 1198:

Ap—0 to 9 inches; brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; many fine roots; medium acid; abrupt smooth boundary.

A2—9 to 26 inches; strong brown (7.5YR 5/6) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.

B21t—26 to 32 inches; red (2.5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; few thin patchy clay films on faces of peds; common fine and medium roots; very strongly acid; clear smooth boundary.

B22t—32 to 75 inches; red (2.5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few thin patchy clay films on faces of peds; common fine and medium roots; very strongly acid.

The solum ranges from 70 inches to more than 85 inches in thickness. It is strongly acid in the A horizon except where the soil has been limed and is strongly acid or very strongly acid in the B horizon.

The A horizon is 22 to 36 inches thick. The Ap or A1 horizon is 5 to 11 inches thick and is brown or dark grayish brown. The A2 horizon is 15 to 27 inches thick and is brownish yellow or strong brown. The A3 horizon, where present, is about 2 inches thick and is yellowish red loamy sand.

The B1 horizon, where present, is 7 to 9 inches thick and is yellowish red sandy loam. The B2t horizon is 32 inches to more than 50 inches thick and is red or yellowish red sandy loam or sandy clay loam.

Marlboro series

The Marlboro series consists of deep, well drained, moderately permeable soils that formed in thick clayey marine sediment. They are on broad smooth ridges on the Coastal Plain. Slopes are 0 to 6 percent.

Marlboro soils are closely associated on the landscape with Coxville, Dothan, Faceville, Norfolk, and Orangeburg soils. Coxville soils are poorly drained and are in depressions. Dothan, Norfolk, and Orangeburg soils have less clay in the B horizon than Marlboro soils; in addition, Dothan soils have plinthite in the lower part of the B horizon, and Orangeburg soils have a redder B horizon than Marlboro soils. Faceville soils have a redder B horizon than Marlboro soils.

Typical pedon of Marlboro sandy loam, 2 to 6 percent slopes, in a field, about 3 miles southeast of Columbia, 0.8 miles northwest of intersection of U.S. Highway 76 and secondary road 222, 50 feet north of U.S. Highway 76:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; friable; many fine roots; many fine pores; slightly acid; abrupt smooth boundary.

B21t—8 to 33 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; friable; common fine roots; common fine pores; medium acid; gradual smooth boundary.

B22t—33 to 42 inches; coarsely mottled yellowish brown (10YR 5/6) and yellowish red (5YR 4/8) sandy clay; weak medium subangular blocky structure; firm; few thin discontinuous clay films; few fine pores; strongly acid; gradual smooth boundary.

B23t—42 to 64 inches; yellowish red (5YR 4/8) sandy clay; common medium prominent brownish yellow (10YR 6/6) and few medium distinct light gray (10YR 7/2) and very pale brown (10YR 7/3) mottles; weak medium subangular blocky structure; firm; few fine pores; strongly acid; gradual smooth boundary.

B24t—64 to 80 inches; coarsely mottled red (2.5YR 5/6), brownish yellow (10YR 6/6), very pale brown (10YR 7/4), and light gray (10YR 7/2) clay; weak medium subangular blocky structure; firm; strongly acid.

The solum ranges from 70 inches to more than 80 inches in thickness. The A horizon is strongly acid or medium acid except where the soil has been limed. The Bt horizon ranges from strongly acid to slightly acid in the upper part and from very strongly acid to medium acid in the lower part.

The Ap horizon is 5 to 8 inches thick and is brown or dark grayish brown. The A2 horizon, where present, is 4 or 5 inches thick and is yellowish brown sandy loam.

The B2t horizon is 65 inches to more than 72 inches thick. The upper part of the B2t horizon is yellowish brown or strong brown clay loam, sandy clay, or clay. The lower part of the B2t horizon is sandy clay loam, sandy clay, or clay that is strong brown, yellowish red, or red and has mottles in shades of brown and gray or is mottled in a combination of those colors.

Nason series

The Nason series consists of deep, well drained, moderately permeable soils that formed in residuum weathered from the Carolina slate. These soils are on broad and narrow upland ridges and on side slopes in the Piedmont province. Slopes range from 2 to 30 percent.

Nason soils are closely associated on the landscape with Georgeville, Herndon, Orange, and Kirksey soils. Georgeville and Herndon soils mainly occupy ridgetops and have a solum 40 to 70 inches thick; in addition, Georgeville soils have a redder subsoil than Nason soils. Orange soils are mainly in draws and on saddles and are more poorly drained than Nason soils. Kirksey soils contain less than 35 percent clay in the upper 20 inches of the argillic horizon and have gray mottles less than 20 inches below the top of the argillic horizon.

Typical pedon of Nason silt loam, 6 to 10 percent slopes, approximately 10 miles northwest of Columbia, 0.5 mile northwest on U.S. Highway 76 from intersection of Interstate 26 and U.S. Highway 176, 0.5 mile northeast on a woods road, and 50 feet east of the road:

A1—0 to 5 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; very friable; many fine, medium, and large roots; common medium pebbles of quartz; very strongly acid; abrupt smooth boundary.

A2—5 to 11 inches; light yellowish brown (10YR 6/4) silt loam; weak fine granular structure; very friable; many fine roots; few medium pebbles of quartz; very strongly acid; clear smooth boundary.

B21t—11 to 19 inches; reddish yellow (5YR 6/8) silty clay; moderate medium subangular blocky structure; firm; patchy faint clay films on faces of peds; common fine and medium roots; few fine pores; few fine pebbles of quartz; very strongly acid; gradual wavy boundary.

B22t—19 to 34 inches; yellowish red (5YR 5/6) silty clay; few fine faint yellow and strong brown mottles; moderate medium subangular blocky structure; firm; broken distinct clay films on faces of peds; few fine and medium roots; few fine pores; few fine pebbles of quartz; very strongly acid; gradual wavy boundary.

B3—34 to 41 inches; yellowish red (5YR 4/6) silty clay; common medium prominent light gray (10YR 7/2) and common medium distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable; few fine pores; few medium pebbles of quartz; many large highly weathered fragments of slate; very strongly acid; diffuse irregular boundary.

R—41 inches; rippable slate bedrock; cannot be dug with spade.

The solum ranges from 25 to 45 inches in thickness, and in many places it rests directly on slate bedrock. Depth to rippable bedrock ranges from 40 to more than 60 inches. The solum is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed.

The A1 or Ap horizon is 1 to 6 inches thick and is very dark grayish brown, dark grayish brown, grayish brown, or brown. The A2 horizon, where present, is 1 to 6 inches thick and is pale brown or light yellowish brown.

The B2t horizon is 13 to 25 inches thick. It is reddish yellow, yellowish red, or strong brown and is generally mottled with two or more of those colors. It is clay, silty clay, or silty clay loam. The B3 horizon is 6 to 13 inches thick and is brown, strong brown, yellowish red, or reddish yellow and is mottled with pink, white, or gray or with combinations of those colors. It is clay, silty clay, or silty clay loam.

The C horizon, where present, is slate saprolite underlain by bedrock.

Norfolk series

The Norfolk series consists of deep, nearly level to gently sloping, well drained, moderately permeable soils that formed in thick loamy marine sediment. These soils are on broad interstream divides on the Coastal Plain. Slopes are 0 to 6 percent.

Norfolk soils are closely associated on the landscape with the Clarendon, Coxville, Dothan, Fuquay, Goldsboro, Marlboro, Orangeburg, and Rains soils. Clarendon, Goldsboro, Coxville, and Rains soils are more poorly drained and are at lower elevations in the same positions on the landscape. Clarendon, Dothan, and Fuquay soils have more than 5 percent plinthite in the Bt horizon. Marlboro soils have a clayey control section. Orangeburg soils have a redder B horizon than Norfolk soils.

Typical pedon of Norfolk loamy sand, 0 to 2 percent slopes, in a cultivated field, about 1.0 mile south of Eastover, 0.7 mile east of intersection of secondary roads 56 and 489, on north side of a field road and 250 feet north of a power transmission line:

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) loamy sand; weak medium granular structure; friable; many fine roots; strongly acid; abrupt smooth boundary.

A2—10 to 17 inches; yellowish brown (10YR 5/4) loamy sand; weak fine granular structure; very friable; common fine roots; few uncoated grains of sand; very strongly acid; abrupt smooth boundary.

B2t—17 to 75 inches; yellowish brown (10YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; common fine roots; many fine pores; grains of sand coated and bridged with clay; very strongly acid.

The solum ranges from 70 inches to more than 85 inches in thickness. It is strongly acid or very strongly acid throughout, except where the surface layer is limed.

The Ap horizon is 6 to 10 inches thick. It is brown, grayish brown, or dark grayish brown. The A2 horizon, where present, is 3 to 8 inches thick. It is light yellowish brown, yellowish brown, pale brown, or very pale brown.

The B1 horizon, where present, is 3 to 8 inches thick. It is yellowish brown sandy loam. The B2t horizon is 53 inches to more than 75 inches thick. It is yellowish brown, brownish yellow, or strong brown sandy loam or sandy clay loam. In some pedons the lower part of the B2t horizon is mottled with red, yellowish red, strong brown, brownish yellow, light gray, or yellow.

Orange series

The Orange series consists of deep, slowly permeable, somewhat poorly drained soils that formed in material weathered from Carolina slate in the Piedmont province. Slopes range from 0 to 4 percent.

Orange soils are closely associated on the landscape with Georgeville, Herndon, Kirksey, and Nason soils. Orange soils are in similar positions on the landscape to those soils and also at slightly lower elevations in smooth, gently sloping draws. Orange soils are more poorly drained than Georgeville, Herndon, and Nason soils and have gray colors 6 to 24 inches below the top of the B2t horizon. The B horizon of Kirksey soils contains less than 35 percent clay.

Typical pedon of Orange loam, 0 to 4 percent slopes, in woods about 7 miles northwest of Columbia, 1.3 miles northwest on frontage road from intersection of Piney Grove Road and Interstate 26, 1,000 feet northeast of Interstate 26:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; very friable; many fine, medium, and large roots; strongly acid; abrupt smooth boundary.

A2—9 to 11 inches; light brownish gray (10YR 6/2) loam; weak fine granular structure; friable; many fine, medium, and large roots; strongly acid; clear smooth boundary.

B1—11 to 15 inches; yellowish brown (10YR 5/8) silt loam; weak medium subangular blocky structure; friable; many fine, medium, and large roots; common coarse distinct light brownish gray (10YR 6/2) and dark grayish brown (10YR 4/2) mottles along old root channels; medium acid; abrupt smooth boundary.

B21t—15 to 21 inches; light olive brown (2.5Y 5/6) clay; moderate medium subangular blocky structure; very firm, sticky and plastic; thick discontinuous clay films on faces of peds; common fine and medium roots; few subangular pebbles of quartz; neutral; clear smooth boundary.

B22t—21 to 29 inches; light olive brown (2.5Y 5/6) clay; common fine distinct strong brown and few fine distinct light brownish gray mottles; moderate medium subangular blocky structure; very firm, sticky and plastic; thick discontinuous clay films on faces of peds; common medium roots; neutral; clear smooth boundary.

B23t—29 to 37 inches; light olive brown (2.5Y 5/6) clay; many fine distinct strong brown and common medium distinct light brownish gray (2.5Y 6/2) mottles; moderate coarse subangular blocky structure; very firm, sticky and very plastic; thick discontinuous clay films on faces of peds; common medium roots; few slickensides on vertical and horizontal planes; yellow (2.5Y 7/6) silt coatings on faces of larger cracks; neutral; abrupt smooth boundary.

B24t—37 to 40 inches; mottled light olive brown (2.5Y 5/6), light brownish gray (2.5Y 6/2), strong brown (7.5YR 5/8), and gray (N 5/0) clay; moderate coarse subangular blocky structure; very firm, sticky and plastic; thick discontinuous clay films on faces of peds; many medium angular pebbles of quartz; neutral; abrupt smooth boundary.

R—40 inches; gray and brown hard slate rock.

The solum ranges from 28 to 46 inches in thickness. It is strongly acid or medium acid in the A horizon and medium acid to neutral in the B horizon. Depth to bedrock ranges from 40 to 60 inches.

The A1 or Ap horizon is 4 to 9 inches thick and is gray, dark gray, dark grayish brown, grayish brown, or dark brown. The A2 horizon is 2 to 8 inches thick. It is light gray, light brownish gray, light olive brown, or very pale brown silt loam or loam.

The B1 horizon, where present, is 2 to 4 inches thick and is light yellowish brown, yellowish brown, or strong brown silt loam or silty clay loam. The B2t horizon is 17 to 44 inches thick. It is brownish yellow, yellowish brown, light olive brown, and strong brown; or it is mottled with combinations of those colors and has mottles of light gray, very pale brown, pale brown, brown, light brownish gray, and yellowish red. It is clay, silty clay, silty clay loam, or clay loam. The B3 horizon, where present, is 3 to 8 inches thick. It is light gray or mottled light gray, yellowish brown, strong brown, yellowish red, or red silty clay or silty clay loam.

The C horizon, where present, is as much as 27 inches thick over bedrock. It is light gray or mottled greenish gray, yellowish brown, or strong brown clay or clay loam.

Orangeburg series

The Orangeburg series consists of deep, well drained, moderately permeable soils that formed in thick loamy marine sediment. These soils are on broad ridges and interstream divides on uplands in the Coastal Plain province. Slopes are 0 to 15 percent.

The Orangeburg soils are closely associated on the landscape with Dothan, Faceville, Lucy, Marlboro, Norfolk, Troup, and Vaucluse soils. Dothan soils have a yellowish brown B horizon that contains plinthite. The B horizon of Faceville and Marlboro soils contains more than 35 percent clay, and Marlboro and Norfolk soils have a B horizon that is yellowish brown. Lucy and Troup soils have a sandy A horizon more than 20 inches thick. Vaucluse soils have a firm, brittle fragipan.

Typical pedon of Orangeburg loamy sand, 2 to 6 percent slopes, in a cultivated field, about 2 miles north of Eastover on the east bank of S.C. Highway 263, 0.4 mile north of its intersection with U.S. Highway 601:

Ap—0 to 8 inches; brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; many fine roots; common fine pores; medium acid; abrupt irregular boundary.

A2—8 to 12 inches; yellowish brown (10YR 5/4) loamy sand; weak fine granular structure; very friable; many fine roots; medium acid; abrupt smooth boundary.

B1—12 to 18 inches; yellowish red (5YR 5/8) sandy loam; weak fine subangular blocky structure; friable; common fine roots; many fine pores; strongly acid; clear smooth boundary.

B21t—18 to 39 inches; yellowish red (5YR 4/8) sandy clay loam; weak fine subangular blocky structure; friable; grains of sand bridged with clay; common fine and medium roots; common fine pores; strongly acid; gradual smooth boundary.

B22t—39 to 57 inches; red (2.5YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable; grains of sand bridged with clay; common fine and medium roots; common fine pores; very strongly acid; gradual smooth boundary.

B23t—57 to 75 inches; yellowish red (5YR 5/8) and red (2.5YR 4/8) sandy clay loam; weak fine subangular blocky structure; friable; few fine roots; few fine pores; very strongly acid; gradual smooth boundary.

B24t—75 to 90 inches; yellowish red (5YR 5/8) sandy clay loam; few fine distinct red mottles; weak medium subangular blocky structure; firm; strongly acid.

The solum ranges from 60 inches to more than 115 inches in thickness. It is strongly acid or medium acid in the A horizon and strongly acid or very strongly acid in the Bt horizon.

The A horizon is 4 to 14 inches thick. The A1 or Ap horizon is 2 to 9 inches thick and is brown, very dark grayish brown, dark grayish brown, dark brown, or dark yellowish brown. The A2 horizon, where present, is 3 to 6 inches thick and is light yellowish brown or yellowish brown. The A3 horizon, where present, is about 8 inches thick and is yellowish brown loamy sand.

The B1 horizon, where present, is 3 to 7 inches thick and is yellowish red or yellowish brown sandy loam. The B2t horizon is 39 to 100 inches thick. It is commonly sandy clay loam but in places is sandy clay in the lower part. It is red or yellowish red and it either has no mottles or has mottles in shades of brown, yellow, and red.

Pelion series

The Pelion series consists of deep, moderately well drained, moderately slowly permeable or slowly permeable soils. These soils formed in loamy marine sediment. They are on smooth and broken side slopes and toe slopes, mainly in the Sand Hills on the Coastal Plain. Slopes range from 2 to 15 percent.

Pelion soils are closely associated on the landscape with Ailey, Blanton, Dothan, Fuquay, Johnston, Lakeland, and Vaucluse soils. Pelion soils are generally at lower elevations than Blanton, Dothan, Fuquay, and Lakeland soils. They are in similar positions to Ailey soils but at lower elevations and are at higher elevations than Johnston soils. Ailey, Blanton, and Fuquay soils have a sandy A horizon more than 20 inches thick. Dothan soils have a yellowish brown B horizon that is 5 percent or more plinthite. Johnston soils are very poorly drained and have a thick black A horizon. Lakeland soils are sandy throughout to a depth of 80 inches. Vaucluse soils are better drained than Pelion soils, have a redder B horizon, and have a fragipan. Also, they are generally at higher elevations on broken side slopes.

Typical pedon of Pelion loamy sand, 2 to 6 percent slopes, in woods about 7.5 miles northeast of Columbia city limits, 1.4 miles south of intersection of S.C. Highway 12 and Fort Jackson's 6th Division Road, and 1/4 mile east of 6th Division Road near stream:

A1—0 to 5 inches; very dark gray (10YR 3/1) loamy sand; weak fine granular structure; friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.

A2—5 to 10 inches; pale brown (10YR 6/3) loamy sand; weak fine granular structure; friable; common fine and medium roots; very strongly acid; clear smooth boundary.

B21t—10 to 18 inches; light yellowish brown (10YR 6/4) sandy clay loam; few fine distinct yellowish red mottles; moderate medium subangular blocky structure; firm; thin discontinuous clay films on faces of peds; few fine and medium roots; few fine pores; common coarse clear rounded grains of quartz sand; very strongly acid; clear smooth boundary.

B22t—18 to 26 inches; pale yellow (2.5Y 7/4) sandy clay loam; many medium distinct reddish yellow (5YR 6/8), few fine distinct strong brown, and few fine faint light gray mottles; moderate medium subangular blocky structure; firm, slightly brittle; thin discontinuous clay films on faces of peds; few fine roots; few fine pores; very strongly acid; clear smooth boundary.

B23t—26 to 38 inches; mottled light gray (10YR 7/1), yellow (10YR 7/6), reddish yellow (5YR 6/8), and strong brown (7.5YR 5/8) sandy clay loam; strong coarse angular blocky structure; very firm, brittle; thin discontinuous clay films on vertical faces of some peds; few fine and medium roots; few fine pores; very strongly acid; gradual smooth boundary.

B3g—38 to 48 inches; light gray (10YR 7/1) sandy clay loam; many coarse prominent reddish yellow (5YR 6/8), yellowish red (5YR 4/6), red (2.5YR 4/6), and yellow (10YR 7/6) mottles; weak coarse subangular blocky structure; very firm, slightly sticky; common fine and medium roots; many fine flakes of mica; very strongly acid; gradual smooth boundary.

C1g—48 to 57 inches; light gray (10YR 7/1) sandy clay loam; many medium prominent yellow (10YR 7/8), brownish yellow (10YR 6/8), yellowish red (5YR 4/8), and reddish yellow (5YR 6/8) mottles; massive; friable; few fine roots; many fine flakes of mica; very strongly acid; gradual smooth boundary.

C2g—57 to 75 inches; light gray (10YR 7/1) loamy sand; many coarse distinct brownish yellow (10YR 6/6) mottles; massive; loose; many fine flakes of mica; very strongly acid.

The solum ranges from 43 to 72 inches in thickness. It is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed.

The A1 or Ap horizon is 4 to 8 inches thick and is grayish brown, dark grayish brown, dark gray, or very dark gray. The A2 horizon is 3 to 11 inches thick. It is pale brown or very pale brown loamy sand, sand, or sandy loam.

The B1 horizon, where present, is about 4 inches thick. It is light yellowish brown sandy loam. The B2t horizon is 20 to 45 inches thick. The upper part of the B2t horizon is yellowish brown, pale brown, pale yellow, or light yellowish brown sandy clay loam. The lower part of the B2t horizon is gray or light gray and has higher chroma mottles, or it is mottled in shades of gray, yellow, brown, and red. The B2t horizon commonly is sandy clay loam but ranges to sandy loam. The B3 horizon, where present, is 10 to 20 inches thick and is light gray or reddish yellow sandy loam, coarse sandy loam, or sandy clay loam.

The C horizon is at a depth of 43 to 72 inches. It is loamy sand, sandy loam, sandy clay loam, sandy clay, or clay that is mottled in shades of light gray, white, brown, yellow, and red.

Persanti series

The Persanti series consists of deep, moderately well drained, slowly permeable soils that formed in clayey marine sediment. These soils are on the Coastal Plain on broad estuary terraces. Slopes are dominantly less than 2 percent.

Persanti soils are closely associated on the landscape with Cantey, Goldsboro, Orangeburg, Rains, and Smithboro soils. Persanti soils are better drained than Cantey, Smithboro, and Rains soils and are at slightly higher elevations in similar positions on the landscape. Rains soils have a coarser textured B horizon than Persanti soils. Goldsboro and Orangeburg soils are at slightly higher elevations than Persanti soils and have a coarser textured B horizon; in addition, Orangeburg soils are well drained.

Typical pedon of Persanti very fine sandy loam, in woods, 1.7 miles west of Kingville, 1.0 mile southwest of secondary road 489, 100 feet west of private road:

Ap—0 to 5 inches; brown (10YR 5/3) very fine sandy loam; weak fine subangular blocky structure; friable; many fine and large roots; strongly acid; abrupt smooth boundary.

B1—5 to 10 inches; yellowish brown (10YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable; many fine, medium, and large roots; strongly acid; clear smooth boundary.

B21t—10 to 19 inches; mottled strong brown (7.5YR 5/8) and red (2.5YR 5/8) clay loam; strong fine angular blocky structure; very firm, slightly sticky and plastic; thick continuous clay films on faces of peds; common fine medium and large roots; few fine pores; strongly acid; clear smooth boundary.

B22t—19 to 25 inches; mottled red (2.5YR 5/8), brownish yellow (10YR 6/6), and yellowish brown (10YR 5/6) clay; few fine distinct pale yellow mottles; strong medium angular blocky structure; very firm, sticky and very plastic; thick continuous clay films on faces of peds; common fine roots; roots do not penetrate interior of peds; strongly acid; clear smooth boundary.

B23t—25 to 42 inches; mottled red (2.5YR 5/8), yellowish red (5YR 4/8), and yellow (10YR 7/6) clay; few fine distinct light gray mottles; strong medium platy structure parting to strong fine and medium angular blocky; very firm, sticky and very plastic; thick continuous light gray (10YR 7/2) clay films on faces of peds; common fine roots; roots do not penetrate interior of peds; strongly acid; gradual smooth boundary.

B24t—42 to 60 inches; mottled red (2.5YR 5/8), yellow (10YR 7/6), and brownish yellow (10YR 6/6) clay; many medium distinct light gray (10YR 7/1) mottles; strong medium platy structure parting to strong fine and medium angular blocky; very firm, sticky and very plastic; thick continuous clay films on faces of peds; few fine flakes of mica; very strongly acid; gradual smooth boundary.

B25t—60 to 75 inches; mottled light gray (10YR 7/1), red (2.5YR 5/8), yellow (10YR 7/6), and yellowish red (5YR 4/8) clay; strong coarse angular blocky structure; very firm, sticky and very plastic; thick continuous clay films on faces of peds; very strongly acid.

The solum ranges from 60 inches to more than 75 inches in thickness. It is slightly acid to very strongly acid in the A horizon and is strongly acid to extremely acid in the B horizon.

The A1 or Ap horizon is 3 to 7 inches thick. It is brown, grayish brown, dark grayish brown, or dark gray. The A2 horizon, where present, is 3 to 5 inches thick. It is pale brown or light brownish gray fine sandy loam or very fine sandy loam.

The B1 horizon, where present, is 4 to 5 inches thick. It is brownish yellow, yellowish brown, or light yellowish brown clay loam or sandy clay loam. The B2t horizon is 40 to 70 inches thick. The upper part is yellowish brown, brownish yellow, and strong brown or is mottled in various shades of brown, yellow, and red; the lower part is mottled in shades of brown, yellow, red, and gray or is dominantly gray and has yellow and red mottles. The B2t horizon is mostly clay or silty clay, but contains some subhorizons of clay loam.

Rains series

The Rains series consists of deep, nearly level, poorly drained, moderately permeable soils that formed in loamy marine sediment. These soils are on the Coastal Plain. They occupy broad flats and depressional areas on and between broad interstream ridges.

Rains soils are closely associated on the landscape with Coxville, Cantey, Goldsboro, Johnston, and Norfolk soils. Coxville and Cantey soils have a clayey control section and are in similar positions on the landscape. Goldsboro soils are better drained and are at slightly higher elevations than Rains soils. Johnston soils have a coarse-loamy control section and a thicker A1 horizon than Rains soils and are more poorly drained than Rains soils. Norfolk soils are well drained and have a yellowish brown Bt horizon.

Typical pedon of Rains sandy loam, in woods, approximately 4 miles southeast of Columbia, 0.5 mile north of intersection of S.C. Highway 48 and secondary road 87, and 100 feet east of road 87:

A1—0 to 8 inches; very dark gray (10YR 3/1) sandy loam; weak fine granular structure; friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

A2—8 to 12 inches; grayish brown (10YR 5/2) sandy loam; weak fine granular structure; friable; grains of sand coated and bridged with clay; many fine and medium roots; many fine pores; strongly acid; abrupt smooth boundary.

B21tg—12 to 24 inches; gray (10YR 6/1) sandy clay loam; common coarse distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; broken distinct clay films on faces of peds; common medium roots; many fine pores; very strongly acid; clear smooth boundary.

B22tg—24 to 46 inches; gray (10YR 6/1) sandy clay loam; many coarse distinct yellowish brown (10YR 5/6), common coarse distinct light yellowish brown (10YR 6/4), and few fine prominent red mottles; moderate medium subangular blocky structure; friable; complete distinct clay films on faces of peds; common medium roots; many fine pores; very strongly acid; gradual smooth boundary.

B23tg—46 to 62 inches; gray (10YR 6/1) sandy clay loam; common coarse distinct yellowish brown (10YR 5/6) and light yellowish brown (10YR 6/4) mottles; moderate coarse subangular blocky structure; firm, broken faint clay films on faces of some peds; very strongly acid; gradual smooth boundary.

B3g—62 to 68 inches; gray (10YR 6/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/6) and few medium distinct strong brown (7.5YR 5/6) mottles; weak coarse subangular blocky structure; firm; patchy faint clay films on faces of some vertical peds; very strongly acid.

The solum ranges from 60 inches to more than 80 inches in thickness. It is strongly acid or very strongly acid throughout, except in the areas where the surface layer is limed.

The A1 horizon is 5 to 9 inches thick. It is black, very dark gray, or dark gray. The A2 horizon, where present, is 4 to 7 inches thick and is dark gray, grayish brown, or light brownish gray.

The B1 horizon, where present, is 4 to 7 inches thick. It is light gray or grayish brown sandy loam. The B2t horizon is 38 to 56 inches thick. It is gray or light gray sandy clay loam or clay loam. The B3 horizon is 4 to 16 inches thick. It is gray or light gray sandy loam, sandy clay loam, or sandy clay.

Smithboro series

The Smithboro series consists of deep, somewhat poorly drained, slowly permeable soils that formed in clayey marine sediment. These soils are on the Coastal Plain on broad estuary terraces. Slopes are dominantly less than 2 percent.

Smithboro soils are closely associated on the landscape with Cantey, Coxville, Goldsboro, Persanti, and Rains soils. Smithboro soils are on similar positions to Cantey, Persanti, and Goldsboro soils. They are better drained than Cantey soils and are at slightly higher elevations. Smithboro soils are less well drained than Persanti soils, have gray colors in the upper part of the horizon, and are at slightly lower elevations. Goldsboro soils are better drained and have a fine-loamy control section. Coxville and Rains soils are more poorly drained than Smithboro soils; in addition, Rains soils have a coarser textured B horizon.

Typical pedon of Smithboro loam, in woods, approximately 3.2 miles west of Gadsden, 1.4 miles west of intersection of secondary roads 734 and 2236, 0.7 mile southeast on private road, 250 feet south of power transmission line, and 50 feet west of private road:

A1—0 to 6 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; very friable; many fine medium and large roots; very strongly acid; abrupt smooth boundary.

B1—6 to 10 inches; very pale brown (10YR 7/3) loam; common medium distinct dark grayish brown (10YR 4/2) and common medium faint light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; friable; many fine and medium roots, common medium pores; very strongly acid; clear smooth boundary.

B21tg—10 to 20 inches; mottled brownish yellow (10YR 6/8), gray (10YR 6/1), light brownish gray (10YR 6/2), and yellowish red (5YR 4/8) clay loam; moderate medium subangular blocky structure; firm, sticky and plastic; thick continuous clay films on faces of peds; few fine and medium roots; few fine pores; very strongly acid; gradual wavy boundary.

B22tg—20 to 29 inches; gray (10YR 6/1) clay loam; common medium prominent red (2.5YR 4/8), common medium distinct yellowish brown (10YR 5/6), and few medium faint pale brown (10YR 6/3) mottles; strong medium subangular blocky structure; firm, sticky and plastic; thin continuous clay films on faces of peds; few fine and medium roots; few fine pores; very strongly acid; gradual wavy boundary.

B23tg—29 to 48 inches; gray (10YR 6/1) clay; many medium distinct brownish yellow (10YR 6/8), few medium prominent weak red (10R 5/4), and few coarse faint pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; very firm, sticky and plastic; thin patchy clay films on faces of peds; few fine and medium roots; very strongly acid; gradual wavy boundary.

B24tg—48 to 67 inches; gray (10YR 6/1) clay; common medium distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; very firm, sticky and plastic; thin patchy clay films on faces of peds; few fine roots along faces of peds; very strongly acid; gradual wavy boundary.

B25tg—67 to 78 inches; mottled gray (10YR 6/1), strong brown (7.5YR 5/8), and reddish brown (2.5YR 5/4) silty clay; common medium faint light brownish gray (10YR 6/2) mottles; moderate coarse subangular blocky structure; firm, sticky and plastic; thin patchy clay films on faces of peds; few fine and medium roots along faces of peds; very strongly acid.

The solum is 60 inches to more than 80 inches thick. It is strongly acid or very strongly acid throughout.

The A1 or Ap horizon is 4 to 8 inches thick. It is very dark gray, dark grayish brown, or very dark grayish brown. The A2 horizon, where present, is about 3 inches thick. It is grayish brown or pale brown sandy loam.

The B1 horizon, where present, is 2 to 6 inches thick. It is pale brown, light olive brown, or very pale brown or is mottled in various shades of brown and gray. It is loam, clay loam, or sandy clay loam.

The B2t horizon is clay loam, clay, or silty clay. The upper 5 to 10 inches of the B2tg horizon is yellowish brown, light yellowish brown, or pale brown. It contains mottles in shades of brown, red, and gray, or it is mottled in various shades of brown, gray, red, and yellow. The lower 53 to 65 inches of the B2tg horizon is gray, light gray, or light brownish gray and has red, brown, and yellow mottles.

State series

The State series consists of deep, well drained, moderately permeable soils that formed in stratified, loamy, fluvial sediment derived from weathered Carolina slate. These soils are on high stream terraces in the Piedmont and adjacent Coastal Plain provinces. Slopes are less than 2 percent.

State soils are closely associated on the landscape with Altavista, Chewacla, Congaree, Georgeville, and Nason soils. Altavista and Chewacla soils are more poorly drained. Chewacla and Congaree soils are on flood plains and do not have an argillic horizon. Georgeville and Nason soils are on adjacent uplands and have a clayey control section.

Typical pedon of State sandy loam, 0 to 2 percent slopes, in a field of planted pine, 6.0 miles east of U.S. Highway 21 at Blythewood on secondary road 54, 0.7 mile southeast on secondary road 1418, on south bank of road, 50 feet west of residential driveway:

Ap—0 to 5 inches; grayish brown (10YR 5/2) sandy loam; weak fine granular structure; friable, nonsticky; many fine and medium roots; medium acid; abrupt smooth boundary.

A2—5 to 8 inches; very pale brown (10YR 7/4) sandy loam; weak fine granular structure; friable, nonsticky; medium acid; clear smooth boundary.

B21t—8 to 25 inches; yellowish brown (10YR 5/6) sandy clay loam; weak fine subangular blocky structure; friable, nonsticky; thin patchy clay films on faces of peds; many medium roots; common fine pores; medium acid; gradual smooth boundary.

B22t—25 to 48 inches; yellowish brown (10YR 5/6) clay loam; few medium distinct strong brown (7.5YR 5/8) mottles; moderate fine subangular blocky structure; friable, slightly sticky; thin continuous clay films on faces of peds; common fine and medium roots; few 5 to 80 millimeters round and subangular pebbles of quartz in the lower part; strongly acid; clear smooth boundary.

IIC1—48 to 68 inches; mottled brownish yellow (10YR 6/6) and yellowish brown (10YR 5/8) very slaty silty clay; few medium distinct pale brown (10YR 6/3) and light gray (10YR 7/2) mottles; rock structure; 50 percent, by volume, dark red (10YR 3/6) and strong brown (7.5YR 5/8) coarse angular fragments of slate that have a few streaks of light gray and brownish yellow; very strongly acid; gradual irregular boundary.

IIC2—68 to 78 inches; brownish yellow (10YR 6/6), yellowish brown (10YR 5/8), and light gray (10YR 7/2) slate saprolite, crushes to loam; rock controlled structure; firm, nonsticky; readily cut with spade; many hard platy fragments of slate; very strongly acid.

The solum ranges from 42 to 72 inches in thickness. It is very strongly acid to medium acid throughout. Bedrock is at a depth of more than 6 feet.

The A1 or Ap horizon is 5 to 9 inches thick. It is brown, grayish brown, or dark grayish brown loam, sandy loam, or loamy sand. The A2 horizon is 3 to 6 inches thick. It is yellowish brown, light yellowish brown, pale brown, very pale brown, or strong brown loam or sandy loam.

The B2t horizon is 25 to 60 inches thick. It is yellowish brown, strong brown, and brownish yellow or is mottled in various shades of brown, yellow, and red. It is sandy clay loam, clay loam, or loam. The B3 horizon, where present, is 10 to 20 inches thick. It is brownish yellow and yellowish brown; or it is mottled with combinations of those colors and of red, yellowish red, and light gray. It is sandy loam, loam, or silty clay loam.

The IIC horizon is mottled brownish yellow, yellowish brown, and light gray loam, clay loam, very slaty silty clay, or soft slate saprolite.

Tawcaw series

The Tawcaw series consists of deep, somewhat poorly drained, slowly permeable soils that formed in clayey alluvial sediment washed from the Piedmont province. These soils are on flood plains along the Congaree and Wateree Rivers. Slopes are less than 1 percent.

Tawcaw soils are associated on the landscape with Congaree, Chastain, Toccoa, and Chewacla soils. Congaree, Toccoa, and Chewacla soils have a coarser textured control section than Tawcaw soils; in addition, Congaree and Toccoa soils are better drained. Chastain soils are more poorly drained than Tawcaw soils.

Typical pedon of Tawcaw silty clay loam in woods about 17 miles southeast of Columbia, 2.5 miles south of secondary road 734 on a private road:

A1—0 to 4 inches; dark brown (7.5YR 4/4) silty clay loam; weak fine granular structure; friable, slightly sticky and plastic; many fine and medium roots; medium acid; abrupt smooth boundary.

B21—4 to 11 inches; reddish brown (5YR 4/4) silty clay; weak medium subangular blocky structure; firm, sticky and plastic; many fine and medium roots; few fine pores; medium acid; gradual smooth boundary.

B22—11 to 22 inches; reddish brown (5YR 4/4) silty clay; common medium faint light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; firm, sticky and plastic; many fine and medium roots; few fine pores; medium acid; gradual smooth boundary.

B23—22 to 31 inches; mottled light gray (10YR 7/2), dark brown (10YR 4/3), brown (7.5YR 5/4), and dark grayish brown (10YR 4/2) silty clay loam; weak fine subangular blocky structure; friable, sticky; common medium roots; materials that are mottled dark grayish brown are concretions; medium acid; gradual smooth boundary.

B24—31 to 48 inches; mottled light gray (10YR 7/2), dark yellowish brown (10YR 4/4), and light yellowish brown (10YR 6/4) silty clay loam; weak fine subangular blocky structure; firm, sticky; common large roots; common black concretions; coatings of silt along root channels; medium acid; gradual smooth boundary.

B25—48 to 61 inches; mottled light gray (10YR 7/2), brown (7.5YR 5/4), dark yellowish brown (10YR 4/4), and light yellowish brown (10YR 6/4) silty clay; weak medium subangular blocky structure; firm, sticky; common black concretions; medium acid.

The solum ranges from 48 inches to more than 64 inches in thickness. It is strongly acid to slightly acid throughout.

The A1 horizon is 3 to 6 inches thick. It is brown, dark brown, or reddish brown.

The B21 horizon is 5 to 10 inches thick. It is reddish brown, brown, dark brown, or yellowish red. In some pedons it has pale brown and yellowish brown mottles. The B22 horizon is 6 to 11 inches thick. It is reddish brown, brown, and yellowish red or is mottled with combinations of those colors and of pale brown and yellowish brown. The lower 16 to 41 inches of the B2 horizon is mottled in combinations of dark brown, brown, reddish brown, dark yellowish brown, light yellowish brown, dark grayish brown and light gray. The B2 horizon is clay, silty clay, silty clay loam, or clay loam. The B3 horizon is present in some pedons. It is mottled in combinations of yellowish brown, pale brown, light brownish gray, light gray, and gray. It is clay, silty clay, or sandy clay.

The C horizon is loam, sandy clay loam, silty clay loam, or clay.

Toccoa series

The Toccoa series consists of deep, well drained, moderately rapidly permeable soils that formed in thick loamy alluvium washed from the Piedmont province. These soils are on broad flood plains of the Broad, Congaree, Saluda, and Wateree Rivers. They are commonly flooded. Slope is less than 2 percent.

Toccoa soils are closely associated on the landscape with Chastain, Chewacla, Congaree, and Tawcaw soils. Chastain, Chewacla, and Tawcaw soils are at lower elevations and are more poorly drained; in addition, Chastain and Tawcaw soils have a clayey B horizon, and Chewacla soils have a fine-loamy control section. Congaree soils are at about the same elevations as the Toccoa soils, but unlike those soils have a fine-loamy control section.

Typical pedon of Toccoa loam, in planted sweetgum trees, about 7.0 miles southeast of Columbia city limits, 0.5 mile southwest of intersection of S.C. Highway 48 and secondary road 37, on private road, 260 feet south of a spring:

Ap—0 to 4 inches; dark yellowish brown (10YR 4/4) loam; weak fine granular structure; friable; common fine and medium roots; common fine flakes of mica; medium acid; abrupt smooth boundary.

C1—4 to 12 inches; strong brown (7.5YR 5/6) loam; massive; friable; common fine and medium roots; many fine flakes of mica; medium acid; abrupt smooth boundary.

C2—12 to 45 inches; dark yellowish brown (10YR 4/4) fine sandy loam; massive; very friable; common fine roots; many fine flakes of mica; bedding planes and thin strata of loam; medium acid; clear smooth boundary.

C3—45 to 60 inches; dark yellowish brown (10YR 4/4) loamy sand; massive; very friable; common fine flakes of mica; medium acid; gradual smooth boundary.

C4—60 to 68 inches; dark yellowish brown (10YR 3/4) fine sand; single grained; loose; many fine flakes of mica; medium acid; gradual smooth boundary.

C5—68 to 72 inches; dark yellowish brown (10YR 3/4) fine sandy loam; massive; very friable; many fine flakes of mica; medium acid.

The pedon is medium acid or slightly acid throughout. Common to many flakes of mica are present in all horizons.

The A1 or Ap horizon is 4 to 12 inches thick. It is dark yellowish brown, brown, dark brown, or dark grayish brown loam, loamy fine sand, fine sandy loam, or silt loam.

The C horizon extends to a depth of more than 95 inches. It is strong brown, yellowish brown, dark yellowish brown, brown, or dark brown. It is fine sandy loam or sandy loam and has thin layers of loam, loamy sand, sand, or clay loam in most pedons.

Troup series

The Troup series consists of deep, well drained, moderately permeable soils that formed in thick, sandy and loamy sediment. Those soils are on broad ridges on uplands of the Coastal Plain. They have sandy surface and subsurface layers 42 to 72 inches thick. Slopes range from 0 to 6 percent.

Troup soils are closely associated on the landscape with Ailey, Blanton, Fuquay, Lakeland, and Lucy soils and are in similar positions on the landscape to all of those soils except Ailey. Ailey soils are generally at lower elevations on side slopes. They have a sandy surface layer 20 to 40 inches thick. Blanton soils have gray colors in the Bt horizon. Fuquay soils have a sandy surface layer 20 to 40 inches thick and have plinthite in the Bt horizon above a depth of 60 inches. Lucy soils have a sandy surface layer 20 to 40 inches thick and reddish colors in the subsoil. Lakeland soils are sand to a depth of 80 inches or more.

Typical pedon of Troup sand, 0 to 6 percent slopes, in a field, about 3 miles north of Eastover on north bank of a dirt road, 0.7 mile east of S.C. Highway 263, and 0.5 mile north of intersection of Highway 263 and U.S. Highway 601:

Ap—0 to 7 inches; brown (10YR 4/3) sand; weak fine granular structure; very friable; many fine roots; medium acid; abrupt smooth boundary.

A21—7 to 26 inches; yellowish brown (10YR 5/4) sand; single grained; loose; many fine and medium roots; many uncoated grains of sand; strongly acid; clear smooth boundary.

A22—26 to 48 inches; strong brown (7.5YR 5/6) loamy sand; single grained; loose; common fine and medium roots; most grains of sand are coated; very strongly acid; gradual smooth boundary.

B2t—48 to 75 inches; yellowish red (5YR 4/8) sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; grains are sand coated and bridged with clay; very strongly acid.

The solum ranges from 80 inches to more than 100 inches in thickness. It is strongly acid or very strongly acid throughout, except in areas where the surface layer is limed.

The A1 or Ap horizon is 5 to 8 inches thick and is dark grayish brown, grayish brown, brown, or dark brown. The A2 horizon is 37 to 65 inches thick and is light yellowish brown, yellowish brown, strong brown, brownish yellow, or reddish yellow sand or loamy sand.

The B1 horizon, where present, is 8 to 12 inches thick and is strong brown or yellowish red loamy sand or sandy loam. The B2t horizon extends to a depth of 75 to 80 inches or more and is yellowish red, red, strong brown, or yellowish brown sandy loam or sandy clay loam.

Vaucluse series

The Vaucluse series consists of well drained, slowly permeable soils that formed in loamy marine sediment. These soils are mainly on narrow, irregular slopes on uplands of the Coastal Plain. They have a fragipan. Slopes range from 6 to 15 percent.

Vaucluse soils are closely associated on the landscape with Ailey, Fuquay, Lakeland, Lucy, Pelion, and Troup soils. Vaucluse soils have a fragipan and Fuquay, Lakeland, Lucy, Pelion, and Troup soils do not. Ailey, Fuquay, Lucy, and Troup soils have a sandy A horizon more than 20 inches thick; also, Fuquay soils have nodules of plinthite in the B horizon. Lakeland soils are sand to a depth of 80 inches or more. Pelion soils are less well drained than Vaucluse soils, and they have gray colors within the upper 24 inches of the B horizon.

Typical pedon of Vaucluse loamy sand, 6 to 10 percent slopes, in woods, about 10 miles east of Columbia, 0.7 mile northeast of intersection of secondary roads 935 and 86, on south bank of secondary road 86, 60 feet from a private drive:

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

A2—6 to 15 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; many fine and medium roots; common coarse fragments of ironstone; strongly acid; clear wavy boundary.

B2t—15 to 29 inches; strong brown (7.5YR 5/6) sandy clay loam; common fine faint yellowish red mottles; weak medium subangular blocky structure; friable; thin patchy clay films on faces of peds; common fine and medium roots; common fine pores; common coarse fragments of ironstone; very strongly acid; abrupt wavy boundary.

Bx—29 to 58 inches; red (2.5YR 5/8) sandy loam; many medium and coarse distinct strong brown (7.5YR 5/8) and yellow (10YR 7/6) mottles and streaks; few fine prominent white particles of kaolinitic clay; massive; red part is about 78 percent of horizon, 3 to 12 inches in horizontal dimension and 10 to 40 inches in vertical dimension; strong brown and yellow part is mostly 0.5 to 1.5 inches thick and 10 to 30 inches long, occurring about equally in vertical and horizontal streaks; red part is firm, brittle, and cemented; yellow and strong brown part is friable; strong brown and yellow part is sandy clay loam, has moderate medium subangular blocky structure, and has thick continuous clay films on faces of peds, common medium roots, and common coarse fragments of ironstone; strongly acid; gradual smooth boundary.

B3—58 to 72 inches; red (2.5YR 5/8) sandy loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak coarse subangular blocky structure; friable; strong brown mottles are sandy clay loam; sand grains coated with clay; strongly acid.

The solum ranges from 50 inches to more than 72 inches in thickness. It is strongly acid or very strongly acid throughout. Depth to the fragipan is 14 to 32 inches.

The A1 or Ap horizon is 4 to 6 inches thick. It is very dark grayish brown, dark grayish brown, brown, or dark yellowish brown. The A2 horizon, where present, is 8 to 12 inches thick.

The B2t horizon is 4 to 16 inches thick. It is strong brown or yellowish red. The Bx horizon is 21 to 50 inches thick. It is strong brown, yellowish red, yellowish brown, or red or is mottled in various shades of brown, red, yellow, and gray. It is sandy loam, sandy clay loam, or sandy clay. It is 65 to 80 percent brittle material and is 0 to 2 percent light gray or white particles of kaolin clay less than 2 inches in diameter. The B3 horizon, where present, is 7 to 22 inches thick. It is red, yellowish red, and reddish yellow or is mottled brownish yellow, yellowish red, and red.

Wedowee series

The Wedowee series consists of deep, well drained, moderately permeable soils that formed in material weathered from granitic rock in the Carolina Slate Belt. These soils are on medium and narrow ridges and irregular side slopes in the Piedmont province. Slopes range from 2 to 30 percent.

Wedowee soils are closely associated on the landscape with Nason and Georgeville soils. Nason and Georgeville soils have a silt content of 30 percent or more; Wedowee soils have a silt content of less than 30 percent.

Typical pedon of Wedowee loamy sand, 2 to 6 percent slopes, in young pine woods on the east bank of secondary road 674 running north through Harbison Forest, 1.8 miles north of its intersection with U.S. Highway 76:

Ap—0 to 5 inches; brown (10YR 5/3) loamy sand; weak fine granular structure; very friable; many fine and medium roots; medium acid; abrupt smooth boundary.

B1—5 to 9 inches; brownish yellow (10YR 6/6) sandy loam; weak fine granular structure; friable, slightly sticky; many fine roots; medium acid; clear smooth boundary.

B21t—9 to 18 inches; strong brown (7.5YR 5/6) sandy clay; many common faint yellowish red (5YR 5/8) and few medium distinct red (2.5YR 5/8) mottles; moderate coarse angular blocky structure parting to weak medium subangular blocky; friable, sticky; thick continuous clay films on faces of the larger peds; thin patchy clay films on faces of the smaller peds; common medium and large roots; many fine flakes of mica; medium acid; gradual wavy boundary.

B22t—18 to 25 inches; coarsely mottled strong brown (7.5YR 5/6), yellowish red (5YR 5/6), brownish yellow (10YR 6/6), and yellow (10YR 7/8) sandy clay loam; moderate coarse subangular blocky structure parting to weak medium subangular blocky; friable, slightly sticky; thick continuous clay films on faces of peds; many fine flakes of mica; few fine fragments of feldspar and many fine grains of quartz; medium acid; gradual irregular boundary.

B3—25 to 35 inches; mottled brownish yellow (10YR 6/8), strong brown (7.5YR 5/6), yellow (10YR 7/6), and yellowish red (5YR 5/6) sandy clay loam; weak coarse angular blocky structure; horizontal fracture planes; friable; many fine flakes of mica; strongly acid; gradual wavy boundary.

C1—35 to 53 inches; mottled brownish yellow (10YR 6/8), very pale brown (10YR 8/3), yellow (10YR 7/6), and yellowish red (5YR 5/6) coarse grained granite saprolite that crushes to sandy clay loam, has streaks of sandy loam; some horizontal and vertical fracture planes; very friable; patchy clay films on large vertical fracture planes; many fine flakes of mica; many very pale brown grains of quartz 2 to 4 millimeters in diameter; few thin, yellowish red seams of clay; strongly acid; gradual wavy boundary.

C2—53 to 80 inches; finely mottled very pale brown (10YR 8/3), brownish yellow (10YR 6/8), strong brown (7.5YR 5/6), and white (10YR 8/2) granite saprolite that crushes to sandy clay loam; very friable; strongly acid.

The solum ranges from 25 to 40 inches in thickness. It is very strongly acid or strongly acid throughout, except in areas where the surface layer is limed.

The A1 or Ap horizon is 1 to 5 inches thick. It is very dark gray, grayish brown, or brown. The A2 horizon, where present, is yellowish brown, brownish yellow, or pale brown loamy sand 4 to 6 inches thick.

The B1 horizon, where present, is 4 or 5 inches thick and is sandy loam or sandy clay loam. The B2t horizon is 15 to 20 inches thick. It is strong brown, brownish yellow, or yellowish brown and in the lower part has mottles of strong brown, yellowish brown, brownish yellow, yellow, yellowish red, and red. The B2t horizon is sandy clay but grades to sandy clay loam in the lower part. The B3 horizon is 4 to 10 inches thick. It is mottled in shades of strong brown, yellowish brown, yellow, yellowish red, and pale brown. Texture is sandy loam or sandy clay loam.

The C horizon is weathered granite and is mottled in shades of brown, yellow, and red.

Classification

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. Readers interested in further details about the system should refer to "Soil taxonomy" (*10*).

The system of classification has six categories. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. In this system the classification is based on the different soil properties that can be observed in the field or those that can be inferred either from other properties that are observable in the field or from the combined data of soil science and other disciplines. The properties selected for the higher categories are the result of soil genesis or of factors that affect soil genesis. In table 19, the soils of the survey area are classified according to the system. Categories of the system are discussed in the following paragraphs.

ORDER. Ten soil orders are recognized as classes in the system. The properties used to differentiate among orders are those that reflect the kind and degree of dominant soil-forming processes that have taken place. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis and are important to plant growth or that are selected to reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of expression of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and a prefix that suggests something about the properties of the soil. An example is Haplaquents (*Hapl*, meaning simple horizons, plus *aquent*, the suborder of Entisols that have an aquic moisture regime).

SUBGROUP. Each great group may be divided into three subgroups: the central (typic) concept of the great groups, which is not necessarily the most extensive subgroup; the intergrades, or transitional forms to other orders, suborders, or great groups; and the extragrades, which have some properties that are representative of the great groups but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceeding the name of the great group. The adjective *Typic* identifies the subgroup that is thought to typify the great group. An example is Typic Haplaquents.

FAMILY. Families are established within a subgroup on the basis of similar physical and chemical properties that affect management. Among the properties considered in horizons of major biological activity below plow depth are particle-size distribution, mineral content, temperature regime, thickness of the soil penetrable by roots, consistence, moisture equivalent, soil slope, and permanent cracks. A family name consists of the name of a subgroup and a series of adjectives. The adjectives are the class names for the soil properties used as family differentiae. An example is fine-loamy, mixed, nonacid, thermic, Typic Haplaquents.

SERIES. The series consists of soils that formed in a particular kind of material and have horizons that, except for texture of the surface soil or of the underlying substratum, are similar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineral and chemical composition.

Formation of the soils

The factors of soil formation are discussed and then related to soils in the survey area in this section, and the process of soil formation is explained.

Soil is the product of soil-forming processes that act upon material formed, deposited, or accumulated by geologic forces. The five major factors of soil formation are parent material, climate, relief, plants and animals, and time. Climate, plants, and animals, especially plants, are the active forces in soil formation. Their effect on parent material is modified by relief and by the length of time the parent material has been in place. The relative importance of each factor differs from place to place. In some places one factor may dominate in the formation of a soil and determine most of its properties. Generally, however, the interaction of all the factors determines the kind of soil that forms in any given place.

Parent material

Parent material is the unconsolidated mass in which a soil forms. Since Richland County is in both the Piedmont and the Coastal Plain provinces, the parent material accounts for many major differences among the soils.

In the Piedmont province almost all of the soils formed in saprolite that weathered from rocks known locally as the "Carolina Slates." These are metamorphosed shale (dominantly argillite), fine grained sandstone, and muscovite mica (*4*). Weathered products of these rocks have a high content of silt and very fine sand. The resulting soil textures are silt loam, loam, silty clay loam, silty clay, and clay. Soils derived from these rocks are in the Georgeville, Herndon, Nason, and Orange series. They have a subsoil that contains 30 percent or more silt. A few areas of coarse-grained granite rock are in the Carolina Slates Belt. The Wedowee soils formed in the granitic saprolite.

Soils on stream and river flood plains in the Piedmont and Coastal Plain provinces formed in loamy or sandy sediment that washed from the uplands of the Piedmont province. These include (1) the Congaree and Toccoa soils, which have little genetic development and are classed as Entisols, and (2) the Chastain, Chewacla, and Tawcaw soils, which have some genetic development and are classed as Inceptisols.

The parent material in the Coastal Plain province consists of marine-deposited sediment that is dominantly quartz sand and kaolinitic clays in varying proportions. In the Sand Hill region of the Coastal Plain, sandy sediment is predominant; such soils as Blanton, Lakeland, Fuquay, Troup, and Kershaw soils formed in this region. Pelion and Ailey soils, however, formed in clayey and loamy sediment that has a high content of kaolin and is low in inherent fertility. In the southern part of the Coastal Plain, the sediment has a higher content of clay and silt in proportion to the content of sand. Such soils as Dothan, Marlboro, Norfolk, and Orangeburg soils formed in this loamy sediment.

Climate

Richland County has a temperate climate; thus winters are mild, and summers are very warm. The rainfall is ample throughout the growing season. Summer is the wettest season. More detailed information about the climate of Richland County is given in the section "General nature of the county."

Climate, particularly precipitation and temperature, affects the physical, chemical, and biological relationships in the soil. The growth and activity of living organisms and also the chemical and physical decomposition or weathering of parent material are accelerated by moisture and warm temperatures. Water dissolves and transports minerals and organic matter as it moves down through the layers of soil. It causes the leaching of soluble bases as it percolates through the soil and the translocation or redistribution of less soluble, finer textured, and highly weathered materials. The amount of water that percolates through the soil depends on the rainfall, relief, permeability of the soil material, and frost-free season.

Rainfall and the temperate climate of Richland County are responsible for the leaching and removal of soluble materials released through weathering of the rocks that were the original source of the marine sediment. For this reason, most of the soils are strongly acid and have low base saturation. Water movement through the soil is responsible for the clayey and loamy subsoil characteristic of such soils as Georgeville and Norfolk and for the excessive leaching and clay removal of such coarse-textured soils as Lakeland. It also causes the clay accumulation in the deep subsoil of Blanton, Fuquay and Troup soils.

Relief

Relief, or "lay of the land," is the difference in height of landforms. It has been determined largely by geologic history and the effects of dissection by streams as these streams developed. Relief influences the formation of soils chiefly by its effects on water movement, erosion, and plant cover. In the Piedmont province runoff is less rapid on the gentle slopes, and more soil material forms on the surface. Here where soil development has been faster than geologic erosion, the soils are thicker than those soils that formed on moderate to steep slopes where soil removal by geologic erosion has more closely kept pace with soil development.

In the Sand Hills the broad ridgetops or plains are nearly level or gently undulating. Few streams dissect the plains. Runoff is slight, and most of the rainfall passes down through the permeable soil material, thus leaching bases and transporting clays to greater depths. In the more sloping part of the Sand Hills, where drainageways have developed, this same process takes place, but is modified by increased runoff.

On the nearly level flood plains of the streams, soil-forming materials deposited by stream overflow accumulate on the surface at rates exceeding other soil-forming processes. Most soils on this landscape are classed in the orders of Entisols or Inceptisols and have not developed genetic horizons. In level or depressional areas, where stream and surface drainage is not well established, the water table is close to the surface and soils are permanently wet. Soils classified in the great groups of Paleaquults, Ochraquults, and Albaquults formed in this environment.

Plants and animals

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 by parent material, relief, and age of the soils.

Bacteria, fungi, and other micro-organisms are indispensable in soil formation. They hasten the weathering of minerals and the decomposition of organic matter, and they release nutrients to plants. Larger plants alter the soil microclimate, furnish organic matter, and transfer chemical elements from the subsoil to the surface soil. Most of the bacteria and fungi in the soils of Richland County are in the upper few inches of the surface layer.

Earthworms and other small invertebrates are chiefly active in the surface layer and in the upper part of the subsoil. They slowly but continually mix the soil material of these horizons.

Animals also play a role in soil formation. For example, by eating plants they perform a step in returning and distributing plant nutrients to the soil. Also, burrowing animals mix soil material.

Large trees affect soil formation by bringing nutrients up from deep within the soil and bringing soil material up from varying depths when they are overturned by wind. Also, as large roots decay, the openings are filled by material from above.

Trees were the native vegetation in this county. In the Sand Hills tree species were chiefly oaks and longleaf pine. In the Piedmont province various oaks, hickory, sweetgum, and loblolly and shortleaf pine were dominant. Water-tolerant oaks, maple, sweetgum, blackgum, and cypress were common in areas of wet soils.

Time

The length of time required for a soil to form depends largely on the intensity of other soil-forming factors. The soils of Richland County range from young to mature. On the uplands of the Piedmont province, and also in the Coastal Plain province, many of the soils have well-developed genetic horizons, or layers, that are easily recognized. Here, below the surface layer, the layers of the subsoil have an accumulation of clay. Where the parent material is sandy, little horizonation has taken place. In level or depressional areas, the soils are saturated, and horizons are only moderately distinct. On the stream flood plains, the soils are young because the soil parent material is still being deposited as alluvium; thus, well-defined horizons have not had time to develop.

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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.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	More than 9

Base saturation. The degree to which material having base exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coat, clay skin.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

Coarse textured (light textured) soil. Sand or loamy sand.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the bases of steep slopes.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures is difficult.

Complex, soil. A mapping unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

Compressible. Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping (or contour farming). 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 40 or 80 inches (1 or 2 meters).

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. Unstable walls of cuts made by earthmoving equipment. The soil sloughs easily.

Depth to rock. Bedrock at a depth that adversely affects the specified use.

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 for 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, as for example in "hillpeats" and "climatic moors."

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.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by running water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes a bare surface.

Excess fines. Excess silt and clay. The soil does not provide a source of gravel or sand for construction purposes.

Fast intake. The rapid movement of water into the soil.

Favorable. Favorable soil features for the specified use.

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.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Flooding. The temporary covering of soil with water from overflowing streams, runoff from adjacent slopes, and tides. Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; *November-May*, for example, means that flooding can occur during the period November through May. Water standing for short periods after rainfall or commonly covering swamps and marshes is not considered flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Gleyed soil. A soil having one or more neutral gray horizons as a result of waterlogging and lack of oxygen. The term "gleyed" also designates gray horizons and horizons having yellow and gray mottles as a result of intermittent waterlogging.

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.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table, which is the upper limit of saturation.

Habitat. The natural abode of a plant or animal; refers to the kind of environment in which a plant or animal normally lives, as opposed to the range or geographical distribution.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:

O horizon.—An organic layer, fresh and decaying plant residue, at the surface of a mineral soil.

A horizon.—The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.

A2 horizon.—A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

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.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Leaching. The removal of soluble material from soil or other material by percolating water.

Light textured soil. Sand and loamy sand.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. Inadequate strength for supporting loads.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark colored, finely divided, well decomposed organic soil material mixed with mineral soil material. The content of organic matter is more than 20 percent.

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3.

Nutrient, plant. Any element taken in by a plant, essential to its growth, and used by it in the production of food and tissue. Plant nutrients are nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, zinc, and perhaps other elements obtained from the soil; and carbon, hydrogen, and oxygen obtained largely from the air and water.

Parent material. The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly. The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality that enables the soil to transmit water or air, measured as the number of inches per hour that water moves through the soil. Terms describing permeability are *very slow* (less than 0.06 inch), *slow* (0.06 to 0.20 inch), *moderately slow* (0.2 to 0.6 inch), *moderate* (0.6 to 2.0 inches), *moderately rapid* (2.0 to 6.0 inches), *rapid* (6.0 to 20 inches), and *very rapid* (more than 20 inches).

Phase, soil. A subdivision of a soil series or other unit in the soil classification system based on differences in the soil that affect its management. A soil series, for example, may be divided into phases on the bases of differences in slope, stoniness, thickness, or some other characteristic that affects management. These differences are too small to justify separate series.

pH value. (See Reaction, soil). A numerical designation of acidity and alkalinity in soil.

Piping. Moving water forms subsurface tunnels or pipelike cavities in 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 a semisolid to a plastic state.

Range condition. The health or productivity of forage plants on a given range, in terms of the potential productivity under normal climate and the best practical management. Condition classes generally recognized are—*excellent*, *good*, *fair*, and *poor*. The classification is based on the percentage of original, or assumed climax vegetation on a site, as compared to what has been observed to grow on it when well managed.

Poorly graded. Refers to 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 outlets. Surface or subsurface drainage outlets difficult or expensive to install.

Productivity (soil). The capability of a soil for producing a specified plant or sequence of plants under a specified system of management. Productivity is measured in terms of output, or harvest, in relation to input.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock. Soil scientists regard as soil only the part of the regolith that is modified by organisms and other soil-building forces. Most engineers describe the whole regolith, even to a great depth, as "soil."

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulates over disintegrating rock.

Rooting depth. Shallow root zone. The soil is shallow over a layer that greatly restricts roots. See Root zone.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged in stream channels from a drainage area. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called ground-water runoff or seepage flow from ground water.

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.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saprolite (geology). Soft, earthy, clay-rich, thoroughly decomposed rock formed in place by chemical weathering of igneous and metamorphic rock. In soil survey, the term saprolite is applied to any unconsolidated residual material underlying the soil and grading to hard bedrock below.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage. The rapid movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils, formed from a particular type of parent material, having horizons that, except for the texture of the A or surface horizon, are similar in all profile characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineralogical and chemical composition.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

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.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

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.

Slow intake. The slow movement of water into the soil.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

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 content of organic matter than the overlying surface layer.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

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 or management.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it can soak into the soil or flow slowly to a prepared outlet without harm. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. A marine terrace, generally wide, was deposited by the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The condition of the soil, especially the soil structure, as related to the growth of plants. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil (engineering). Presumably a fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Unstable fill. Risk of caving or sloughing in banks of fill material.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water.

Water table, apparent. A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table, artesian. A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water table, perched. A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to a soil or soil material consisting of particles well distributed over a wide range in size or diameter. Such a soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Illustrations

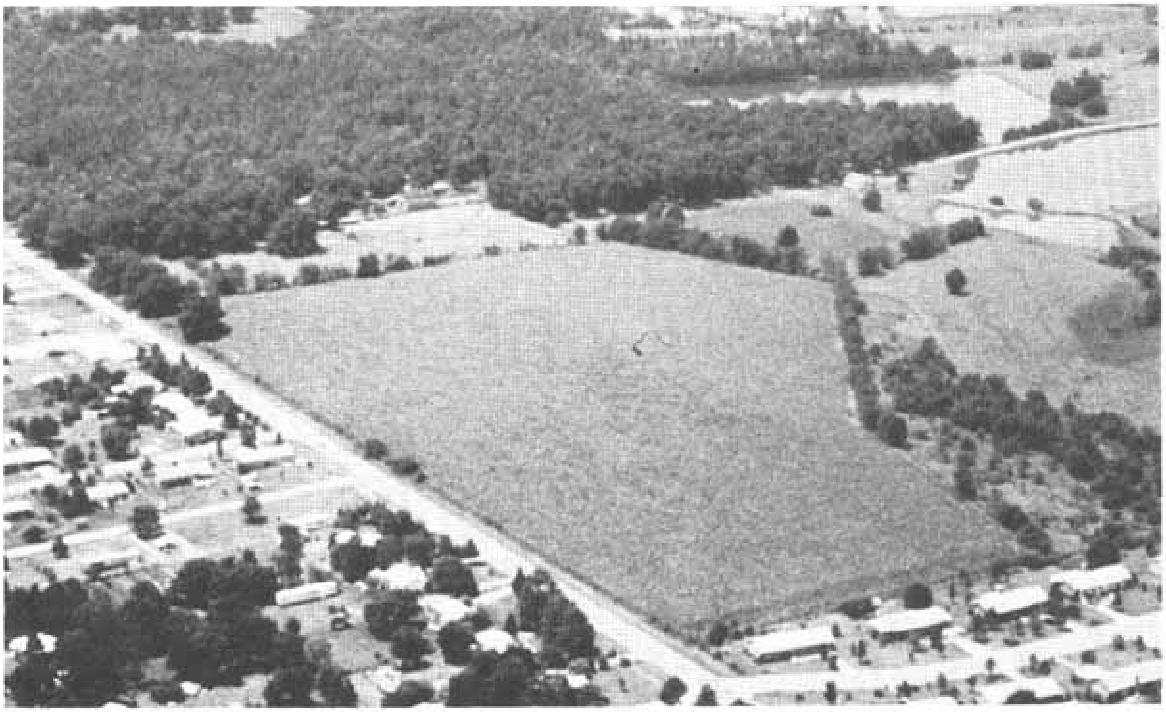

Figure 1.—Much of the farmland in Richland County has been urbanized because of the rapid growth of the city of Columbia.

Figure 2.—Typical landscape of the Orangeburg-Norfolk-Marlboro map unit.

Figure 3.—A road cut exposure of Fuquay sand. Free water seeps from the top of the plinthite layer into the ditch.

Figure 4.—Construction areas collect sediment on Fuquay-Urban land complex, 0 to 6 percent slopes.

Figure 5.—Turkey oak and a few longleaf pine are typical vegetation on Lakeland sand, 2 to 6 percent slopes.

Figure 6.—Planting corn on Marlboro sandy loam, 0 to 2 percent slopes. Good tilth for seedbed preparation is evident.

Figure 7.—Nason silt loam, 2 to 6 percent slopes. This soil overlies rippable slate bedrock.

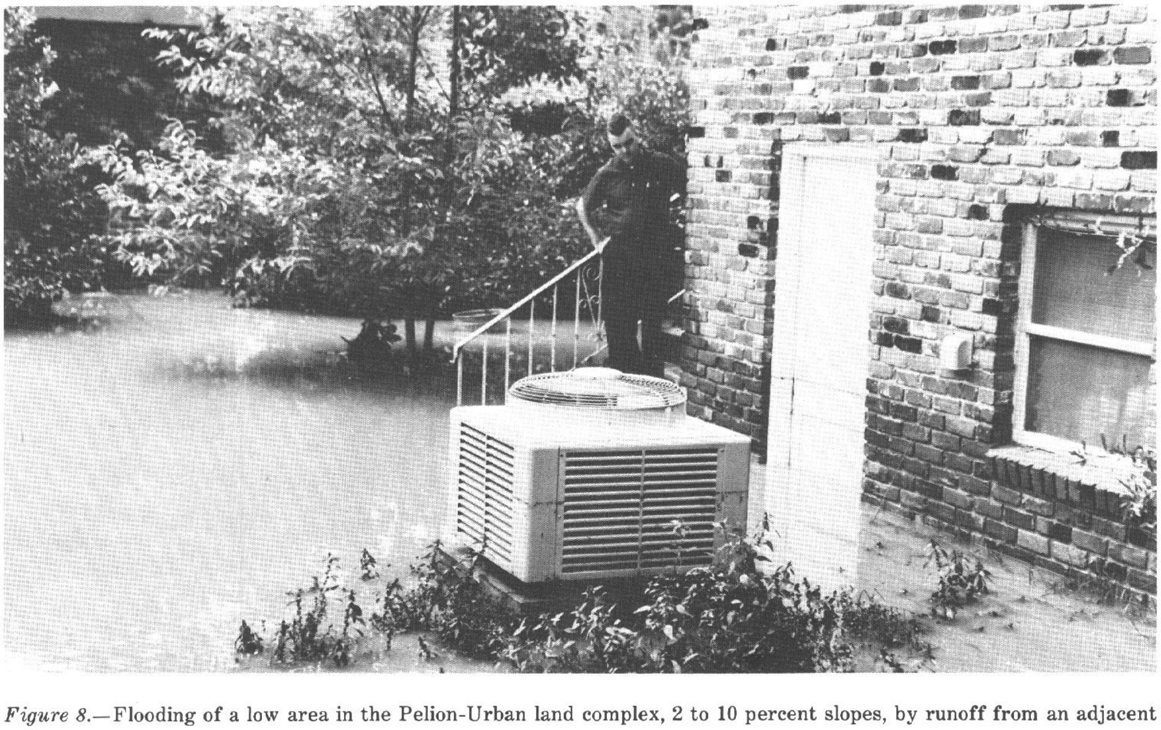

Figure 8.—Flooding of a low area in the Pelion-Urban land complex, 2 to 10 percent slopes, by runoff from an adjacent area.

Figure 9.—Typical area of Toccoa loam on the flood plain of a creek in the Piedmont province.

Figure 10.—A borrow pit in an area of Udorthents from which kaolin clay was removed for making tile.

Figure 11.—A paved parking lot-Urban land area. Orangeburg, Fuquay, Ailey, Pelion, and Vaucluse soils are the main soils covered by structures.

Figure 12.—Lakeland soils have severe limitations for embankments.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION DATA

[Recorded in the period 1951-74 at Columbia, South Carolina]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	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[1]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F		In	In	In		In
January-----	54.6	30.5	42.6	78	11	52	3.78	2.25	5.14	7	0.3
February----	57.3	32.2	44.8	78	14	48	3.77	2.11	5.12	7	1.0
March-------	65.2	38.9	52.0	86	21	157	3.99	2.50	5.32	7	.4
April-------	75.1	47.8	61.5	91	28	345	3.15	1.57	4.43	5	.0
May---------	82.1	55.9	69.0	96	37	589	3.52	1.90	4.84	7	.0
June--------	87.5	63.2	75.4	100	47	762	4.76	2.65	6.48	7	.0
July--------	90.3	67.7	79.0	99	55	899	5.39	3.27	7.28	9	.0
August------	89.5	67.0	78.3	98	54	877	5.24	2.80	7.22	7	.0
September---	85.1	60.6	72.9	96	41	687	3.76	1.32	5.70	5	.0
October-----	75.9	48.3	62.1	91	25	379	3.53	.94	5.59	4	.0
November----	66.7	37.7	52.2	83	18	110	2.48	1.02	3.66	4	.0
December----	57.7	31.8	44.8	78	13	84	2.75	1.46	3.80	5	.4
Year------	73.9	48.5	61.2	100	9	4,989	46.12	39.64	52.35	74	2.1

[1]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

[Recorded in the period 1951-1974 at Columbia, South Carolina]

Probability	Temperature		
	24° F or less	28° F or less	32° F or less
Last freezing temperature in spring:			
1 year in 10 later than--	March 26	April 11	April 23
2 years in 10 later than--	March 19	April 5	April 18
5 years in 10 later than--	March 6	March 24	April 7
First freezing temperature in fall:			
1 year in 10 earlier than--	October 29	October 21	October 16
2 years in 10 earlier than--	November 4	October 26	October 19
5 years in 10 earlier than--	November 15	November 5	October 26

TABLE 3.--GROWING SEASON LENGTH

[Recorded in the period 1951-1974 at Columbia, 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	226	203	182
8 years in 10	235	211	189
5 years in 10	253	225	202
2 years in 10	272	239	214
1 year in 10	281	247	221

TABLE 4.--POTENTIALS AND LIMITATIONS OF MAP UNITS ON THE GENERAL SOIL MAP FOR SPECIFIED USES

Map units	Extent of area	Cultivated farm crops	Woodland	Urban uses	Recreation uses
	Pct				
1. Nason-Georgeville	28	Medium: erosion.	Medium	Medium: slopes, depth to bedrock.	Medium: slopes.
2. Lakeland	11	Low: too sandy.	Medium: too sandy.	Medium: low absorption too sandy, possible contamination of ground water.	Medium: too sandy.
3. Vaucluse-Ailey-Pelion	10	Low: fragipan.	Medium: too sandy.	Medium: fragipan.	Low: slopes, too sandy.
4. Fuquay-Troup-Vaucluse	4	Medium: too sandy.	Medium: too sandy, fragipan.	High	Medium: too sandy.
5. Pelion-Johnston-Vaucluse	10	Low: wetness, compact subsoil.	Medium to high: wetness, compact subsoil.	Medium: wetness.	Medium: wetness, slopes.
6. Orangeburg-Norfolk-Marlboro	13	High	High	High	High.
7. Dothan-Clarendon	5	High	High	High: wetness.	High: wetness.
8. [illegible]	5	Medium: wetness.	High	Low: wetness.	Medium: wetness.
9. Congaree-Tawcaw-Chastain	14	Low: wetness, floods.	High: wetness, floods.	Low: wetness, floods.	Low: wetness, floods.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AeC	Ailey loamy sand, 2 to 10 percent slopes	12,650	2.6
AtA	Altavista silt loam, 0 to 2 percent slopes	2,150	0.4
BaB	Blanton sand, 0 to 6 percent slopes	8,900	1.9
Ca	Cantey loam	5,325	1.1
Cd	Chastain silty clay loam	9,780	2.0
Ce	Chewacla loam	8,400	1.8
CH	Chewacla soils	3,800	0.8
Cn	Clarendon sandy loam	4,100	0.9
Co	Congaree loam	25,300	5.3
Cx	Coxville fine sandy loam	5,500	1.1
Dn	Dorovan muck	1,750	0.4
DoA	Dothan loamy sand, 0 to 2 percent slopes	15,550	3.2
DoB	Dothan loamy sand, 2 to 6 percent slopes	5,725	1.2
DuB	Dothan-Urban land complex, 0 to 6 percent slopes	2,250	0.5
FaA	Faceville sandy loam, 0 to 2 percent slopes	1,930	0.4
FaB	Faceville sandy loam, 2 to 6 percent slopes	1,175	0.2
FuA	Fuquay sand, 0 to 2 percent slopes	2,275	0.5
FuB	Fuquay sand, 2 to 6 percent slopes	11,200	2.3
FyB	Fuquay-Urban land complex, 0 to 6 percent slopes	3,600	0.8
GeB	Georgeville silt loam, 2 to 6 percent slopes	22,125	4.6
GeC	Georgeville silt loam, 6 to 10 percent slopes	19,100	4.0
GoA	Goldsboro sandy loam, 0 to 2 percent slopes	3,370	0.7
HeB	Herndon silt loam, 2 to 6 percent slopes	6,175	1.3
HeC	Herndon silt loam, 6 to 10 percent slopes	5,500	1.1
HnB	Herndon-Urban land complex, 2 to 6 percent slopes	900	0.2
Jo	Johnston loam	16,000	3.3
KeC	Kershaw sand, 2 to 10 percent slopes	1,975	0.4
KrB	Kirksey loam, 2 to 6 percent slopes	575	0.1
LaB	Lakeland sand, 2 to 6 percent slopes	33,660	7.0
LaD	Lakeland sand, 10 to 15 percent slopes	10,525	2.2
LkB	Lakeland-Urban land complex, 2 to 6 percent slopes	5,100	1.1
LuB	Lucy loamy sand, 2 to 6 percent slopes	1,150	0.2
MaA	Marlboro sandy loam, 0 to 2 percent slopes	4,450	0.9
MaB	Marlboro sandy loam, 2 to 6 percent slopes	3,325	0.7
NaB	Nason silt loam, 2 to 6 percent slopes	8,540	1.8
NaC	Nason silt loam, 6 to 10 percent slopes	15,925	3.3
NaE	Nason complex, 10 to 30 percent slopes	27,775	5.8
NoA	Norfolk loamy sand, 0 to 2 percent slopes	10,580	2.2
NoB	Norfolk loamy sand, 2 to 6 percent slopes	5,050	1.1
OaB	Orange loam, 0 to 4 percent slopes	3,600	0.8
ObA	Orangeburg loamy sand, 0 to 2 percent slopes	6,325	1.3
ObB	Orangeburg loamy sand, 2 to 6 percent slopes	4,400	0.9
ObC	Orangeburg loamy sand, 6 to 10 percent slopes	1,030	0.2
OgB	Orangeburg-Urban land complex, 2 to 6 percent slopes	4,950	1.0
OgD	Orangeburg-Urban land complex, 6 to 15 percent slopes	1,875	0.4
PeB	Pelion loamy sand, 2 to 6 percent slopes	18,000	3.8
PeD	Pelion loamy sand, 6 to 15 percent slopes	8,100	1.7
PnC	Pelion-Urban land complex, 2 to 10 percent slopes	10,480	2.2
Ps	Persanti very fine sandy loam	6,950	1.5
Ra	Rains sandy loam	2,350	0.5
Sm	Smithboro loam	2,550	0.5
StA	State sandy loam, 0 to 2 percent slopes	1,050	0.2
Tc	Tawcaw silty clay loam	20,850	4.4
To	Toccoa loam	1,800	0.4
TrB	Troup sand, 0 to 6 percent slopes	6,325	1.3
Ud	Udorthents	1,800	0.4
Ur	Urban land	4,800	1.0
VaC	Vaucluse loamy sand, 6 to 10 percent slopes	10,940	2.3
VaD	Vaucluse loamy sand, 10 to 15 percent slopes	17,240	3.6
WeB	Wedowee loamy sand, 2 to 6 percent slopes	450	0.1
WeE	Wedowee loamy sand, 10 to 30 percent slopes	1,575	0.3
	Water	9,400	1.9
	Total	479,000	100.0

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE

[All yields were estimated for a high level of management in 1975. Absence of a yield figure indicates the crop is seldom grown on the soil or the soil is not suited to the crop]

Soil name and map symbol	Corn	Soybeans	Cotton lint	Wheat	Bahiagrass	Improved bermuda-grass	Grass hay
	Bu	Bu	Lb	Bu	AUM[1]	AUM[1]	Ton
Ailey:							
AeC	45	18	350	35	5.0	5.0	3.0
Altavista:							
AtA	120	45	550	55	8.5	9.0	5.4
Blanton:							
BaB	60	25	350	25	8	8	4.8
Cantey:							
Ca	---	---	---	---	---	---	---
Chastain:							
Cd	---	---	---	---	---	---	---
Chewacla:							
Ce, [2]CH	80	30	---	---	7.0	---	4.2
Clarendon:							
Cn	110	40	700	45	10.0	10.5	6.2
Congaree:							
Co	125	45	---	---	9	10	---
Coxville:							
Cx	105	40	---	45	6.0	---	3.6
Dorovan:							
Dn	---	---	---	---	---	---	---
Dothan:							
DoA	90	40	800	45	8	8.0	5.5
DoB, [2]DuB	80	40	750	45	8	8.0	5.5
Faceville:							
FaA	105	40	875	45	7.0	10.0	5.8
FaB	105	40	875	45	7.0	10.0	5.8
Fuquay:							
FuA, FuB, [2]FyB	80	30	650	35	7.0	8.0	5.0
Georgeville:							
GeB	90	---	700	45	---	5.0	3.0
GeC	80	---	625	40	---	5.0	3.0
Goldsboro:							
GoA	125	45	700	60	10.0	11.0	6.5
Herndon:							
HeB, [2]HnB	90	---	700	40	---	5.0	3.0
HeC	80	---	600	35	---	5.0	3.0
Johnston:							
Jo	---	---	---	---	---	---	---
Kershaw:							
KeC	---	---	---	---	3.0	3.0	1.8
Kirksey:							
KrB	65	30	600	---	---	6.0	3.6

See footnotes at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Soybeans	Cotton lint	Wheat	Bahiagrass	Improved bermuda-grass	Grass hay
	Bu	Bu	Lb	Bu	AUM[1]	AUM[1]	Ton
Lakeland:							
LaB, [2]LkB	55	20	---	---	7.0	7.0	4.2
LaD	---	---	---	---	6.0	6.0	3.5
Lucy:							
LuB	80	30	650	35	8.5	8.5	5.5
Marlboro:							
MaA	100	40	1,000	45	9.0	10	6.0
MaB	100	40	1,000	45	9.0	10	6.0
Nason:							
NaB	90	30	550	45	---	5.0	3.0
NaC	85	30	500	40	---	5.0	3.0
[2]NaE	---	---	---	---	---	---	---
Norfolk:							
NoA	110	40	700	60	9.0	10.5	6.0
NoB	100	35	650	55	9.0	10.5	6.0
Orange:							
OaB	80	25	---	40	---	5.0	3.0
Orangeburg:							
ObA	100	50	900	60	8.5	10.5	6.2
ObB, [2]OgB	100	45	850	55	8.5	10.5	6.2
ObC, [2]OgD	80	30	650	50	7.0	9.0	5.4
Pelion:							
PeB	60	25	500	35	7	8	4.8
PeD	---	---	---	---	6	6	3.5
[2]PnC	50	20	400	---	7	7	4.2
Persanti:							
Ps	100	40	700	35	8	9	5.4
Rains:							
Ra	110	40	450	---	10.0	---	6.0
Smithboro:							
Sm	90	40	---	---	9.0	---	5.0
State:							
StA	120	35	800	35	---	9.5	5.6
Tawcaw:							
Tc	90	35	---	45	---	10.6	6.0
Toccoa:							
To	85	---	---	---	---	9.0	8.0
Troup:							
TrB	60	---	---	---	7.2	7.5	4.0
Udorthents:							
Ud	---	---	---	---	---	---	---
Urban land:							
Ur	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Soybeans	Cotton lint	Wheat	Bahiagrass	Improved bermuda-grass	Grass hay
	Bu	Bu	Lb	Bu	AUM[1]	AUM[1]	Ton
Vaucluse:							
VaC	50	20	400	---	6	7	---
VaD	---	---	---	---	6	7	---
Wedowee:							
WeB	80	---	525	---	---	4.0	3.0
WeE	---	---	---	---	---	3.0	2.0

[1]Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for a period of 30 days.

[2]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

TABLE 7.--CAPABILITY CLASSES AND SUBCLASSES

[Udorthents, Urban land, and Urban land complexes were not assigned to a capability class]

Capability class	Total acreage	Capability subclasses		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	39,885	---	---	---
II	131,010	74,515	41,870	14,625
III	70,005	42,580	12,200	15,225
IV	78,375	10,940	21,125	46,310
V	---	---	---	---
VI	63,640	53,115	---	10,525
VII	51,930	1,575	48,380	1,975
VIII	---	---	---	---
Totals	434,845	182,725	123,575	88,660

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed in this table. Absence of an entry in a column means the information was not available. Site index was calculated at age 30 for eastern cottonwood, at age 35 for American sycamore, and at age 50 for all other species]

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Potential productivity: Important trees	Potential productivity: Site index	Trees to plant
Ailey:							
AeC	3s	Slight	Moderate	Moderate	Slash pine	80	Slash pine,
					Longleaf pine	70	longleaf pine.
Altavista:							
AtA	2w	Slight	Moderate	Slight	Loblolly pine	91	Loblolly pine,
					Longleaf pine	84	yellow-poplar,
					Shortleaf pine	77	black walnut,
					Sweetgum	84	sweetgum,
					White oak	---	American sycamore,
							cherrybark oak.
Blanton:							
BaB	3s	Slight	Moderate	Moderate	Slash pine	80	Slash pine,
					Loblolly pine	80	Loblolly pine.
					Longleaf pine	70	
Cantey:							
Ca	2w	Slight	Severe	Severe	Loblolly pine	90	Loblolly pine,[1]
					Slash pine	90	slash pine,[1]
					Sweetgum	85	sweetgum.[1]
					Water oak	---	
Chastain:							
Cd	2w	Slight	Severe	Severe	Sweetgum	94	Loblolly pine,
					Water oak	89	American sycamore,
					Eastern cottonwood	90	sweetgum,
					Green ash	88	cherrybark oak.
					Loblolly pine	90	
					Water tupelo	---	
					White oak	---	
					Southern red oak	---	
					Baldcypress	---	
Chewacla:							
Ce, [2]CH	1w	Slight	Moderate	Moderate	Loblolly pine	96	Loblolly pine,
					Yellow-poplar	104	slash pine,
					American sycamore	90	American sycamore,
					Sweetgum	97	yellow-poplar,
					Water oak	86	sweetgum,
					Eastern cottonwood	100	green ash.
					Green ash	97	
					Southern red oak	90	
Clarendon:							
Cn	2w	Slight	Moderate	Slight	Loblolly pine	90	Loblolly pine,
					Slash pine	90	slash pine,
					Sweetgum	85	American sycamore,
							yellow-poplar,
							sweetgum.
Congaree:							
Co	1o	Slight	Slight	Slight	Sweetgum	100	Loblolly pine,
					Yellow-poplar	107	slash pine,
					Cherrybark oak	107	yellow-poplar,
					Loblolly pine	90	American sycamore,
					Eastern cottonwood	107	black walnut,
					American sycamore	89	cherrybark oak,
					Black walnut	100	eastern cottonwood,
					Scarlet oak	100	sweetgum.
					Willow oak	95	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Important trees	Site index	
Coxville:							
Cx	2w	Slight	Severe	Severe	Loblolly pine	90	Loblolly pine, slash pine, sweetgum, American sycamore.
					Slash pine	90	
					Longleaf pine	71	
					Sweetgum	90	
					Water oak	90	
					Willow oak	---	
					Water tupelo	---	
Dorovan:							
Dn	4w	Slight	Severe	Severe	Blackgum	70	Baldcypress.
					Sweetbay	---	
Dothan:							
DoA, DoB, [2]DuB	2o	Slight	Slight	Slight	Slash pine	90	Slash pine, loblolly pine, longleaf pine.
					Loblolly pine	90	
					Longleaf pine	70	
Faceville:							
FaA, FaB	3o	Slight	Slight	Slight	Loblolly pine	82	Loblolly pine, slash pine.
					Slash pine	80	
					Longleaf pine	65	
Fuquay:							
FuA, FuB, [2]FyB	3s	Slight	Moderate	Moderate	Loblolly pine	83	Slash pine, longleaf pine.
					Slash pine	83	
					Longleaf pine	67	
Georgeville:							
GeB, GeC	3o	Slight	Slight	Slight	Loblolly pine	81	Loblolly pine, Virginia pine, eastern redcedar, black walnut, yellow-poplar.
					Longleaf pine	67	
					Shortleaf pine	63	
					White oak	69	
					Scarlet oak	70	
					Southern red oak	67	
Goldsboro:							
GoA	2w	Slight	Moderate	Slight	Loblolly pine	90	Loblolly pine, slash pine, yellow-poplar, American sycamore, sweetgum.
					Slash pine	93	
					Longleaf pine	77	
					Sweetgum	90	
					Southern red oak	---	
					White oak	---	
Herndon:							
HeB, HeC, [2]HnB	3o	Slight	Slight	Slight	Loblolly pine	80	Loblolly pine, Virginia pine, eastern redcedar, yellow-poplar.
					Shortleaf pine	61	
					White oak	65	
					Southern red oak	72	
					Yellow-poplar	91	
Johnston:							
Jo	1w	Slight	Severe	Severe	Loblolly pine	97	Loblolly pine, slash pine, baldcypress, yellow-poplar, sweetgum, green ash, water tupelo.
					Sweetgum	111	
					Water oak	103	
Kershaw:							
KeC	5s	Slight	Moderate	Severe	Slash pine	65	Slash pine, longleaf pine.
					Longleaf pine	55	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Important trees	Site index	
Kirksey:							
KrB	4w	Slight	Moderate	Slight	Loblolly pine	67	Loblolly pine, eastern redcedar.
Lakeland:							
LaB, LaD, LkB	4s	Slight	Slight	Moderate	Slash pine	75	Slash pine, loblolly pine.
					Loblolly pine	75	
					Longleaf pine	60	
Lucy:							
LuB	3s	Slight	Moderate	Moderate	Slash pine	80	Slash pine, longleaf pine, loblolly pine.
					Longleaf pine	70	
					Loblolly pine	80	
Marlboro:							
MaA, MaB	3o	Slight	Slight	Slight	Loblolly pine	82	Slash pine, loblolly pine.
					Slash pine	80	
					Longleaf pine	62	
Nason:							
NaB, NaC	3o	Slight	Slight	Slight	Northern red oak	62	Loblolly pine, Virginia pine.
					Virginia pine	69	
					Shortleaf pine	66	
					Loblolly pine	80	
[2]NaE	3r	Moderate	Moderate	Slight	Northern red oak	62	Loblolly pine, Virginia pine.
					Virginia pine	69	
					Shortleaf pine	66	
					Loblolly pine	80	
Norfolk:							
NoA, NoB	2o	Slight	Slight	Slight	Loblolly pine	86	Slash pine, loblolly pine.
					Longleaf pine	68	
					Slash pine	86	
Orange:							
OaB	4w	Slight	Moderate	Moderate	Northern red oak	60	Loblolly pine, Virginia pine.
					Virginia pine	60	
					Shortleaf pine	60	
					Loblolly pine	70	
Orangeburg:							
ObA, ObB, ObC, [2]OgB, [2]OgD	2o	Slight	Slight	Slight	Loblolly pine	86	Slash pine, loblolly pine.
					Slash pine	86	
					Longleaf pine	70	
Pelion:							
PeB, PeD, [2]PnC	2w	Slight	Moderate	Slight	Loblolly pine	86	Loblolly pine, slash pine.
					Slash pine	86	
Persanti:							
Ps	2w	Slight	Moderate	Moderate	Loblolly pine	90	Loblolly pine, slash pine, sweetgum, yellow-poplar.
					Shortleaf pine	80	
					Water oak	90	
					Sweetgum	90	
Rains:							
Ra	2w	Slight	Severe	Severe	Loblolly pine	94	Loblolly pine, slash pine, sweetgum, American sycamore.
					Slash pine	91	
					Sweetgum	90	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Important trees	Site index	
Smithboro:							
Sm	2w	Slight	Moderate	Moderate	Loblolly pine Slash pine Sweetgum	90 90 90	Loblolly pine, slash pine, American sycamore, sweetgum.
State:							
StA	2o	Slight	Slight	Slight	Loblolly pine Slash pine Yellow-poplar Southern red oak	90 90 100 ---	Loblolly pine, slash pine, yellow-poplar.
Tawcaw:							
Tc	1w	Slight	Moderate	Moderate	Loblolly pine Sweetgum Water oak Water tupelo	100 100 90 ---	Loblolly pine, eastern cottonwood, American sycamore, sweetgum, water oak, cherrybark oak.
Toccoa:							
To	1o	Slight	Slight	Slight	Loblolly pine Yellow-poplar Sweetgum Southern red oak	90 107 100 ---	Loblolly pine, yellow-poplar, American sycamore, cherrybark oak.
Troup:							
TrB	3s	Slight	Moderate	Moderate	Loblolly pine Longleaf pine Slash pine	80 70 80	Loblolly pine, longleaf pine, slash pine.
Vaucluse:							
VaC, VaD	3o	Slight	Slight	Slight	Loblolly pine	76	Loblolly pine, slash pine.
Wedowee:							
WeB	3o	Slight	Slight	Slight	Loblolly pine Virginia pine Shortleaf pine Southern red oak Northern red oak White oak	80 70 70 70 70 65	Loblolly pine, Virginia pine, eastern redcedar, yellow-poplar.
WeE	3r	Moderate	Moderate	Slight	Loblolly pine Virginia pine Shortleaf pine Southern red oak Northern red oak White oak	80 70 70 70 70 65	Loblolly pine, Virginia pine, eastern redcedar, yellow-poplar.

[1]Tree planting is feasible only on areas with adequate surface drainage.

[2]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

TABLE 9.--BUILDING SITE DEVELOPMENT

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry means soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Ailey:					
AeC	Slight	Slight	Slight	Moderate: slope.	Slight.
Altavista:					
AtA	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.
Blanton:					
BaB	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
Cantey:					
Ca	Severe: wetness, floods, too clayey.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
Chastain:					
Cd	Severe: floods, wetness, too clayey.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.
Chewacla:					
Ce, [1]CH	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
Clarendon:					
Cn	Moderate: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, corrosive.	Slight.
Congaree:					
Co	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Coxville:					
Cx	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, low strength.
Dorovan:					
Dn	Severe: wetness, floods, excess humus.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.
Dothan:					
DoA, [1]DuB	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight.
DoB	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: slope.	Slight.
Faceville:					
FaA	Moderate: too clayey.	Slight	Slight	Slight	Moderate: low strength.
FaB	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Fuquay:					
FuA, [1]FyB	Slight	Slight	Slight	Slight	Slight.
FuB	Slight	Slight	Slight	Moderate: slope.	Slight.
Georgeville:					
GeB	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.
GeC	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.
Goldsboro:					
GoA	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: wetness.	Slight.
Herndon:					
HeB, [1]HnB	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.
HeC	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.
Johnston:					
Jo	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Kershaw:					
KeC	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight.
Kirksey:					
KrB	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: depth to rock, slope.	Moderate: low strength.
Lakeland:					
LaB, [1]LkB	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight.
LaD	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
Lucy:					
LuB	Slight	Slight	Slight	Moderate: slope.	Slight.
Marlboro:					
MaA	Moderate: too clayey.	Slight	Slight	Slight	Moderate: low strength.
MaB	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.
Nason:					
NaB	Moderate: too clayey.	Moderate: low strength.	Severe: slope.	Moderate: low strength.	Severe: low strength.
NaC	Moderate: slope, too clayey.	Moderate: low strength.	Severe: slope.	Severe: slope.	Severe: low strength.
[1]NaE	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Norfolk:					
NoA	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight.
NoB	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: slope.	Slight.
Orange:					
OaB	Severe: too clayey, wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, shrink-swell.
Orangeburg:					
ObA	Slight	Slight	Slight	Slight	Slight.
ObB, [1]OgB	Slight	Slight	Slight	Moderate: slope.	Slight.
ObC, [1]OgD	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
Pelion:					
PeB, [1]PnC	Severe: wetness.	Moderate: wetness, low strength.	Severe: wetness.	Moderate: wetness, slope, low strength.	Moderate: low strength.
PeD	Severe: wetness.	Moderate: wetness, slope, low strength.	Severe: wetness.	Severe: slope.	Moderate: low strength, slope.
Persanti:					
Ps	Severe: wetness, too clayey.	Moderate: wetness, shrink-swell, low strength.	Severe: wetness.	Moderate: wetness, shrink-swell, low strength.	Severe: low strength.
Rains:					
Ra	Severe: wetness.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods, corrosive.	Severe: wetness.
Smithboro:					
Sm	Severe: wetness, too clayey.	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.
State:					
StA	Slight	Slight	Slight	Slight	Slight.
Tawcaw:					
Tc	Severe: floods, wetness, too clayey.	Severe: floods, low strength.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.	Severe: floods, low strength.
Toccoa:					
To	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Troup:					
TrB	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
Udorthents:					
Ud.					

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Urban land: Ur.					
Vaucluse: VaC, VaD	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
Wedowee: WeB	Moderate: too clayey.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: slope, low strength, shrink-swell.	Moderate: low strength, shrink-swell.
WeE	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

[1]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

TABLE 10.--SANITARY FACILITIES

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe," and other terms used to rate soils. Absence of an entry means soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ailey:					
AeC	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Altavista:					
AtA	Severe: wetness, depth to rock.	Severe: wetness.	Severe: wetness, depth to rock.	Severe: wetness.	Good.
Blanton:					
BaB	Slight	Severe: seepage.	Severe: too sandy.	Slight	Poor: too sandy, seepage.
Cantey:					
Ca	Severe: wetness, floods, percs slowly.	Slight	Severe: wetness, floods, too clayey.	Severe: wetness, floods.	Poor: wetness, too clayey.
Chastain:					
Cd	Severe: floods, wetness, percs slowly.	Severe: floods.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey, wetness.
Chewacla:					
Ce, [1]CH	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Good.
Clarendon:					
Cn	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
Congaree:					
Co	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Good.
Coxville:					
Cx	Severe: wetness, percs slowly.	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Dorovan:					
Dn	Severe: wetness, floods.	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess humus.	Severe: wetness, floods.	Poor: wetness, floods, excess humus.
Dothan:					
DoA	Moderate: percs slowly.	Slight	Severe: wetness.	Moderate: wetness.	Good.
DoB, [1]DuB	Moderate: percs slowly.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Good.
Faceville:					
FaA	Slight	Moderate: seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
FaB	Slight	Moderate: slope, seepage.	Moderate: too clayey.	Slight	Fair: too clayey.

See footnotes at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Fuquay:					
FuA	Moderate: percs slowly.	Slight	Slight	Slight	Good.
FuB, [1]FyB	Moderate: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Georgeville:					
GeB	Moderate: percs slowly.	Moderate: slope, seepage.	Moderate: too clayey.	Slight	Poor: too clayey.
GeC	Moderate: percs slowly, slope.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Poor: too clayey.
Goldsboro:					
GoA	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
Herndon:					
HeB, [1]HnB	Moderate: percs slowly.	Moderate: seepage.	Moderate: too clayey.	Slight	Poor: too clayey.
HeC	Moderate: percs slowly, slope.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Poor: too clayey.
Johnston:					
Jo	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
Kershaw:					
KeC	[2]Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: too sandy.
Kirksey:					
KrB	Severe: percs slowly, depth of rock.	Moderate: depth to rock, slope.	Severe: depth to rock.	Slight	Fair: thin layer, too clayey.
Lakeland:					
LaB, [1]LkB	[2]Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
LaD	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
Lucy:					
LuB	Slight	Severe: seepage.	Slight	Slight	Fair: too sandy.
Marlboro:					
MaA	Moderate: percs slowly.	Moderate: seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
MaB	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
Nason:					
NaB	Severe: depth to rock.	Moderate: seepage.	Severe: depth to rock.	Slight	Poor: too clayey.

See footnotes at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Nason:					
NaC	Severe: depth to rock.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Poor: too clayey.
[1]NaE	Severe: slope.	Severe: slope.	Severe: depth to rock.	Severe: slope.	Poor: slope.
Norfolk:					
NoA	Moderate: wetness.	Moderate: seepage.	Moderate: wetness.	Slight	Good.
NoB	Moderate: wetness.	Moderate: slope, seepage.	Moderate: wetness.	Slight	Good.
Orange:					
OaB	Severe: percs slowly, wetness, depth to rock.	Moderate: depth to rock, slope.	Severe: depth to rock, wetness, too clayey.	Severe: wetness.	Poor: too clayey.
Orangeburg:					
ObA	Slight	Moderate: seepage.	Slight	Slight	Good.
ObB, [1]OgB	Slight	Moderate: slope, seepage.	Slight	Slight	Good.
ObC, [1]OgD	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
Pelion:					
PeB, [1]PnC	Severe: percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Good.
PeD	Severe: percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Fair: slope.
Persanti:					
Ps	Severe: wetness, percs slowly.	Slight	Moderate: wetness, too clayey.	Moderate: wetness.	Poor: too clayey.
Rains:					
Ra	Severe: wetness.	Severe: wetness, floods.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Smithboro:					
Sm	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness, too clayey.
State:					
StA	Slight	Moderate: seepage.	Severe: seepage.	Slight	Good.
Tawcaw:					
Tc	Severe: floods, wetness, percs slowly.	Severe: floods.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey
Toccoa:					
To	Severe: floods.	Severe: floods, seepage.	Severe: floods, seepage.	Severe: floods, seepage.	Good.

See footnotes at end of table.

TABLE 10.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Troup:					
TrB	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
Udorthents:					
Ud.					
Urban land:					
Ur.					
Vaucluse:					
VaC, VaD	Severe: percs slowly.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
Wedowee:					
WeB	Moderate: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight	Fair: too clayey, area reclaim.
WeE	Severe: slope.	Severe: slope.	Moderate: slope, too clayey.	Severe: slope.	Poor: slope.

[1]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

[2]Rapid permeability may cause pollution of ground water.

TABLE 11.--CONSTRUCTION MATERIALS

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. See text for definitions of "good," and "fair." Absence of an entry means soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Ailey:				
AeC	Good	Poor: excess fines.	Unsuited	Fair: too sandy.
Altavista:				
AtA	Poor: low strength.	Unsuited	Unsuited	Fair: thin layer.
Blanton:				
BaB	Good	Fair: excess fines.	Unsuited	Poor: too sandy.
Cantey:				
Ca	Poor: wetness.	Unsuited	Unsuited	Poor: wetness, thin layer.
Chastain:				
Cd	Poor: wetness, low strength.	Unsuited	Unsuited	Poor: wetness, too clayey.
Chewacla:				
Ce, [1]CH	Poor: wetness, low strength.	Unsuited	Unsuited	Good.
Clarendon:				
Cn	Good	Unsuited	Unsuited	Fair: thin layer.
Congaree:				
Co	Fair: low strength.	Unsuited	Unsuited	Good.
Coxville:				
Cx	Poor: wetness, low strength.	Unsuited	Unsuited	Poor: wetness.
Dorovan:				
Dn	Poor: wetness, excess humus.	Unsuited	Unsuited	Poor: wetness, excess humus.
Dothan:				
DoA, DoB, [1]DuB	Fair	Poor: excess fines.	Poor: excess fines.	Fair.
Faceville:				
FaA, FaB	Fair: low strength.	Unsuited	Unsuited	Fair: too clayey.
Fuquay:				
FuA, FuB, [1]FyB	Good	Poor: excess fines.	Unsuited	Poor: too sandy.
Georgeville:				
GeB, GeC	Fair: low strength.	Unsuited	Unsuited	Poor: thin layer.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Goldsboro: GoA	Good	Unsuited	Unsuited	Good.
Herndon: HeB, HeC, [1]HnB	Fair: low strength.	Unsuited	Unsuited	Fair: thin layer.
Johnston: Jo	Poor: wetness, excess humus.	Poor: excess fines.	Poor: excess fines.	Poor: wetness.
Kershaw: KeC	Good	Fair: excess fines.	Unsuited	Poor: too sandy.
Kirksey: KrB	Fair: low strength.	Unsuited	Unsuited	Fair: too clayey.
Lakeland: LaB, LaD, [1]LkB	Good	Fair: excess fines.	Unsuited	Poor: too sandy.
Lucy: LuB	Good	Poor: excess fines.	Poor: excess fines.	Poor: too sandy.
Marlboro: MaA, MaB	Fair: low strength.	Unsuited	Unsuited	Fair: thin layer.
Nason: NaB, NaC	Poor: low strength.	Unsuited	Unsuited	Poor: too clayey.
[1]NaE	Poor: low strength.	Unsuited	Unsuited	Poor: slope.
Norfolk: NoA, NoB	Good	Unsuited	Unsuited	Fair: too sandy.
Orange: OaB	Poor: low strength, shrink-swell, area reclaim.	Unsuited	Unsuited	Fair: area reclaim, thin layer.
Orangeburg: ObA, ObB, ObC, [1]OgB, [1]OgD	Good	Unsuited	Unsuited	Fair: thin layer.
Pelion: PeB, [1]PnC	Fair: low strength.	Unsuited	Unsuited	Fair: thin layer.
PeD	Fair: low strength.	Unsuited	Unsuited	Fair: thin layer, slope.
Persanti: Ps	Poor: low strength.	Unsuited	Unsuited	Poor: thin layer.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Rains:				
Ra	Poor: wetness.	Unsuited	Unsuited	Poor: wetness.
Smithboro:				
Sm	Poor: low strength.	Unsuited	Unsuited	Poor: too clayey.
State:				
StA	Good	Unsuited	Unsuited	Fair: thin layer.
Tawcaw:				
Tc	Poor: low strength.	Unsuited	Unsuited	Poor: too clayey.
Toccoa:				
To	Good	Poor: excess fines.	Unsuited	Good.
Troup:				
TrB	Good	Fair: excess fines.	Poor: excess fines.	Poor: too sandy.
Udorthents: Ud.				
Urban land: Ur.				
Vaucluse:				
VaC, VaD	Good	Unsuited	Unsuited	Fair: too sandy.
Wedowee:				
WeB	Fair: low strength, shrink-swell.	Unsuited	Unsuited	Fair: thin layer, area reclaim.
WeE	Fair: slope, low strength.	Unsuited	Unsuited	Poor: slope.

[1]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

TABLE 12.--WATER MANAGEMENT

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry means soil was not evaluated]

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Ailey: AeC	Slight	Moderate: piping.	Not needed	Droughty, complex slope.	Cemented pan, complex slope.	Droughty.
Altavista: AtA	Moderate: seepage, depth to rock.	Moderate: piping.	Favorable	Favorable	Not needed	Favorable.
Blanton: BaB	Severe: seepage.	Severe: piping, seepage.	Not needed	Droughty, seepage, fast intake.	Not needed	Droughty.
Cantey: Ca	Slight	Moderate: compressible.	Wetness, floods, percs slowly.	Wetness, floods, percs slowly.	Not needed	Not needed.
Chastain: Cd	Slight	Moderate: compressible, low strength.	Floods, wetness, percs slowly.	Floods, wetness, percs slowly.	Not needed	Not needed.
Chewacla: Ce, [1]CH	Moderate: seepage.	Moderate: piping.	Poor outlets, floods.	Wetness, floods.	Not needed	Not needed.
Clarendon: Cn	Moderate: seepage.	Moderate: compressible, piping.	Favorable	Favorable	Not needed	Favorable.
Congaree: Co	Moderate: seepage.	Moderate: compressible, piping, low strength.	Not needed	Floods	Not needed	Not needed.
Coxville: Cx	Slight	Moderate: compressible.	Wetness, percs slowly.	Wetness, percs slowly.	Not needed	Not needed.
Dorovan: Dn	Severe: seepage.	Severe: unstable fill, excess humus.	Floods	Floods	Not needed	Not needed.
Dothan: DoA, DoB, [1]DuB	Slight	Slight	Not needed	Favorable	Favorable	Favorable.
Faceville: FaA, FaB	Moderate: seepage.	Slight	Not needed	Favorable	Favorable	Favorable.
Fuquay: FuA, FuB, [1]FyB	Slight	Moderate: piping.	Not needed	Fast intake	Favorable	Favorable.
Georgeville: GeB	Moderate: slope, seepage.	Moderate: compressible, low strength, erodes easily.	Not needed	Complex slope, erodes easily.	Favorable	Favorable.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
Georgeville:						
GeC	Moderate: slope, seepage.	Moderate: compressible, low strength, erodes easily.	Not needed	Complex slope, erodes easily.	Complex slope, erodes easily.	Slope, erodes easily.
Goldsboro:						
GoA	Moderate: seepage.	Slight	Favorable	Favorable	Not needed	Favorable.
Herndon:						
HeB, [1]HnB	Moderate: seepage.	Severe: compressible, low strength, erodes easily.	Not needed	Complex slope, erodes easily.	Favorable	Favorable.
HeC	Moderate: seepage.	Severe: compressible, low strength, erodes easily.	Not needed	Complex slope, erodes easily.	Complex slope	Erodes easily, slope.
Johnston:						
Jo	Severe: seepage.	Severe: piping.	Poor outlets, floods.	Wetness, floods.	Not needed	Not needed.
Kershaw:						
KeC	Severe: seepage.	Severe: seepage.	Not needed	Droughty, fast intake, seepage.	Too sandy	Droughty.
Kirksey:						
KrB	Moderate: seepage, depth to rock, slope.	Moderate: piping.	Not needed	Complex slope, erodes easily.	Favorable	Favorable.
Lakeland:						
LaB, LaD, [1]LkB	Severe: seepage.	Severe: seepage, piping.	Not needed	Droughty, seepage, fast intake.	Not needed	Not needed.
Lucy:						
LuB	Severe: seepage.	Severe: seepage, piping, erodes easily.	Not needed	Erodes easily, fast intake, seepage.	Too sandy, erodes easily, slope.	Droughty, erodes easily, slope.
Marlboro:						
MaA	Moderate: seepage.	Slight	Not needed	Favorable	Favorable	Favorable.
MaB	Moderate: seepage.	Slight	Not needed	Slope	Favorable	Favorable.
Nason:						
NaB, NaC, [1]NaE	Moderate: depth to rock, seepage.	Moderate: compressible, low strength.	Not needed	Erodes easily, slope.	Slope	Erodes easily, slope.
Norfolk:						
NoA	Moderate: seepage.	Slight	Not needed	Favorable	Not needed	Favorable.
NoB	Moderate: seepage.	Slight	Not needed	Favorable	Favorable	Favorable.
Orange:						
OaB	Slight	Moderate: compressible, low strength, shrink-swell.	Wetness, percs slowly.	Slow intake, percs slowly, wetness.	Slope, percs slowly, wetness.	Percs slowly, wetness.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Orangeburg: ObA, ObB, [1]OgB	Moderate: seepage.	Slight	Not needed	Favorable	Favorable	Favorable.
ObC, [1]OgD	Moderate: seepage.	Slight	Not needed	Slope	Slope	Slope.
Pelion: PeB	Slight	Moderate: compressible, low strength.	Percs slowly, wetness, slope.	Percs slowly, wetness, slope.	Percs slowly, wetness.	Percs slowly, wetness.
PeD, [1]PnC	Slight	Moderate: compressible, low strength.	Percs slowly, wetness, slope.	Percs slowly, wetness, slope.	Percs slowly, wetness, slope.	Percs slowly, wetness, slope.
Persanti: Ps	Slight	Moderate: low strength, piping.	Wetness, percs slowly.	Wetness, percs slowly.	Not needed	Percs slowly, wetness.
Rains: Ra	Moderate: seepage.	Slight	Wetness, floods.	Wetness, floods.	Not needed	Not needed.
Smithboro: Sm	Slight	Moderate: compressible.	Percs slowly, wetness.	Slow intake, wetness, percs slowly.	Not needed	Not needed.
State: StA	Moderate: seepage.	Slight	Not needed	Favorable	Favorable	Favorable.
Tawcaw: Tc	Slight	Moderate: compressible, low strength.	Floods, wetness, percs slowly.	Floods, wetness, percs slowly.	Not needed	Not needed.
Toccoa: To	Severe: seepage.	Moderate: piping.	Not needed	Floods, seepage.	Not needed	Not needed.
Troup: TrB	Severe: seepage.	Severe: seepage, piping.	Not needed	Droughty, fast intake, seepage.	Too sandy, erodes easily, piping.	Droughty, erodes easily.
Udorthents: Ud.						
Urban land: Ur.						
Vaucluse: VaC, VaD	Slight	Moderate: piping.	Not needed	Complex slope	Complex slope, percs slowly.	Percs slowly.
Wedowee: WeB	Moderate: depth to rock, seepage.	Moderate: low strength, thin layer.	Not needed	Slope	Favorable	Favorable.
WeE	Moderate: depth to rock, seepage.	Moderate: low strength, thin layer.	Not needed	Slope	Slope	Slope.

[1]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

TABLE 13.--RECREATION

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry means soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Ailey:				
AeC	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.
Altavista:				
AtA	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight.
Blanton:				
BaB	Moderate: too sandy.	Moderate: too sandy.	Severe: too sandy.	Severe: too sandy.
Cantey:				
Ca	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
Chastain:				
Cd	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Chewacla:				
Ce, [1]CH	Severe: wetness, floods.	Severe: floods.	Severe: wetness, floods.	Moderate: wetness, floods.
Clarendon:				
Cn	Moderate: wetness.	Slight	Moderate: wetness.	Slight.
Congaree:				
Co	Severe: floods.	Moderate: floods.	Severe: floods.	Moderate: floods.
Coxville:				
Cx	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Dorovan:				
Dn	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess humus.	Severe: wetness, floods, excess humus.
Dothan:				
DoA	Slight	Slight	Slight	Slight.
DoB, [1]DuB	Slight	Slight	Moderate: slope.	Slight.
Faceville:				
FaA	Slight	Slight	Slight	Slight.
FaB	Slight	Slight	Moderate: slope.	Slight.
Fuquay:				
FuA	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.

See footnote at end of table.

TABLE 13.--RECREATION--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Fuquay:				
FuB, [1]FyB	Moderate: too sandy.	Moderate: too sandy.	Severe: too sandy.	Moderate: too sandy.
Georgeville:				
GeB	Slight	Slight	Moderate: slope.	Slight.
GeC	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Goldsboro:				
GoA	Slight	Slight	Slight	Slight.
Herndon:				
HeB, [1]HnB	Slight	Slight	Moderate: slope.	Slight.
HeC	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Johnston:				
Jo	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
Kershaw:				
KeC	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.
Kirksey:				
KrB	Moderate: percs slowly.	Slight	Moderate: percs slowly, slope.	Slight.
Lakeland:				
LaB, [1]LkB	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.
LaD	Severe: too sandy.	Severe: too sandy.	Severe: too sandy, slope.	Severe: too sandy.
Lucy:				
LuB	Moderate: too sandy.	Moderate: too sandy.	Severe: too sandy.	Moderate: too sandy.
Marlboro:				
MaA	Slight	Slight	Slight	Slight.
MaB	Slight	Slight	Moderate: slope.	Slight.
Nason:				
NaB	Slight	Slight	Moderate: slope, depth to rock.	Slight.
NaC	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
[1]NaE	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Norfolk:				
NoA	Slight	Slight	Slight	Slight.

See footnote at end of table.

TABLE 13.--RECREATION--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Norfolk:				
NoB	Slight	Slight	Moderate: slope.	Slight.
Orange:				
OaB	Moderate: percs slowly, wetness.	Moderate: wetness.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.
Orangeburg:				
ObA	Slight	Slight	Slight	Slight.
ObB, [1]OgB	Slight	Slight	Moderate: slope.	Slight.
ObC, [1]OgD	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Pelion:				
PeB	Moderate: percs slowly, wetness.	Slight	Moderate: percs slowly, wetness, slope.	Slight.
PeD	Moderate: percs slowly, wetness, slope.	Moderate: slope.	Severe: slope.	Slight.
[1]PnC	Moderate: percs slowly, wetness.	Slight	Severe: slope.	Slight.
Persanti:				
Ps	Moderate: percs slowly, wetness.	Slight	Moderate: percs slowly, wetness.	Slight.
Rains:				
Ra	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Smithboro:				
Sm	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.
State:				
StA	Slight	Slight	Slight	Slight.
Tawcaw:				
Tc	Severe: floods, wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods.
Toccoa:				
To	Severe: floods.	Moderate: floods.	Moderate: floods.	Slight.
Troup:				
TrB	Moderate: too sandy.	Moderate: too sandy.	Severe: too sandy.	Moderate: too sandy.
Udorthents:				
Ud.				

See footnote at end of table.

TABLE 13.--RECREATION--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Urban land: Ur.				
Vaucluse: VaC, VaD	Moderate: percs slowly, too sandy.	Moderate: too sandy.	Severe: slope.	Slight.
Wedowee: WeB	Slight	Slight	Moderate: slope.	Slight.
WeE	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.

[1]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

TABLE 14.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates the soil was not rated]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Ailey:										
AeC	Poor	Fair	Fair	Poor	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Altavista:										
AtA	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Blanton:										
BaB	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Cantey:										
Ca	Poor	Poor	Fair	Fair	Fair	Good	Good	Poor	Fair	Good.
Chastain:										
Cd	Very poor.	Poor	Poor	Fair	Poor	Good	Good	Poor	Fair	Good.
Chewacla:										
Ce, [1]CH	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
Clarendon:										
Cn	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Congaree:										
Co	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Coxville:										
Cx	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
Dorovan:										
Dn	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Dothan:										
DoA, DoB, [1]DuB	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Faceville:										
FaA	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FaB	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Fuquay:										
FuA, FuB, [1]FyB	Fair	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Georgeville:										
GeB, GeC	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Goldsboro:										
GoA	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Herndon:										
HeB, [1]HnB	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 14.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Herndon: HeC	Fair	Good	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Johnston: Jo	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Kershaw: KeC	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Kirksey: KrB	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Lakeland: LaB, LaD, [1]LkB	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Lucy: LuB	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Marlboro: MaA, MaB	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Nason: NaB	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NaC	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
[1]NaE	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Norfolk: NoA, NoB	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Orange: OaB	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
Orangeburg: ObA, ObB, [1]OgB	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ObC, [1]OgD	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Pelion: PeB	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PeD, [1]PnC	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Persanti: Ps	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Rains: Ra	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
Smithboro: Sm	Fair	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.

See footnote at end of table.

TABLE 14.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
State: StA	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Tawcaw: Tc	Fair	Fair	Good	Good	Fair	Fair	Fair	Fair	Good	Fair.
Toccoa: To	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Troup: TrB	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Udorthents: Ud.										
Urban land: Ur.										
Vaucluse: VaC	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
VaD	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Wedowee: WeB	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WeE	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

[1]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[The symbol < means less than; > means greater than. Absence of an entry means data were not estimated. NP means nonplastic]

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Ailey: AeC	0-30	Loamy sand	SM, SP-SM	A-2, A-3	0	85-100	75-100	50-80	5-20	---	NP
	30-38	Sandy loam, sandy clay loam.	SM, SC	A-2, A-4, A-6	0	90-100	75-100	60-90	30-40	30-40	8-16
	38-69	Sandy loam, sandy clay loam.	SM, SC	A-2, A-4, A-6	0	90-100	75-100	55-90	20-40	28-40	8-14
Altavista: AtA	0-7	Silt loam	ML, CL-ML	A-4	0	95-100	95-100	40-100	60-90	<30	NP-7
	7-46	Clay loam, silty clay loam, loam, silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0	95-100	95-100	60-95	60-75	20-45	5-26
	46-49	Variable	---	---	0	---	---	---	---	---	---
Blanton: BaB	0-50	Sand	SP-SM	A-3, A-2	0	100	100	85-100	5-12	---	NP
	50-96	Sandy clay loam, sandy loam.	SC, SM-SC, SM	A-4, A-2	0	100	100	85-95	25-50	18-30	4-10
Cantey: Ca	0-5	Loam	ML, SM-SC, CL-ML	A-4	0	98-100	98-100	78-98	45-80	<40	NP-7
	5-57	Clay, sandy clay, silty clay.	CL, ML, MH	A-6, A-7	0	98-100	98-100	75-100	55-95	28-60	11-25
	57-81	Clay, sandy clay, sandy clay loam.	SC, CL, ML, MH	A-4, A-6, A-7	0	98-100	98-100	90-100	45-95	30-60	8-25
Chastain: Cd	0-4	Silty clay loam	ML, CL, CL-ML	A-4, A-6	0	100	100	90-100	70-95	23-45	3-18
	4-65	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0	100	100	95-100	85-98	35-75	12-40
	41-65	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0	100	100	90-100	70-90	30-78	11-42
Chewacla: Ce, [1]CH	0-7	Loam	ML, CL	A-4, A-5, A-6, A-7	0	98-100	95-100	70-100	55-90	36-50	4-20
	7-58	Silt loam, clay loam, silty clay loam.	ML, CL, MH	A-4, A-5, A-6, A-7	0	96-100	95-100	80-100	51-98	32-61	4-30
	58-75	Variable	---	---	0	---	---	---	---	---	---
Clarendon: Cn	0-19	Sandy loam	SM, SC, SM-SC	A-2	0	98-100	95-100	70-95	20-40	<30	NP-10
	19-25	Sandy clay loam	SC, CL, SM, SM-SC, CL-ML	A-4, A-6	0	98-100	95-100	75-95	36-55	20-40	5-15
	25-72	Sandy clay loam	SC, CL, SM-SC, CL-ML	A-2, A-4, A-6	0	99-100	98-100	80-95	30-55	20-40	5-15

See footnote at end of table.

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Congaree:											
Co----------------	0-8	Loam------------	CL-ML, ML, CL	A-4	0	95-100	95-100	70-100	51-90	20-35	3-10
	8-38	Silty clay loam, fine sandy loam, loam.	SM, SC, ML, CL	A-4, A-6, A-7	0	95-100	95-100	70-100	40-90	25-50	4-22
	38-80	Variable---------	---	---	---	---	---	---	---	---	---
Coxville:											
Cx----------------	0-9	Fine sandy loam	SM, ML, CL-ML, CL	A-4, A-6, A-7	0	100	100	85-97	46-75	20-46	1-15
	9-65	Clay loam, sandy clay, clay.	CL, CH	A-6, A-7	0	100	100	85-98	53-80	30-55	12-35
	65-80	Variable---------	---	---	0	---	---	---	---	---	---
Dorovan:											
Dn----------------	0-58	Muck------------	Pt	---	0	---	---	---	---	---	---
	58-76	Variable---------	---	---	0	---	---	---	---	---	---
Dothan:											
DoA, DoB, [1]DuB----	0-17	Loamy sand------	SM	A-2	0	95-100	92-100	60-80	13-30	---	NP
	17-37	Sandy clay loam, sandy loam.	SM-SC, SC, SM	A-2, A-4, A-6	0	95-100	92-100	68-90	23-45	<40	NP-15
	37-78	Sandy clay loam, sandy clay.	SM-SC, SC	A-2, A-4, A-6, A7	0	95-100	92-100	70-95	30-50	25-45	4-18
Faceville:											
FaA, FaB----------	0-7	Sandy loam------	SM, SM-SC	A-2, A-4	0	90-100	85-100	72-97	17-38	<25	NP-5
	7-12	Sandy clay loam, sandy clay.	SC, ML, CL, SM	A-4, A-6	0	98-100	90-100	85-98	46-66	<35	NP-13
	12-84	Sandy clay, clay, clay loam.	CL, SC	A-6, A-7	0	98-100	95-100	75-99	45-72	25-43	11-23
Fuquay:											
FuA, FuB, [1]FyB----	0-35	Sand------------	SP-SM, SM	A-2, A-3	0	95-100	90-100	50-83	5-35	---	NP
	35-48	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	85-100	85-100	60-80	23-45	<25	NP-13
	48-75	Sandy clay loam	SC, CL, SM, SM-SC, CL-ML	A-2, A-4, A-6	0	95-100	90-100	58-90	28-55	20-39	4-12
Georgeville:											
GeB, GeC----------	0-9	Silt loam-------	ML, CL-ML	A-4	0-3	90-100	85-100	65-100	51-98	<40	NP-10
	9-52	Silty clay, silty clay loam, clay loam.	MH, ML	A-7	0	95-100	95-100	90-100	75-98	41-75	15-35
	52-72	Silty clay loam, silt loam, clay loam.	MH	A-7	0	95-100	90-100	65-100	60-98	50-75	15-35
Goldsboro:											
GoA---------------	0-13	Sandy loam------	SM, SM-SC, SC	A-2, A-4	0	90-100	85-100	50-95	15-45	<25	NP-14
	13-80	Sandy clay loam, sandy loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	0	98-100	95-100	60-95	25-55	16-35	4-16

See footnote at end of table.

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Herndon: HeB, HeC, [1]HnB	0-13	Silt loam	ML, CL-ML	A-4, A-6	0	90-100	90-100	80-98	65-90	<36	NP-12
	13-52	Silty clay loam, silty clay, clay.	MH, ML	A-7	0	98-100	95-100	95-99	80-98	41-70	13-30
	52-75	Silt loam, loam, fine sandy loam.	MH, ML	A-7, A-5	0-2	90-100	85-100	80-99	70-95	41-70	9-36
Johnston: Jo	0-38	Loam	ML, CL, SM, SC	A-2, A-4	0	100	100	60-95	30-75	<35	NP-10
	38-66	Stratified fine sandy loam to sandy loam.	SM, SC, SM-SC	A-2, A-4	0	100	100	50-85	25-50	<35	NP-10
Kershaw: KeC	0-80	Sand	SP, SP-SM	A-2, A-3	0	98-100	98-100	50-80	1-7	---	NP
Kirksey: KrB	0-9	Loam	ML, CL-ML	A-4	0-2	90-100	88-99	80-95	70-90	<30	NP-7
	9-21	Silty clay loam, clay loam, silt loam.	ML, CL, CL-ML	A-4, A-6	0-1	95-100	90-100	90-98	80-95	20-40	4-15
	21-51	Silt loam, fine sandy loam.	ML, CL-ML, CL	A-4, A-6	0-2	95-100	90-100	85-96	55-90	<40	NP-12
Lakeland: LaB, LaD, [1]LkB	0-29	Sand	SP-SM	A-3, A-2	0	90-100	90-100	60-100	5-12	---	NP
	29-99	Sand, fine sand	SP, SP-SM	A-3, A-2	0	90-100	90-100	50-100	1-12	---	NP
Lucy: LuB	0-26	Loamy sand	SM, SP-SM	A-2	0	100	95-100	50-80	10-30	---	NP
	26-32	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	100	95-100	55-85	15-50	<30	NP-15
	32-75	Sandy loam, sandy clay loam.	SC, SM-SC	A-2, A-6, A-4	0	100	95-100	60-95	20-50	20-40	5-20
Marlboro: MaA, MaB	0-8	Sandy loam	SM, SM-SC, ML, CL-ML	A-2, A-4	0	98-100	95-100	75-100	25-60	<35	NP-7
	8-64	Sandy clay, clay loam, clay.	CL, ML	A-4, A-6, A-7	0	98-100	95-100	78-100	51-70	25-48	8-20
	64-80	Sandy clay loam, sandy clay, clay.	CL, ML, SM, SC	A-4, A-6, A-7	0	98-100	95-100	74-100	45-70	24-48	8-20
Nason: NaB, NaC, [1]NaE	0-11	Silt loam	ML, CL, CL-ML	A-4	0	80-100	75-100	65-100	50-90	20-38	NP-10
	11-41	Silty clay loam, silty clay, clay.	MH, CH	A-7	0	75-100	70-100	60-100	55-95	50-66	20-36

See footnote at end of table.

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Norfolk:											
NoA, NoB----------	0-17	Loamy sand------	SM	A-2	0	95-100	92-100	50-91	13-30	---	NP
	17-75	Sandy loam, sandy clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	95-100	91-100	70-96	30-55	20-40	4-20
Orange:											
OaB---------------	0-11	Loam------------	SM, ML, CL-ML, SM-SC	A-4	0	90-95	85-95	75-95	45-85	<24	NP-6
	11-40	Clay, silty clay, silty clay loam.	CH	A-7	0	90-95	85-95	75-95	65-90	70-99	45-70
Orangeburg:											
ObA, ObB, ObC, [1]OgB, [1]OgD--------	0-12	Loamy sand------	SM	A-2	0	98-100	95-100	60-75	14-27	---	NP
	12-18	Sandy loam------	SM	A-2	0	98-100	95-100	70-84	25-35	<30	NP-4
	18-57	Sandy clay loam	SC, CL, SM	A-6, A-4	0	98-100	95-100	71-91	38-55	22-40	7-19
	57-90	Sandy clay loam, sandy clay.	SC, CL	A-6, A-4	0	98-100	95-100	70-97	40-65	25-40	8-21
Pelion:											
PeB, PeD, [1]PnC----	0-10	Loamy sand------	SM, SM-SC	A-2, A-4	0	95-100	90-100	50-90	13-40	<30	NP-7
	10-26	Sandy clay loam	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	0	95-100	92-100	50-90	25-55	20-40	5-18
	26-48	Sandy clay loam, sandy clay.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	0	98-100	92-100	50-90	25-60	20-40	5-20
	48-57	Sandy clay loam, sandy loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	98-100	92-100	50-90	18-50	<40	NP-18
Persanti:											
Ps----------------	0-5	Very fine sandy loam.	SM, SM-SC, ML, CL-ML	A-4	0	100	95-100	80-98	40-60	<35	NP-7
	5-75	Clay, silty clay	CL, ML, CH, MH	A-6, A-7	0	100	98-100	90-100	65-95	35-60	12-30
Rains:											
Ra----------------	0-12	Sandy loam------	SM, SM-SC	A-2, A-4	0	100	95-100	50-85	25-50	<35	NP-10
	12-46	Sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	100	98-100	65-98	30-70	18-40	4-18
	46-62	Sandy clay loam, clay loam, sandy clay.	SC, SM-SC, CL, CL-ML	A-4, A-6, A-7	0	100	98-100	65-98	36-72	18-45	4-22
	62-68	Sandy loam, sandy clay loam, sandy clay.	SM, SC, ML, CL	A-2, A-4, A-6	0	100	95-100	60-95	30-60	15-40	3-18

See footnote at end of table.

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Smithboro: Sm	0-10	Loam	ML, CL, CL-ML	A-4	0	100	98-100	85-100	51-80	<35	NP-10
	10-78	Clay, clay loam, silty clay.	CL, ML, CH, MH	A-6, A-7	0	100	100	94-100	70-95	34-60	11-30
State: StA	0-8	Sandy loam	SM, SM-SC, ML, CL-ML	A-2, A-4	0	95-100	90-100	70-100	30-65	<25	NP-7
	8-48	Sandy clay loam, clay loam, loam.	CL-ML, CL, SC, SM-SC	A-2, A-4, A-6, A-7-6	0	95-100	90-100	75-100	30-70	20-41	5-15
	48-68	Variable	---	---	---	---	---	---	---	---	---
Tawcaw: Tc	0-4	Silty clay loam	CL, CH	A-6, A-7	0	100	100	85-100	75-95	28-55	8-26
	4-61	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0	100	100	90-100	51-98	30-65	11-33
Toccoa: To	0-4	Loam	SM, ML	A-2, A-4	0	98-100	95-100	85-100	25-60	<30	NP-4
	4-62	Sandy loam, loam	SM, ML	A-2, A-4	0	95-100	90-100	60-100	30-55	<30	NP-4
Troup: TrB	0-48	Sand	SM	A-2	0	100	100	50-80	15-35	---	NP
	48-75	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4	0	95-100	95-100	80-90	36-55	20-30	4-10
Udorthents: Ud.											
Urban land: Ur.											
Vaucluse: VaC, VaD	0-15	Loamy sand	SM, SP-SM	A-2, A-3	0	98-100	90-100	51-70	8-30	---	NP
	15-29	Sandy clay loam, sandy loam.	SC, SM-SC	A-2, A-4, A-6	0	98-100	90-100	51-70	25-50	20-40	5-18
	29-58	Sandy clay loam, sandy loam, sandy clay.	SC, SM-SC	A-2, A-4, A-6	0	95-100	92-100	55-75	20-50	22-40	4-20
	58-72	Sandy loam, sandy clay loam, sandy clay.	SM, SC, ML, CL	A-2, A-4, A-6, A-7	0	98-100	95-100	51-90	20-85	<50	NP-20
Wedowee: WeB, WeE	0-5	Loamy sand	SM, SM-SC	A-4	0	95-100	90-100	80-99	36-50	<30	NP-6
	5-9	Loam, sandy clay loam, sandy loam.	SM, SC, CL, ML	A-4, A-6	0	90-100	90-100	80-97	40-75	<32	NP-15
	9-35	Sandy clay, sandy clay loam.	SC, ML, CL	A-4, A-6, A-7	0	95-100	95-100	65-97	45-70	30-58	10-25
	35-80	Weathered bedrock.	---	---	---	---	---	---	---	---	---

[1]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means greater then. The erosion tolerance factor (T) is for the entire profile. Absence of an entry means data were not available or were not estimated]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
Ailey:									
AeC	0-30	6.0-20	0.03-0.05	4.5-6.5	Low	Low	Moderate	0.20	4
	30-38	0.6-2.0	0.09-0.12	4.5-5.5	Low	Moderate	Moderate	0.24	
	38-69	0.06-0.2	0.06-0.10	4.5-5.5	Low	Moderate	Moderate	0.17	
Altavista:									
AtA	0-7	2.0-6.0	0.12-0.20	4.5-6.0	Low	Moderate	Moderate	0.32	4
	7-46	0.6-2.0	0.12-0.20	4.5-6.0	Low	Moderate	Moderate	0.32	
	46-49	---	---	---	---	---	---	---	
Blanton:									
BaB	0-50	6.0-20	0.03-0.07	4.5-6.0	Low	Low	High	0.17	5
	50-96	0.6-2.0	0.10-0.15	4.5-5.5	Low	High	High	0.32	
Cantey:									
Ca	0-5	0.6-2.0	0.14-0.18	3.6-6.5	Low	High	High	0.32	5
	5-57	0.06-0.2	0.11-0.16	3.6-5.5	Moderate	High	High	0.24	
	57-81	0.06-0.6	0.10-0.15	3.6-5.5	Moderate	High	High	0.24	
Chastain:									
Cd	0-4	0.2-0.6	0.12-0.18	4.5-5.5	Moderate	High	High	0.32	5
	4-41	0.06-0.2	0.12-0.16	4.5-5.5	Moderate	High	High	0.37	
	41-65	0.06-0.2	0.12-0.16	4.5-5.5	Moderate	High	High	0.37	
Chewacla:									
Ce, [1]CH	0-7	0.6-2.0	0.15-0.24	5.1-6.5	Low	High	Moderate	0.28	4
	7-58	0.6-2.0	0.15-0.24	5.1-6.5	Low	High	Moderate	0.32	
	58-75	---	---	---	---	---	---	---	
Clarendon:									
Cn	0-19	2.0-6.0	0.10-0.14	4.5-6.5	Low	Moderate	High	0.15	5
	19-25	0.6-2.0	0.10-0.15	4.5-5.5	Low	Moderate	High	0.20	
	25-72	0.2-0.6	0.08-0.12	4.5-5.5	Low	Moderate	High	0.15	
Congaree:									
Co	0-8	0.6-2.0	0.12-0.20	5.1-7.3	Low	Moderate	Moderate	0.37	5
	8-38	0.6-2.0	0.12-0.20	5.1-7.3	Low	Moderate	Moderate	0.37	
	38-80	---	---	---	---	---	---	---	
Coxville:									
Cx	0-9	0.6-2.0	0.12-0.17	4.5-6.0	Low	High	High	0.28	4
	9-65	0.2-0.6	0.14-0.18	4.5-5.5	Moderate	High	High	0.32	
	65-80	---	---	---	---	---	---	---	
Dorovan:									
Dn	0-58	0.2-6.0	0.25-0.50	3.6-5.5	---	High	High	0.15	3
	58-76	---	---	---	---	---	---	---	
Dothan:									
DoA, DoB, [1]DuB	0-17	2.0-6.0	0.06-0.10	4.5-5.5	Low	Moderate	Moderate	0.20	4
	17-37	0.6-2.0	0.10-0.14	4.5-5.5	Low	Moderate	Moderate	0.28	
	37-78	0.2-0.6	0.08-0.12	4.5-5.5	Low	Moderate	Moderate	0.28	
Faceville:									
FaA, FaB	0-7	6.0-20	0.06-0.09	4.5-5.5	Low	Low	Moderate	0.28	5
	7-12	0.6-2.0	0.12-0.15	4.5-5.5	Low	Low	Moderate	0.37	
	12-84	0.6-2.0	0.12-0.18	4.5-5.5	Low	Low	Moderate	0.37	
Fuquay:									
FuA, FuB, [1]FyB	0-35	>6.0	0.04-0.09	4.5-5.5	Low	Low	High	0.20	5
	35-48	0.6-2.0	0.12-0.15	4.5-5.5	Low	Low	High	0.20	
	48-75	0.06-0.2	0.10-0.13	4.5-5.5	Low	Low	High	0.20	

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete	Erosion factors: K	Erosion factors: T
	In	In/hr	In/in	pH					
Georgeville: GeB, GeC	0-9	0.6-2.0	0.15-0.20	4.5-6.0	Low	High	High	0.43	3
	9-52	0.6-2.0	0.13-0.18	4.5-5.5	Low	High	High	0.37	
	52-72	0.6-2.0	0.13-0.18	4.5-5.5	Low	High	High	0.43	
Goldsboro: GoA	0-13	2.0-6.0	0.08-0.12	4.5-6.0	Low	Moderate	High	0.20	5
	13-80	0.6-2.0	0.11-0.15	4.5-5.5	Low	Moderate	High	0.24	
Herndon: HeB, HeC, [1]HnB	0-13	0.6-2.0	0.14-0.20	4.5-6.5	Low	High	High	0.43	3
	13-52	0.6-2.0	0.13-0.18	3.6-5.5	Low	High	High	0.37	
	52-75	0.6-6.0	0.05-0.08	3.6-5.5	Low	High	High	0.43	
Johnston: Jo	0-38	2.0-6.0	0.10-0.20	4.5-5.5	Low	High	High	0.20	4
	38-66	6.0-20	0.06-0.12	4.5-5.5	Low	High	High	0.17	
Kershaw: KeC	0-80	>20	0.02-0.05	4.5-5.5	Low	Low	High	0.15	5
Kirksey: KrB	0-9	0.6-2.0	0.15-0.22	5.1-6.5	Low	Moderate	Moderate	0.43	3
	9-21	0.2-0.6	0.12-0.18	4.5-5.5	Low	Moderate	High	0.43	
	21-51	0.6-2.0	0.11-0.15	3.6-5.5	Low	Moderate	High	0.43	
Lakeland: LaB, LaD, [1]LkB	0-29	>20	0.05-0.08	4.5-6.0	Low	Low	Moderate	0.17	5
	29-99	>20	0.03-0.08	4.5-6.0	Low	Low	Moderate	---	
Lucy: LuB	0-26	>6.0	0.06-0.10	5.1-5.5	Low	Low	High	0.20	5
	26-32	2.0-6.0	0.10-0.12	4.5-5.5	Low	Low	High	---	
	32-75	0.6-2.0	0.12-0.14	4.5-5.5	Low	Low	High	---	
Marlboro: MaA, MaB	0-8	2.0-6.0	0.09-0.14	5.1-6.0	Low	High	Moderate	0.20	4
	8-64	0.6-2.0	0.14-0.18	5.1-6.5	Low	High	Moderate	0.20	
	64-80	0.6-2.0	0.12-0.18	4.5-6.0	Low	High	High	0.20	
Nason: NaB, NaC, [1]NaE	0-11	0.6-2.0	0.14-0.20	4.5-5.5	Low	High	High	0.32	4
	11-41	0.6-2.0	0.10-0.19	4.5-5.5	Moderate	High	High	0.28	
Norfolk: NoA, NoB	0-17	2.0-6.0	0.06-0.10	4.5-6.0	Low	Moderate	High	0.17	5
	17-75	0.6-2.0	0.10-0.15	4.5-5.5	Low	Moderate	High	0.24	
Orange: OaB	0-11	0.6-2.0	0.14-0.20	5.1-6.0	Low	High	Moderate	0.49	2
	11-40	0.06-0.2	0.10-0.19	5.6-7.3	High	High	Moderate	0.28	
Orangeburg: ObA, ObB, ObC, [1]OgB, [1]OgD	0-12	2.0-6.0	0.06-0.08	4.5-6.0	Low	Moderate	Moderate	0.20	5
	12-18	2.0-6.0	0.07-0.10	4.5-5.5	Low	Moderate	Moderate	0.24	
	18-57	0.6-2.0	0.10-0.13	4.5-5.5	Low	Moderate	Moderate	0.24	
	57-90	0.6-2.0	0.10-0.13	4.5-5.5	Low	Moderate	Moderate	0.24	
Pelion: PeB, PeD, [1]PnC	0-10	2.0-6.0	0.03-0.10	4.5-6.5	Low	High	High	0.24	3
	10-26	0.6-2.0	0.12-0.16	3.6-5.5	Low	High	High	0.17	
	26-48	0.06-0.6	0.06-0.10	3.6-5.5	Low	High	High	0.20	
	48-57	0.6-2.0	0.06-0.10	3.6-5.5	Low	High	High	0.15	

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permea-bility	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
Persanti:									
Ps	0-5	0.2-2.0	0.11-0.15	4.5-6.5	Low	High	High	0.43	5
	5-75	0.06-0.2	0.12-0.15	3.6-5.5	Moderate	High	High	0.20	
Rains:									
Ra	0-12	2.0-6.0	0.08-0.12	4.5-6.5	Low	High	High	0.17	5
	12-46	0.6-2.0	0.10-0.15	4.5-5.5	Low	High	High	0.24	
	46-62	0.6-2.0	0.10-0.15	4.5-5.5	Low	High	High	0.28	
	62-68	0.6-2.0	0.10-0.15	4.5-5.5	Low	High	High	0.28	
Smithboro:									
Sm	0-10	0.6-2.0	0.15-0.20	4.5-5.5	Low	High	High	0.24	5
	10-78	0.06-0.2	0.14-0.18	3.6-5.5	Moderate	High	High	0.32	
State:									
StA	0-8	2.0-6.0	0.11-0.16	4.5-6.0	Low	Moderate	High	0.20	5
	8-48	0.6-2.0	0.12-0.17	4.5-6.0	Low	Moderate	High	0.24	
	48-68	---	---	---	---	---	---	---	
Tawcaw:									
Tc	0-4	0.06-0.6	0.12-0.18	4.5-6.5	Moderate	High	High	0.32	5
	4-61	0.06-0.2	0.12-0.16	4.5-6.5	Moderate	High	High	0.37	
Toccoa:									
To	0-4	2.0-6.0	0.09-0.12	5.1-6.5	Low	Low	Moderate	0.10	4
	4-72	2.0-6.0	0.06-0.12	5.1-6.5	Low	Low	Moderate	0.10	
Troup:									
TrB	0-48	6.0-20	0.05-0.08	4.5-5.5	Low	Low	Moderate	0.17	5
	48-75	0.6-2.0	0.10-0.13	4.5-5.5	Low	Low	Moderate	0.20	
Udorthents: Ud.									
Urban land: Ur.									
Vaucluse:									
VaC, VaD	0-15	6.0-20	0.04-0.08	4.5-5.5	Low	Low	High	0.17	3
	15-29	0.6-6.0	0.10-0.15	4.5-5.5	Low	Low	High	0.20	
	29-58	0.06-0.2	0.05-0.08	4.0-5.5	Low	Low	High	0.17	
	58-72	2.0-6.0	0.05-0.08	4.0-5.5	Low	Low	High	0.17	
Wedowee:									
WeB, WeE	0-5	2.0-6.0	0.10-0.18	4.5-5.5	Low	Low	High	0.24	2
	5-9	0.6-2.0	0.12-0.18	4.5-5.5	Low	Moderate	High	0.28	
	9-35	0.6-2.0	0.12-0.18	4.5-5.5	Moderate	Moderate	High	0.28	
	35-80	---	---	---	---	---	---	---	

[1]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

TABLE 17.--SOIL AND WATER FEATURES

[Absence of an entry indicates the feature is not a concern. The definitions of "flooding" and "water table" in the glossary explain terms as "rare," "brief," and "perched." The symbol < means less than; > means greater than]

Soil name and map symbol	Hydro-logic groups	Flooding			High water table			Bedrock	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness
					Ft			In	
Ailey: AeC	B	None	---	---	>6.0	---	---	>60	---
Altavista: AtA	C	Rare	Very brief	Mar-Jul	1.5-2.5	Apparent	Dec-Mar	40-50	Rippable
Blanton: BaB	A	None	---	---	>6.0	---	---	>60	---
Cantey: Ca	D	Common	Long	Nov-Apr	0-1.0	Apparent	Nov-Apr	>60	---
Chastain: Cd	D	Common	Very long	Dec-Apr	0-1.0	Apparent	Nov-May	>60	---
Chewacla: Ce, [1]CH	C	Common	Brief	Nov-Apr	0.5-1.5	Apparent	Nov-Apr	>60	---
Clarendon: Cn	C	None	---	---	1.5-2.5	Apparent	Dec-Mar	>60	---
Congaree: Co	B	Frequent	Brief	Nov-Apr	2.5-4.0	Apparent	Nov-Apr	>60	---
Coxville: Cx	D	None	---	---	0-2.5	Apparent	Nov-Apr	>60	---
Dorovan: Dn	D	Frequent	Very long	Jan-Dec	<0.5	Apparent	Jan-Dec	>60	---
Dothan: DoA, DoB, [1]DuB	B	None	---	---	3.5-4.0	Perched	Jan-Apr	>60	---
Faceville: FaA, FaB	B	None	---	---	>6.0	---	---	>60	---
Fuquay: FuA, FuB, [1]FyB	B	None	---	---	2.5-4.0	Perched	Jan-Mar	>60	---
Georgeville: GeB, GeC	B	None	---	---	>6.0	---	---	>60	---
Goldsboro: GoA	B	None	---	---	2.5-3.5	Apparent	Dec-Mar	>60	---
Herndon: HeB, HeC, [1]HnB	B	None	---	---	>6.0	---	---	>60	---
Johnston: Jo	D	Frequent	Long	Nov-Jul	(1)-1.5	Apparent	Nov-Jun	>60	---
Kershaw: KeC	A	None	---	---	>6.0	---	---	>60	---
Kirksey: KrB	C	None	---	---	>6.0	---	---	40-60	Rippable
Lakeland: LaB, LaD, [1]LkB	A	None	---	---	>6.0	---	---	>72	---
Lucy: LuB	A	None	---	---	>6.0	---	---	>60	---

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness
					Ft			In	
Marlboro: MaA, MaB	B	None	---	---	>6.0	---	---	>60	---
Nason: NaB, NaC, NaE	C	None	---	---	>6.0	---	---	40-60	Rippable
Norfolk: NoA, NoB	B	None	---	---	3.5-5.0	Perched	---	>60	---
Orange: OaB	D	None	---	---	1.0-3.0	Apparent	Dec-May	40-60	Hard
Orangeburg: ObA, ObB, ObC, [1]OgB, [1]OgD	B	None	---	---	>6.0	---	---	>60	---
Pelion: PeB, PeD, [1]PnC	B/D	None	---	---	1.0-2.5	Perched	Nov-Apr	>60	---
Persanti: Ps	C	None	---	---	2.0-3.5	Apparent	Dec-Apr	>60	---
Rains: Ra	B/D	Common	Brief	Dec-Mar	0-1.0	Apparent	Nov-Apr	>60	---
Smithboro: Sm	D	None	---	---	0.5-1.5	Apparent	Dec-Mar	>60	---
State: StA	B	None	---	---	>6.0	---	---	>60	---
Tawcaw: Tc	C	Common	Long	Dec-Apr	1.5-2.5	Apparent	Nov-Apr	>60	---
Toccoa: To	B	Common	Brief	Jan-Dec	2.5-5.0	Apparent	Dec-Apr	>60	---
Troup: TrB	A	None	---	---	>6.0	---	---	>60	---
Udorthents: Ud.									
Urban land: Ur.									
Vaucluse: VaC, VaD	C	None	---	---	>6.0	---	---	>60	---
Wedowee: WeB, WeE	B	None	---	---	>6.0	---	---	48-60	Rippable

[1]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

TABLE 18.--ENGINEERING TEST DATA

[Tests performed by South Carolina Highway Department in cooperation with the Bureau of Public Roads, U. S. Department of Commerce, in accordance with standard procedures of the American Association of State Highway and Transportation Officials. NP means nonplastic]

Soil name and location	Parent material	Laboratory number	Depth	Mechanical analysis: Percentage passing sieve-- No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 60 (0.25 mm)	No. 200 (0.074 mm)	Percentage smaller than 0.005 mm	Liquid limit	Plasticity index	Classification: AASHTO	Unified
			Inches							Pct			
Blanton sand: Approximately 2 miles north of Columbia on secondary road 1560, 400 feet from its intersection with State Route 83. Site is 200 feet north of road.	Sandy and loamy, Coastal Plain sediment.	I-55545	0-9	---	100	---	38	10	4	--	NP	A-3	SP-SM
		I-55546	9-21	---	100	---	34	14	7	--	NP	A-2-4	SM
		I-55547	21-50	---	100	---	39	14	8	--	NP	A-2-4	SM
		I-55548	50-61	---	100	---	40	25	20	20	4	A-2-4	SM
Cantey loam: 1.1 miles east of Kingsville on secondary road 1032, then 0.8 mile south on private road; on west bank of ditch.	Clayey Coastal Plain sediment.	I-05901	0-8	---	100	79	68	49	30	29	7	A-4(3)	SM-SL
		I-05902	11-24	---	100	82	75	65	46	29	11	A-6(6)	CL
		I-05904	24-45	---	100	76	67	60	48	40	19	A-6(9)	CL
		I-05904	45-80	---	100	95	93	83	61	36	15	A-6(10)	CL
Chastain silty clay loam: Approximately 4 miles southeast of Columbia on State Route 48 and 0.4 mile west of intersection of State Route 48 and secondary road 48.	Clayey alluvium.	I-55555	4-18	---	100	---	82	78	70	57	36	A-7-6(19)	CH
		I-55556	18-41	---	100	---	89	86	63	46	20	A-7-6(13)	CL
		I-55557	41-65	---	100	---	95	89	71	52	18	A-7-5(13)	MH
Chewacla loam: Approximately 3 miles southeast of Columbia, 1.0 mile west of State Route 48 and secondary road 48 and 1.0 mile northeast of sewage treatment plant.	Loamy alluvium of Piedmont province.	I-55561	13-20	---	100	---	95	84	61	61	29	A-7-5(20)	MH
		I-55562	20-38	---	100	---	96	80	54	54	22	A-7-5(16)	MH
Chewacla soils: 2.5 miles north of U.S. Route 76 at South Carolina State Commission of Forestry Headquarters on Broad River floodplain, about 1300 feet south of the river.	Loamy alluvium.	I-25780	0-8	---	100	---	99	83	44	--	NP	A-4(8)	ML
		I-25781	13-39	---	100	---	98	81	50	32	14	A-6(10)	CL
		I-25782	55-80	---	100	---	97	75	55	38	18	A-6(11)	CL
Chewacla soils: Approximately 4 miles northeast of Columbia; 0.5 mile on road 1282, west of intersection of secondary roads 1382 and 1282. Site is 300 feet south of road.	Loamy alluvium.	I-55549	6-13	---	100	---	89	74	42	44	10	A-5(9)	ML
		I-55550	19-33	---	100	---	88	77	51	54	19	A-7-5(15)	MH
		I-55551	33-60	---	100	---	93	78	52	53	19	A-7-5(15)	MH

TABLE 18.--ENGINEERING TEST DATA--Continued

Soil name and location	Parent material	Laboratory number	Depth	Mechanical analysis: Percentage passing sieve-- No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 60 (0.25 mm)	No. 200 (0.074 mm)	Percentage smaller than 0.005 mm	Liquid limit	Plasticity index	Classification: AASHTO	Unified
			Inches							Pct			
Clarendon sandy loam: 1.7 miles northeast of Gadsden and 3 miles southwest of Eastover; 700 feet south of a connecting road between secondary roads 84 and 1322.	Loamy Coastal Plain sediment.	I-059-5	0-6	99	99	83	73	38	16	--	NP	A-4(1)	SM
		I-05906	19-25	99	97	79	73	49	32	29	6	A-4(3)	SM
		I-05907	25-36	100	98	81	74	47	28	26	7	A-4(2)	SM-SC
Coxville loam: 0.8 mile east of Gadsden on State Route 48 to a field road and 0.4 mile north to a ditchbank on east side of field road.	Clayey Coastal Plain sediment.	I-05908	0-6	---	100	85	76	58	39	26	6	A-4(5)	CL-ML
		I-05909	6-22	---	100	93	88	80	58	38	19	A-6(12)	CL
		I-05910	28-40	---	100	87	79	64	44	33	13	A-6(7)	CL
		I-05911	56-80	---	100	92	80	53	50	49	24	A-7-6(10)	CL
Faceville sandy loam: Approximately 3 miles northeast of Eastover; 2 miles south of intersection of U.S. Route 76 and State Route 263, on east side of a north-south dirt road between Wateree River State Route 263.	Clayey sediment, Coastal Plain.	I-55572	12-84	---	100	---	68	53	47	39	14	A-6(5)	CL
Fuquay sand: On the east bank of U.S. Route 321, approximately 5 miles north of its intersection with Interstate 20, and 0.5 mile north of intersection with secondary road 61.	Loamy and sandy Coastal Plain sediment.	I-05874	8-32	100	99	64	45	20	11	--	NP	A-2-4	SM
		I-05875	46-58	99	98	61	44	25	18	--	NP	A-2-4	SM
		I-05876	68-79	100	95	58	46	31	23	30	6	A-2-4	SM
Herndon silt loam: Approximately 5 miles northwest of Columbia. 4 miles north of intersection of U.S. Route 76 and Interstate 20, 0.2 mile southwest of intersection of U.S. Route 76 and secondary road 674. Site is on north bank of road 674.	Carolina slate.	I-55552	0-5	---	100	---	91	85	36	36	12	A-6(9)	CL
		I-55553	21-31	---	100	---	93	83	54	55	19	A-7-5(15)	MH
		I-55554	31-48	---	100	---	93	83	55	44	17	A-7-6(12)	ML
Nason silt loam: Approximately 13 miles northwest of Columbia, 0.5 mile northwest of intersection of Interstate 26 and U.S. Route 176; 0.5 mile northeast on woods road. Site is 50 feet east of road.	Saprolite (Carolina slate)	I-55567	0-5	---	100	---	82	60	31	38	2	A-4(5)	ML
		I-55568	19-34	---	100	---	91	84	71	64	30	A-7-5(20)	MH
		I-55569	34-41	---	100	---	92	86	72	51	21	A-7-5(15)	MH

TABLE 18.--ENGINEERING TEST DATA--Continued

Soil name and location	Parent material	Laboratory number	Depth	Mechanical analysis: Percentage passing sieve-- No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 60 (0.25 mm)	No. 200 (0.074 mm)	Percentage smaller than 0.005 mm	Liquid limit	Plasticity index	Classification: AASHTO	Unified
			Inches							Pct			
Orangeburg loamy sand: 2 miles north of Eastover on east bank of State Route 263, 0.4 mile north of intersection of U.S. Route 601 and State Route 601 and State Route 263.	Loamy Coastal Plain sediment.	I-55570	18-39	---	100	---	56	38	32	29	7	A-4(1)	SC
		I-55571	39-57	---	100	---	56	40	34	34	8	A-4(1)	SM
Wedowee loamy sand: 1.2 miles southwest of intersection of Nipper Creek and State Route 215, 200 feet east of creek.	Saprolite of course-grained granite.	I-05898	3-7	98	96	53	44	28	14	--	NP	A-2-4	SM
		I-05899	11-18	100	97	81	66	55	37	31	9	A-4(4)	CL
		I-05900	45-14	98	88	24	17	8	4	--	NP	A-1-b	SW-SM

TABLE 19.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Ailey	Loamy, siliceous, thermic Arenic Fragiudults
[1]Altavista	Fine-loamy, mixed, thermic Aquic Hapludults
Blanton	Loamy, siliceous, thermic Grossarenic Paleudults
Cantey	Clayey, kaolinitic, thermic Typic Albaquults
Chastain	Fine, kaolinitic, acid, thermic Typic Fluvaquents
Chewacla	Fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts
Clarendon	Fine-loamy, siliceous, thermic Plinthaquic Paleudults
Congaree	Fine-loamy, mixed, nonacid, thermic Typic Udifluvents
Coxville	Clayey, kaolinitic, thermic Typic Paleaquults
Dorovan	Dysic, thermic Typic Medisaprists
Dothan	Fine-loamy, siliceous, thermic Plinthic Paleudults
Faceville	Clayey, kaolinitic, thermic Typic Paleudults
Fuquay	Loamy, siliceous, thermic Arenic Plinthic Paleudults
Georgeville	Clayey, kaolinitic, thermic Typic Hapludults
Goldsboro	Fine-loamy, siliceous, thermic Aquic Paleudults
Herndon	Clayey, kaolinitic, thermic Typic Hapludults
Johnston	Coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts
Kershaw	Thermic, uncoated Typic Quartzipsamments
Kirksey	Fine-silty, siliceous, thermic Aquic Hapludults
Lakeland	Thermic, coated Typic Quartzipsamments
Lucy	Loamy, siliceous, thermic Arenic Paleudults
Marlboro	Clayey, kaolinitic, thermic Typic Paleudults
Nason	Clayey, mixed, thermic Typic Hapludults
Norfolk	Fine-loamy, siliceous, thermic Typic Paleudults
Orange	Fine, montmorillonitic, thermic Albaquic Hapludalfs
Orangeburg	Fine-loamy, siliceous, thermic Typic Paleudults
Pelion	Fine-loamy, siliceous, thermic Aquic Hapludults
Persanti	Clayey, kaolinitic, thermic Aquic Paleudults
Rains	Fine-loamy, siliceous, thermic Typic Paleaquults
Smithboro	Clayey, kaolinitic, thermic Aeric Paleaquults
State	Fine-loamy, mixed, thermic Typic Hapludults
Tawcaw	Fine, kaolinitic, thermic Fluvaquentic Dystrochrepts
Toccoa	Coarse-loamy, mixed, nonacid, thermic Typic Udifluvents
Troup	Loamy, siliceous, thermic Grossarenic Paleudults
Vaucluse	Fine-loamy, siliceous, thermic Typic Fragiudults
Wedowee	Clayey, kaolinitic, thermic Typic Hapludults

[1]These soils are taxadjuncts to the Altavista series because they have slightly more silt than that defined for the series.

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