United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with Alabama Agricultural Experiment Station and Alabama Soil and Water Conservation Committee

Soil Survey of Russell County, Alabama

How to Use This Soil Survey

General Soil Map

The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

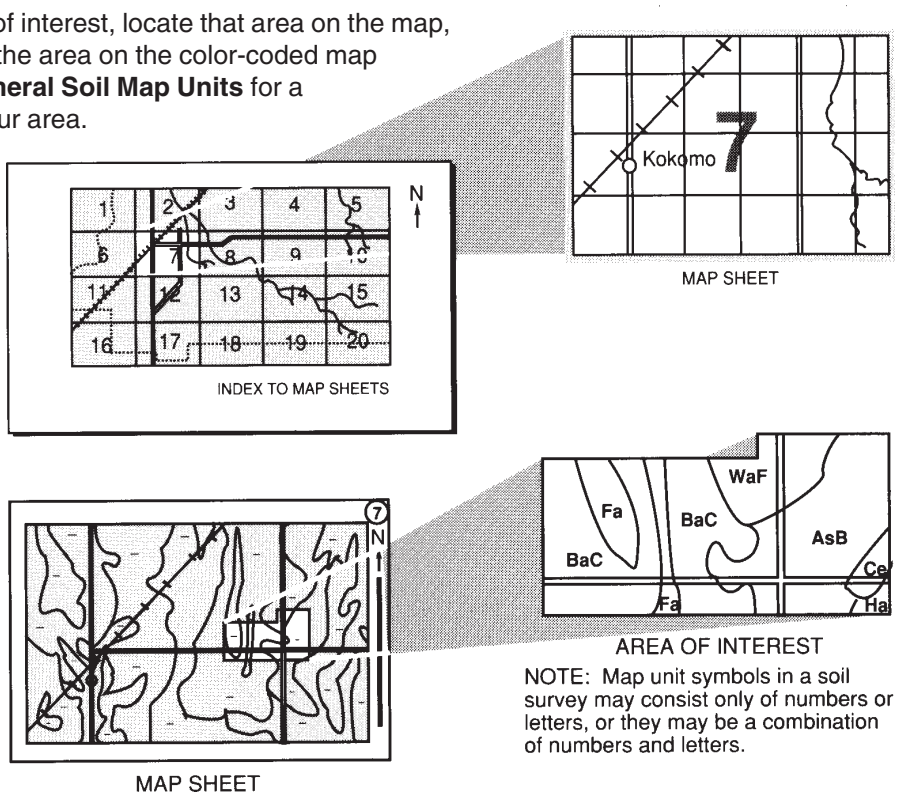
To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map units symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1994. Soil names and descriptions were approved in 1997. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1994. This survey was made cooperatively by the Natural Resources Conservation Service, the Alabama Agricultural Experiment Station, the Alabama Cooperative Extension System, the Alabama Soil and Water Conservation Committee, and the Alabama Department of Agriculture and Industries. The survey is part of the technical assistance furnished to the Russell County Soil and Water Conservation District.

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

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Cover: Peanuts growing in an area of Orangeburg fine sandy loam, 0 to 2 percent slopes. Peanuts are an important crop in Russell County.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

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Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations that affect various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

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

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension System.

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Soil Survey of
Russell County, Alabama

By James M. Mason

Fieldwork by James M. Mason, Robert W. Stevens, and Johnny C. Trayvick

United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
the Alabama Agricultural Experiment Station, the Alabama Cooperative Extension System, the Alabama Soil and Water Conservation Committee, and the Alabama Department of Agriculture and Industries

Russell County is in the southeastern part of Alabama (fig. 1). It has a total area of about 413,940 acres, or about 654 square miles. About 405,620 acres consists of land areas and small areas of water. About 8,320 acres consists of large areas of water in the form of lakes and rivers. The county is bordered on the north by Lee County, on the west by Macon and Bullock Counties, and on the south by Barbour County. The Chattahoochee River forms the eastern border and is also the border between Alabama and Georgia.

Russell County is mostly rural, and it had a population of about 48,198 in 1994. Phenix City, the largest city and the county seat, had a population of about 29,600 in 1994 *(8, 11)*. It is in the northeastern part of the county. Columbus, Georgia, is directly across the Chattahoochee River from Phenix City. The largest communities in the county are Phenix City, Hurtsboro, Crawford, Seale, Pittsview, Cottonton, Fort Mitchell, Rutherford, and Hatchechubbee. Part of the Fort Benning Military Reservation is in the east-central part of the county.

Farming and timber production are the main agricultural enterprises in the county. The climate is favorable for crop and livestock production. The major crops are cotton, soybeans, peanuts, corn, wheat, and hay. Plywood, pulpwood, and sawtimber are also produced.

Russell County makes up part of the Southern Coastal Plain and the Alabama, Mississippi, and Arkansas Blackland Prairie Major Land Resource Areas. Soils in the Southern Coastal Plain range from sandy to clayey and from somewhat excessively drained to very poorly drained. The topography in this area is varied, ranging from highly dissected upland areas that have high relief to broad, nearly level stream terraces and flood plains along the Chattahoochee River and other major streams. Soils in the Blackland Prairie area, which is in the west-central part of the county, are dominantly clayey and range from acid to alkaline in reaction. The topography in this area is generally smooth to gently rolling with low relief.

This soil survey updates an earlier survey of Russell County published in 1915 *(3)*. It provides additional information and larger maps, which show the soils in greater detail.

General Nature of the County

This section provides general information about the county. It gives a brief description of the early history of the county, transportation facilities, water resources, mineral resources, and climate.

Early History

Russell County was organized in 1832 from Creek Indian Territory. It was named in honor of Colonel Gilbert Christian Russell, a noted soldier who traveled through the area *(3, 15)*.

Girard was the first settlement in the area that is now Russell County. It was established as a trading post on the west bank of the Chattahoochee River prior to 1820. The main industries in Girard were cotton milling and the brewing and distilling of alcoholic

Figure 1.—Location of Russell County in Alabama.

liquors. In 1883, the community of Brownville was incorporated in the vicinity of Girard. In 1889, the combined communities were renamed Phenix City. The community of Seale, which is near the center of the county, was the county seat until 1935 *(3, 15)*.

The early non-Indian settlers in the area were from the Lower Atlantic and Eastern Gulf States. They established farms on flat terraces adjacent to the Chattahoochee River and other major streams. As a means of subsistence, they grew a variety of crops and raised livestock. Logging was another early occupation. To protect the settlers from the Creek Indians, the U.S. Government established Fort Bainbridge, Fort Mitchell, and Sand Fort. Fort Mitchell became an important trading center and was used as a base of operation against the Creek Indian Nation *(15)*.

Russell County developed rapidly until about 1860, when progress was slowed by the Civil War. The communities of Crawford, Seale, and Glenville had been thriving towns and centers of trade until the war. Agriculture in the county was also adversely affected by the war *(3, 15)*.

Transportation Facilities

The Southern Railway provides freight services to the county. It runs parallel to the Chattahoochee River in the eastern part of the county and from Hurtsboro to Seale to Phenix City.

U.S. Highway 80 crosses the northern part of the county from east to west. U.S. Highway 431 crosses the central part of the county from north to south. Numerous State and County hard-surfaced roads provide easy access to most parts of the county.

Air transportation is available through the municipal airport at Columbus, Georgia, which is across the Chattahoochee River from Phenix City. Several private airfields provide service suitable for small aircraft throughout the county.

A series of locks and dams on the Chattahoochee River provides access to the Gulf of Mexico through the Gulf Intercoastal Waterway *(4)*.

Water Resources

Russell County has an adequate amount of surface water suitable for domestic and recreational uses. The main streams in the county are the Chattahoochee River, Uchee Creek, Little Uchee Creek, Ihagee Creek, Hatchechubbee Creek, and Cowikee Creek. Lakes that provide water for livestock and recreational uses include Torbert Lake, Choppers Lake, Lake Margloba, Lake Bickerstaff, Mott Lake, Clarks Lake, and Lonesome Duck Lake. Numerous farm ponds also provide water for livestock and recreational uses.

Moderate to large quantities of ground water are available for municipal and industrial uses and for irrigation in Russell County. The principal sources of ground water in the county are sand and gravel beds in the following geologic units: Tuscaloosa Group undifferentiated, the Eutaw Formation, and the Blufftown Formation. Other sources of water are Precambrian rocks in the northeastern part of the county, the Cusseta Sand member of the Ripley Formation in the southern part of the county, and terrace and alluvial deposits in the larger stream valleys. Water from the Tuscaloosa Group undifferentiated is generally of good quality in most areas. Water from the Eutaw and Blufftown Formations is soft to very hard and in some areas has a high content of iron. Water from the Precambrian rocks is generally hard and contains excessive amounts of iron and sulfates. It is, however, suitable for some uses. Water from the Ripley Formation and the terrace and

Figure 2.—A sand and gravel pit in an area of Maxton loamy sand, 0 to 2 percent slopes, rarely flooded, on a terrace along the Chattahoochee River. Sand and gravel are important resources in the county.

alluvial deposits generally is of good quality but may contain excessive amounts of iron *(13)*.

Mineral Resources

Economically important minerals in Russell County include limestone, sand, gravel, and clay. Limestone is in the west-central part of the county and is a potential source of agricultural lime. Sand and gravel (fig. 2) are in terrace deposits along the Chattahoochee River and other major streams. Extensive deposits of sand suitable for use as foundry sand are in the western and central parts of the county. Extensive deposits of clayey materials suitable for brick and light aggregate are on low terraces adjacent to the Chattahoochee River and other major streams *(12, 13)*.

Climate

Russell County has long, hot summers because moist tropical air from the Gulf of Mexico persistently covers the area. Winters are cool and fairly short.

Precipitation is fairly heavy throughout the year, and prolonged droughts are rare. Summer precipitation, mainly in the form of afternoon thunderstorms, is usually adequate for all locally grown crops.

Severe local storms, including tornadoes, strike occasionally in or near the area. They are short in duration and cause variable and spotty damage. Every few years in summer or fall, a tropical depression or remnant of a hurricane that has moved inland causes extremely heavy rains for 1 to 3 days.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Columbus, Georgia, in the period 1961 to 1990. 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 37 degrees. The lowest temperature on record, which occurred on January 21, 1985, is -2 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 July 31, 1986, is 104 degrees.

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

The total annual precipitation is about 51 inches. Of this, 27 inches, or 53 percent, usually falls in April through October. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through October is less than 14 inches. The heaviest 1-day rainfall during the period of record was 5.7 inches on April 1, 1981. Thunderstorms occur on about 56 days each year, and most occur in July.

The average seasonal snowfall is about 0.7 inch. The greatest snow depth at any one time during the period of record was 14 inches. On the average, there are no days that have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 54 percent. Humidity is higher at night, and the average at dawn is about 87 percent. The sun shines 63 percent of the time possible in summer and 51 percent in winter. The prevailing wind is from the south. Average windspeed is highest, about 7 miles per hour, in March.

How This Survey Was Made

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

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

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

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a

basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

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

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

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

This survey area was mapped at two levels of detail. At the more detailed level, map units are narrowly defined. Map unit boundaries were plotted and verified at closely spaced intervals. At the less detailed level, map units are broadly defined. Boundaries were plotted and verified at wider intervals. In the legend for the detailed soil maps, narrowly defined units are indicated by symbols in which the first letter is a capital and the second is lowercase. For broadly defined units, the first and second letters are capitals.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

Soil Survey Procedures

The general procedures followed in making this survey are described in the “National Soil Survey Handbook” of the Natural Resources Conservation Service *(23)*. The soil survey of Russell County, published in 1915, and the “Geologic Map of Russell County, Alabama” were among the references used *(3, 12)*.

Before the fieldwork began, preliminary boundaries of landforms were plotted stereoscopically on high altitude aerial photographs taken in 1977. U.S. Geological Survey topographic maps and aerial photographs were studied to relate land and image features.

Traverses were made on foot and by vehicle, mostly at intervals of about one-fourth mile. They were made at closer intervals in areas of high variability. Soil examinations along the traverses were made 50, 100, and 300 feet apart, depending on the landscape and soil pattern *(10, 14)*. Observations of landforms, uprooted trees, vegetation, roadbanks, and animal burrows were made continuously without regard to spacing. Soil boundaries were determined on the basis of soil examinations, observations, and photo interpretation. The soil material was examined with the aid of a spade, a hand auger, or a truck-mounted probe to a depth of 5 feet or more. The pedons described as typical were observed and studied in excavations.

Samples for chemical and physical analyses and for engineering test data were taken from the site of the typical pedon of some of the major soils in the survey area. The analyses were made by the Agronomy and Soils Clay Mineralogy Laboratory, Auburn University, Auburn, Alabama, and by the Alabama Department of Highways and Transportation, Montgomery, Alabama. The results of some of the analyses and the laboratory procedures can be obtained from the laboratory.

High-altitude aerial photography base maps at a scale of 1:20,000 were used for mapping of soil and surface drainage in the field. Cultural features were

transferred from U.S. Geological Survey 7.5-minute series topographic maps and were recorded from visual observations. Soil mapping, drainage patterns, and cultural features recorded on base maps were then transferred to half-tone film positives by cartographic technicians prior to the final map-finishing process.

General Soil Map Units

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

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

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

Each map unit is rated for *cultivated crops, pasture and hay, woodland,* and *urban uses*. Cultivated crops are those grown extensively in the survey area. Pasture and hay refer to improved, locally grown grasses and legumes. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments. Table 4 summarizes the suitability and limitations of the general soil map units.

The boundaries of the general soil map units in Russell County were matched, where possible, with those of the previously completed surveys of Bullock and Lee Counties, Alabama, and Chattahoochee, Muscogee, and Stewart Counties, Georgia. In a few areas, however, the lines do not join and the names of the map units differ. These differences result mainly because of changes in soil series concepts, differences in map unit design, and changes in soil patterns near survey area boundaries.

1. Congaree-Wickham-Maxton

Nearly level and gently undulating, well drained soils that have a loamy or sandy surface layer and a loamy or sandy substratum or a loamy subsoil; formed in loamy and sandy alluvial sediments

This map unit consists of soils on the flood plains and low terraces that parallel the Chattahoochee River. Areas are long and narrow. The soils in this unit are subject to occasional or rare flooding. Slopes range from 0 to 3 percent. The natural vegetation consists of bottom land hardwoods in the lower areas on the landscape and mixed hardwoods and pines in the higher areas.

This unit makes up about 5 percent of the county. It is about 35 percent Congaree and similar soils, 25 percent Wickham soils, 15 percent Maxton soils, and 25 percent soils of minor extent.

The Congaree and similar soils are on the higher, more convex parts of the flood plain. Typically, the surface layer is brown and dark brown loam. The substratum is brown loam in the upper part, brown fine sandy loam in the next part, and dark yellowish brown fine sandy loam in the lower part.

The Wickham soils are on high parts of broad terraces. The surface layer is dark brown fine sandy loam. Typically, the subsoil is yellowish red sandy clay loam in the upper part and yellowish red sandy loam in the lower part. The substratum is strong brown fine sandy loam.

The Maxton soils are on broad terraces at slightly lower elevations than the Wickham soils. Typically, the surface layer is dark brown loamy sand. The subsoil is yellowish red and red sandy clay loam. The substratum is yellowish red sand in the upper part and strong brown sand in the lower part.

Of minor extent in this map unit are Bladen, Kolomoki, Riverview, and Toccoa soils. The poorly drained Bladen soils are in depressions on low terraces. Kolomoki soils are in positions similar to those of the Maxton soils and have a clayey subsoil. Riverview soils are in slightly higher positions than the Congaree soils and have a more strongly developed subsoil. Toccoa soils are in positions similar to those of the Congaree soils and have less clay in the substratum.

Most areas of this map unit are used for cultivated

crops, pasture, or hay. Some areas are used for woodland or pecan orchards. A few areas are used for gravel, sand, or clay pits.

The soils in this map unit are well suited to cultivated crops, pasture, and hay. Flooding is a hazard in areas of the Congaree and similar soils.

The soils in this map unit are well suited to woodland. The potential productivity of loblolly pine and hardwoods is very high. Common trees include loblolly pine, yellow-poplar, sweetgum, American sycamore, eastern cottonwood, green ash, and water oak.

The soils in this map unit are poorly suited to most urban uses. The flooding is a hazard affecting most uses.

2. Dogue-Kinston-Lynchburg

Nearly level, moderately well drained, poorly drained, and somewhat poorly drained soils that have a loamy or sandy surface layer and a clayey or loamy subsoil or a loamy substratum; formed in loamy sediments

This map unit consists of soils on low terraces and flood plains along major streams. Areas are long and narrow. Numerous old channel scars and small depressions are scattered throughout the map unit. The soils in this unit are subject to rare or frequent flooding. Slopes range from 0 to 2 percent. The natural vegetation consists of bottom land hardwoods in the lower areas on the landscape and mixed hardwoods and pines in the higher areas.

This map unit makes up about 12 percent of the county. It is about 30 percent Dogue soils, 25 percent Kinston and similar soils, 20 percent Lynchburg and similar soils, and 25 percent soils of minor extent.

The moderately well drained Dogue soils are in high positions on low terraces. Typically, the surface layer is dark brown and brown fine sandy loam. The subsoil is strong brown clay in the upper part, yellowish brown clay that has grayish mottles in the next part, and yellowish brown sandy clay loam that has grayish mottles in the lower part. The substratum is light brownish gray loam that has brownish and reddish mottles.

The poorly drained Kinston and similar soils are in low positions on flood plains along streams. Typically, the surface layer is dark gray sandy loam. The substratum is light gray clay loam that has brownish mottles in the upper part and gray clay loam that has brownish mottles in the lower part.

The somewhat poorly drained Lynchburg soils are in intermediate positions on low terraces. Typically, the surface layer is very dark gray loamy fine sand. The subsurface layer is pale brown loamy fine sand. The subsoil is grayish brown sandy clay loam that has brownish and reddish mottles in the upper part and grayish brown clay loam that has brownish mottles in the lower part.

Of minor extent in this map unit are Bladen, Goldsboro, Mantachie, and Wahee soils and Fluvaquents. The poorly drained Bladen soils are in depressions on low terraces. The very poorly drained Fluvaquents are in depressions on flood plains. The moderately well drained Goldsboro soils are on low terraces at slightly higher elevations than the Dogue soils and are loamy throughout the profile. The somewhat poorly drained Mantachie soils are at slightly higher elevations than the Kinston soils. The somewhat poorly drained Wahee soils are in positions similar to those of the Lynchburg soils and have a clayey subsoil.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for cultivated crops, pasture, or hay.

The soils in this map unit are generally suited to cultivated crops, pasture, and hay. Wetness is the main limitation in areas of the Dogue and Lynchburg soils. Areas of the Kinston and similar soils on flood plains are poorly suited to cultivated crops, pasture, and hay. The flooding and the wetness are the main management concerns.

The soils in this map unit are suited to woodland. The potential productivity of loblolly pine and hardwoods is very high. Common trees include loblolly pine, yellow-poplar, sweetgum, and water oak. The flooding and wetness limit the use of equipment and increase the seedling mortality rate.

The soils in this map unit are poorly suited to most urban uses because of the flooding and wetness.

3. Urbo-Mooreville-Una

Nearly level, somewhat poorly drained, moderately well drained, and poorly drained soils that have a loamy surface layer and a clayey or loamy subsoil; formed in clayey and loamy alluvium

This map unit consists of soils on broad flood plains along major streams in the northwestern and southwestern parts of the county. Areas are long and narrow. The soils are frequently flooded, but the duration of flooding is brief. Slopes are dominantly 0 to 2 percent. The natural vegetation consists mainly of bottom land hardwoods.

This map unit makes up about 2 percent of the county. It is about 35 percent Urbo soils, 25 percent Mooreville soils, 20 percent Una soils, and 20 percent soils of minor extent.

The somewhat poorly drained Urbo soils are on flats or in slightly concave areas at intermediate levels on the flood plain. Typically, the surface layer is dark brown clay loam. The subsoil is grayish brown clay that has brownish mottles in the upper part, gray clay loam that has brownish mottles in the next part, and grayish brown silty clay loam that has brownish mottles in the lower part.

The moderately well drained Mooreville soils are on the higher, more convex parts of flood plains. Typically, the surface layer is dark brown fine sandy loam. The subsoil is yellowish brown sandy clay loam in the upper part and yellowish brown sandy clay loam that has grayish and brownish mottles in the lower part.

The poorly drained Una soils are in sloughs, swales, and other depressional areas on flood plains. Typically, the surface layer is very dark gray silty clay loam. The subsoil is gray and grayish brown clay that has brownish mottles.

Of minor extent in this map unit are Bladen, Dogue, Lynchburg, Ocilla, and Wahee soils. These soils are on low terraces at slightly higher elevations than the major soils and are not subject to frequent flooding. Also included are small areas of sandy soils that are adjacent to stream channels.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for pasture.

The soils in this map unit are poorly suited to cultivated crops, pasture, and hay. The choice of crops and pasture plants and the period of grazing are limited by wetness and the flooding.

The soils in this map unit are suited to hardwoods and pine trees. Common trees include sweetgum, water oak, cherrybark oak, yellow-poplar, and loblolly pine. The frequent flooding and the wetness limit the use of equipment and increase the seedling mortality rate.

The soils in this map unit are poorly suited to most urban uses because of the frequent flooding and the wetness.

4. Conecuh-Luverne

Gently sloping to strongly sloping, moderately well drained and well drained soils that have a loamy surface layer and a clayey subsoil; formed in clayey sediments overlying shale and in stratified clayey and loamy sediments

The landscape generally has varied relief in areas of this map unit. It is dominated by narrow to broad, nearly level and gently sloping ridgetops and strongly sloping side slopes on uplands. Narrow flood plains border incised intermittent and perennial streams. The landscape is dissected by a well-defined, branching drainage system. Slopes are dominantly 1 to 8 percent but range from 1 to 15 percent. The natural vegetation consists of pines and mixed hardwoods.

This map unit makes up about 22 percent of the county. It is about 65 percent Conecuh soils, 20 percent Luverne soils, and 15 percent soils of minor extent.

The moderately well drained Conecuh soils are on the lower ridgetops and on the lower parts of side slopes. Typically, the surface layer is very dark grayish brown fine sandy loam. The subsoil is red silty clay in the upper part, red clay that has grayish mottles in the next part, and mottled grayish, reddish, and brownish silty clay in the lower part. The substratum is light olive brown silty clay that has reddish and grayish mottles in the upper part and olive silty clay loam that has yellowish and grayish mottles in the lower part.

The well drained Luverne soils are on the higher ridgetops and on the more strongly sloping positions on side slopes. Typically, the surface layer is dark brown sandy loam. The subsurface layer is light yellowish brown loamy fine sand. The subsoil is yellowish red clay in the upper part and red sandy clay that has brownish and grayish mottles in the lower part. The substratum is stratified sandy clay loam and sandy loam.

Of minor extent in this map unit are Kinston, Springhill, and Troup soils. The poorly drained Kinston soils are on narrow flood plains. Springhill soils are in slightly higher positions than the Luverne soils and are loamy throughout. Troup soils are on high ridgetops and have thick sandy surface and subsurface layers.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for cultivated crops, pasture, or hay.

The soils in this map unit are poorly suited to most cultivated crops and are well suited to pasture and hay. Erosion is the main management concern. Applications of lime and fertilizer are needed for crops and pasture plants. Conservation tillage, terraces, grassed waterways, cover crops, and contour farming are necessary to maintain productivity and control erosion.

The soils in this map unit are well suited to woodland. The potential productivity of loblolly pine is very high. Common trees include loblolly pine, longleaf pine, shortleaf pine, sweetgum, and water oak. The low strength of the clayey subsoil restricts the use of equipment when the soils are wet. Erosion is a hazard along logging roads, landings, and skid trails.

The soils in this map unit are poorly suited to most urban uses. The main management concerns are the very slow permeability and high shrink-swell potential

in the Conecuh soils and the moderately slow permeability and moderate shrink-swell potential in the Luverne soils. In some areas the slope is a management concern.

5. Hannon

Nearly level to strongly sloping, moderately well drained soils that have a clayey surface layer and a clayey subsoil; formed in clayey sediments and the underlying soft limestone (chalk) or alkaline clay

The landscape generally has slight to moderate relief in areas of this map unit. It is dominated by broad, nearly level and gently sloping ridgetops and gently sloping and moderately sloping side slopes on uplands. Narrow flood plains border incised, mostly intermittent streams. Slopes are generally long and smooth, and they range from 1 to 15 percent. The natural vegetation consists of pines and mixed hardwoods.

This map unit makes up about 2 percent of the county. It is about 85 percent Hannon soils and 15 percent soils of minor extent.

Typically, the surface layer of the Hannon soils is dark brown clay. The upper part of the subsoil is red clay that has brownish and grayish mottles. The lower part of the subsoil is light olive brown and olive clay and silty clay that has masses of calcium carbonate.

Of minor extent in this map unit are Conecuh, Luverne, Sumter, and Urbo soils. Conecuh and Luverne soils are in positions similar to those of the Hannon soils but are at higher elevations. They do not have alkaline materials within the profile. Sumter soils are in lower positions than those of the Hannon soils and are alkaline throughout. The somewhat poorly drained Urbo soils are on narrow flood plains and are frequently flooded.

Most areas of this map unit are used for pasture or hay. A few large areas are used for woodland and wildlife habitat.

The soils in this map unit are poorly suited to cultivated crops and are well suited to pasture and hay. Erosion and poor tilth are the main management concerns. Applications of lime and fertilizer are needed for crops and pasture plants. Conservation tillage, grassed waterways, cover crops, and contour farming are necessary to maintain productivity and minimize erosion.

The soils in this map unit are well suited to woodland. The potential productivity of loblolly pine is high. Common trees include loblolly pine, longleaf pine, sweetgum, water oak, and post oak. The low strength of the clayey surface layer restricts the use of equipment when the soils are wet. Erosion is a hazard along logging roads, landings, and skid trails.

The soils in this map unit are poorly suited to most urban uses. The main limitations are the very slow permeability and the high shrink-swell potential. In some areas the slope is a management concern.

6. Springhill-Troup-Luverne

Gently sloping to moderately steep, well drained and somewhat excessively drained soils that have a loamy or sandy surface layer and a clayey or loamy subsoil; formed in loamy, clayey, and sandy sediments

The landscape generally has varied relief in areas of this map unit. It is dominated by narrow to broad, gently sloping ridgetops and strongly sloping and moderately steep side slopes on uplands. Narrow flood plains border incised, intermittent and perennial streams. The landscape is dissected by a well-defined, branching drainage system. Slopes are short and complex, and they range from 0 to 30 percent. The natural vegetation consists of pines and mixed hardwoods.

This map unit makes up about 40 percent of the county. It is about 30 percent Springhill soils, 25 percent Luverne soils, 20 percent Troup soils, and 25 percent soils of minor extent.

The well drained Springhill soils are on the middle and upper parts of side slopes and on narrow ridgetops. Typically, the surface layer is dark brown loamy sand. The subsurface layer is brown loamy sand. The subsoil is red sandy clay loam in the upper part and yellowish red sandy clay loam in the lower part.

The somewhat excessively drained Troup soils are on narrow ridgetops and on the upper parts of side slopes. Typically, the surface layer is brown loamy fine sand. The subsurface layer is pale brown loamy sand in the upper part and very pale brown loamy sand in the lower part. The subsoil is red sandy loam.

The well drained Luverne soils are on the lower parts of side slopes and on narrow ridgetops. Typically, the surface layer is dark brown sandy loam. The subsurface layer is light yellowish brown sandy loam. The subsoil is yellowish red clay in the upper part and red clay that has brownish and grayish mottles in the lower part. The substratum is mottled reddish, brownish, and grayish sandy clay loam.

Of minor extent in this map unit are Alaga, Conecuh, Cowarts, Fuquay, and Kinston soils. Alaga and Fuquay soils are in positions similar to those of the Troup soils. Alaga soils are sandy to a depth of 80 inches or more. Fuquay soils are sandy to a depth of

20 to 40 inches. Conecuh soils are on lower parts of side slopes than the major soils and have smectitic clay mineralogy. Cowarts soils are in positions similar to those of the Springhill soils, do not have thick sandy surface and subsurface layers, and have a brownish subsoil. The poorly drained Kinston soils are on narrow flood plains and are subject to frequent flooding.

Most areas of this map unit are used for woodland. Areas that are used for cultivated crops, pasture, or hay or as sites for homes are scattered throughout the map unit, mainly on the broad ridgetops.

The soils in this map unit are poorly suited to cultivated crops and are suited to pasture and hay. Low fertility, complex slopes, and droughtiness are the main limitations. Erosion is a hazard if the soils are tilled. Applications of lime and fertilizer are needed for crops and pasture plants. Conservation tillage, terraces, grassed waterways, cover crops, and contour farming help to maintain productivity and control erosion.

The soils in this map unit are well suited to woodland. The potential productivity of loblolly pine is high. Common trees include loblolly pine, longleaf pine, shortleaf pine, southern red oak, sweetgum, and water oak. The slope limits the use of logging equipment in the steeper areas. Erosion is a hazard along logging roads, landings, and skid trails. In areas of the Troup soils, the sandy texture restricts the use of wheeled equipment, especially when the soils are very dry, and droughtiness increases the seedling mortality rate.

The soils in this map unit are poorly suited to most urban uses. The slope is a limitation affecting most urban uses in some areas. The moderately slow permeability and moderate shrink-swell potential in areas of the Luverne soils are management concerns.

7. Sumter-Hannon

Gently sloping to moderately steep, well drained and moderately well drained soils that have a clayey surface layer and a clayey subsoil; formed in clayey sediments and the underlying soft limestone (chalk)

The landscape generally has varied relief in areas of this map unit. It is dominated by narrow, gently sloping ridgetops and strongly sloping and moderately steep side slopes on uplands in the northwestern part of the county. Narrow flood plains border incised, mostly intermittent streams. Slopes are generally short and complex, and they range from 5 to 25 percent. The natural vegetation consists of eastern redcedar in areas of the Sumter soils and loblolly pine and mixed hardwoods in areas of the Hannon soils.

This map unit makes up about 1 percent of the county. It is about 45 percent Sumter soils, 35 percent Hannon soils, and 20 percent soils of minor extent.

The moderately deep, well drained Sumter soils are on side slopes. Typically, the surface layer is very dark grayish brown silty clay loam. The subsoil is pale olive silty clay loam in the upper part and light olive brown silty clay loam that has brownish mottles in the lower part. The substratum is stratified soft limestone (chalk), marl, and fossil oyster shell.

The very deep, moderately well drained Hannon soils are on narrow ridgetops and on the upper parts of side slopes. Typically, the surface layer is dark brown clay. The upper part of the subsoil is red clay that has brownish and grayish mottles. The lower part of the subsoil is light olive brown and olive clay and silty clay that has masses of calcium carbonate.

Of minor extent in this map unit are Conecuh, Luverne, and Urbo soils. Conecuh and Luverne soils are in positions similar to those of the Hannon soils but are at higher elevations. They do not have alkaline materials within the profile. The somewhat poorly drained Urbo soils are on narrow flood plains and are frequently flooded.

Most areas of this unit are used for woodland and wildlife habitat. A few small areas are used for pasture.

The soils in this map unit are poorly suited to cultivated crops, pasture, and hay. The complex slopes, poor tilth, and the severe hazard of erosion are the main management concerns.

The soils in this map unit are suited to woodland. The potential productivity of loblolly pine is high in areas of the Hannon soils. Because they are alkaline throughout, the Sumter soils are not suited to pine trees. Common trees include loblolly pine, longleaf pine, shortleaf pine, eastern redcedar, water oak, and sweetgum. The slope and clayey textures limit the use of logging equipment in the steeper areas. Erosion is a hazard along logging roads, landings, and skid trails.

The soils in this map unit are poorly suited to most urban uses. The very slow permeability, the shrink-swell potential, and the slope are management concerns.

8. Cowarts-Uchee-Marvyn

Gently sloping to strongly sloping, well drained soils that have a loamy or sandy surface layer and a loamy subsoil; formed in loamy and sandy sediments

The landscape generally has slight to moderate relief in areas of this map unit. It is dominated by narrow to broad, gently sloping ridgetops and strongly sloping side slopes on uplands in the northern part of the county. Narrow flood plains border incised,

intermittent and perennial streams. The landscape is dissected by a well-defined, branching drainage system. Slopes range from 0 to 15 percent. The natural vegetation consists of pines and mixed hardwoods.

This unit makes up about 10 percent of the county. It is about 30 percent Cowarts soils, 30 percent Uchee soils, 15 percent Marvyn and similar soils, and 25 percent soils of minor extent.

The Cowarts soils are on narrow ridgetops and on side slopes. Typically, the surface layer is brown loamy sand. The subsoil is yellowish brown sandy clay loam in the upper part and brownish yellow sandy clay loam that has reddish mottles in the lower part. The substratum is mottled brownish, reddish, and grayish sandy clay loam.

The Uchee soils are on narrow to broad ridgetops and on the upper parts of side slopes. Typically, the surface layer is dark grayish brown loamy sand. The subsurface layer is yellowish brown loamy sand in the upper part and light yellowish brown loamy sand in the lower part. The subsoil is yellowish brown sandy loam in the upper part and yellowish brown sandy clay loam that has brownish and grayish mottles in the lower part. The substratum is mottled brownish, reddish, and grayish sandy clay loam.

The Marvyn soils are on broad ridgetops at higher elevations. Typically, the surface layer is dark brown loamy sand. The subsoil is yellowish brown sandy loam in the upper part, yellowish brown sandy clay loam in the next part, and yellowish brown sandy loam in the lower part. The substratum is mottled brownish, grayish, and reddish sandy loam.

Of minor extent in this map unit are Blanton, Kinston, Luverne, Orangeburg, and Springhill soils. Blanton soils are in positions similar to those of the Uchee soils. They have sandy surface and subsurface layers that have a combined thickness of more than 40 inches. The poorly drained Kinston soils are on narrow flood plains. Orangeburg soils are on high ridgetops. They have a reddish subsoil and do not have thick sandy surface and subsurface layers. Luverne and Springhill soils are in positions similar to those of the Cowarts soils. Luverne soils have a clayey subsoil. Springhill soils have a reddish subsoil and do not have thick sandy surface and subsurface layers.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for woodland. Corn, cotton, soybeans, peanuts, and wheat are the main crops.

The soils in this map unit are suited to cultivated crops and are well suited to pasture and hay. Low fertility, droughtiness, and erosion are the main management concerns. Applications of lime and fertilizer are needed for crops and pasture plants. Conservation tillage, terraces, grassed waterways, cover crops, and contour farming are necessary to maintain productivity and minimize erosion.

The soils in this map unit are well suited to woodland. The potential productivity of loblolly pine is high. Common trees include loblolly pine, longleaf pine, shortleaf pine, southern red oak, water oak, and sweetgum. The soils in this unit have few limitations affecting woodland.

The soils in this map unit are suited to most urban uses. The moderately slow permeability is a management concern. The slope is a management concern in the steeper areas.

9. Dothan-Fuquay-Orangeburg

Nearly level and gently sloping, well drained soils that have a loamy or sandy surface layer and a loamy subsoil; formed in loamy and sandy sediments

The landscape generally has slight to moderate relief in areas of this map unit. It consists of gently rolling uplands that have gentle side slopes, broad flats, and broad, convex ridgetops. It is dissected by a well-defined, branching drainage system. Slopes are long and smooth, and they range from 0 to 5 percent. The natural vegetation consists of pines and mixed hardwoods.

This unit makes up about 6 percent of the county. It is about 40 percent Dothan soils, 25 percent Fuquay soils, 15 percent Orangeburg soils, and 20 percent soils of minor extent.

The Dothan soils are on broad, nearly level ridgetops and on gently sloping side slopes. Typically, the surface layer is dark brown fine sandy loam. The subsoil is brownish yellow and yellowish brown sandy clay loam in the upper part, yellowish brown sandy clay loam that has masses of plinthite in the next part, and mottled brownish, reddish, and grayish sandy clay loam in the lower part.

The Fuquay soils are on broad, nearly level and gently sloping ridgetops. Typically, the surface layer is brown loamy fine sand. The subsurface layer is light yellowish brown loamy sand in the upper part and very pale brown loamy fine sand in the lower part. The subsoil is yellowish brown sandy clay loam in the upper part and yellowish brown sandy clay loam that has reddish mottles and masses of plinthite in the lower part.

The Orangeburg soils are on the slightly higher, narrow to broad ridgetops. Typically, the surface layer is dark brown fine sandy loam. The subsurface layer is

brown sandy loam. The subsoil is sandy clay loam. It is yellowish red in the upper part and red in the lower part.

Of minor extent in this map unit are Kinston, Luverne, Springhill, and Troup soils. The poorly drained Kinston soils are on narrow flood plains. Luverne and Springhill soils are on side slopes. Luverne soils are clayey in the upper part of the subsoil. Springhill soils have a reddish subsoil and do not have thick sandy surface and subsurface layers. Troup soils are on the higher parts of ridgetops and have sandy surface and subsurface layers that have a combined thickness of more than 40 inches.

Most areas of this map unit are used for cultivated crops, pasture, or hay. Scattered areas are used as sites for homes. A few areas on the strongly sloping side slopes along drainageways and on narrow flood plains are used as woodland.

The soils in this map unit are well suited to cultivated crops, pasture, and hay. The low fertility, the hazard of erosion, and the droughtiness in areas of the Fuquay soils are the main management concerns. Applications of lime and fertilizer are needed for crops and pasture plants. Conservation tillage, terraces, grassed waterways, cover crops, and contour farming help to maintain productivity and control erosion.

The soils in this map unit are well suited to woodland. The potential productivity of loblolly pine is high. Common trees include loblolly pine, longleaf pine, shortleaf pine, southern red oak, water oak, sweetgum, and hickory. The soils in this unit have few limitations affecting woodland.

The soils in this map unit are well suited to most urban uses. The moderately slow permeability and the seasonal high water table are management concerns in areas of the Dothan and Fuquay soils.

Detailed Soil Map Units

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

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some "included" areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Hannon clay loam, 1 to 3 percent slopes, is a phase of the Hannon series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Uchee-Cowarts complex, 5 to 15 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Kinston, Mantachie, and Iuka soils, 0 to 1 percent slopes, frequently flooded, is an undifferentiated group in this survey area.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Urban land is an example.

Table 5 gives the acreage and proportionate extent of each map unit. Other tables (see "Table of Contents") give properties of the soils and the limitations, capabilities, and potentials for many uses. The "Glossary" defines many of the terms used in describing the soils or miscellaneous areas.

Soil Descriptions

AnA—Annemaine fine sandy loam, 0 to 2 percent slopes, rarely flooded

This very deep, moderately well drained soil is on stream terraces along the Chattahoochee River and other large streams. Flooding is rare but can occur under unusual weather conditions. Slopes are long and smooth. Individual areas generally are oblong. They range from 10 to about 100 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 4 inches thick. The subsoil, to a depth of 42 inches, is yellowish red clay. It has red and light yellowish brown mottles in the upper part and light brownish gray and yellowish brown mottles in the lower part. The substratum, to a depth of 65 inches, is yellowish brown fine sandy loam that has light gray mottles.

Important properties of the Annemaine soil—

Permeability: Slow
Available water capacity: High
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 1.5 to 2.5 feet from January through March
Shrink-swell potential: Moderate
Flooding: Rare

Included in mapping are a few small areas of Kinston, Maxton, and Wickham soils. The poorly drained Kinston soils are on narrow flood plains or in small depressions. The well drained Maxton and Wickham soils are in slightly higher, more convex positions than those of the Annemaine soil and are loamy throughout. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used as pasture, hayland, or woodland. A few areas are used for cultivated crops.

This map unit is well suited to cultivated crops. The main management concerns are wetness and the low fertility. Shallow ditches can help to remove excess surface water. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay plants, such as bermudagrass and bahiagrass. Wetness is a moderate limitation. Shallow ditches can help to remove excess surface water. Restricting grazing during very wet periods or deferring grazing until the ground is dry helps to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include yellow-poplar, sweetgum, American sycamore, water oak, and cherrybark oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of blackberry, greenbrier, panicums, longleaf uniola, poison ivy, Alabama supplejack, muscadine grape, sweetgum, and water oak.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation and plant competition. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting activities should be planned for seasons when the soil is dry. Plant competition reduces timber production and can prevent adequate reforestation. The competing vegetation can be controlled by site preparation, applications of herbicides, or prescribed burning.

This map unit is poorly suited to most urban uses. The main management concerns are the flooding,

wetness, and the slow permeability. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat for white-tailed deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIw. The woodland ordination symbol is 9W.

BdA—Bladen fine sandy loam, 0 to 1 percent slopes, occasionally flooded

This very deep, poorly drained soil is on low terraces adjacent to major streams throughout the county. It is subject to occasional flooding, usually in late winter and early spring. Most mapped areas are long and narrow, but some are broad. Individual areas range from 5 to 30 acres in size.

Typically, the surface layer is very dark grayish brown fine sandy loam about 3 inches thick. The subsurface layer, to a depth of 14 inches, is dark gray fine sandy loam. The subsoil, to a depth of 65 inches, is clay. In the upper part, it is light brownish gray and light grayish brown and has mottles in shades of brown and red. In the lower part, it is gray and has mottles in shades of yellow, red, and brown.

Important properties of the Bladen soil—

Permeability: Slow
Available water capacity: High
Organic matter content: Medium
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at the surface to a depth of 1.0 foot from December through May
Shrink-swell potential: Moderate
Flooding: Occasional

Included in this map unit are a few small areas of Goldsboro, Lynchburg, Ocilla, and Wahee soils. These soils are in slightly higher, more convex positions than those of the Bladen soil. Goldsboro soils are moderately well drained and have a loamy subsoil. Lynchburg soils are somewhat poorly drained and have a loamy subsoil. Ocilla soils have thick sandy surface and subsurface layers. Wahee soils are somewhat poorly drained. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few small areas are used for cultivated crops or pasture.

This map unit is poorly suited to cultivated crops, pasture, and hay. Wetness and the occasional flooding are the main management concerns. If cultivated crops are grown, a surface drainage system and protection from flooding are needed. If areas are used for pasture or hay, grasses that tolerate wet soil conditions should be selected. Common bermudagrass is suitable.

This map unit is suited to loblolly pine and hardwoods. Other species that commonly grow in areas of this map unit include sweetgum, water oak, and green ash. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of red maple, water oak, green ash, sweetgum, panicums, sweetbay, greenbrier, blackberry, Alabama supplejack, ironwood, and longleaf uniola.

This map unit has severe limitations affecting timber management. The main management concerns are an equipment limitation, the seedling mortality rate, and plant competition. The seasonal high water table and the flooding restrict the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. The high seedling mortality rate is caused by excessive wetness. It can be reduced by planting on beds, or it can be compensated for by increasing the number of trees planted. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are wetness, the slow permeability, and the occasional flooding. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding.

This map unit has fair potential for openland and woodland wildlife habitat and good potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of

desirable plants. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide areas of open water for waterfowl and furbearing animals.

The capability subclass is IVw. The woodland ordination symbol is 8W.

BeA—Bladen loam, 0 to 1 percent slopes, ponded

This very deep, poorly drained soil is in shallow depressions on low terraces. Slopes are smooth and concave. Most areas are subject to shallow ponding for several months in most years. Individual areas vary in shape from circular to long and narrow. They range from 5 to 50 acres in size.

Typically, the surface layer is very dark grayish brown loam about 3 inches thick. The subsoil, to a depth of 65 inches, is clay. In the upper part, it is dark gray and has yellowish brown mottles. In the lower part, it is grayish brown and has light olive brown mottles.

Important properties of the Bladen soil—

Permeability: Slow
Available water capacity: High
Organic matter content: Medium
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, from 1.0 foot above the surface to a depth of 1.0 foot from December through May
Shrink-swell potential: Moderate
Flooding: None

Included in mapping are a few small areas of Dogue and Wahee soils. The moderately well drained Dogue soils and the somewhat poorly drained Wahee soils are in slightly higher positions than those of the Bladen soil and are not subject to ponding. Included soils make up about 5 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat.

This map unit is not suited to cultivated crops, pasture, or hay. Wetness and the ponding are severe limitations affecting these uses.

This map unit is suited to loblolly pine and hardwoods. Other species that commonly grow in areas of this map unit include blackgum, red maple, sweetgum, green ash, baldcypress, and water tupelo. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of sweetbay, red maple, water oak, sweetgum, greenbrier, switchcane, and Alabama supplejack.

This map unit has severe limitations affecting timber management. The main management concerns are an equipment limitation, the seedling mortality rate, and plant competition. The seasonal high water table and the ponding restrict the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. The high seedling mortality rate is caused by excessive wetness. It can be compensated for by planting on beds or increasing the number of trees planted. Plant competition can prevent adequate natural or artificial reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is not suited to most urban uses. The ponding and wetness are severe limitations affecting most uses. Buildings and roads should be constructed on well-compacted fill to elevate them above the expected level of ponding.

This map unit has poor potential for openland and woodland wildlife habitat and good potential for wetland wildlife habitat. Habitat for openland and woodland wildlife can be improved by planting appropriate vegetation, maintaining the existing plant cover, and promoting the establishment of desirable plants. Habitat for wetland wildlife can be improved by providing more areas of open water for waterfowl and furbearing animals and by planting mast-producing trees.

The capability subclass is VIw. The woodland ordination symbol is 8W.

BnB—Blanton loamy sand, 0 to 5 percent slopes

This very deep, moderately well drained soil is on broad ridgetops in the uplands in the northern part of the county. Slopes generally are long and smooth. Individual areas are irregular in shape and range from 5 to more than 100 acres in size.

Typically, the surface layer is very dark grayish brown loamy sand about 7 inches thick. The subsurface layer, to a depth of 42 inches, is loamy sand. It is yellowish brown in the upper part, light yellowish brown in the next part, and very pale brown

in the lower part. The subsoil extends to a depth of 65 inches. In the upper part, it is yellowish brown sandy loam. In the lower part, it is mottled yellowish brown, gray, and brownish yellow sandy clay loam.

Important properties of the Blanton soil—

Permeability: Rapid in the surface layer and subsurface layer; moderately slow in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Very low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Shrink-swell potential: Low
Seasonal high water table: Perched, at a depth of 4.0 to 6.0 feet from January through March
Flooding: None

Included in mapping are a few small areas of Cowarts, Dothan, and Uchee soils. Cowarts and Dothan soils are in lower positions than those of the Blanton soil and do not have thick sandy surface and subsurface layers. Uchee soils are in positions similar to those of the Blanton soil and have sandy surface and subsurface layers that have a combined thickness of 20 to 40 inches. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for cultivated crops, pasture, or hay.

This map unit is suited to cultivated crops. The main management concerns are the low available water capacity, the very low fertility, and a moderate hazard of erosion. Irrigation can prevent crop damage and increase productivity in most years. Returning crop residue to the soil helps to maintain tilth and increases the available water capacity. Minimum tillage, contour farming, and cover crops reduce the runoff rate and help to control erosion. Most crops respond well to applications of lime and to frequent, light applications of fertilizer.

This map unit is well suited to pasture and hay plants, such as coastal bermudagrass and bahiagrass. The main management concerns are the low available water capacity and the very low fertility. Leaching of plant nutrients is also a management concern. Frequent, light applications of nitrogen are necessary to maintain the productivity of grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged dry periods or deferring grazing until the ground is dry help to keep the pasture in good condition.

This map unit is suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, and southern red oak. On the basis of a 50-year site curve, the site index is 80 for loblolly pine. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 1.8 cords per acre per year. The understory vegetation consists mainly of little bluestem, longleaf uniola, lespedeza, common persimmon, pricklypear cactus, brackenfern, flowering dogwood, and blackjack oak.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation, the moderate seedling mortality rate, and plant competition. The sandy texture restricts the use of wheeled equipment, especially when the soils are very dry. Harvesting activities should be planned for seasons when the soil is moist. The moderate seedling mortality rate is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition reduces timber production and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed burning.

This map unit is suited to most urban uses. It has slight to moderate limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the sandy texture, wetness, the very low fertility, and droughtiness. Cutbanks are unstable and subject to slumping. Support beams should be used to maintain the stability of the cutbanks. If this unit is used as a site for septic tank absorption fields, effluent can surface in downslope areas and create a health hazard. Increasing the length of the absorption lines helps to overcome this concern. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants.

This map unit has fair potential for openland wildlife habitat, poor potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat. The low available water capacity and the very low natural fertility are limitations. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIIs. The woodland ordination symbol is 8S.

CnB—Conecuh fine sandy loam, 1 to 3 percent slopes

This very deep, moderately well drained soil is on broad ridgetops in the uplands in the west-central and central parts of the county. Slopes generally are long and smooth. Individual areas are irregular in shape. They range from 10 to 200 acres in size.

Typically, the surface layer is very dark grayish brown fine sandy loam about 3 inches thick. The subsoil extends to a depth of 55 inches. It is red silty clay in the upper part, red clay that has light brownish gray mottles in the next part, and mottled grayish, reddish, and brownish silty clay in the lower part. The substratum extends to a depth of 80 inches. In the upper part, it is light olive brown silty clay that has red and grayish brown mottles. In the lower part, it is olive silty clay loam that has olive yellow and gray mottles.

Important properties of the Conecuh soil—

Permeability: Very slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: High
Flooding: None

Included in mapping are a few small areas of Luverne and Orangeburg soils. Luverne and Orangeburg soils are on slightly higher knolls than the Conecuh soil. Luverne soils have mixed clay mineralogy. Orangeburg soils are loamy throughout. Included soils make up about 15 percent of mapped areas. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for pasture and hay.

This map unit is suited to cultivated crops. The main management concerns are the low fertility, poor tilth, and a moderate hazard of erosion. Early-fall seeding, minimum tillage, terraces, diversions, grassed waterways, and cover crops help to control erosion. Tillage should be on the contour or across the slope. Maintaining crop residue on or near the surface helps to control runoff and maintain tilth and the content of organic matter. Most crops respond well to systematic applications of fertilizer and lime.

This map unit is well suited to pasture and hay. Bahiagrass and coastal bermudagrass are the main grasses grown in areas of this map unit. The main management concerns are the low fertility and a hazard of erosion. Seedbeds should be prepared on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition (fig. 3).

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, water oak, and sweetgum. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of muscadine grape, poison ivy, longleaf uniola, yellow jessamine, blackberry, panicums, huckleberry, sweetgum, water oak, and flowering dogwood.

This map unit has moderate or severe limitations affecting timber management. The main management concerns are an equipment limitation and plant competition. Low strength restricts the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the very slow permeability, the high shrink-swell potential, and low strength on sites for roads and streets. The instability of cutbanks is also a management concern. Support beams should be used to maintain the stability of the cutbanks. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Roads and streets should be designed to compensate for the low strength and instability of the subsoil. Septic tank absorption fields do not function properly during rainy periods because of the very slow permeability. An alternative method is needed to dispose of sewage properly.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of existing oak trees and suitable understory plants. Prescribed burning every three years, rotated among

Figure 3.—A well managed pasture of bahiagrass in an area of Conecuh fine sandy loam, 1 to 3 percent slopes. This pasture provides good quality forage for cattle.

several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIIe. The woodland ordination symbol is 9C.

CoC2—Conecuh loam, 3 to 8 percent slopes, eroded

This very deep, moderately well drained soil is on side slopes in the uplands. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In some places, all of the original surface layer has been removed. Some areas have a few rills and gullies. Slopes generally are long and smooth, but some are short and complex. Individual areas are irregular in shape. They range from 10 to 200 acres in size.

Typically, the surface layer is dark brown loam about 3 inches thick. The subsoil extends to a depth of 47 inches. It is yellowish red silty clay in the upper part, yellowish red clay that has grayish mottles in the next part, and mottled grayish, reddish, and brownish clay in the lower part. The substratum, to a depth of 65 inches, is olive brown silty clay and silty clay loam having brownish and grayish mottles.

Important properties of the Conecuh soil—

Permeability: Very slow
Available water capacity: Moderate
Organic matter content: Low

Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: High
Flooding: None

Included in mapping are a few small areas of Luverne, Kinston, and Hannon soils. Luverne soils are on slightly higher knolls or ridges than the Conecuh soil. They have mixed mineralogy. Hannon soils are on the lower parts of slopes. They are alkaline in the lower part of the subsoil and in the substratum. The poorly drained Kinston soils are in drainageways. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for cultivated crops, pasture, or hay.

This map unit is poorly suited to most cultivated crops. The main management concerns are the low fertility and a severe hazard of erosion. Early-fall seeding, minimum tillage, terraces, diversions, and grassed waterways help to control erosion. Tillage should be on the contour or across the slope. Maintaining crop residue on or near the surface helps to control runoff and maintain tilth and the content of organic matter. Most crops respond well to systematic applications of fertilizer and lime.

This map unit is well suited to pasture and hay. Bahiagrass and coastal bermudagrass are the main grasses grown in areas of this map unit. The main management concerns are the low fertility and a hazard of erosion. Seedbeds should be prepared on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of muscadine grape, poison ivy, yellow jessamine, flowering dogwood, longleaf uniola, panicums, sweetgum, and water oak.

This map unit generally has moderate limitations affecting timber management. The main management concerns are an equipment limitation and plant competition. Low strength restricts the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth. Exposing the surface by removing ground cover increases the hazard of erosion, including rill and gully erosion. Mulching, seeding, and constructing diversions can help to control erosion on roads, landings, and skid trails.

This map unit is poorly suited to most urban uses. It has moderate to severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the high shrink-swell potential, the very slow permeability, and low strength on sites for roads and streets. The instability of cutbanks is also a management concern. Support beams should be used to maintain the stability of the cutbanks. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Roads and streets should be designed to compensate for the low strength and instability of the subsoil. Septic tank absorption fields do not function properly because of the very slow permeability. An alternate method is needed to dispose of sewage properly.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for white-tailed deer, turkey, and squirrel can be improved by planting or encouraging the growth of existing oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide areas of open water for waterfowl and furbearers.

The capability subclass is IVe. The woodland ordination symbol is 9C.

CtB—Congaree-Toccoa complex, gently undulating, occasionally flooded

This map unit consists of very deep, well drained Congaree and Toccoa soils on the flood plain along the Chattahoochee River. These soils are subject to occasional flooding, usually in late winter and early spring. These soils occur as areas so intricately intermingled that they could not be mapped separately

at the scale selected for mapping. The Congaree and similar soils make up about 50 percent of the unit, and the Toccoa and similar soils make up about 35 percent. Slopes generally are short and complex. Individual areas are long and narrow. They range from 10 to 200 acres in size.

The Congaree soil is on low and intermediate parts of the flood plain. Typically, the surface layer is brown loam about 7 inches thick. The subsurface layer, to a depth of 14 inches, is dark brown loam. The substratum extends to a depth of 80 inches. It is brown loam in the upper part, brown fine sandy loam in the next part, and dark yellowish brown fine sandy loam that has pale brown mottles in the lower part.

Important properties of the Congaree soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 2.5 to 4.0 feet from December through April
Shrink-swell potential: Low
Flooding: Occasional

The Toccoa soil is on the slightly higher parts of the flood plain. Typically, the surface layer is dark brown fine sandy loam about 5 inches thick. The substratum extends to a depth of 65 inches. It is strong brown fine sandy loam in the upper part, yellowish brown fine sandy loam and strong brown loam in the next part, and light yellowish brown sandy loam in the lower part.

Important properties of the Toccoa soil—

Permeability: Moderately rapid
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 2.5 to 5.0 feet from December through April
Shrink-swell potential: Low
Flooding: Occasional

Included in mapping are a few small areas of Kinston, Kolomoki, Maxton, and Wickham soils. The poorly drained Kinston soils are in small depressions. Kolomoki, Maxton, and Wickham soils are on low knolls or on remnants of terraces at slightly higher elevations than the Congaree and Toccoa soils. They are not subject to the occasional flooding. The included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used as pasture or woodland. A few areas are used for cultivated crops or hay.

This map unit is suited to cultivated crops. The main management concern is the flooding. Although crops can be grown in most years, the flooding delays planting or damages crops in some years. Crops and drainage ditches may be damaged or destroyed due to scouring and deposition by fast-flowing floodwaters.

This map unit is suited to pasture and hay. The main management concern is the occasional flooding. Cattle and other livestock need to be moved to higher areas during periods of flooding. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This map unit is well suited to loblolly pine and hardwoods. Other species that commonly grow in areas of this map unit include eastern cottonwood, sweetgum, yellow-poplar, American sycamore, water oak, and green ash. On the basis of a 50-year site curve, the site index for loblolly pine is 100 in areas of the Congaree soil and 105 in areas of the Toccoa soil. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.7 cords per acre per year in areas of the Congaree soil and 2.9 cords per acre per year in areas of the Toccoa soil. The understory vegetation consists mainly of panicums, muscadine grape, Alabama supplejack, eastern cottonwood, green ash, American sycamore, sweetgum, and water oak.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation and plant competition. The seasonal high water table and the occasional flooding restrict the use of equipment to periods when the soils are dry. Using standard wheeled and tracked equipment when the soils are wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is not suited to most urban uses. The main management concern is the occasional flooding. Buildings can be constructed on pilings or well-compacted fill to elevate them above the expected level of flooding.

This map unit has good potential for openland and woodland wildlife habitat. Potential for wetland wildlife habitat is fair in areas of the Congaree soil and very

poor in areas of the Toccoa soil. Habitat for openland and woodland wildlife can be improved by planting or encouraging the growth of existing oak trees and suitable understory plants. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide areas of open water for waterfowl and furbearing animals.

The capability subclass is IIw. The woodland ordination symbol is 11A in areas of the Congaree soil and 12A in areas of the Toccoa soil.

CwB—Cowarts loamy sand, 2 to 5 percent slopes

This very deep, well drained soil is on narrow ridgetops and on side slopes in the uplands in the northern part of the county. Slopes generally are short and complex, but may be long and smooth in some areas. Individual areas are irregular in shape. They range from 10 to 200 acres in size.

Typically, the surface layer is brown loamy sand about 6 inches thick. The subsoil, to a depth of 28 inches, is sandy clay loam. It is yellowish brown in the upper part and is brownish yellow and has yellowish red mottles in the lower part. The substratum, to a depth of 60 inches, is mottled yellowish brown, red, and gray sandy clay loam. In some areas the surface layer is sandy loam.

Important properties of the Cowarts soil—

Permeability: Slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Blanton, Luverne, Marvyn, Springhill, and Uchee soils. Also included are soils that have a slope of less than 2 percent or more than 5 percent. Blanton and Uchee soils are on slightly higher parts of ridgetops than the Cowarts soil and have thick sandy surface and subsurface layers. Luverne soils are on lower parts of slopes and are clayey in the upper part of the subsoil. Marvyn and Springhill soils are in landscape positions similar to those of the Cowarts soil. The combined thickness of the surface layer and subsoil in the Marvyn soils is more than 40 inches. Springhill soils have a reddish subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used as pastureland, hayland, or woodland. A few areas are used for cultivated crops.

This map unit is well suited to cultivated crops. The main management concerns are the low fertility and a moderate hazard of erosion. Gullies form readily in areas that have a concentrated flow of water on the surface. Conservation tillage, terraces, contour farming, and cover crops reduce the runoff rate and help to control erosion. Installing drop-inlet structures in grassed waterways helps to prevent gullying. Returning all crop residue to the soil or regularly adding other organic matter improves fertility and helps to maintain tilth and the content of organic matter. Most crops respond well to additions of lime and fertilizer.

This map unit is well suited to pasture and hay plants, such as coastal bermudagrass and bahiagrass. The main management concerns are the low fertility and a moderate hazard of erosion. Tillage should be on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet and dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of little bluestem, greenbrier, panicums, brackenfern, southern red oak, blackjack oak, water oak, and flowering dogwood.

This map unit has few limitations affecting woodland management. Competition from understory plants is a minor management concern. Carefully managed reforestation helps to control this competition. Site preparation practices, such as chopping, burning, and applying herbicides, help to control the initial plant competition and facilitate mechanical planting.

This map unit is suited to most urban uses. It has slight limitations affecting building sites and local roads and streets and has slight to severe limitations affecting most kinds of sanitary facilities. The main management concern is the slow permeability. Septic tank absorption fields do not function properly because of the slow permeability. Enlarging the size of the absorption area helps to overcome this limitation.

This map unit has good potential for openland and

woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIe. The woodland ordination symbol is 8A.

DgA—Dogue fine sandy loam, 0 to 2 percent slopes, rarely flooded

This very deep, moderately well drained soil is on stream terraces along major streams throughout the county. Flooding is rare but can occur under unusual weather conditions. Slopes are long and smooth. Individual areas generally are oblong. They range from 5 to about 200 acres in size.

Typically, the surface layer is dark brown and brown fine sandy loam about 11 inches thick. The subsoil extends to a depth of 52 inches. It is strong brown clay in the upper part, yellowish brown clay that has light brownish gray mottles in the next part, and yellowish brown sandy clay loam that has light brownish gray mottles in the lower part. The substratum, to a depth of 70 inches, is light brownish gray loam that has brownish and reddish mottles.

Important properties of the Dogue soil—

Permeability: Slow
Available water capacity: High
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 1.5 to 3.0 feet from January through March
Shrink-swell potential: Moderate
Flooding: Rare

Included in mapping are a few small areas of Bladen, Goldsboro, Lynchburg, Ocilla, and Wahee soils. The poorly drained Bladen soils are on narrow flood plains and in small depressions. Goldsboro and Ocilla soils are in slightly higher, more convex positions than those of the Dogue soil. Goldsboro soils are loamy throughout. Ocilla soils have thick sandy surface and subsurface layers. The somewhat poorly drained Lynchburg and Wahee soils are in slightly lower positions than those of the Dogue soil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops or woodland. A few areas are used for pasture and hay.

This map unit is well suited to cultivated crops. The main management concerns are wetness and the low fertility. Shallow ditches can help to remove excess surface water. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay plants, such as bermudagrass and bahiagrass. Wetness is a moderate limitation. Shallow ditches can help to remove excess surface water. Restricting grazing during very wet periods or deferring grazing until the ground is dry helps to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include yellow-poplar, sweetgum, American sycamore, water oak, and cherrybark oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of blackberry, greenbrier, panicums, longleaf uniola, poison ivy, Alabama supplejack, muscadine grape, sweetgum, and water oak.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation and plant competition. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting activities should be planned for seasons when the soil is dry. Plant competition reduces timber production and can prevent adequate reforestation. The competing vegetation can be controlled by site preparation, applications of herbicides, or prescribed burning.

This map unit is poorly suited to most urban uses. The main management concerns are the flooding, wetness, and the slow permeability. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat for white-tailed deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or

promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIw. The woodland ordination symbol is 9W.

DoA—Dothan fine sandy loam, 0 to 2 percent slopes

This very deep, well drained soil is on broad ridgetops in the uplands in the northern and eastern parts of the county. Slopes generally are long and smooth. Individual areas generally are oblong. They range from 5 to more than 100 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 6 inches thick. The subsoil, to a depth of 65 inches, is sandy clay loam. It is brownish yellow and yellowish brown in the upper part, yellowish brown and has reddish masses of plinthite in the next part, and mottled strong brown, yellowish brown, dark red, and gray in the lower part. The content of nodular plinthite in the lower part of the subsoil is about 10 percent.

Important properties of the Dothan soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched, at a depth of 3.0 to 5.0 feet from January through March
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Cowarts, Fuquay, and Orangeburg soils. Cowarts and Fuquay soils are in lower positions than those of the Dothan soil. Cowarts soils do not have a significant content of plinthite in the subsoil. Fuquay soils have thick sandy surface and subsurface layers. Orangeburg soils are on slightly higher knolls than the Dothan soil or are on more convex slopes. They have a reddish subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of map unit soil are used for cultivated crops, pasture, or hay. A few areas are used as sites for homes, and a few areas are used for woodland.

This map unit is well suited to cultivated crops (fig. 4). It has few limitations affecting this use. Peanuts and corn are the most common crops and generally are grown in rotation. Tillage should be on the contour or across the slope. Maintaining crop residue on or near the surface helps to control runoff and maintains tilth and the content of organic matter. Most crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. It has few limitations affecting these uses. Coastal bermudagrass and bahiagrass are the main grasses grown in areas of this map unit. Applications of lime and fertilizer improve fertility and increase the production of forage and hay. Proper stocking rates, pasture rotation, and restricted grazing during very wet or dry periods help to keep the pasture in good condition.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of little bluestem, yellow jessamine, panicums, flowering dogwood, southern red oak, and huckleberry.

This map unit has few limitations affecting the production of timber. Soil compaction and plant competition are minor management concerns. Harvesting during the drier periods helps to prevent compaction. Using proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, and trees.

This map unit is well suited to most urban uses. It has slight or moderate limitations affecting building sites and local roads and streets and has moderate or severe limitations affecting most kinds of sanitary facilities. The main management concerns are wetness and the moderately slow permeability. A subsurface drainage system can reduce the wetness. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the moderately slow permeability. Enlarging the size of the absorption field helps to overcome these limitations.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for

Figure 4.—Peanuts in an area of Dothan fine sandy loam, 0 to 2 percent slopes. This soil has few limitations affecting cultivated crops, pasture, or hay.

quail and turkey. Leaving undisturbed areas of vegetation around cropland and pasture improves habitat for openland wildlife by providing food and rest areas.

The capability class is I. The woodland ordination symbol is 9A.

DoB—Dothan fine sandy loam, 2 to 5 percent slopes

This very deep, well drained soil is on side slopes in the uplands in the northern and eastern parts of the county. Slopes generally are short and smooth. Most areas are long and narrow in shape. They range from 5 to more than 150 acres in size.

Typically, the surface layer is brown fine sandy loam about 5 inches thick. The subsoil, to a depth of 65 inches, is sandy clay loam. It is yellowish brown in the upper part, yellowish brown and has reddish masses of plinthite in the next part, and mottled brownish, reddish, and grayish in the lower part.

Important properties of the Dothan soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low

Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched, at a depth of 3.0 to 5.0 feet from January through March
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Cowarts, Fuquay, and Orangeburg soils. Cowarts soils are in positions similar to those of the Dothan soil. They do not have significant accumulations of plinthite in the lower part of the subsoil. Fuquay soils are on the upper parts of slopes and have thick sandy surface and subsurface layers. Orangeburg soils are on narrow ridges and have a reddish subsoil. Included soils make up about 15 percent of mapped areas. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops or pasture. A few small areas are used for woodland.

This map unit is well suited to cultivated crops. The main management concerns are the low fertility and a moderate hazard of erosion. Gullies form readily in areas that have a concentrated flow of water on the surface. Conservation tillage, terraces, contour farming, and cover crops reduce the runoff rate and help to control erosion. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to additions of lime and fertilizer.

This map unit is well suited to pasture and hay plants, such as coastal bermudagrass and bahiagrass. The main management concerns are the low fertility and a moderate hazard of erosion. Seedbed preparation should be on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet and dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of little bluestem, greenbrier, yellow jessamine, panicums, sumac, sweetgum, southern red oak, and water oak.

This map unit has few limitations affecting woodland management. Competition from understory plants is a minor management concern. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicide, help to control the initial plant competition and facilitate mechanical planting.

This map unit is suited to most urban uses. It has moderate limitations affecting building sites, slight limitations affecting local roads and streets, and severe limitations affecting most sanitary facilities. The main management concerns are wetness and the moderately slow permeability. A subsurface drainage system can reduce the wetness. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the moderately slow permeability. Enlarging the size of the absorption field helps to overcome these limitations.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of existing oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Leaving undisturbed areas of vegetation around cropland and pasture improves habitat for openland wildlife by providing food and rest areas.

The capability subclass is IIe. The woodland ordination symbol is 9A.

FpA—Fluvaquents, ponded

These very deep, very poorly drained soils are in swales, sloughs, oxbows, beaver ponds, and other shallow depressions on flood plains along streams that drain the Coastal Plain. Slopes are smooth and concave. Most areas are subject to ponding for several months in most years. Individual areas vary in shape from circular to long and narrow. They range from 5 to 50 acres in size.

Important properties of the Fluvaquents—

Permeability: Slow
Available water capacity: High
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, from 2.0 feet above the surface to a depth of 1.0 foot from January through December
Shrink-swell potential: Low
Flooding: Frequent

Included in mapping are a few small areas of Kinston, Iuka, and Mantachie soils. The poorly drained Kinston soils are in positions similar to those of the Fluvaquents but are not subject to ponding. The somewhat poorly drained Mantachie soils and the moderately well drained Iuka soils are in slightly higher positions than those of the Fluvaquents. They are not subject to ponding. Included soils make up about 5 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat.

This map unit is not suited to cultivated crops, pasture, or hay. Wetness, the ponding, and the flooding are severe limitations affecting these uses.

This map unit is suited to the production of baldcypress and green ash. Other species that commonly grow in areas of this map unit include blackgum, green ash, red maple, and water tupelo. The understory vegetation consists mainly of black alder, bulrush, greenbrier, ferns, switchcane, red maple, and black willow.

The main management concerns affecting woodland management are an equipment limitation, the seedling mortality rate, and plant competition. The seasonal high water table and the ponding restrict the use of equipment to periods when the soils are dry. Using standard wheeled and tracked equipment when the soils are wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soils and helps to maintain productivity. The high seedling mortality rate is caused by excessive wetness. It can be compensated for by planting on beds or increasing the number of trees planted. Plant competition can prevent adequate natural or artificial reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is not suited to most urban uses. The ponding, wetness, and the frequent flooding are severe limitations affecting most uses. Buildings and roads should be constructed on well-compacted fill to elevate them above the expected level of flooding.

This map unit has poor potential for openland and woodland wildlife habitat and good potential for wetland wildlife habitat. Habitat for openland and woodland wildlife can be improved by planting appropriate vegetation, maintaining the existing plant cover, and promoting the establishment of desirable plants. Habitat for wetland wildlife can be improved by providing more areas of open water for waterfowl and furbearers and by planting mast-producing trees.

The capability subclass is VIIw. This map unit has not been assigned a woodland ordination symbol.

FuB—Fuquay loamy fine sand, 0 to 5 percent slopes

This very deep, well drained soil is on broad ridgetops in the uplands in the southeastern part of the county. Slopes are long and smooth. Individual areas are oblong to irregular in shape. They range from 5 to more than 80 acres in size.

Typically, the surface layer is brown loamy fine sand about 8 inches thick. The subsurface layer, to a depth of 28 inches, is loamy sand. It is light yellowish brown in the upper part and very pale brown in the lower part. The subsoil, to a depth of 65 inches, is yellowish brown sandy clay loam. It has strong brown and red mottles in the lower part. Nodular plinthite makes up about 15 percent of the matrix in the lower part of the subsoil.

Important properties of the Fuquay soil—

Permeability: Rapid in the surface layer and subsurface layer; slow in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched, at a depth of 2.0 to 4.0 feet from January through March
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Blanton, Dothan, and Orangeburg soils. Blanton soils are in landscape positions similar to those of the Fuquay soil. They have sandy surface and subsurface layers that have a combined thickness of more than 40 inches. Dothan and Orangeburg soils are in slightly higher landscape positions than those of the Fuquay soil. They do not have thick sandy surface layers. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops or woodland. Some areas are used for pasture, hay, or homesites.

This map unit is well suited to most cultivated crops. The main management concerns are the low available water capacity and the low fertility. Conservation tillage, cover crops in winter, a crop residue management system, and a crop rotation that

includes grasses and legumes increase the available water capacity, minimize crusting, and improve fertility. Using supplemental irrigation and selecting crop varieties that are adapted to droughty conditions increase the production of crops. Most crops respond well to applications of lime and to frequent, light applications of fertilizer.

This map unit is well suited to pasture and hay plants, especially such drought tolerant grasses as bahiagrass and coastal bermudagrass. The main management concerns are the low available water capacity and the low fertility. Leaching of plant nutrients is also a management concern. Split applications of nitrogen fertilizer are recommended to maintain the productivity of grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged dry periods help to keep the pasture in good condition.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison oak, flowering dogwood, common persimmon, blackjack oak, and little bluestem.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation, the seedling mortality rate, and plant competition. The sandy texture of the surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Harvesting activities should be planned for seasons when the soil is moist. The moderate seedling mortality rate can be compensated for by increasing the number of trees planted. Plant competition reduces timber production and can prevent adequate reforestation. The competing vegetation can be controlled by site preparation, herbicides, or prescribed burning.

This map unit is suited to most urban uses. The main management concerns are the slow permeability in the subsoil and droughtiness. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants. Septic tank absorption fields may not function properly during rainy periods because of the slow permeability in the subsoil. Enlarging the size of the absorption field helps to compensate for this limitation.

This map unit has good potential for openland wildlife habitat, fair potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat. The low available water capacity and the low fertility are limitations. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIs. The woodland ordination symbol is 9S.

GoA—Goldsboro loamy fine sand, 0 to 2 percent slopes

This very deep, moderately well drained soil is on low stream terraces that parallel large streams throughout the county. Slopes generally are long and smooth. Individual areas generally are oblong. They range from 5 to about 100 acres in size.

Typically, the surface layer is dark brown loamy fine sand about 9 inches thick. The subsurface layer, to a depth of 17 inches, is light yellowish brown loamy fine sand. The subsoil extends to a depth of 64 inches. In the upper part, it is light olive brown sandy clay loam. In the next part, it is light yellowish brown clay loam that has reddish and grayish mottles. In the lower part, it is light brownish gray clay loam that has reddish and brownish mottles. The substratum, to a depth of 90 inches, is light gray sandy clay loam that has reddish and brownish mottles.

Important properties of the Goldsboro soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 2.0 to 3.0 feet from January through March
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Bladen, Lynchburg, and Ocilla soils. The poorly drained Bladen soils are in narrow drainageways or small depressions. The somewhat poorly drained Lynchburg and Ocilla soils are in slightly lower, less convex positions than those of the Goldsboro soils. Ocilla soils have thick sandy surface and subsurface layers. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated

crops, pasture, or hay. A few areas are used for woodland or homesites.

This map unit is well suited to cultivated crops. The main management concerns are wetness and the low fertility. The surface layer is friable and easy to keep in good tilth. It can be worked over a wide range of moisture content. Shallow ditches can help to remove excess surface water. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay plants, such as bermudagrass and bahiagrass. Wetness is a moderate limitation. Shallow ditches can help to remove excess surface water. Restricting grazing during very wet periods or deferring grazing until the ground is dry helps to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include sweetgum, yellow-poplar, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of poison ivy, greenbrier, panicums, waxmyrtle, water oak, and sweetgum.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation and plant competition. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting activities should be planned for seasons when the soil is dry. Plant competition reduces tree growth and can prevent adequate reforestation. The competing vegetation can be controlled by site preparation or prescribed burning.

This map unit is suited to most urban uses. It has moderate limitations affecting building sites and local roads and streets and has severe limitations affecting most sanitary facilities. The main management concern is wetness. Septic tank absorption fields may not function properly during rainy periods because of the moderate permeability and the seasonal high water table. Enlarging the size of the absorption field helps to compensate for this limitation.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat for openland and woodland wildlife can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIw. The woodland ordination symbol is 9A.

GrB—Gritney fine sandy loam, 2 to 5 percent slopes

This very deep, moderately well drained soil is on toeslopes in the uplands in the southern part of the county. Slopes generally are long and smooth. Individual areas are irregular in shape. They range from 10 to 100 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 7 inches thick. The subsurface layer, to a depth of 13 inches, is pale brown fine sandy loam. The subsoil extends to a depth of 49 inches. In the upper part, it is strong brown sandy clay. In the next part, it is yellowish brown clay that has grayish, brownish, and reddish mottles. In the lower part, it is yellowish brown sandy clay that has reddish and grayish mottles. The substratum, to a depth of 80 inches, is mottled light brownish gray, dark brown, and yellowish brown sandy clay loam.

Important properties of the Gritney soil—

Permeability: Slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched, at a depth of 1.5 to 3.0 feet from January through March
Shrink-swell potential: Moderate
Flooding: None

Included in mapping are a few small areas of Conecuh, Cowarts, and Luverne soils. Conecuh and Luverne soils are in landscape positions similar to those of the Gritney soils. Conecuh soils have smectitic clay mineralogy. Luverne soils are well drained and are reddish in the upper part of the subsoil. Cowarts soils are on narrow ridges and are loamy throughout. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland or pasture. A few areas are used for cultivated crops.

This map unit is suited to cultivated crops. The main management concern is a moderate hazard of erosion. Terraces, contour farming, minimum tillage, and cover crops reduce the runoff rate and help to control erosion. Returning crop residue to the soil and growing winter cover crops minimize crusting, help to maintain tilth, and increase the rate of water infiltration. Most crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. Erosion is a hazard if the surface layer is exposed during the establishment of pasture. Tillage should be on the contour or across the slope to minimize erosion. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet or dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of little bluestem, panicums, greenbrier, poison ivy, huckleberry, muscadine grape, waxmyrtle, sweetgum, water oak, and flowering dogwood.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation and plant competition. Low strength restricts the use of equipment to periods when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is poorly suited to most urban uses. It has moderate limitations affecting building sites and severe limitations affecting local roads and streets and most kinds of sanitary facilities. The main management concerns are the moderate shrink-swell potential, the slow permeability, wetness, and low strength on sites for roads or streets. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential. Roads and streets should be designed to offset the limited ability of this soil to support a load. Septic tank absorption fields may not function properly because of the slow permeability and the seasonal high water table. Enlarging the size of the absorption field or using an alternative method of waste disposal helps to overcome these limitations.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of existing oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide areas of open water for waterfowl and furbearers.

The capability subclass is IIIe. The woodland ordination symbol is 8A.

HaB—Hannon clay loam, 1 to 3 percent slopes

This very deep, moderately well drained soil is on ridgetops in the uplands of the Blackland Prairie. Slopes generally are long and smooth. Individual areas are irregular in shape. They range from 10 to 100 acres in size.

Typically, the surface layer is dark yellowish brown clay loam about 4 inches thick. The subsoil extends to a depth of 65 inches. In the upper part, it is red clay that has light brownish gray mottles. In the next part, it is light olive brown clay that has soft masses of calcium carbonate. In the lower part, it is olive and olive gray silty clay that has soft masses of calcium carbonate.

Important properties of the Hannon soil—

Permeability: Very slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: High
Flooding: None

Included in mapping are a few small areas of Conecuh and Sumter soils. Conecuh soils are on slightly higher knolls than the Hannon soil and do not have alkaline materials in the surface layer and

subsoil. Sumter soils are in scattered areas and are alkaline throughout. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used as pasture. A few areas are used for cultivated crops, hay, or woodland.

This map unit is suited to most cultivated crops. The main management concerns are poor tilth and a moderate hazard of erosion. This map unit can be worked only within a narrow range of moisture content because it becomes cloddy if worked when too wet or too dry. Conservation tillage, contour farming, and cover crops help to reduce the runoff rate and control erosion. Returning all crop residue to the soil improves tilth, minimizes crusting, and increases the available water capacity.

This map unit is well suited to pasture and hay. Tall fescuegrass, dallisgrass, and bahiagrass are the main grasses grown in areas of this map unit. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, eastern redcedar, sugarberry, and sweetgum. On the basis of a 50-year site curve, the site index for loblolly pine is 80. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 1.8 cords per acre per year. The understory vegetation consists mainly of panicums, waxmyrtle, blackberry, greenbrier, poison ivy, and hawthorns.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation, the seedling mortality rate, and plant competition. The clayey texture of the surface layer and the subsoil restricts the use of equipment, especially during rainy periods. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting and managing activities should be planned for seasons when the soil is dry. Planting rates can be increased to compensate for the high seedling mortality rate. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the high shrink-swell potential, the very slow permeability, and low strength on sites for roads and streets. The instability of cutbanks is also a management concern. Support beams should be used to maintain the stability of the cutbanks. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Roads and streets should be designed to compensate for the instability of the subsoil. Septic tank absorption fields do not function properly because of the very slow permeability. An alternate method of waste disposal is needed to dispose of sewage properly.

This map unit has fair potential for openland wildlife habitat, good potential for woodland wildlife habitat, and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide areas of open water for waterfowl and furbearers.

The capability subclass is IIe. The woodland ordination symbol is 7C.

HnC2—Hannon clay, 3 to 5 percent slopes, eroded

This very deep, moderately well drained soil is on side slopes in the uplands of the Blackland Prairie. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil that has been mixed in by tillage. Some areas have a few rills and shallow gullies. Slopes generally are long and smooth. Individual areas are irregular in shape. They range from 10 to 100 acres in size.

Typically, the surface layer is dark brown clay about 2 inches thick. The subsoil extends to a depth of 65 inches. In the upper part, it is red clay. In the next part, it is light olive brown clay that has soft masses of calcium carbonate. In the lower part, it is grayish brown and light olive brown silty clay that has soft masses and concretions of calcium carbonate.

Important properties of the Hannon soil—

Permeability: Very slow
Available water capacity: Moderate

Organic matter content: Low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: High
Flooding: None

Included in mapping are a few small areas of Conecuh and Sumter soils. Conecuh soils are on slightly higher parts of slopes than the Hannon soil and do not have alkaline materials within the surface layer and subsoil. Sumter soils are in scattered areas and are alkaline throughout. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used as pasture or hayland. A few areas are used for cultivated crops or woodland.

This map unit is suited to most cultivated crops. The main management concerns are poor tilth and a hazard of erosion. Erosion is a severe hazard if this soil is cultivated. This map unit can be worked only within a narrow range of moisture content because it becomes cloddy if worked when too wet or too dry. Conservation tillage, contour farming, and cover crops help to reduce the runoff rate and control erosion. Returning all crop residue to the soil improves tilth, minimizes crusting, and increases the available water capacity.

This map unit is well suited to pasture and hay. Tall fescuegrass, dallisgrass, and bahiagrass are the main grasses grown in areas of this map unit. Seedbeds should be prepared on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, eastern redcedar, sugarberry, and sweetgum. On the basis of a 50-year site curve, the site index for loblolly pine is 80. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 1.8 cords per acre per year. The understory vegetation consists mainly of panicums, waxmyrtle, blackberry, greenbrier, poison ivy, and hawthorns.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation, the seedling mortality rate, and plant competition. The clayey texture of the surface layer and the subsoil restricts the use of equipment, especially during rainy periods. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Harvesting and managing activities should be planned for seasons when the soil is dry. Planting rates can be increased to compensate for the high seedling mortality rate. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the high shrink-swell potential, the very slow permeability, and low strength on sites for roads and streets. The instability of cutbanks is also a management concern. Support beams should be used to maintain the stability of the cutbanks. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Roads and streets should be designed to compensate for the instability of the subsoil. Septic tank absorption fields do not function properly because of the very slow permeability. An alternate method of waste disposal is needed to dispose of sewage properly.

This map unit has fair potential for openland wildlife habitat, good potential for woodland wildlife habitat, and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide areas of open water for waterfowl and furbearers.

The capability subclass is IIIe. The woodland ordination symbol is 7C.

HnD2—Hannon clay, 5 to 8 percent slopes, eroded

This very deep, moderately well drained soil is on narrow ridgetops and side slopes of the Blackland Prairie. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In some places, all of the original surface layer has

been removed. Some areas have a few rills and shallow gullies. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 5 to more than 50 acres in size.

Typically, the surface layer is dark brown clay about 2 inches thick. The subsoil extends to a depth of 65 inches. In the upper part, it is red clay. In the next part, it is red clay that has brownish and grayish mottles. In the lower part, it is light olive brown clay and silty clay that has soft masses and concretions of calcium carbonate.

Important properties of the Hannon soil—

Permeability: Very slow
Available water capacity: Moderate
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: High
Flooding: None

Included in mapping are a few small areas of Conecuh and Sumter soils. Conecuh soils are on the upper parts of slopes and do not have alkaline materials within the surface layer and subsoil. Sumter soils are in scattered areas and are alkaline throughout. Included soils make up about 15 percent of the map unit. Individual areas are less than 5 acres in size.

Most areas of this map unit are used for woodland or pasture. A few areas are used for hay or cultivated crops.

This map unit is poorly suited to cultivated crops. The main management concerns are the slope, poor tilth, and a severe hazard of erosion. Early-fall seeding, minimum tillage, diversions, and grassed waterways help to control erosion. Tillage should be on the contour or across the slope.

This map unit is suited to pasture and hay. The main management concerns are the slope and a severe hazard of erosion. Seedbeds should be prepared on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is suited to loblolly pine. Other species that commonly grow in areas of this map unit include eastern redcedar, sugarberry, longleaf pine, shortleaf pine, and sweetgum. On the basis of a 50-year site curve, the site index for loblolly pine is 80. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 1.8 cords per acre per year. The understory vegetation consists mainly of greenbrier, waxmyrtle, blackberry, panicums, little bluestem, sumac, poison ivy, and honeysuckle.

This map unit has moderate or severe limitations affecting timber management. The main management concerns are an equipment limitation, the seedling mortality rate, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion, including rill and gully erosion. Mulching, seeding, and constructing diversions can help to control erosion on roads, landings, and skid trails. The low strength of the clayey subsoil restricts the use of equipment to periods when the soil is dry. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. The high seedling mortality rate is caused by droughtiness and the high content of clay in the surface layer. It can be compensated for by increasing the number of trees planted. Planting on raised beds or subsoiling help to increase the seedling survival rate. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the very slow permeability, the slope, the high shrink-swell potential, and low strength on sites for roads and streets. The instability of cutbanks is also a management concern. Support beams should be used to maintain the stability of the cutbanks. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Septic tank absorption fields do not function properly during rainy periods because of the very slow permeability. An alternative system should be used to dispose of sewage properly.

This map unit has good potential for woodland wildlife habitat, fair potential for openland wildlife habitat, and poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IVe. The woodland ordination symbol is 7C.

HsE2—Hannon-Sumter complex, 5 to 12 percent slopes, eroded

This map unit consists of the very deep, moderately well drained Hannon soil and the moderately deep, well drained Sumter soil. It is on side slopes and narrow ridges on uplands of the Blackland Prairie. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In places, all of the original surface layer has been removed. Some areas have a few rills and shallow gullies. The Hannon soil makes up about 45 percent of the map unit, and the Sumter soil makes up about 35 percent. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 10 to 100 acres in size.

The Hannon soil is on narrow ridgetops and the upper parts of slopes. Typically, the surface layer is very dark grayish brown clay about 5 inches thick. The subsoil extends to a depth of 65 inches. In the upper part, it is strong brown clay. In the next part, it is yellowish brown clay that has grayish mottles. In the lower part, it is light olive brown clay and silty clay that has soft masses of calcium carbonate.

Important properties of the Hannon soil—

Permeability: Very slow
Available water capacity: Moderate
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: High
Flooding: None

The Sumter soil is on the lower parts of slopes. Typically, the surface layer is dark grayish brown silty clay about 4 inches thick. The subsoil extends to a depth of 29 inches. It is light olive brown silty clay in the upper part and olive brown silty clay loam in the lower part. The substratum, to a depth of 60 inches, is soft limestone (chalk) interbedded with strata of fossil oyster shells.

Important properties of the Sumter soil—

Permeability: Very slow
Available water capacity: Moderate
Organic matter content: Medium
Natural fertility: High
Depth to bedrock: 20 to 40 inches
Root zone: 20 to 40 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Moderate
Flooding: None

Included in mapping are a few small areas of Conecuh and Kinston soils. Also included are a few small areas of gullied land. Conecuh soils are on the upper parts of slopes and do not have alkaline materials within the surface layer and subsoil. The poorly drained Kinston soils are on narrow flood plains. Included areas make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for cultivated crops, pasture, or hay.

This map unit is not suited to cultivated crops. The main management concerns are poor tilth and a hazard of erosion. Erosion is a severe hazard if these soils are cultivated. Sheet and rill erosion are evident in most areas, and shallow gullies are common. This map unit can be worked only within a narrow range of moisture content because it becomes cloddy if worked when too wet or too dry. Conservation tillage, contour farming, and cover crops help to reduce the runoff rate and control erosion. Returning all crop residue to the soils improves tilth, minimizes crusting, and increases the available water capacity.

This map unit is suited to pasture and hay. Seedbeds should be prepared on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet periods help to keep the soils in good condition.

This map unit is suited to loblolly pine in areas of the Hannon soil, but it is not suited to pine trees in areas of the Sumter soil because of alkalinity. Because the soils occur as intricately intermingled areas, onsite investigation is necessary before planting. On the basis of a 50-year site curve, the site index is 80 for loblolly pine in areas of the Hannon soil. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 1.8 cords per acre per year. This map unit is suited to eastern redcedar in areas of the Sumter soil. On the basis of a 50-year curve, the site index for eastern redcedar is 40. The average annual growth of well stocked, even-aged, unmanaged stands of eastern redcedar at 40 years of age is 140 board feet per acre per year. The understory vegetation consists mainly of greenbrier, panicums, Johnsongrass, broomsedge bluestem, Macartney rose, blackberry, poison ivy, sumac, winged elm, and sugarberry.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation, the seedling mortality rate, and plant competition. Using standard wheeled and tracked equipment when the soils are wet results in ruts and compaction. Harvesting and managing activities should be planned for seasons when the soils are dry. Planting rates can be increased to compensate for the high seedling mortality rate. Plant competition reduces timber production and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed burning.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the depth to bedrock, the very slow permeability, the shrink-swell potential, and low strength on sites for roads and streets. The instability of cutbanks is also a management concern. Support beams should be used to maintain the stability of the cutbanks in areas of the Hannon soil. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Roads and streets should be designed to compensate for the instability of the subsoil. Septic tank absorption fields do not function properly because of the very slow permeability. An alternate method of waste disposal is needed to dispose of sewage properly.

This map unit has fair potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for white-tailed deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Habitat for openland wildlife can be improved by planting grasses and other seed-producing plants in small areas around cropland and pasture. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide areas of open water for waterfowl and furbearers.

The capability subclass is VIe. The woodland ordination symbol is 7C in areas of the Hannon soil and 3C in areas of the Sumter soil.

KMA—Kinston, Mantachie, and Iuka soils, 0 to 1 percent slopes, frequently flooded

This map unit consists of the very deep, poorly drained Kinston soil, the somewhat poorly drained Mantachie soil, and the moderately well drained Iuka soil on flood plains along streams that drain the Coastal Plain. These soils are subject to flooding for brief periods several times each year. The composition of the unit varies, but the mapping was sufficiently controlled to evaluate the soils for the expected uses. Some areas mainly consist of a single soil, and others contain all three soils in varied proportions. Individual areas are usually long and narrow. They range from 5 to more than 1,000 acres in size.

The Kinston soil makes up about 35 percent of the map unit. It is in flat to concave positions, generally at the lowest elevations on the flood plain. Typically, the surface layer is dark gray sandy loam about 3 inches thick. The subsurface layer, to a depth of 14 inches, is gray loam that has strong brown mottles. The substratum, to a depth of 65 inches, is light gray and gray clay loam that has yellowish brown and strong brown mottles.

Important properties of the Kinston soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at the surface to a depth of 1.0 foot from December through April
Shrink-swell potential: Low
Flooding: Frequent

The Mantachie soil makes up about 30 percent of the map unit. It is in smooth, slightly convex positions at intermediate elevations on the flood plain. Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil extends to a depth of 65 inches. In the upper part, it is brown loam that has grayish and brownish mottles. In the next part, it is grayish brown loam that has brownish, yellowish, and reddish mottles. In the lower part, it is gray sandy clay loam that has brownish mottles.

Important properties of the Mantachie soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 1.0 to 1.5 feet from December through April
Shrink-swell potential: Low
Flooding: Frequent

The Iuka soil makes up about 25 percent of the map unit. It is on the higher, more convex parts of the flood plain. Typically, the surface layer is dark brown fine sandy loam about 8 inches thick. The substratum, to a depth of 80 inches, is yellowish brown fine sandy loam in the upper part and yellowish brown fine sandy loam that has grayish and brownish mottles in the lower part.

Important properties of the Iuka soil—

Permeability: Moderate
Available water capacity: Moderate
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 1.0 to 3.0 feet from December through April
Shrink-swell potential: Low
Flooding: Frequent

Included in mapping are a few small areas of Dogue and Mooreville soils and Fluvaquents. The moderately well drained Dogue soils are on low knolls or remnants of terraces at slightly higher elevations than the Kinston, Mantachie, and Iuka soils. They are not subject to frequent flooding. The very poorly drained Fluvaquents are in small depressions and are subject to ponding. The moderately well drained Mooreville soils are in positions similar to those of the Iuka soil. They have layers of clay loam or sandy clay loam in the subsoil. The included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for pasture, hay, or cultivated crops.

This map unit is poorly suited to most cultivated crops. The frequent flooding and the wetness are the main management concerns. If cultivated crops are grown, a surface drainage system and protection from flooding are needed.

This map unit is poorly suited to pasture and hay because of the frequent flooding and the wetness. If areas are used for pasture or hay, grasses that tolerate the wet soil conditions should be selected. Common bermudagrass is suitable. Shallow ditches can help to remove excess surface water.

This map unit is suited to loblolly pine and hardwoods. Other species that commonly grow in areas of this map unit include American sycamore, yellow-poplar, cherrybark oak, water oak, green ash, and sweetgum. On the basis of a 50-year site curve, the site index for loblolly pine is 90 in areas of the Kinston soil, 100 in areas of the Mantachie soil, and 105 in areas of the Iuka soil. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year in areas of the Kinston soil, 2.7 cords per acre per year in areas of the Mantachie soil, and 2.9 cords per acre per year in areas of the Iuka soil. The understory vegetation consists mainly of muscadine grape, Alabama supplejack, greenbrier, poison ivy, longleaf uniola, sweetgum, blackgum, water oak, sweetbay, green ash, and red maple.

This map unit has severe limitations affecting timber management. The main management concerns are an equipment limitation, the seedling mortality rate, and plant competition. The seasonal high water table and the flooding restrict the use of equipment to periods when the soils are dry. Using standard wheeled and tracked equipment when the soils are wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soils and helps to maintain productivity. The high seedling mortality rate is caused by excessive wetness. It can be reduced by planting on beds and increasing the number of trees planted. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is not suited to most urban uses. The flooding and wetness are severe limitations affecting most uses. Buildings can be constructed on pilings or well-compacted fill to elevate them above the expected level of flooding.

The Mantachie and Iuka soils have fair potential for openland wildlife habitat and good potential for woodland wildlife habitat. The Kinston soil has poor potential for openland and woodland wildlife habitat. The potential for wetland wildlife habitat is fair in areas of the Mantachie and Kinston soils and poor in areas of the Iuka soil. Habitat for openland and woodland wildlife can be improved by planting or encouraging the growth of existing oak trees and suitable understory plants. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide areas of open water for waterfowl and furbearers.

The capability subclass is Vw. The woodland ordination symbol is 9W in areas of the Kinston soil, 11W in areas of the Mantachie soil, and 12W in areas of the Iuka soil.

KoA—Kolomoki fine sandy loam, 0 to 2 percent slopes, rarely flooded

This very deep, well drained soil is on low terraces that parallel the Chattahoochee River. Flooding is rare

but can occur under unusual weather conditions. Slopes are long and smooth. Individual areas generally are oblong. They range from 20 to about 400 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 6 inches thick. The subsoil extends to a depth of 48 inches. In the upper part, it is yellowish red clay. In the next part, it is yellowish red sandy clay. In the lower part, it is strong brown sandy clay loam. The substratum, to a depth of 65 inches, is strong brown loamy sand.

Important properties of the Kolomoki soil—

Permeability: Moderate in the subsoil; rapid in the substratum
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: Rare

Included in mapping are a few small areas of Annemaine, Bladen, Dogue, and Maxton soils. The moderately well drained Annemaine and Dogue soils are in slightly lower, less convex positions than those of the Kolomoki soil. They have grayish mottles in the upper part of the subsoil. The poorly drained Bladen soils are in small depressions. Maxton soils are in slightly higher, more convex positions than those of the Kolomoki soil and are loamy throughout. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for woodland and wildlife habitat.

This map unit is well suited to cultivated crops (fig. 5). It has no significant management concerns affecting this use. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay plants, such as bermudagrass and bahiagrass. It has no significant management concerns affecting pasture and hayland. Restricting grazing during very wet periods or deferring grazing until the ground is dry helps to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include yellow-poplar, sweetgum, American sycamore, water oak, and cherrybark oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of blackberry, greenbrier, panicums, longleaf uniola, poison ivy, Alabama supplejack, muscadine grape, sweetgum, and water oak.

This map unit has few limitations affecting woodland management. Competition from understory plants is a minor management concern. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control the initial plant competition and facilitate mechanical planting.

This map unit is poorly suited to most urban uses. The hazard of flooding is severe and difficult to overcome. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for white-tailed deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability class is I. The woodland ordination symbol is 8A.

LnB—Luverne sandy loam, 2 to 5 percent slopes

This very deep, well drained soil is on narrow ridgetops in the uplands throughout the county. Slopes are long and smooth. Individual areas are irregular in shape. They range from 10 to 50 acres in size.

Typically, the surface layer is dark brown sandy loam about 4 inches thick. The subsurface layer, to a depth of 10 inches, is light yellowish brown loamy fine sand. The subsoil extends to a depth of 48 inches. In the upper part, it is yellowish red clay. In the next part, it is yellowish red clay that has brownish mottles. In the lower part, it is red sandy clay that has brownish and grayish mottles. The substratum, to a depth of 65 inches, is stratified red, yellowish brown, strong brown, and light brownish gray sandy clay loam and sandy loam.

Figure 5.—High yields of cotton can be expected in this area of Kolomoki fine sandy loam, 0 to 2 percent slopes, rarely flooded.

Important properties of the Luverne soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Moderate
Flooding: None

Included in mapping are a few small areas of Conecuh, Cowarts, and Springhill soils. Also included are soils that have a slope of less than 2 percent or more than 5 percent. Conecuh soils are in slightly lower positions than those of the Luverne soil and have smectitic clay mineralogy. Cowarts and Springhill soils are in slightly higher landscape positions than those of the Luverne soil and are loamy throughout. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for cultivated crops, pasture, hay, or homesites.

This map unit is suited to cultivated crops. The main management concerns are the low fertility and a severe hazard of erosion. Terraces, contour farming, minimum tillage, and cover crops can reduce the runoff rate and help to control erosion. Using a sod-based rotation system and incorporating crop residue into the soil increase the content of organic matter and improve tilth. Crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. It has few limitations affecting these uses. Erosion is a hazard if the surface layer is exposed during the establishment of pasture. Tillage should be on the contour or across the slope to minimize erosion. Proper stocking rates, pasture rotation, and restricted grazing

during wet periods help to keep the pasture and soil in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine (fig. 6). Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison ivy, flowering dogwood, waxmyrtle, little bluestem, huckleberry, American beautyberry, muscadine grape, common persimmon, and panicums.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation and plant competition. The low strength of the clayey subsoil restricts the use of equipment when the soil is wet. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the

Figure 6.—A well managed, even-aged stand of loblolly pine in an area of Luverne sandy loam, 2 to 5 percent slopes.

initial plant competition, and herbicides can control subsequent growth.

This map unit is suited to most urban uses. It has moderate limitations affecting building sites and severe limitations affecting local roads and streets and most kinds of sanitary facilities. The main management concerns are the moderately slow permeability, the moderate shrink-swell potential, and low strength on sites for local roads and streets. Properly designing foundations and footings and diverting runoff away from the buildings help to prevent the structural damage that results from shrinking and swelling. Septic tank absorption fields do not function properly during rainy periods because of the moderately slow permeability. An alternative method is needed to dispose of sewage properly.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of existing oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIIe. The woodland ordination symbol is 9C.

LnC2—Luverne sandy loam, 5 to 10 percent slopes, eroded

This very deep, well drained soil is on narrow ridgetops and on side slopes in the uplands. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil. In places, all of the original surface layer has been removed. Some areas have a few rills and gullies. Slopes generally are short and complex, but some are long and smooth. Individual areas are irregular in shape. They range from 10 to more than 300 acres in size.

Typically, the surface layer is dark yellowish brown sandy loam about 4 inches thick. The subsoil extends to a depth of 33 inches. It is red clay in the upper part, red clay loam that has pale brown mottles in the next part, and red clay loam that has brownish and yellowish mottles in the lower part. The substratum, to a depth of 65 inches, is stratified red, yellowish brown, and gray sandy loam and sandy clay loam.

Important properties of the Luverne soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Moderate
Flooding: None

Included in mapping are a few small areas of Conecuh, Cowarts, Gritney, and Springhill soils. The moderately well drained Conecuh and Gritney soils are on the lower parts of slopes. Conecuh soils have smectitic clay mineralogy. Gritney soils have a brownish subsoil. Cowarts and Springhill soils are on the upper parts of slopes and are loamy throughout. Included soils make up about 15 percent of mapped areas. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for pasture and hay.

This map unit is poorly suited to cultivated crops. The main management concerns are the low fertility, poor tilth, and a severe hazard of erosion. Terraces, contour farming, minimum tillage, and cover crops reduce the runoff rate and help to control erosion. Installing drop-inlet structures in grassed waterways helps to prevent gullying. Using a sod-based rotation system and incorporating crop residue into the soil increase the content of organic matter and improve tilth. Most crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. Erosion is a hazard if the surface layer is exposed during the establishment of pasture. Tillage should be on the contour or across the slope to minimize erosion. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet or dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison ivy, flowering dogwood, little bluestem, huckleberry, American beautyberry, yellow jessamine, waxmyrtle, muscadine grape, sweetgum, and water oak.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation and plant competition. The low strength of the clayey subsoil restricts the use of

equipment, especially when the soil is wet. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is suited to most urban uses. It has moderate limitations affecting building sites and severe limitations affecting local roads and streets and most kinds of sanitary facilities. The main management concerns are the moderate shrink-swell potential, the moderately slow permeability, and the low strength on sites for roads or streets. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential. Roads and streets should be designed to offset the limited ability of the soil to support a load. Septic tank absorption fields may not function properly because of the moderately slow permeability. Enlarging the size of the absorption field or using an alternative method of waste disposal helps to overcome this limitation.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of existing oak trees and suitable understory plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide areas of open water for waterfowl and furbearers.

The capability subclass is IVe. The woodland ordination symbol is 9C.

LsE—Luverne-Springhill complex, 15 to 25 percent slopes

This map unit consists of very deep, well drained Luverne and Springhill soils. It is on side slopes and narrow ridgetops of highly dissected uplands. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Luverne soil makes up about 50 percent of the map unit, and the Springhill soil makes up about 35 percent. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 25 to more than 1,000 acres in size.

The Luverne soil is generally on the middle and lower parts of slopes. Typically, the surface layer is dark brown sandy loam about 3 inches thick. The subsoil extends to a depth of 29 inches. In the upper part, it is yellowish red clay that has brownish mottles. In the lower part, it is yellowish red clay loam. The substratum, to a depth of 65 inches, is stratified red, strong brown, and light gray sandy loam and sandy clay loam.

Important properties of the Luverne soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Moderate
Flooding: None

The Springhill soil is generally on the upper parts of slopes and on narrow ridgetops. Typically, the surface layer is dark yellowish brown loamy sand about 4 inches thick. The subsurface layer, to depth of 12 inches, is brown loamy sand. The subsoil extends to a depth of 65 inches. In the upper part, it is red sandy clay loam. In the next part, it is yellowish red sandy clay loam. In the lower part, it is yellowish red sandy loam.

Important properties of the Springhill soil—

Permeability: Moderate in the upper part of the subsoil; moderately rapid in the lower part
Available water capacity: High
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Conecuh, Kinston, and Troup soils. Conecuh soils are on the lower parts of slopes and have smectitic clay mineralogy. The poorly drained Kinston soils are on narrow flood plains. Troup soils are on the upper parts of slopes and have thick sandy surface and subsurface layers. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for pasture.

This map unit is not suited to cultivated crops. The

main management concerns are the moderately steep slope and a severe hazard of erosion. The short, complex slopes and the low fertility are also limitations.

This map unit is poorly suited to pasture and hay. The main management concerns are the slope, the low fertility, and a severe hazard of erosion. The more steeply sloping areas are best suited to native grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This map unit is suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison oak, little bluestem, waxmyrtle, muscadine grape, American beautyberry, yellow jessamine, huckleberry, sweetgum, water oak, and flowering dogwood.

This map unit has moderate limitations affecting timber management. The main management concerns are a hazard of erosion, an equipment limitation, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion, including rill and gully erosion. Mulching, seeding, and constructing diversions can help to control erosion on roads, landings, and skid trails. The slope restricts the use of equipment. Using standard wheeled and tracked equipment when the soils are wet results in ruts and compaction. Cable yarding systems are safer and damage the soil less. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is poorly suited to most urban uses. It is generally not suitable as a site for buildings because of the slope. Other limitations include the moderately slow permeability, the moderate shrink-swell potential, and low strength in areas of the Luverne soil.

This map unit has fair potential for openland wildlife habitat, good potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide areas of open water for waterfowl and furbearers.

The capability subclass is VIIe. The woodland ordination symbol is 9R.

LyA—Lynchburg loamy fine sand, 0 to 2 percent slopes, rarely flooded

This very deep, somewhat poorly drained soil is on low terraces that parallel major streams throughout the county. Flooding is rare but can occur under unusual weather conditions. Slopes are long and smooth. Individual areas generally are broad. They range from 10 to 80 acres in size.

Typically, the surface layer is very dark gray loamy fine sand about 7 inches thick. The subsurface layer, to a depth of 15 inches, is very pale brown loamy fine sand. The subsoil extends to a depth of 65 inches. It is light olive brown sandy clay loam in the upper part, grayish brown sandy clay loam that has brownish and reddish mottles in the next part, and grayish brown clay loam that has brownish mottles in the lower part.

Important properties of the Lynchburg soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 0.5 foot to 1.5 feet from January through March
Shrink-swell potential: Low
Flooding: Rare

Included in mapping are a few small areas of Bladen, Dogue, Goldsboro, and Ocilla soils. The poorly drained Bladen soils are in depressions. The moderately well drained Dogue and Goldsboro soils and the Ocilla soils are on slightly higher knolls than the Lynchburg soil. Ocilla soils have thick sandy surface and subsurface layers. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for pasture, hay, or cultivated crops.

This map unit is suited to cultivated crops. The main management concerns are the low fertility and wetness. Planting may be delayed in spring because of the wetness. Shallow ditches can help to remove

excess surface water. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter.

This map unit is suited to pasture and hay. Wetness is the main management concern. Grasses that tolerate the wet soil conditions should be selected. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime are needed for the optimum production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include sweetgum, water oak, and yellow-poplar. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of longleaf uniola, poison ivy, waxmyrtle, blackgum, sweetgum, and water oak.

This map unit has moderate or severe limitations affecting timber management. The main management concerns are an equipment limitation and plant competition. Harvesting operations should be planned for seasons when the soil is dry. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. Plant competition reduces timber production and can prevent adequate reforestation. The competing vegetation can be controlled by site preparation, herbicides, or prescribed burning.

This map unit is poorly suited to most urban uses. The main management concerns are the flooding and wetness. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding. Because of the seasonal high water table, a drainage system is needed if buildings are constructed. Septic tank absorption fields do not function properly during rainy periods because of the wetness. Increasing the size of the absorption field or constructing the absorption field on a raised bed helps to compensate for this limitation.

This map unit has good potential for openland and woodland wildlife habitat and fair potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting or encouraging the growth of existing oak trees and suitable understory plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide areas of open water for waterfowl and furbearing animals.

The capability subclass is IIw. The woodland ordination symbol is 9W.

MnB—Marvyn loamy sand, 2 to 5 percent slopes

This very deep, well drained soil is on broad ridgetops in the uplands in the northern part of the county. Slopes generally are long and smooth. Individual areas are irregular in shape. They range from 10 to 100 acres in size.

Typically, the surface layer is dark brown loamy sand about 6 inches thick. The subsoil extends to a depth of 49 inches. In the upper part, it is yellowish brown sandy loam and sandy clay loam. In the next part, it is yellowish brown sandy clay loam that has reddish mottles. In the lower part, it is yellowish brown sandy loam. The substratum, to a depth of 65 inches, is mottled strong brown, gray, and red sandy loam. In some areas, the texture of the surface layer is sandy loam.

Important properties of the Marvyn soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Blanton, Cowarts, Dothan, Luverne, and Uchee soils. Also included are soils that have a slope of less than 2 percent or more than 5 percent. Blanton and Uchee soils are on slightly higher parts of ridgetops than the Marvyn soil and have thick sandy surface and subsurface layers. Cowarts soils are on the lower parts of slopes. The combined thickness of the surface layer and subsoil of the Cowarts soils is less than 40 inches. Dothan soils are in positions similar to those of the Marvyn soil. They have significant accumulations of plinthite in the lower part of the subsoil. Luverne soils are on the lower parts of slopes and are clayey in the upper part of the subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated

crops, pasture, or hay. A few areas are used for woodland.

This map unit is well suited to cultivated crops. The main management concerns are the low fertility and a moderate hazard of erosion. Gullies form readily in areas that have a concentrated flow of water on the surface. Conservation tillage, terraces, contour farming, and cover crops reduce the runoff rate and help to control erosion. Installing drop-inlet structures in grassed waterways helps to prevent gullying. Returning all crop residue to the soil or regularly adding other organic matter improves fertility and helps to maintain tilth and the content of organic matter. Most crops respond well to additions of lime and fertilizer.

This map unit is well suited to pasture and hay plants, such as coastal bermudagrass and bahiagrass. The main management concerns are the low fertility and a moderate hazard of erosion. Tillage should be on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet and dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of little bluestem, greenbrier, panicums, brackenfern, southern red oak, blackjack oak, water oak, and flowering dogwood.

This map unit has few limitations affecting woodland management. Competition from understory plants is a minor management concern. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control the initial plant competition and facilitate mechanical planting.

This map unit is suited to most urban uses. It has slight limitations affecting building sites and local roads and streets and has slight to severe limitations affecting most kinds of sanitary facilities. The main management concern is the moderately slow permeability. Septic tank absorption fields do not function properly because of the moderately slow permeability. Enlarging the size of the absorption area helps to overcome this limitation.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIe. The woodland ordination symbol is 9A.

MxA—Maxton loamy sand, 0 to 2 percent slopes, rarely flooded

This very deep, well drained soil is on low terraces that parallel the Chattahoochee River and other large streams. Flooding is rare but can occur under unusual weather conditions. Slopes are long and smooth. Individual areas generally are oblong. They range from 10 to about 100 acres in size.

Typically, the surface layer is dark brown loamy sand about 10 inches thick. The subsoil, to a depth of 38 inches, is yellowish red and red sandy clay loam. The substratum, to a depth of 75 inches, is reddish yellow and strong brown sand.

Important properties of the Maxton soil—

Permeability: Moderate in the subsoil; rapid in the substratum
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: Rare

Included in mapping are a few small areas of Annemaine, Bladen, Dogue, and Kolomoki soils. The moderately well drained Annemaine and Dogue soils and the Kolomoki soils are in slightly lower, less convex positions than those of the Maxton soil. They are clayey in the upper part of the subsoil. The poorly drained Bladen soils are in small depressions. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for woodland and wildlife habitat.

This map unit is well suited to cultivated crops. It has no significant management concerns affecting this use. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic

matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay plants, such as bermudagrass and bahiagrass. It has no significant management concerns affecting pasture and hayland. Restricting grazing during very wet periods or deferring grazing until the ground is dry helps to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include yellow-poplar, sweetgum, American sycamore, water oak, and cherrybark oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of blackberry, greenbrier, panicums, longleaf uniola, poison ivy, Alabama supplejack, muscadine grape, sweetgum, and water oak.

This map unit has few limitations affecting woodland management. Competition from understory plants is a minor management concern. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control the initial plant competition and facilitate mechanical planting.

This map unit is poorly suited to most urban uses. The hazard of flooding is severe and difficult to overcome. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for white-tailed deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability class is I. The woodland ordination symbol is 9A.

OcA—Ocilla loamy fine sand, 0 to 2 percent slopes, rarely flooded

This very deep, somewhat poorly drained soil is on low terraces that parallel large streams throughout the county. Flooding is rare but can occur under unusual weather conditions. Slopes generally are long and smooth. Individual areas generally are oblong. They range from 5 to 50 acres in size.

Typically, the surface layer is dark grayish brown loamy fine sand about 8 inches thick. The subsurface layer, to a depth of 28 inches, is loamy fine sand. It is yellowish brown in the upper part and very pale brown in the lower part. The subsoil extends to a depth of 65 inches. In the upper part, it is yellowish brown sandy clay loam that has brownish and grayish mottles. In the lower part, it is mottled yellowish brown, light brownish gray, and strong brown sandy clay loam and sandy clay.

Important properties of the Ocilla soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched, at a depth of 1.0 to 2.5 feet from January through March
Shrink-swell potential: Low
Flooding: Rare

Included in mapping are a few small areas of Bladen, Goldsboro, and Lynchburg soils. The poorly drained Bladen soils are in small depressions. The moderately well drained Goldsboro soils are on small knolls at slightly higher elevations than the Ocilla soil. They do not have thick sandy surface and subsurface layers. Lynchburg soils are in slightly lower positions than those of the Ocilla soil and also do not have thick sandy surface and subsurface layers. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of map unit soil are used for woodland. A few areas are used for pasture, hay, or cultivated crops.

This map unit is suited to most cultivated crops. The low fertility, wetness, and the low available water capacity are the main management concerns. Shallow ditches can help to remove excess surface water. Conservation tillage, cover crops in winter, a crop residue management system, and a crop rotation that includes grasses and legumes increase the available water, minimize crusting, and improve fertility. Using supplemental irrigation and selecting crop varieties that are adapted to droughty conditions increase the production of crops. Most crops respond well to applications of lime and fertilizer.

This map unit is suited to pasture and hay. The low fertility, wetness, and the low available water capacity

are the main management concerns. Shallow ditches can help to remove excess surface water. Drought tolerant grasses, such as bahiagrass and bermudagrass, should be selected. Proper stocking rates, pasture rotation, and restricted grazing during very wet and very dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and promote the growth of forage plants.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of panicums, greenbrier, waxmyrtle, water oak, and sweetgum.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation, the seedling mortality rate, and plant competition. The sandy texture of the surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Wetness limits the use of equipment during winter and spring. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. The moderate seedling mortality rate is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition can prevent adequate reforestation unless sites receive appropriate site preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is poorly suited to most urban uses. The main management concerns are the flooding and wetness. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding. Because of the seasonal high water table, a drainage system is needed if buildings are constructed. Septic tank absorption fields do not function properly during rainy periods because of the wetness. Increasing the size of the absorption field or constructing the absorption field on a raised bed helps to compensate for this limitation.

This map unit has fair potential for openland and wetland wildlife habitat and good potential for woodland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water for waterfowl and furbearing animals.

The capability subclass is IIIw. The woodland ordination symbol is 9W.

OrA—Orangeburg fine sandy loam, 0 to 2 percent slopes

This very deep, well drained soil is on broad ridgetops in the uplands in the eastern part of the county. Slopes are long and smooth. Individual areas generally are irregular in shape. They range from 10 to more than 100 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 8 inches thick. The subsurface layer, to a depth of 15 inches, is brown fine sandy loam. The subsoil, to a depth of 80 inches, is red sandy clay loam.

Important properties of the Orangeburg soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Fuquay, Red Bay, and Springhill soils. Fuquay soils are in slightly lower landscape positions than those of the Orangeburg soil. They have thick sandy surface and subsurface layers. Red Bay soils are in landscape positions similar to those of the Orangeburg soil. They have dark red colors throughout the subsoil. Springhill soils are on the lower parts of slopes. The subsoil of the Springhill soil has a significant decrease in clay content within 60 inches of the surface. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for homesites or woodland.

This map unit is well suited to cultivated crops. It has few limitations affecting this use, although low fertility is a management concern. The surface layer is friable and is easy to keep in good tilth. It can be tilled over a wide range of moisture content without becoming cloddy. Cover crops, minimum tillage, and a

crop residue management system or regular additions of other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. It has no significant limitations affecting these uses, although low fertility is a management concern. Coastal bermudagrass and bahiagrass are commonly grown grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of little bluestem, yellow jessamine, panicums, poison oak, greenbrier, flowering dogwood, and sweetgum.

This map unit has few limitations affecting the production of timber. Plant competition is a minor management concern. Using proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, and trees.

This map unit is well suited to most urban uses. It has no significant management concerns affecting most uses.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability class is I. The woodland ordination symbol is 9A.

OuC—Orangeburg-Urban land complex, 1 to 8 percent slopes

This map unit consists of a very deep, well drained Orangeburg soil and areas of Urban land on ridgetops in the Phenix City area. The areas of Orangeburg soil and Urban land are so closely intermingled that they could not be mapped separately at the scale selected for mapping. The Orangeburg soil makes up about 50 percent of the map unit, and the Urban land makes up about 40 percent. Individual areas are rectangular. They range from 5 to 200 acres in size.

Typically, the Orangeburg soil has a surface layer of dark brown fine sandy loam about 8 inches thick. The subsurface layer, to a depth of 15 inches, is brown fine sandy loam. The subsoil, to a depth of 80 inches, is red sandy clay loam.

Important properties of the Orangeburg soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

Urban land consists of areas that are covered by sidewalks, patios, driveways, parking lots, streets, playgrounds, and buildings.

Included in mapping are a few small areas of Cowarts, Springhill, and Uchee soils. Also included are areas that have been modified to such an extent that the soil series cannot be identified. Cowarts and Springhill soils are on the lower parts of slopes and have a brownish subsoil. Uchee soils are on high knolls and have thick sandy surface and subsurface layers. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Areas of the Orangeburg soil cannot easily be managed for crops, pasture, timber, or wildlife habitat because of the limited size of the areas, the areas of Urban land, and the areas of highly disturbed soils.

Areas of the Orangeburg soil are well suited to most urban uses. The soil has no significant limitations affecting these uses.

This map unit has not been assigned a capability subclass or a woodland ordination symbol.

PaE—Pacolet sandy loam, 15 to 25 percent slopes

This very deep, well drained soil is on narrow ridges and side slopes in the uplands in the northeastern part of the county. Most areas are dissected by deeply incised, intermittent drainageways. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 10 to 60 acres in size.

Typically, the surface layer is dark brown sandy

loam about 4 inches thick. The subsurface layer, to a depth of 9 inches, is red sandy clay loam. The subsoil, to a depth of 22 inches, is red sandy clay. The substratum, to a depth of 80 inches, is mottled red and reddish yellow saprolite that has a texture of sandy loam.

Important properties of the Pacolet soil—

Permeability: Moderate
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Kinston, Orangeburg, and Springhill soils. The poorly drained Kinston soils are on narrow flood plains. Orangeburg and Springhill soils are on the upper parts of slopes or on narrow ridgetops. They are loamy throughout. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used as sites for homes.

This map unit is not suited to most cultivated crops. The complex topography and the moderately steep slopes are severe limitations affecting the use of equipment. Erosion is a severe hazard. Gullies form readily in areas that have a concentrated flow of water on the surface. If the soil is cultivated, all tillage should be on the contour or across the slope.

This map unit is poorly suited to pasture and hay. The complex slopes and a severe hazard of erosion are the main management concerns. The use of equipment is limited by the sloping, complex topography. Tillage should be on the contour or across the slope if practical. Grasses that require low maintenance are best suited to the more steeply sloping areas. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 80. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 1.8 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison ivy, flowering dogwood, huckleberry, muscadine grape, sweetgum, hickory, and water oak.

This map unit has moderate limitations affecting timber management. The main management concerns are a hazard of erosion, an equipment limitation, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion. Mulching, seeding, and constructing diversions can help to control erosion on roads, landings, and skid trails. The slope restricts the use of equipment. Using standard wheeled and tracked equipment when the soil is wet results in ruts and compaction. Management activities should be planned for seasons when the soil is dry. Plant competition reduces timber production and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed burning.

This map unit is poorly suited to most urban uses. It has moderate to severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the slope and a severe hazard of erosion. If areas of this map unit are used as building sites, only the part of the site that is used for construction should be disturbed. Access roads can be designed so that surface runoff is controlled and cut slopes are stabilized. Roads should also be designed to offset the limited ability of this map unit to support a load. Septic tank absorption fields may not function properly because of the slope. Effluent from absorption fields may surface in downslope areas and create a health hazard. Alternative methods should be used to properly dispose of waste.

This map unit has poor potential for openland wildlife habitat, fair potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide open water for waterfowl and furbearing animals.

The capability subclass is VIIe. The woodland ordination symbol is 7R.

Pt—Pits

This map unit consists of open excavations from which the original soil and underlying material have been removed for use at another location. Pits are scattered throughout the county, primarily on low terraces that parallel large streams and on sandy

uplands. Individual areas generally are rectangular and range from 3 to 500 acres in size.

In the uplands, this map unit is mainly in areas where Alaga, Luverne, Springhill, and Troup soils have been removed to a depth of 5 to 25 feet. In these areas, this map unit has been used as a source of construction material for highways and foundations, foundry sand, and fill material. On stream terraces and flood plains, this map unit is mainly in areas where Bladen, Congaree, Riverview, Toccoa, Wahee, and Bladen soils have been removed to a depth of 5 to 15 feet. In these areas, this map unit has been used as a source of sand and gravel for construction and clay for bricks.

Included in mapping are areas of abandoned pits. These areas consist of pits and of banks of spoil material that are 10 to 25 feet high. The surface of these areas generally is a mixture of coarse sand and gravel. Reaction is extremely acid or very strongly acid. Also included are pits that hold water for extended periods after rains.

Most areas of this map unit do not support vegetation. A few low-quality trees and sparse stands of grass are in some of the abandoned pits. This map unit is unsuited to most uses. Extensive reclamation efforts are required to make areas suitable as cropland, pasture, woodland, or a site for urban development. Onsite investigation and testing are needed to determine the suitability of this unit for any uses.

The capability subclass is VIIIs. This map unit has not been assigned a woodland ordination symbol.

RbA—Red Bay sandy loam, 0 to 2 percent slopes

This very deep, well drained soil is on broad ridgetops in the uplands in the eastern part of the county. Slopes are long and smooth. Individual areas generally are irregular in shape. They range from 10 to more than 100 acres in size.

Typically, the surface layer is reddish brown sandy loam about 9 inches thick. The subsoil, to a depth of 65 inches, is dark red and dark reddish brown sandy clay loam.

Important properties of the Red Bay soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Orangeburg and Springhill soils. Orangeburg soils are in landscape positions similar to those of the Red Bay soil. They do not have dark red colors throughout the subsoil. Springhill soils are on lower parts of slopes than the Red Bay soil and do not have dark red colors throughout the subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for homesites or woodland.

This map unit is well suited to cultivated crops. It has few limitations affecting this use, although low fertility is a management concern. The surface layer is friable and is easy to keep in good tilth. It can be tilled over a wide range of moisture content without becoming cloddy. Cover crops, minimum tillage, and a crop residue management system or regular additions of other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to systematic applications of lime and fertilizer.

This map unit is well suited to pasture and hay. It has no significant limitations affecting these uses, although low fertility is a management concern. Coastal bermudagrass and bahiagrass are the commonly grown grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of little bluestem, yellow jessamine, panicums, poison oak, greenbrier, flowering dogwood, and sweetgum.

This map unit has few limitations affecting the production of timber. Plant competition is a minor management concern. Using proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, and trees.

This map unit is well suited to most urban uses. It has no significant management concerns affecting most uses.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for

wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability class is I. The woodland ordination symbol is 9A.

RvA—Riverview loam, 0 to 1 percent slopes, occasionally flooded

This very deep, well drained soil is on low terraces that parallel the Chattahoochee River. It is subject to occasional flooding, usually in spring. Slopes are long and smooth. Individual areas generally are long and narrow. They range from 10 to 200 acres in size.

Typically, the surface layer is dark brown loam about 8 inches thick. The subsoil extends to a depth of 43 inches. It is dark yellowish brown loam in the upper part, very dark grayish brown silt loam in the next part, and dark brown loam in the lower part. The substratum, to a depth of 65 inches, is yellowish brown loam.

Important properties of the Riverview soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 3.0 to 5.0 feet from December through April
Shrink-swell potential: Low
Flooding: Occasional

Included in mapping are a few small areas of Kolomoki, Maxton, and Wickham soils. Also included are soils that are similar to the Riverview soil, except that they have a black surface layer. Kolomoki, Maxton, and Wickham soils are on small knolls at slightly higher elevations than the Riverview soil. They have a reddish subsoil. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of the Riverview soil are used for pasture or hay. A few areas are used for cultivated crops, woodland, or pecan orchards (fig. 7).

This map unit is well suited to cultivated crops. The main management concern is the occasional flooding. Planting of early-season crops may be delayed in some years because of the flooding. Conservation tillage, cover crops in winter, a crop residue management system, and a crop rotation that includes grasses and legumes increase the available water, minimize crusting, and improve fertility. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay. The occasional flooding is the main management concern. Proper stocking rates, pasture rotation, and restricted grazing during very wet periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and promote the growth of forage plants.

This map unit is well suited to loblolly pine and hardwoods. Common species include yellow-poplar, pecan, sweetgum, water oak, American sycamore, and green ash. On the basis of a 50-year site curve, the site index for loblolly pine is 100. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.7 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison ivy, Alabama supplejack, muscadine grape, red maple, sweetgum, and water oak.

This map unit has few limitations affecting woodland management. Competition from understory plants is a minor management concern. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control the initial plant competition and facilitate mechanical planting.

This map unit is poorly suited to most urban uses. The flooding is the main management concern. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding.

This map unit has good potential for openland and woodland wildlife habitat and poor potential for wetland wildlife habitat. Habitat for deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, and promoting the establishment of desirable plants. Habitat for openland wildlife can be improved by planting seed-producing grasses and shrubs along the edges of fields and pastures.

The capability subclass is IIw. The woodland ordination symbol is 11A.

SbB—Springhill sandy loam, 2 to 5 percent slopes

This very deep, well drained soil is on narrow ridgetops and on side slopes in the uplands in the central part of the county. Slopes generally are short and complex but may be long and smooth in some

Figure 7.—Pecan trees and pasture in an area of Riverview loam, 0 to 1 percent slopes, occasionally flooded.

areas. Individual areas are irregular in shape. They range from 5 to 100 acres in size.

Typically, the surface layer is yellowish brown sandy loam about 7 inches thick. The subsoil, to a depth of 42 inches, is yellowish red sandy clay loam. The substratum, to a depth of 65 inches, is yellowish red sandy loam. In some areas, the texture of the surface layer is loamy sand.

Important properties of the Springhill soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Cowarts, Luverne, Orangeburg, and Troup soils. Also included are soils that have a slope of less than 2 percent or more than 5 percent. Cowarts soils are in landscape positions similar to those of the Springhill soil and have a brownish subsoil. Luverne soils are on the lower parts of slopes and are clayey in the upper part of the subsoil. Orangeburg and Troup soils are on slightly higher parts of ridgetops than the Springhill soil. The subsoil of the Orangeburg soil does not have a significant decrease in clay content within 60 inches

of the surface. Troup soils have thick sandy surface and subsurface layers. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for cultivated crops, pasture, or hay.

This map unit is suited to most cultivated crops. The main management concerns are the low fertility and a moderate hazard of erosion. Gullies form readily in areas that have a concentrated flow of water on the surface. Conservation tillage, terraces, contour farming, and cover crops reduce the runoff rate and help to control erosion. Installing drop-inlet structures in grassed waterways helps to prevent gullying. Returning all crop residue to the soil or regularly adding other organic matter improves fertility and helps to maintain tilth and the content of organic matter. Most crops respond well to additions of lime and fertilizer.

This map unit is well suited to pasture and hay plants, such as coastal bermudagrass and bahiagrass. The main management concerns are the low fertility and a moderate hazard of erosion. Tillage should be on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during prolonged wet and dry periods help to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of little bluestem, greenbrier, panicums, brackenfern, southern red oak, blackjack oak, water oak, and flowering dogwood.

This map unit has few limitations affecting woodland management. Competition from understory plants is a minor management concern. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control the initial plant competition and facilitate mechanical planting.

This map unit is well suited to most urban uses. It has no significant limitations affecting these uses

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIe. The woodland ordination symbol is 9A.

ScD—Springhill-Cowarts-Urban land complex, 8 to 15 percent slopes

This map unit consists of very deep, well drained Springhill and Cowarts soils and areas of Urban land on side slopes in the uplands in the Phenix City area. The areas of soils and Urban land are so intermingled that they could not be mapped separately at the scale selected for mapping. The Springhill soil makes up about 35 percent of the map unit, the Cowarts soil makes up about 30 percent, and the Urban land makes up about 30 percent. Individual areas are irregular in shape. They range from 10 to 200 acres in size.

Typically, the surface layer of the Springhill soil is dark yellowish brown loamy sand about 4 inches thick. The subsurface layer, to a depth of 12 inches, is pale brown loamy sand. The subsoil, to a depth of 45 inches, is sandy clay loam. It is red in the upper part and yellowish red in the lower part. The substratum, to a depth of 65 inches, is thinly stratified yellowish red sandy clay loam and sandy loam.

Important properties of the Springhill soil—

Permeability: Moderate
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 6 feet
Root zone: More than 6 feet
Seasonal high water table: More than 6.0 feet deep
Flooding: None

Typically, the surface layer of the Cowarts soil is dark brown loamy sand about 6 inches thick. The subsoil, to a depth of 24 inches, is strong brown sandy clay loam that has reddish mottles in the lower part. The substratum, to a depth of 65 inches, is yellowish brown sandy loam that has reddish, brownish, and grayish mottles.

Important properties of the Cowarts soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low

Depth to bedrock: More than 6.0 feet
Root zone: More than 6.0 feet
Seasonal high water table: More than 6.0 feet deep
Flooding: None

Urban land consists of areas that are covered by sidewalks, patios, driveways, parking lots, streets, playgrounds, and buildings.

Included in mapping are a few small areas of Luverne, Troup, and Uchee soils. Also included are areas that have been modified to such an extent that the soil series cannot be identified. Luverne soils are on the lower parts of slopes and are clayey in the upper part of the subsoil. Troup and Uchee soils are on narrow ridgetops and have thick sandy surface and subsurface layers. Included areas make up about 5 percent of this unit. Individual areas generally are less than 5 acres in size.

Areas of the Springhill and Cowarts soils cannot easily be managed for crops, pasture, timber, or wildlife habitat because of the limited size of the areas, the areas of Urban land, and the areas of highly disturbed soils.

Areas of the Springhill and Cowarts soils are suited to most urban uses. The main management concerns are the slope and a severe hazard of erosion. The moderately slow permeability is also a limitation in areas of the Cowarts soil. If areas of this map unit are used as building sites, only the part of the site that is used for construction should be disturbed. Access roads can be designed so that surface runoff is controlled and cut slopes are stabilized. If this unit is used as a site for septic tank absorption fields, effluent can surface in downslope areas and create a health hazard. Constructing the absorption lines on the contour and enlarging the absorption area help to overcome this limitation.

This map unit has not been assigned a capability subclass or a woodland ordination symbol.

ShE3—Sumter-Hannon complex, 12 to 25 percent slopes, severely eroded

This map unit consists of a moderately deep, well drained Sumter soil and a very deep, moderately well drained Hannon soil. It is on side slopes and narrow ridgetops in the Blackland Prairie. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Sumter soil makes up about 50 percent of the map unit, and the Hannon soil makes up about 35 percent. In most areas, the surface layer is a mixture of the original surface layer and material from the subsoil that has been mixed in by site preparation activities. Some areas have a few rills and shallow gullies. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 20 to 200 acres in size.

The Sumter soil is on narrow ridgetops and on the upper and middle parts of slopes. Typically, the surface layer is very dark grayish brown silty clay loam about 3 inches thick. The subsoil, to a depth of 38 inches, is silty clay loam. It is pale olive in the upper part and light olive brown and has pale brown mottles in the lower part. The substratum, to a depth of 80 inches, is soft limestone (chalk).

Important properties of the Sumter soil—

Permeability: Very slow
Available water capacity: Moderate
Organic matter content: Medium
Natural fertility: High
Depth to bedrock: 20 to 40 inches
Root zone: 20 to 40 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Moderate
Flooding: None

The Hannon soil is generally on ridge crests and lower parts of slopes. Typically, the surface layer is dark brown clay about 2 inches thick. The subsoil, to a depth of 40 inches, is clay. In the upper part, it is yellowish red and red. In the lower part, it is light yellowish brown and light brownish gray, has red and yellow mottles, and has masses of calcium carbonate. The substratum, to a depth of 80 inches, is light olive gray clay that has many masses of calcium carbonate.

Important properties of the Hannon soil—

Permeability: Very slow
Available water capacity: Moderate
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 60 inches deep
Shrink-swell potential: High
Flooding: None

Included in mapping are a few small areas of alkaline soils that are shallow over bedrock and a few that are deep to bedrock. Also included are small areas of gullied land and areas of soils that have a slope of more than 25 percent or less than 12 percent. Included areas make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat.

This map unit is unsuited to cultivated crops. The

complex topography and the strongly sloping and moderately steep slopes are severe limitations affecting the use of equipment. Erosion is a severe hazard.

This map unit is poorly suited to pasture and hay. The steep, complex slopes and a severe hazard of erosion are the main management concerns.

This map unit is suited to eastern redcedar in areas of the Sumter soil. On the basis of a 50-year curve, the site index for eastern redcedar is 40. The average annual growth of well stocked, even-aged, unmanaged stands of eastern redcedar at 40 years of age is 140 board feet per acre per year. This map unit is suited to loblolly pine in areas of the Hannon soil, but it is not suited to pine trees in areas of the Sumter soil because of alkalinity. Because the soils occur as intricately intermingled areas, onsite investigation is necessary before planting. On the basis of a 50-year site curve, the site index is 80 for loblolly pine in areas of the Hannon soil. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 1.8 cords per acre per year. The understory vegetation consists mainly of greenbrier, poison ivy, broomsedge bluestem, Johnsongrass, panicums, honeylocust, redcedar, hackberry, and sweetgum.

This map unit has moderate limitations affecting timber management. The main management concerns are a hazard of erosion, an equipment limitation, the seedling mortality rate, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion, including rill and gully erosion. Mulching, seeding, and constructing diversions can help to control erosion on roads, landings, and skid trails. The slope and the clayey texture of the surface layer restrict the use of equipment. Using standard wheeled and tracked equipment results in ruts and increases the hazard of erosion. The high seedling mortality rate is caused by droughtiness and clayey textures. It can be compensated for by increasing the number of trees planted and by planting on raised beds. Plant competition reduces timber production and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed burning.

This map unit is poorly suited to most urban uses. The soils have severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are the slope, the very slow permeability, the shrink-swell potential, and the depth to bedrock in areas of the Sumter soil. Erosion is a severe hazard in the steeper areas.

This map unit has poor potential for openland wildlife habitat, fair potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is VIIe. The woodland ordination symbol is 3R in areas of the Sumter soil and 8R in areas of the Hannon soil.

TaB—Troup-Alaga complex, 0 to 5 percent slopes

This map unit consists of very deep, somewhat excessively drained Troup and Alaga soils on broad ridgetops and on upper parts of side slopes in the uplands in the central part of the county. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Troup soil makes up about 50 percent of the map unit, and the Alaga soil makes up about 40 percent. Slopes generally are long and smooth. Individual areas are irregular in shape and range from 10 to more than 100 acres in size.

Typically, the surface layer of the Troup soil is brown loamy fine sand about 4 inches thick. The subsurface layer, to a depth of 54 inches, is loamy sand. It is yellowish brown and light yellowish brown in the upper part, brownish yellow in the middle part, and very pale brown in the lower part. The subsoil, to a depth of 80 inches, is yellowish red sandy loam.

Important properties of the Troup soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Very low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

Typically, the Alaga soil has a surface layer of dark brown loamy fine sand about 4 inches thick. The substratum, to a depth of 80 inches, is loamy sand. It is yellowish brown in the upper part and light yellowish brown in the lower part.

Important properties of the Alaga soil—

Permeability: Rapid
Available water capacity: Low
Organic matter content: Low
Natural fertility: Very low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Cowarts, Orangeburg, and Springhill soils. Also included are areas that have been strip-mined. Cowarts and Springhill soils generally are on lower parts of slopes than the Troup and Alaga soils. They do not have thick sandy surface and subsurface layers. Orangeburg soils are in slightly higher landscape positions than those of the Alaga and Troup soils. They also do not have thick sandy surface and subsurface layers. Included areas make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for hay, pasture, or woodland.

This map unit is suited to cultivated crops. The main management concerns are the low available water capacity, the very low fertility, and a moderate hazard of erosion. Irrigation can prevent crop damage and increase productivity in most years. Returning crop residue to the soil helps to maintain tilth and increases the available water capacity. Minimum tillage, contour farming, and cover crops reduce the runoff rate and help to control erosion. Most crops respond well to applications of lime and to frequent, light applications of fertilizer.

This map unit is well suited to pasture and hay plants, such as coastal bermudagrass and bahiagrass. The main management concerns are the low fertility and the low available water capacity. Leaching of plant nutrients is also a management concern. Frequent, light applications of nitrogen are necessary to maintain the productivity of grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged dry periods help to keep the pasture in good condition.

This map unit is suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, and southern red oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of little bluestem, poison oak, longleaf uniola, lespedeza, common persimmon, pricklypear cactus, brackenfern, flowering dogwood, and blackjack oak.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation, the seedling mortality rate, and plant competition. The sandy texture restricts the use of wheeled equipment, especially when the soils are very dry. Harvesting activities should be planned for seasons when the soils are moist. The moderate seedling mortality rate is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition reduces timber production and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed burning.

This map unit is suited to most urban uses. It has slight limitations affecting building sites and local roads and streets and has slight to severe limitations affecting most kinds of sanitary facilities. The main management concerns are the sandy textures, seepage, the very low fertility, and droughtiness. Cutbanks are unstable and subject to slumping. Support beams should be used to maintain the stability of the cutbanks. If this unit is used as a site for septic tank absorption fields, effluent can surface in downslope areas and create a health hazard. Increasing the length of the absorption lines and constructing the lines on the contour help to compensate for this concern. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants.

This map unit has fair potential for openland wildlife habitat, poor potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat. The low available water capacity and the very low natural fertility are management concerns. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIIs. The woodland ordination symbol is 8S.

TsE—Troup-Springhill-Luverne complex, 10 to 30 percent slopes

This map unit consists of very deep, somewhat excessively drained Troup soil and well drained Springhill and Luverne soils. It is on side slopes and narrow ridges of highly dissected uplands in the

southern and eastern parts of the county. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Troup soil makes up about 35 percent of the map unit, the Springhill soil makes up about 30 percent, and the Luverne soil makes up about 25 percent. Slopes generally are short and complex. Individual areas are irregular in shape. They range from 25 to 500 acres in size.

The Troup soil is generally on the upper parts of slopes. Typically, the surface layer is brown loamy fine sand about 6 inches thick. The subsurface layer, to a depth of 50 inches, is loamy sand. It is pale brown in the upper part and very pale brown in the lower part. The subsoil, to depth of 65 inches, is red sandy loam.

Important properties of the Troup soil—

Permeability: Rapid in the surface layer and subsurface layer; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Very low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

The Springhill soil is generally on the upper and middle parts of slopes and on narrow ridges. Typically, the surface layer is dark yellowish brown loamy sand about 4 inches thick. The subsurface layer, to a depth of 12 inches, is brown loamy sand. The subsoil, to a depth of 65 inches, is sandy clay loam. It is red in the upper part and yellowish red in the lower part.

Important properties of the Springhill soil—

Permeability: Moderate
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

The Luverne soil is generally on the middle and lower parts of slopes. Typically, the surface layer is dark brown sandy loam about 5 inches thick. The subsurface layer, to a depth of 8 inches, is light yellowish brown sandy loam. The subsoil, to a depth of 53 inches, is red clay. It has brownish and grayish mottles in the lower part. The substratum, to a depth of 65 inches, is stratified sandy loam and sandy clay loam. Individual strata are yellowish red, red, light gray, and strong brown.

Important properties of the Luverne soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Moderate
Flooding: None

Included in mapping are a few small areas of Alaga, Cowarts, Fuquay, and Kinston soils. Alaga and Fuquay soils are in landscape positions similar to those of the Troup soil. Alaga soils do not have loamy materials within a depth of 80 inches. Fuquay soils have sandy surface and subsurface layers that have a combined thickness of 20 to 40 inches. Cowarts soils are in landscape positions similar to those of the Springhill soil. They have a brownish subsoil. The poorly drained Kinston soils are on narrow flood plains. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for pasture and hay.

This map unit is not suited to cultivated crops. The main management concerns are the moderately steep slope and the severe hazard of erosion. The shape of the slope, droughtiness in areas of the Troup soil, and the low fertility are also management concerns.

This map unit is poorly suited to pasture and hay. The main management concerns are the slope, the low fertility, droughtiness in areas of the Troup soil, and a severe hazard of erosion. The more steeply sloping areas are best suited to native grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This map unit is suited to loblolly pine. Other species that commonly grow in areas of this map unit include shortleaf pine, longleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85 in areas of the Troup soil and 90 in areas of the Springhill and Luverne soils. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year in areas of the Troup soil and 2.2 cords per acre per year in areas of the Springhill and Luverne soils. The understory vegetation consists mainly of greenbrier, poison oak, little

bluestem, brackenfern, waxmyrtle, muscadine grape, American beautyberry, red maple, yellow jessamine, huckleberry, and flowering dogwood.

This map unit has moderate limitations affecting timber management. The main management concerns are a hazard of erosion, an equipment limitation, the seedling mortality rate, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion, including rill and gully erosion. Mulching, seeding, and constructing diversions can help to control erosion on roads, landings, and skid trails. The slope and the sandy texture in areas of the Troup soil restrict the use of equipment. Using standard wheeled and tracked equipment when the soils are wet results in ruts and compaction. Cable yarding systems are safer and damage the soil less. The moderate seedling mortality rate in areas of the Troup soil is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is poorly suited to most urban uses. It is generally not suitable as a site for buildings because of the slope. Other limitations include the moderately slow permeability, the moderate shrink-swell potential, and the low strength in areas of the Luverne soil and the sandy texture in areas of the Troup soils.

This map unit has fair potential for openland wildlife habitat, good potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide areas of open water for waterfowl and furbearers.

The capability subclass is VIIe. The woodland ordination symbol is 8R in areas of the Troup soil and 9R in areas of the Springhill and Luverne soils.

UcB—Uchee-Cowarts complex, 0 to 5 percent slopes

This map unit consists of very deep, well drained Uchee and Cowarts soils on narrow to broad ridgetops and on the upper parts of side slopes in the uplands in the northern part of the county. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Uchee soil makes up about 50 percent of the map unit, and the Cowarts soil makes up about 35 percent. Slopes generally are long and smooth. Individual areas are irregular in shape. They range from 5 to more than 100 acres in size.

The Uchee soil generally is on the higher parts of ridgetops and on shoulder slopes. Typically, the surface layer is dark grayish brown loamy sand about 3 inches thick. The subsurface layer, to a depth of 30 inches, is loamy sand. It is yellowish brown in the upper part and light yellowish brown in the lower part. The subsoil extends to a depth of 54 inches. In the upper part, it is yellowish brown sandy loam. In the lower part, it is yellowish brown sandy clay loam that has brownish and grayish mottles. The substratum, to a depth of 80 inches, is mottled yellowish brown, red, and light gray sandy clay loam.

Important properties of the Uchee soil—

Permeability: Rapid in the surface and subsurface layers; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Very low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched, at a depth of 3.5 to 5.0 feet from January through March
Shrink-swell potential: Low
Flooding: None

The Cowarts soil generally is on the lower parts of ridgetops and side slopes. Typically, the surface layer is dark yellowish brown loamy sand about 5 inches thick. The subsurface layer, to a depth of 12 inches, is yellowish brown loamy sand. The subsoil extends to a depth of 34 inches. It is yellowish brown sandy loam in the upper part and yellowish brown sandy clay loam in the lower part. The substratum, to a depth of 65 inches, is mottled yellowish brown, red, and light gray sandy loam and sandy clay loam.

Important properties of the Cowarts soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Blanton, Dothan, Luverne, and Orangeburg soils. Blanton soils are in landscape positions similar to those of the Uchee soil. They have sandy surface and subsurface layers that have a combined thickness of 40 to 80 inches. Dothan and Orangeburg soils are on slightly higher knolls than the Uchee and Cowarts soils. Dothan soils have significant accumulations of plinthite in the lower part of the subsoil and do not have thick sandy surface and subsurface layers. Orangeburg soils have a reddish subsoil and do not have thick sandy surface and subsurface layers. Luverne soils are in slightly lower positions than those of the Uchee and Cowarts soils. They have a clayey subsoil. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for cultivated crops, pasture, or hay.

This map unit is suited to cultivated crops. The main management concerns are the low available water capacity in areas of the Uchee soil, the low fertility, and a moderate hazard of erosion. Contour farming, minimum tillage, and cover crops reduce the runoff rate and help to control erosion. Returning crop residue to the soil helps to maintain tilth and increases the available water capacity. Irrigation can prevent crop damage and increase productivity in most years. Most crops respond well to applications of lime and to frequent, light applications of fertilizer.

This map unit is well suited to pasture and hay plants, such as coastal bermudagrass and bahiagrass. The main management concerns are the low fertility and the low available water capacity of the Uchee soil. Leaching of plant nutrients is also a management concern. Frequent, light applications of nitrogen are necessary to maintain the productivity of grasses. Proper stocking rates, pasture rotation, and restricted grazing during prolonged dry periods help to keep the pasture in good condition.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of little bluestem, panicums, greenbrier, pricklypear cactus, brackenfern, common persimmon, flowering dogwood, and blackjack oak.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation and the seedling mortality rate in areas of the Uchee soil and plant competition. The sandy texture of the surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Harvesting activities should be planned for seasons when the soil is moist. The moderate seedling mortality rate is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition reduces timber production and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed burning.

This map unit is suited to most urban uses. It has slight to moderate limitations affecting building sites and local roads and streets and has severe limitations affecting most kinds of sanitary facilities. The main management concern is the restricted permeability. The seasonal high water table, the sandy textures, and droughtiness are also management concerns in areas of the Uchee soil. Septic tank absorption fields may not function properly during rainy periods because of the restricted permeability. Enlarging the size of the absorption field helps to compensate for this limitation. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants.

This map unit has fair potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. The low available water capacity and the low natural fertility are limitations. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is IIs in areas of the Uchee soil and IIe in areas of the Cowarts soil. The woodland ordination symbol is 8S in areas of the Uchee soil and 8A in areas of the Cowarts soil.

UcD—Uchee-Cowarts complex, 5 to 15 percent slopes

This map unit consists of very deep, well drained Uchee and Cowarts soils on side slopes and narrow ridges in the uplands in the northern part of the county. The soils occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Uchee soil makes up about 50 percent of the map unit, and the Cowarts soil makes up about 35 percent. Slopes generally are short and complex. Individual areas are irregular in shape.

They range from 10 to more than 200 acres in size.

The Uchee soil generally is on the upper parts of slopes and on narrow ridgetops. Typically, the surface layer is dark yellowish brown loamy sand about 6 inches thick. The subsurface layer, to a depth of 28 inches, is loamy sand. It is yellowish brown in the upper part and light yellowish brown in the lower part. The subsoil, to a depth of 44 inches, is yellowish brown and brownish yellow sandy clay loam. The substratum, to a depth of 65 inches, is mottled light gray, red, and strong brown sandy loam.

Important properties of the Uchee soil—

Permeability: Rapid in the surface and subsurface layers; moderate in the subsoil
Available water capacity: Low
Organic matter content: Low
Natural fertility: Very low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched, at a depth of 3.5 to 5.0 feet from January through March
Shrink-swell potential: Low
Flooding: None

The Cowarts soil generally is on the lower and middle parts of slopes. Typically, the surface layer is dark brown loamy sand about 6 inches thick. The subsoil extends to a depth of 24 inches. It is strong brown sandy clay loam in the upper part and strong brown sandy clay in the lower part. The substratum, to a depth of 65 inches, is mottled yellowish brown, red, and light gray sandy loam.

Important properties of the Cowarts soil—

Permeability: Moderately slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: None

Included in mapping are a few small areas of Blanton, Kinston, Luverne, and Springhill soils. Also included are soils that have a slope of less than 5 percent or more than 15 percent. Blanton soils are in landscape positions similar to those of the Uchee soil. They have sandy surface and subsurface layers that have a combined thickness of 40 to 80 inches. The poorly drained Kinston soils are on narrow flood plains. Luverne and Springhill soils are in positions similar to those of the Cowarts soil. Luverne soils have a clayey subsoil. Springhill soils have a reddish subsoil and do not have thick sandy surface and subsurface layers. Included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few areas are used for cultivated crops, pasture, or hay.

This map unit is not suited to cultivated crops. The complex topography and the moderately sloping and strongly sloping slopes are limitations affecting the use of equipment. Erosion is a severe hazard. The sandy texture and droughtiness are limitations in areas of the Uchee soil. If the soils are cultivated, all tillage should be on the contour or across the slope.

This map unit is suited to pasture and hay plants, such as coastal bermudagrass and bahiagrass. The main management concerns are the slope, droughtiness, low fertility, and a severe hazard of erosion. The use of equipment is restricted by the sloping, complex topography and the sandy texture of the Uchee soil. Seedbeds should be prepared on the contour or across the slope if practical. Proper stocking rates, pasture rotation, and restricted grazing during very wet or dry periods help to keep the pasture in good condition.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include longleaf pine, shortleaf pine, sweetgum, and water oak. On the basis of a 50-year site curve, the site index for loblolly pine is 85. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.1 cords per acre per year. The understory vegetation consists mainly of little bluestem, panicums, greenbrier, pricklypear cactus, brackenfern, common persimmon, flowering dogwood, and blackjack oak.

This map unit has moderate limitations affecting timber management. The main management concerns are an equipment limitation and the seedling mortality rate in areas of the Uchee soil, a hazard of erosion, and plant competition. Exposing the surface by removing ground cover increases the hazard of erosion. Mulching, seeding, and constructing diversions can help to control erosion on roads, landings, and skid trails. The sandy texture of the surface layer restricts the use of wheeled equipment, especially when the soil is very dry. Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity. The moderate seedling mortality rate is caused by droughtiness. It can be compensated for by increasing the number of trees planted. Plant competition reduces timber production

and can prevent adequate reforestation. The competing vegetation can be controlled by mechanical methods, herbicides, or prescribed burning.

This map unit is poorly suited to most urban uses. It has moderate to severe limitations affecting building sites and local roads and streets and has severe limitations affecting most kinds of sanitary facilities. The main management concerns are the slope and the moderate and moderately slow permeability. The seasonal high water table, the sandy textures, and droughtiness are also management concerns in areas of the Uchee soil. Erosion is a hazard in the steeper areas. If areas of this map unit are used as building sites, only the part of the site that is used for construction should be disturbed. Access roads can be designed so that surface runoff is controlled and cut slopes are stabilized. Septic tank absorption fields may not function properly during rainy periods because of the restricted permeability. Effluent from absorption areas may surface in downslope areas and create a health hazard. Alternative methods of sewage disposal should be used. Applying lime and fertilizer, mulching, and irrigating help to establish lawns and landscape plants.

This map unit has fair potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. The low available water capacity and the low natural fertility are limitations. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the establishment of desirable plants. Prescribed burning every three years, rotated among several small tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability subclass is VIe. The woodland ordination symbol is 8S in areas of the Uchee soil and 8A in areas of the Cowarts soil.

UdA—Udorthents-Urban land complex, 0 to 2 percent slopes

This map unit consists of very deep Udorthents and areas of Urban land on uplands, primarily in the Phenix City area. The areas of Udorthents and Urban land are so closely intermingled that they could not be mapped separately at the scale selected for mapping. The Udorthents makes up about 50 percent of the map unit, and the Urban land makes up about 40 percent. Individual areas are rectangular. They range from 3 to more than 20 acres in size.

Udorthents consist of earthen materials that have been so modified by construction activities that the original soil components are no longer recognizable. The original soils were altered by cutting and filling, shaping and grading, and compacting. In some areas, the Udorthents consist of materials hauled in from other sources. Udorthents are highly variable within a short distance and may be clayey, loamy, or stratified with various textures. Fragments of concrete, wood, and metal and other debris from construction activities commonly are mixed into the Udorthents.

Important properties of the Udorthents—

Permeability: Variable
Available water capacity: Variable
Organic matter content: Very low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: Variable
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Variable
Flooding: None

Urban land consists of areas that are covered by sidewalks, patios, driveways, parking lots, streets, playgrounds, and buildings.

Included in mapping are a few small areas of Cowarts, Riverview, Springhill, Uchee, and Wickham soils. These soils are on the edges of mapped areas and have identifiable soil horizons. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Areas of the Udorthents cannot easily be managed for crops, pasture, timber, or wildlife habitat because of the limited size of the areas, the areas of Urban land, and the variability in soil properties. Onsite investigation and testing are needed to determine the suitability of this unit for any uses.

This map unit has not been assigned a capability subclass or a woodland ordination symbol.

Ur—Urban land

This map unit consists mainly of high-density residential areas and commercial and industrial developments. Generally, these areas have been graded and smoothed. In most areas, the original soils have been altered beyond recognition or are covered by buildings or pavement. The original soils were altered by cutting and filling, shaping and grading, compacting, or covering with concrete and asphalt. Individual areas generally are less than 30 acres in size. They are primarily in the Phenix City area.

Included in mapping are a few small areas of unaltered soils, mostly Cowarts, Orangeburg, and Springhill soils. Included soils generally make up less than 10 percent of the map unit.

Onsite investigation and testing are needed to determine the suitability of this unit for any uses.

The capability subclass is VIIIs. This map unit has not been assigned a woodland ordination symbol.

UuA—Urbo-Mooreville-Una complex, 0 to 2 percent slopes, frequently flooded

This map unit consists of the very deep, somewhat poorly drained Urbo soil, the moderately well drained Mooreville soil, and the poorly drained Una soil on flood plains along large streams in the northwestern part of the county. These soils are subject to flooding for brief periods several times each year. They occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Urbo soil makes up about 40 percent of the map unit, the Mooreville soil makes up about 25 percent, and the Una soil makes up about 20 percent. Individual areas are usually long and narrow. They range from 10 to more than 1,000 acres in size.

The somewhat poorly drained Urbo soil is in flat to slightly concave positions, generally at low to intermediate elevations on the flood plain. Typically, the surface layer is dark brown clay loam about 8 inches thick. The subsoil extends to a depth of 65 inches. In the upper part, it is grayish brown clay that has yellowish brown mottles. In the next part, it is gray clay loam that has yellowish brown mottles. In the lower part, it is grayish brown silty clay loam that has yellowish brown and strong brown mottles.

Important properties of the Urbo soil—

Permeability: Very slow
Available water capacity: High
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched, at a depth of 1.0 to 2.0 feet from December through April
Shrink-swell potential: Moderate
Flooding: Frequent

The moderately well drained Mooreville soil is in slightly convex positions on low ridges and natural levees. Typically, the surface layer is dark brown fine sandy loam about 6 inches thick. The subsoil, to a depth of 45 inches, is sandy clay loam. It is yellowish brown in the upper part, yellowish brown and has grayish mottles in the next part, and yellowish brown and has brownish and grayish mottles in the lower part. The substratum, to a depth of 70 inches, is mottled yellowish brown, grayish brown, and strong brown sandy loam.

Important properties of the Mooreville soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 1.5 to 3.0 feet from January through March
Shrink-swell potential: Moderate
Flooding: Frequent

The poorly drained Una soil is in swales, sloughs, and other depressional areas at the lowest elevations on the flood plain. Typically, the surface layer is very dark gray silty clay loam about 3 inches thick. The subsoil, to a depth of 65 inches, is gray clay that has brownish mottles.

Important properties of the Una soil—

Permeability: Very slow
Available water capacity: High
Organic matter content: Medium
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Perched, from 2.0 feet above the surface to a depth of 0.5 foot from December through April
Shrink-swell potential: Moderate
Flooding: Frequent

Included in mapping are a few small areas of Dogue, Goldsboro, and Iuka soils. The moderately well drained Dogue and Goldsboro soils are on low knolls or remnants of terraces at slightly higher elevations than the Urbo, Mooreville, and Una soils. They are not subject to frequent flooding. The moderately well drained Iuka soils are in positions similar to those of the Mooreville soil. They have less clay in the subsoil than the Mooreville soil. The included soils make up about 15 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland and wildlife habitat. A few areas are used for pasture, hay, or cultivated crops.

This map unit is not suited to most cultivated crops. The frequent flooding and the wetness are the main management concerns. If cultivated crops are grown, a surface drainage system and protection from flooding are needed.

This map unit is poorly suited to pasture and hay

because of the frequent flooding and the wetness. If areas are used for pasture or hay, grasses that tolerate the wet soil conditions should be selected. Common bermudagrass is suitable. Shallow ditches can help to remove excess surface water.

This map unit is suited to loblolly pine and hardwoods. Other species that commonly grow in areas of this map unit include American sycamore, yellow-poplar, cherrybark oak, water oak, green ash, and sweetgum. On the basis of a 50-year site curve, the site index for loblolly pine is 95 in areas of the Urbo soil and 105 in areas of the Mooreville soil. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.5 cords per acre per year in areas of the Urbo soil and 2.9 cords per acre per year in areas of the Mooreville soil. On the basis of a 50-year site curve, the site index for water tupelo is 70 in areas of the Una soil. The average annual growth of well stocked, even-aged, unmanaged stands of water tupelo at 30 years of age is 0.5 cord per acre per year. The understory vegetation consists mainly of muscadine grape, Alabama supplejack, greenbrier, poison ivy, longleaf uniola, sweetgum, blackgum, water oak, sweetbay, green ash, and red maple.

This map unit has severe limitations affecting timber management. The main management concerns are an equipment limitation, the seedling mortality rate, and plant competition. The seasonal high water table and the flooding restrict the use of equipment to periods when the soils are dry. Using standard wheeled and tracked equipment when the soils are wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soils and helps to maintain productivity. The high seedling mortality rate is caused by excessive wetness. It can be reduced by planting on raised beds, or it can be compensated for by increasing the number of trees planted. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is not suited to most urban uses. The flooding and wetness are severe limitations affecting most uses. Buildings can be constructed on pilings or well-compacted fill to elevate them above the expected level of flooding.

The Urbo and Mooreville soils have fair potential for openland wildlife habitat and good potential for woodland wildlife habitat. The Una soil has poor potential for openland and woodland wildlife habitat. The potential for wetland wildlife habitat is fair in areas of the Urbo and Una soils and poor in areas of the Mooreville soil. Habitat for openland and woodland wildlife can be improved by planting or encouraging the growth of existing oak trees and suitable understory plants. Habitat for wetland wildlife can be improved by constructing shallow ponds that provide areas of open water for waterfowl and furbearers.

The capability subclass is Vw. The woodland ordination symbol is 10W in areas of the Urbo soil, 12W in areas of the Mooreville soil, and 7W in areas of the Una soil.

WbA—Wahee-Bladen complex, 0 to 1 percent slopes, occasionally flooded

This map unit consists of very deep, somewhat poorly drained and poorly drained Wahee and Bladen soils on low terraces along major streams. These soils are subject to occasional flooding, usually in late winter and early spring. They occur as areas so intricately intermingled that they could not be mapped separately at the scale selected for mapping. The Wahee soil makes up about 45 percent of the map unit, and the Bladen soil makes up about 35 percent. Most mapped areas are long and narrow, but some are broad. Individual areas range from 10 to more than 100 acres in size.

The somewhat poorly drained Wahee soil is in flat to slightly convex positions. Typically, the surface layer is dark brown loam about 4 inches thick. The subsoil extends to a depth of 65 inches. In the upper part, it is light olive brown clay that has grayish mottles. In the next part, it is light gray, light brownish gray, and gray clay that has brownish and reddish mottles. In the lower part, it is light gray sandy clay loam that has brownish and reddish mottles.

Important properties of the Wahee soil—

Permeability: Slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, at a depth of 0.5 foot to 1.5 feet from January through March
Shrink-swell potential: Moderate
Flooding: Occasional

The poorly drained Bladen soil is in flat to concave positions. Typically, the surface layer is very dark grayish brown fine sandy loam about 3 inches thick. The subsurface layer, to a depth of 10 inches, is dark gray fine sandy loam. The subsoil, to a depth of 65 inches, is clay. In the upper part, it is light brownish

gray and has brownish and reddish mottles. In the lower part, it is gray and has brownish and reddish mottles.

Important properties of the Bladen soil—

Permeability: Slow
Available water capacity: Moderate
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Seasonal high water table: Apparent, from the surface to a depth of 1.0 foot from December through May
Shrink-swell potential: Moderate
Flooding: Occasional

Included in mapping are a few small areas of Dogue, Goldsboro, and Lynchburg soils. The moderately well drained Dogue and Goldsboro soils are in slightly higher, more convex positions than those of the Wahee and Bladen soils. Lynchburg soils are in positions similar to those of the Wahee soil and are loamy throughout. Included soils make up about 20 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for woodland. A few small areas are used for cultivated crops, pasture, or hay.

This map unit is poorly suited to cultivated crops, pasture, and hay. Wetness and the occasional flooding are the main management concerns. If cultivated crops are grown, a surface drainage system and protection from flooding are needed. If areas are used for pasture or hay, grasses that tolerate wet soil conditions should be selected. Common bermudagrass is suitable.

This map unit is suited to loblolly pine and hardwoods. Other species that commonly grow in areas of this map unit include sweetgum, water oak, and green ash. On the basis of a 50-year site curve, the site index for loblolly pine is 90 in areas of the Wahee soil and 85 in areas of the Bladen soil. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year in areas of the Wahee soil and 2.1 cords per acre per year in areas of the Bladen soil. The understory vegetation consists mainly of red maple, water oak, green ash, sweetgum, panicums, waxmyrtle, greenbrier, poison ivy, and blackberry.

This map unit has severe limitations affecting timber management. The main management concerns are an equipment limitation, the seedling mortality rate, and plant competition. The seasonal high water table and the flooding restrict the use of equipment to periods when the soils are dry. Using standard wheeled and tracked equipment when the soils are wet results in ruts and compaction. Using low-pressure ground equipment reduces damage to the soils and helps to maintain productivity. The high seedling mortality rate is caused by excessive wetness. It can be reduced by planting on raised beds, or it can be compensated for by increasing the number of trees planted. Plant competition reduces timber production and can prevent adequate reforestation unless sites receive intensive preparation and maintenance. Site preparation can control the initial plant competition, and herbicides can control subsequent growth.

This map unit is poorly suited to most urban uses. It has severe limitations affecting building sites, local roads and streets, and most kinds of sanitary facilities. The main management concerns are wetness and the occasional flooding. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding.

This map unit has good potential for wetland wildlife habitat and fair potential for woodland and openland wildlife habitat. Habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Habitat for wetland wildlife can be improved by constructing or maintaining shallow ponds that provide water areas for waterfowl and furbearing animals.

The capability subclass is IIIw in areas of the Wahee soil and IVw in areas of the Bladen soil. The woodland ordination symbol is 9W in areas of the Wahee soil and 8W in areas of the Bladen soil.

WkA—Wickham fine sandy loam, 0 to 2 percent slopes, rarely flooded

This very deep, well drained soil is on low terraces that parallel the Chattahoochee River and other large streams. Flooding is rare but can occur under unusual weather conditions. Slopes are long and smooth. Individual areas generally are oblong. They range from 10 to about 100 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil extends to a depth of 55 inches. It is yellowish red sandy clay loam in the upper part and yellowish red sandy loam in the lower part. The substratum, to a depth of 65 inches, is strong brown fine sandy loam.

Important properties of the Wickham soil—

Permeability: Moderate
Available water capacity: High
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches

Root zone: More than 60 inches
Seasonal high water table: More than 6.0 feet deep
Shrink-swell potential: Low
Flooding: Rare

Included in mapping are a few small areas of Annemaine, Bladen, and Kolomoki soils. The moderately well drained Annemaine soils and the Kolomoki soils are in slightly lower, less convex positions than those of the Wickham soil. They are clayey in the upper part of the subsoil. The poorly drained Bladen soils are in small depressions. Included soils make up about 10 percent of the map unit. Individual areas generally are less than 5 acres in size.

Most areas of this map unit are used for cultivated crops, pasture, or hay. A few areas are used for woodland and wildlife habitat.

This map unit is well suited to cultivated crops. It has no significant management concerns affecting this use. Using minimum tillage and returning all crop residue to the soil or regularly adding other organic matter improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer.

This map unit is well suited to pasture and hay plants, such as bermudagrass and bahiagrass. It has no significant management concerns affecting pasture and hayland. Restricting grazing during very wet periods or deferring grazing until the ground is dry helps to keep the pasture in good condition. Applications of lime and fertilizer improve fertility and increase the production of forage.

This map unit is well suited to loblolly pine. Other species that commonly grow in areas of this map unit include yellow-poplar, sweetgum, American sycamore, water oak, and cherrybark oak. On the basis of a 50-year site curve, the site index for loblolly pine is 90. The average annual growth of well stocked, even-aged, unmanaged stands of loblolly pine at 25 years of age is 2.2 cords per acre per year. The understory vegetation consists mainly of blackberry, greenbrier, panicums, longleaf uniola, poison ivy, Alabama supplejack, muscadine grape, sweetgum, and water oak.

This map unit has few limitations affecting woodland management. Competition from understory plants is a minor management concern. Carefully managed reforestation helps to control competition from undesirable understory plants. Site preparation practices, such as chopping, burning, and applying herbicides, help to control the initial plant competition and facilitate mechanical planting.

This map unit is poorly suited to most urban uses. The hazard of flooding is severe and difficult to overcome. Buildings can be constructed on pilings or mounds to elevate them above the expected level of flooding.

This map unit has good potential for openland and woodland wildlife habitat and very poor potential for wetland wildlife habitat. Habitat for white-tailed deer, turkey, and squirrel can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Prescribed burning every three years, rotated among several tracts of land, can increase the amount of palatable browse for deer and the number of seed-producing plants for quail and turkey.

The capability class is I. The woodland ordination symbol is 9A.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 5 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed at the end of this section. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 5. The location is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

The map units that meet the requirements for prime farmland are:

AnA	Annemaine fine sandy loam, 0 to 2 percent slopes, rarely flooded
CnB	Conecuh fine sandy loam, 1 to 3 percent slopes
CtB	Congaree-Toccoa complex, gently undulating, occasionally flooded
CwB	Cowarts loamy sand, 2 to 5 percent slopes
DgA	Dogue fine sandy loam, 0 to 2 percent slopes, rarely flooded
DoA	Dothan fine sandy loam, 0 to 2 percent slopes
DoB	Dothan fine sandy loam, 2 to 5 percent slopes
GoA	Goldsboro loamy fine sand, 0 to 2 percent slopes
GrB	Gritney fine sandy loam, 2 to 5 percent slopes
HaB	Hannon clay loam, 1 to 3 percent slopes
HnC2	Hannon clay, 3 to 5 percent slopes, eroded
KoA	Kolomoki fine sandy loam, 0 to 2 percent slopes, rarely flooded
LnB	Luverne sandy loam, 2 to 5 percent slopes
LyA	Lynchburg loamy fine sand, 0 to 2 percent slopes, rarely flooded
MnB	Marvyn loamy sand, 2 to 5 percent slopes
MxA	Maxton loamy sand, 0 to 2 percent slopes, rarely flooded
OrA	Orangeburg fine sandy loam, 0 to 2 percent slopes
RbA	Red Bay sandy loam, 0 to 2 percent slopes
RvA	Riverview loam, 0 to 1 percent slopes, occasionally flooded
SbB	Springhill sandy loam, 2 to 5 percent slopes
WkA	Wickham fine sandy loam, 0 to 2 percent slopes, rarely flooded

Use and Management of the Soils

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

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

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

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

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

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

Crops and Pasture

Kenneth M. Rogers, conservation agronomist, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soil, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Natural Resources Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

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

In 1994, approximately 12,000 acres of cropland and 24,000 acres of pasture were in Russell County. Approximately 5,790 acres of cotton, 2,000 acres of peanuts, 570 acres of corn, 200 acres of soybeans, and 600 acres of wheat were planted in the county in 1994. Also, 5,500 acres of hay and 210,000 pounds of pecans were harvested *(22)*. The total acreage used for cultivated crops and pasture has been decreasing slightly for several years. The current trend is toward the conversion of marginal cropland to woodland, especially in the northern part of the county.

The potential in Russell County for increased production of food and fiber is good. Yields can be increased in cultivated areas if the most current technology is applied. This soil survey can help land users make sound land-management decisions and facilitate the application of crop production technology.

The field crops that are suited to the soils and climate in Russell County include many crops that are not commonly grown because of economic considerations. Cotton, peanuts, and corn are the main row crops. Grain sorghum, vegetable crops, and similar crops can be grown if economic conditions are favorable. Wheat, rye, and oats are the only close-growing crops planted for grain production, although barley can be grown. The specialty crops grown in the county include sweet corn, peas, okra, melons, sod, and alfalfa. Many of the soils in the survey area, including Dothan, Red Bay, and Orangeburg soils, are well suited to specialty crops. If economic conditions are favorable, a large acreage of these crops can be

grown. Pecans are the only orchard crop that is grown commercially in the county. Additional information regarding specialty crops can be obtained from the local office of the Cooperative Extension System or the Natural Resources Conservation Service.

Soil erosion is a major management concern on about one-fourth of the cropland and one-half of the pastureland in Russell County. Where the slope is more than two percent, erosion is a hazard. Conecuh, Cowarts, Dothan, Orangeburg, and Luverne soils are examples of soils that are cultivated and that are subject to erosion.

Erosion can reduce productivity and can result in the pollution of streams. Productivity is reduced as the surface layer erodes and more 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 Conecuh, Hannon, and Luverne soils, and on soils that have a layer in the subsoil that restricts rooting depth, such as Dothan soils. Controlling erosion on farmland minimizes the pollution of streams and improves the quality of water for municipal uses, for recreational uses, and for fish and wildlife.

Erosion-control practices provide a protective plant cover, increase the rate of water infiltration, and help to control runoff. A cropping system that keeps plant cover and crop residue on the surface for extended periods can hold soil losses to amounts that do not reduce the productive capacity of the soils. Including grasses and legumes in the cropping system helps to control erosion and improves tilth for the crops that follow in the rotation. The legumes also increase the nitrogen levels in the soils.

Applying a system of conservation tillage and leaving crop residue on the surface increase the rate of water infiltration and help to control runoff and erosion. Using a no-till method of planting reduces the hazard of erosion. This practice is suitable on most of the soils in the county.

Terraces and diversions help to control runoff and erosion. They are most practical on very deep, well drained soils that have uniform slopes. Examples are Dothan, Luverne, and Orangeburg soils. Sandy soils, such as Alaga, Blanton, Fuquay, and Troup soils, are not suited to terracing because gullies form easily when water is concentrated on the surface. Grassed waterways or underground tile outlets are essential in areas where terraces and diversions are installed. Diversions can be used to intercept surface runoff from hilly uplands and to divert the water around the fields to vegetated disposal areas.

Contour farming is a very effective erosion-control method in cultivated areas when used in conjunction with a water-disposal system. It is best suited to soils that have smooth, uniform slopes. Examples are Conecuh, Dothan, Marvyn, and Orangeburg soils.

Soil blowing can be a management concern in early spring on some upland soils, especially if the soils are dry and are not protected by a plant cover. The hazard of erosion is generally highest after the seedbed has been prepared, after planting, and when the plants are small. Tillage methods that leave crop residue on the surface reduce the hazard of soil blowing. Conventional planting practices should include an implement that scratches the surface, leaving a rough, irregular pattern. Also, strips of close-growing crops are effective as windbreaks. If possible, seedbed preparation should be delayed until after March, which is generally windy. Additional information regarding the design of erosion-control practices is available at the local office of the Natural Resources Conservation Service.

Russell County has an adequate amount of rainfall for the commonly grown crops. Prolonged periods of drought are rare, but the distribution of rainfall during spring and summer generally results in droughty periods during the growing season in most years. Irrigation may be needed during these periods to reduce plant stress. Most of the soils that are commonly used for cultivated crops are suitable for irrigation; however, the amount of water applied should be regulated to prevent excessive runoff. Some soils, such as Conecuh, Gritney, and Hannon soils, have a slow rate of water infiltration that limits their suitability for irrigation.

Most of the soils that are used for crops in the county have a surface layer of sandy loam or loamy sand that is light in color and has a low content of organic matter. Regular additions of crop residue, manure, and other organic material can improve the soil structure and minimize crusting, thus improving the rate of water infiltration.

Natural fertility is low in most of the soils in Russell County. Most of the soils require applications of agricultural limestone to neutralize acidity. The crops commonly grown in the county respond well to applications of lime and fertilizer. The levels of available phosphorus and potash are generally low in most of the soils; however, some fields may have a buildup of phosphorus or potassium because of past applications of commercial fertilizer. Therefore, all applications of lime and fertilizer should be based on the results of a soil test. Leaching is a concern in areas of sandy soils, such as Alaga, Blanton, Uchee, Fuquay, Ocilla, and Troup soils. Higher levels of nitrogen, applied in split applications, should be used on these soils. The Cooperative Extension System can

Figure 8.—High yields of coastal bermudagrass can be produced in this area of Orangeburg fine sandy loam, 0 to 2 percent slopes.

help in the determination of the kinds and amounts of fertilizer and lime to apply.

Wetness is a management concern in areas of Bladen, Kinston, Lynchburg, Mantachie, Una, Urbo, and Wahee soils. A drainage system can minimize the harmful effects of excessive wetness.

Bahiagrass and coastal bermudagrass are the main perennial grasses grown for pasture and hay in Russell County (fig. 8). Rye, ryegrass, and wheat are grown as annual, cool-season grass forage. Millet, sorghum, and hybrid forage sorghums provide most of the annual, warm-season grass forage. These annuals are generally grown for temporary grazing or hay in areas commonly used for cropland. Arrowleaf clover, crimson clover, ball clover, and other cool-season forage legumes are suitable for most of the soils in the county, especially if agricultural limestone is applied in proper amounts. Alfalfa, a warm-season legume, is suitable for well drained soils, such as Dothan, Maxton, Red Bay, Orangeburg, Riverview, and Wickham soils.

Several management practices are needed in areas that are used for pasture and hay production. These practices include proper grazing rates, weed control, proper applications of fertilizer, rotation grazing, and scattering of animal droppings. Overgrazing, insufficient fertilizer, and acid soils can result in weak plants and poor stands that are quickly infested with weeds. Maintaining a dense cover of desired pasture species can prevent weeds from becoming established.

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 tables 6 and 7. In any given year, yields

may be higher or lower than those indicated in the tables because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in table 6.

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

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

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

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

Crops other than those shown in the tables 6 and 7 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension System can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

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

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by 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 miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the 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 very cold or very 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. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The capability classification of each map unit is given in the section “Detailed Soil Map Units” and in table 6.

Landscaping and Gardening

Kenneth M. Rogers, conservation agronomist, Natural Resources Conservation Service, helped prepare this section.

The soils in residential areas are used primarily as sites for homes, driveways, and streets. Remaining areas of each lot are commonly used for lawns, which enhance the appearance of the homes; as gardens for vegetables or flowers and shrubs; as orchards for fruits and nuts; for recreational uses; as habitat for animals and birds; for trees, which provide shade and promote energy conservation; for vegetation and structures designed to abate noise, enhance privacy, and provide protection from the wind; and for septic tank absorption fields. Because the outdoor areas are used for several purposes, careful planning and a good understanding of the soils are important.

This section contains general soil-related information regarding landscaping and gardening. Other information may be obtained from the local office of the Cooperative Extension System, the Natural Resources Conservation Service, and private businesses that provide landscaping and related services. The amount of soil information needed for use in some areas is beyond the scope of this survey and is more detailed than that provided at the map scale used. Onsite investigation is needed.

Most of the soils in the residential areas in Russell County have been disturbed to some degree during construction of houses, streets, driveways, and utility service. This construction involved cutting and filling, grading, and excavating. As a result, soil properties are more variable and less predictable than in undisturbed areas. Onsite examination is necessary in planning land uses for soils in disturbed areas.

Some of the poorest soils for plant growth are soils of the Conecuh, Cowarts, Gritney, and Pacolet series that have had the surface layer removed during grading. The exposed dense, firm subsoil restricts root penetration, absorbs little rainfall, and results in excessive runoff. These conditions are common where these and similar soils are mapped as complexes with Urban land. Incorporating organic matter into the soil improves tilth and the rate of water infiltration and provides a more desirable rooting medium. Areas that are subject to intensive foot traffic should be covered with gravel or a mulch, such as pine bark or wood chips.

Some soils, such as Bladen, Lynchburg, and Wahee soils, are wet. The wetness limits the selection of plants to those that are tolerant of a high moisture content in the soil. Several methods can be used to minimize the effects of the wetness. Installing underground tile drains can lower the water table in permeable soils. Bedding the surface layer of slowly permeable soils, such as Bladen soils, helps to provide a satisfactory root zone for some plants.

Some soils, such as Congaree, Mantachie, and Toccoa soils, are on flood plains. Most plants used for gardening and landscaping can be grown in areas of these soils, but consideration should be given to the effects of floodwater. Surface drainage is a management concern because urban uses commonly result in increased rates of surface runoff, which increase the frequency and severity of flooding. Advice and assistance regarding drainage problems can be obtained from the Natural Resources Conservation Service, municipal and county engineering departments, and private engineering companies.

Sandy soils, such as Alaga, Blanton, Fuquay, Ocilla, Troup, and Uchee soils, are droughty, have low fertility, and have a low content of organic matter. Droughtiness limits the selection of plants that will grow unless irrigation is provided. Additions of organic matter increase the available water capacity and help to retain nutrients in the root zone. Supplemental watering and split applications of plant nutrients are recommended. Using a mulch, such as pine bark, wood chips, or pine straw, or incorporating peat moss or well-decomposed manure into the soil provides a more desirable medium for plant growth.

Natural fertility is low in most of the soils in Russell County. Most of the soils are strongly acid or very strongly acid. Additions of ground limestone are needed to neutralize the acidity of most of these soils. The original surface layer contains the most plant nutrients and the most favorable pH for most plants. In many areas, fertility of the surface layer has been improved by applications of lime and fertilizer. If the surface layer is removed during construction, the remaining soil is very acid and low in available plant nutrients. Also, some nutrients are unavailable for plant growth in acid soil conditions. Disturbed soils generally need larger amounts of lime and fertilizer, which should be applied according to the results of soil tests and the type of plants grown. Information on sampling for soil testing can be obtained from the Cooperative Extension System, the Natural Resources Conservation Service, and local nurseries.

In the following paragraphs, some of the plants that are used in landscaping and gardening and some management relationships between the plants and the soils are described. Information in this section should be supplemented by consultations with specialists at the Cooperative Extension System, the Natural Resources Conservation Service, and private landscaping and gardening businesses.

The grasses used for landscaping in Russell County

are mainly vegetatively propagated species, such as zoysiagrass, hybrid bermudagrass, St. Augustine grass, and centipede grass, and seeded species, such as common bermudagrass and centipede grass. The grasses commonly used for short-term cover include ryegrass, rye, wheat, sudangrass, and millet.

The vegetatively propagated plants are usually planted as sprigs, plugs, or sod. Additions of topsoil may be needed before planting in some areas. Also, lime and fertilizer should be applied and incorporated into the soil. The plants should be placed in close contact with the soil, and the plantings should be watered to ensure the establishment of the root system. St. Augustine grass, centipede grass, and certain strains of zoysiagrass are moderately shade tolerant. St. Augustine grass and zoysiagrass normally require more maintenance than centipede grass. The strains of hybrid bermudagrass are fast growing, but they are not as tolerant of shade as St. Augustine grass, centipede grass, or zoysiagrass.

Common perennial grasses that are established by seeding include common bermudagrass and centipede grass. Lime and fertilizer should be applied and incorporated into the soil before seeding. Proper planting depth is important when grasses are established from seed.

Short-term vegetative cover is used to protect the soil at construction sites or to provide cover between the planting seasons of the desired grass species. The most commonly used grasses for short-term cover are ryegrass for cool seasons and sudangrass or millet for warm seasons. These species are annuals and die after the growing season. Periodic applications of lime and fertilizer are needed for all types of grasses. The kinds and amounts of lime and fertilizer to apply should be based on the results of soil tests.

Vines can be used to provide vegetative cover in moderately shaded areas and in steeper areas that cannot be mowed. English ivy and periwinkle can be used for ground cover or on walls and fences. All of these plants are propagated vegetatively, usually from potted plants or sprigs.

Mulches can be used for ground cover in areas where traffic is too heavy for grass cover, in areas where shrubs and flowers are desired with additional ground cover, and in densely shaded areas. Mulches provide effective ground cover. They also provide immediate cover for erosion control in areas where live vegetation is not desired. Effective mulches include pine straw, small-grain straw, hay, composted grass clippings, wood chips, pine bark, gravel, and several manufactured materials. The best type of mulch to use depends to some extent on the hazard of erosion. Mulches also can be used to conserve soil moisture and control weeds around trees, shrubs, and flowers.

Shrubs are used primarily to enhance the appearance of homesites. They also can be used to control traffic. They can be effective in dissipating the energy from raindrops and from runoff from roofs. Most native and adapted species add variety to residential settings. The effects of acidity and fertility levels vary greatly among shrub types.

Vegetable and flower gardens are important to many individuals and businesses. However, the soils in areas where homes and businesses are established may not be suited to vegetables and flowers. Soils that have been disturbed by construction may not be productive unless topsoil is applied. Soils that have slopes of more than 8 percent have poor potential for vegetable gardening because of the hazard of erosion if the soils are tilled. Generally, steeper soils have a thinner surface layer. Flower gardening is possible in steeper areas, however, if mulches are used to help control erosion.

Incorporating composted tree leaves and grass clippings into the soil improves fertility, tilth, and moisture content. Additional information regarding vegetable crops is included under the heading “Crops and Pasture.”

Most garden plants grow best in soils that have a pH level between 5.5 and 6.5 and that have a high fertility level. Applying too much fertilizer or using fertilizers with the wrong combination of plant nutrients can be avoided by soil testing, which is the only effective method of determining how much and what type of fertilizer to apply. Information regarding soil testing can be obtained from the local office of the Cooperative Extension System, the Natural Resources Conservation Service, or from retail fertilizer businesses.

Trees are important in homesite landscaping. Information regarding the relationships between soils and trees is available in the section “Woodland Management and Productivity.” Special assistance in urban forestry can be obtained from the Alabama Forestry Commission.

Woodland Management and Productivity

Jerry L. Johnson, forester, Natural Resources Conservation Service, helped prepare this section.

Forestry is an important industry in Russell County, and forest products make up a significant portion of the economy. Forestry ranks first in the production value of agricultural commodities in the county *(22)*.

Commercial woodland makes up 284,000 acres, or

about 70 percent of the total land area in Russell County. This acreage decreased by about 1,200 acres from 1982 to 1990, primarily because of the conversion of woodland to pasture and urban uses *(18)*. Private landowners own about 65 percent of the woodland in the county, the forest industry owns about 29 percent, and the Federal government owns about 6 percent *(18)*.

The forest types in Russell County include 81,200 acres of loblolly-shortleaf pine, 92,700 acres of oak-pine, 92,700 acres of oak-hickory, and 17,400 acres of oak-gum-cypress. The county has about 52,200 acres of sawtimber, 75,300 acres of poletimber, and 156,500 acres of seedlings and saplings *(18)*.

Most of the soils in the county are well suited to loblolly pine and have a site index of 80 or more. A few map units, such as Sumter soils and Fluvaquents, are generally unsuited to the commercial production of pine trees.

Table 8 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general 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 an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, which the indicator species can produce in a pure stand under natural conditions. The number 1 indicates low potential productivity; 2 or 3, moderate; 4 or 5, moderately high; 6 to 8, high; 9 to 11, very high; and 12 to 39, extremely high. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *R* indicates steep slopes; *W*, excess water in or on the soil; *C*, clay in the upper part of the soil; and *S*, sandy texture. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, W, C, and S.

In table 8 *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Erosion hazard is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed are also subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Plant competition ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable

species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The *potential productivity* of *common trees* on a soil is expressed as a *site index* and as a *volume* number. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown 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. The estimates of the productivity of the soils in this survey are based on published data *(5, 6, 7, 18)*.

The *volume*, a number, is the yield likely to be produced by the most important trees. This number, expressed as cords per acre per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

The first species listed under *common trees* for a soil is the indicator species for that soil. It generally is the most common species on the soil and is the one that determines the ordination class.

Trees to plant are those that are suitable for commercial wood production.

Recreation

The soils of the survey area are rated in table 9 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 9, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in the table 9 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have 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 campsites.

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

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

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

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

Wildlife Habitat

Tommy Counts, wildlife biologist, Natural Resources Conservation Service, helped to prepare this section.

Russell County is dominantly a rural area that has suitable habitat for many kinds of wildlife. The county is about 70 percent woodland, but it is interspersed with areas of cultivated crops, pasture, and hay.

The common species of wild game found in Russell County are eastern wild turkey, bobwhite quail, white-tailed deer, eastern cottontail rabbit, fox and gray squirrels, mourning dove, Canada geese, and ducks.

The nongame wildlife species in the county include armadillos, snakes, egrets, herons, crows, blackbirds, hawks, owls, and songbirds, such as cardinals, robins, thrushes, bluejays, meadowlarks, mockingbirds, sparrows, woodpeckers, vireos, and warblers.

In the upland areas, the woodland generally consists of loblolly pine or mixed pines and hardwoods. In areas on the flood plains along streams and rivers, the woodland consists of bottom land hardwoods. The forest types and their associated plant communities are of major importance to wildlife. Many of these woodland areas are managed primarily to provide habitat for various species of wildlife, such as bobwhite quail, white-tailed deer, and turkey. Management practices that benefit wildlife—including prescribed burning, creating or maintaining openings in the woodland, and thinning stands—are common throughout the county.

Areas of cultivated crops, hay, and pasture are commonly interspersed with the woodland. The open areas are very important to many species of wildlife. The areas of cropland are primarily used for agricultural commodities, such as cotton and peanuts. The pasture and hayland are generally used for perennial grasses, such as bahiagrass and bermudagrass.

Wetlands are used by many kinds of wildlife. Many of the furbearers and wading birds depend almost exclusively upon these areas. Natural depressions and areas of saturated soils along creeks and rivers, bodies of open water, and beaver ponds make up most of the wetland areas in the county. They occur mostly along the Hatchechubbee, Uchee, Little Uchee, and Cowikee Creeks and in areas that are adjacent to the Chattahoochee River.

The furbearers in the county include beaver, muskrat, river otter, mink, bobcat, fox, opossum, coyote, raccoon, and skunk. Waterfowl and wading birds are numerous during certain times of the year in wetland areas, especially in those areas along the Chattahoochee River.

The wildlife species in Russell County that the Federal government has listed as threatened or endangered include the bald eagle, American alligator, and wood stork.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

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

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, soybeans, wheat, oats, grain sorghum, millet, cowpeas, and sunflowers.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture

are also considerations. Examples of grasses and legumes are fescue, bahiagrass, vetch, bermudagrass, Johnsongrass, lespedeza, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are dewberry, blackberry, crotons, goldenrod, beggarweed, partridge pea, greenbrier, and honeysuckle.

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

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

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

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

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

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

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

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

Aquaculture

H.D. Kelly, biologist, Natural Resources Conservation Service, helped prepare this section.

Aquaculture is the controlled production and harvest of animals or plants grown in or on water. In Russell County, catfish farming (channel catfish) and sport fish production (bass and bream) are the most common types of aquaculture. The channel catfish, *Ictulurus punctatus,* is produced either in cages within ponds or in open ponds. The county currently has about 100 acres of catfish ponds and about 5,700 acres of bass and bream ponds. Other species of fish can be produced in ponds, and fish farming could provide additional income for some landowners.

An understanding of soil characteristics is important in determining the potential of a pond site. Conecuh, Dothan, Luverne, Hannon, and Gritney soils are generally suited to pond construction.

Some of the tables included in this survey can help in the evaluation of potential pond sites. Table 14, for example, lists soil limitations affecting pond reservoir areas and embankments, dikes, and levees. Indications of flooding frequency and water table levels are in table 17. These tables and the detailed soil maps can help in the evaluation of the pond-building and water-retaining potential of a location. Once a possible pond site is selected, additional soil borings should be made.

The construction of buildings and the accessibility of the area are important considerations in evaluating a pond site. Depending on the size and planned use of the site, a road system may need to be planned to accommodate harvest trucks. Large trucks are used in commercial operations. Feed trucks and similar equipment also require suitable access to the fish farm. If the farm is planned for fingerling production, a hatchery building will probably be on the site. Other buildings may be needed to store equipment or feed.

Table 11 gives soil limitations affecting roads and building sites.

The quality of water in a pond is influenced by the soil. Several variables of water quality affect the production of fish. Total alkalinity, for example, is directly influenced by the soil. Total alkalinity values ranging from 30 to 150 parts per million are preferred. Fish production can be at an acceptable level in ponds that have a low alkalinity level—less than 20 parts per million—provided that the fish are well fed. Other complicating factors, however, affect fish production when alkalinity values are below 20 parts per million. The application of agricultural lime can often prevent production problems associated with low alkalinity.

The soil in pond basins should be analyzed before the basins are limed and filled with water. The amount of lime needed should be based on the results of the analysis, and the lime should be applied before the ponds are filled with water. Thereafter, annual applications of lime, even in ponds full of water, should range from 20 to 25 percent of the original application to maintain desirable levels of alkalinity. The importance of proper alkalinity levels cannot be overemphasized. Except for the Hannon and Sumter soils, all of the soils that are suitable for pond construction in Russell County require applications of lime.

The source and amount of water to be used should also be considered when evaluating a site for a pond or fish farm. For example, if runoff water is to be used, the watershed should be evaluated. Technical assistance regarding site and production problems is available from the local office of the Natural Resources Conservation Service or the Cooperative Extension System.

Engineering

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

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

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

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

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

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

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

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

Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and

landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

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

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

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

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

Sanitary Facilities

Table 12 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 12 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

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

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the

water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 12 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock, flooding, large stones, and content of organic matter.

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

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

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

The ratings in the table 12 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, and soil reaction affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

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

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

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

Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

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

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

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs

in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

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

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 13, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

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

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

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

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

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

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

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

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

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

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

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet

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

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

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

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

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

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

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

Soil Properties

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

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 20.

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

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

Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

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

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the “Glossary.”

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

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

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074

millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

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

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

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

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

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

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

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

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

Erosion factor K indicates the susceptibility of a soil

to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

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

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 16, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

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

Soil and Water Features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

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

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

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

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a 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, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Table 17 gives the frequency and duration of flooding and the time of year when flooding is most likely.

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 (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). *Common* is used when the occasional and frequent classes are grouped for certain purposes. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

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

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated

zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in table 17 are the depth to the seasonal high water table; the kind of water table—that is, perched or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 17.

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

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

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

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

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

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

Physical and Chemical Analyses of Selected Soils

The results of physical analyses of several typical pedons in the survey area are given in table 18, and the results of chemical analyses are given in table 19. The data are for soils sampled at carefully selected sites, and the pedons are typical of the series. The pedons are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the Agronomy and Soils Clay Mineralogy Laboratory, Auburn University, Auburn, Alabama.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(9, 19)*.

Sand—(0.05-2.0 mm fraction) weight percentages of material less than 2 mm (3A1).

Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all material less than 2 mm (3A1).

Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of material less than 2 mm (3A1).

Extractable bases—method of Hajek, Adams, and Cope *(9)*.

Cation-exchange capacity—sum of cations (5A3a).

Base saturation—method of Hajek, Adams, and Cope *(9)*.

Reaction (pH)—1:1 water dilution (8C1f).

Engineering Index Test Data

Table 20 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are representative of the series described in the section "Soil Series and Their Morphology." The soil samples were tested by the Alabama Highway Department, Bureau of Materials and Tests, Montgomery, Alabama.

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

The tests and methods are AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 422 (ASTM), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 4318 (ASTM); Plasticity index—T 90 (AASHTO), D 4318 (ASTM); and Moisture density—T 99 (AASHTO), D 698 (ASTM).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(16, 21)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 21 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

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

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludults (*Hapl*, meaning minimal horizonation, plus *udult*, the suborder of the Ultisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludults.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, clay activity, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, semiactive, thermic Typic Hapludults.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The Wickham series is an example of a fine-loamy, mixed, semiactive, thermic Typic Hapludults.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” *(20)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(16)* and in “Keys to Soil Taxonomy” *(21)*. Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section “Detailed Soil Map Units.”

Alaga Series

The Alaga series consists of very deep, somewhat excessively drained soils that formed in sandy sediments. These soils are on ridgetops in the uplands. Slopes range from 0 to 5 percent. These soils are thermic, coated Typic Quartzipsamments.

Alaga soils are commonly associated on the landscape with Luverne, Springhill, and Troup soils.

Luverne and Springhill soils are in lower positions than the Alaga soils. They are on side slopes. Luverne soils have a clayey argillic horizon. Springhill soils have a loamy argillic horizon. Troup soils are in landscape positions similar to those of the Alaga soils. They have a loamy kandic horizon at a depth of 40 to 80 inches.

Typical pedon of Alaga loamy fine sand, in an area of Troup-Alaga complex, 0 to 5 percent slopes; about 5 miles north of Hatchechubbee, 2,700 feet east and 300 feet north of the southwest corner of sec. 28, T. 16 N., R. 28 E.

Ap—0 to 4 inches; dark brown (10YR 4/3) loamy fine sand; single grained; loose; many fine roots; moderately acid; abrupt smooth boundary.

C1—4 to 18 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; common fine roots; moderately acid; clear wavy boundary.

C2—18 to 54 inches; yellowish brown (10YR 5/6) loamy sand; single grained; loose; strongly acid; gradual wavy boundary.

C3—54 to 63 inches; yellowish brown (10YR 5/6) loamy sand; single grained; loose; few streaks of uncoated sand; strongly acid; gradual wavy boundary.

C4—63 to 90 inches; light yellowish brown (10YR 6/4) loamy sand; single grained; loose; strongly acid.

The combined thickness of the sandy horizons is more than 80 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except where lime has been applied. The content of quartz gravel ranges from 0 to 5 percent throughout the profile.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3.

The C horizon has hue of 10YR, value of 4 to 8, and chroma of 4 to 6. The texture is loamy sand or sand.

Annemaine Series

The Annemaine series consists of very deep, moderately well drained soils that formed in stratified clayey and loamy sediments. These soils are on low stream terraces adjacent to major streams. Slopes range from 0 to 2 percent. These soils are fine, mixed, semiactive, thermic Aquic Hapludults.

Annemaine soils are commonly associated on the landscape with Kolomoki, Maxton, and Wickham soils. The well drained Kolomoki soils are in slightly higher positions on the low terraces than the Annemaine soils. They do not have low-chroma redoximorphic depletions in the upper part of the argillic horizon. The well drained Maxton and Wickham soils are in higher, more convex positions on the low terraces than the Annemaine soils. They are fine-loamy.

Typical pedon of Annemaine fine sandy loam, 0 to 2 percent slopes, rarely flooded; about 2 miles northeast of Oswichee, 2,400 feet west and 1,800 feet north of the southeast corner of sec. 13, T. 15 N., R. 30 E.

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt wavy boundary.

Bt1—4 to 12 inches; yellowish red (5YR 4/6) clay; strong medium subangular blocky structure; firm; few fine and medium roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—12 to 20 inches; yellowish red (5YR 5/6) clay; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; few fine distinct light brownish gray (10YR 6/2) iron depletions; common medium distinct red (2.5YR 4/8) and light yellowish brown (10YR 6/4) masses of iron accumulation; very strongly acid; clear wavy boundary.

Bt3—20 to 42 inches; yellowish red (5YR 5/8) clay; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; common medium distinct light brownish gray (10YR 6/2) iron depletions; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

C—42 to 62 inches; yellowish brown (10YR 5/6) fine sandy loam; massive; friable; common medium distinct light gray (10YR 7/2) iron depletions; few fine flakes of mica; very strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. The texture is clay or clay loam. The number of redoximorphic depletions in shades of gray and pale brown ranges from none to common in the upper part and from few to many in the lower part. The number of redoximorphic accumulations in shades of red, yellow, and brown ranges from none to common in the upper part and from few to many in the lower part.

The C horizon has hue of 2.5YR to 2.5Y, value of 4

to 6, and chroma of 3 to 8; or it has no dominant matrix color and is multicolored in shades of red, brown, and gray. It has common or many redoximorphic depletions in shades of gray and common or many redoximorphic accumulations in shades of red, yellow, and brown. The texture commonly is fine sandy loam, sandy loam, or sandy clay loam. In some pedons, however, the horizon contains stratified materials ranging from sand to clay.

Bladen Series

The Bladen series consists of very deep, poorly drained soils that formed in clayey sediments. These soils are in level positions or in concave areas on low terraces adjacent to major streams. Slopes are 0 to 1 percent. These soils are fine, mixed, semiactive, thermic Typic Albaquults.

Bladen soils are commonly associated on the landscape with Dogue, Lynchburg, Ocilla, and Wahee soils. The moderately well drained Dogue soils are in slightly higher, more convex positions than the Bladen soils. The somewhat poorly drained Lynchburg and Wahee soils are in slightly higher positions than the Bladen soils. Lynchburg soils are fine-loamy. The somewhat poorly drained Ocilla soils are in slightly higher, more convex positions than the Bladen soils and have a thick sandy epipedon.

Typical pedon of Bladen fine sandy loam in an area of Wahee-Bladen complex, 0 to 1 percent slopes, occasionally flooded; about 3 miles west of Glenville, 200 feet east and 2,600 feet south of the northwest corner of sec. 15, T. 13 N., R. 28 E.

Ap—0 to 3 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak medium granular structure; very friable; few fine and medium roots; strongly acid; abrupt wavy boundary.

E—3 to 10 inches; dark gray (10YR 5/1) fine sandy loam; weak coarse subangular blocky structure; very friable; common fine and medium roots; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in root channels; strongly acid; clear wavy boundary.

Btg1—10 to 18 inches; light brownish gray (10YR 6/2) clay; strong medium subangular blocky structure; firm; few medium roots; few faint clay films on faces of peds; common medium distinct yellowish brown (10YR 5/8) masses of iron accumulation; very strongly acid; clear wavy boundary.

Btg2—18 to 27 inches; light brownish gray (10YR 6/2) clay; strong medium subangular blocky structure; firm; common faint clay films on faces of peds; few medium roots; common medium distinct yellowish brown (10YR 5/8) and common fine prominent red (2.5YR 5/8) masses of iron accumulation; very strongly acid; clear wavy boundary.

Btg3—27 to 35 inches; gray (10YR 5/1) clay; strong medium subangular blocky structure; firm; common faint clay films on faces of peds; common medium distinct yellowish brown (10YR 5/6) and common fine prominent red (2.5YR 5/8) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Btg4—35 to 51 inches; gray (10YR 5/1) clay; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; common coarse prominent red (2.5YR 5/8) and common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Btg5—51 to 65 inches; gray (10YR 5/1) clay; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; many coarse distinct yellowish brown (10YR 5/6) and common fine prominent red (2.5YR 5/8) and strong brown (7.5YR 5/6) masses of iron accumulation; extremely acid.

The thickness of the solum ranges from 60 inches to more than 80 inches. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It is fine sandy loam or loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2.

The Btg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It has common or many masses of iron accumulation in shades of red, yellow, and brown. The texture is clay loam, sandy clay, or clay.

Blanton Series

The Blanton series consists of very deep, moderately well drained soils that formed in sandy and loamy sediments. These soils are on ridgetops in the uplands. Slopes range from 0 to 5 percent. These soils are loamy, siliceous, subactive, thermic Grossarenic Paleudults.

Blanton soils are commonly associated on the landscape with Cowarts, Fuquay, Marvyn, and Uchee soils. Cowarts soils are on side slopes at slightly lower elevations than the Blanton soils and do not have a thick sandy epipedon. Marvyn soils are on the

ridgetops at slightly lower elevations than the Blanton soils and do not have a thick sandy epipedon. Fuquay and Uchee soils are in landscape positions similar to those of the Blanton soils. They have a sandy epipedon that is 20 to 40 inches thick.

Typical pedon of Blanton loamy sand, 0 to 5 percent slopes; about 2 miles south of Crawford, 500 feet east and 50 feet south of the northwest corner of sec. 36, T. 17 N., R. 28 E.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loamy sand; single grained; loose; few fine and medium roots; very strongly acid; abrupt smooth boundary.

E1—7 to 18 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; few fine and medium roots; very strongly acid; clear wavy boundary.

E2—18 to 32 inches; light yellowish brown (10YR 6/4) loamy sand; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

E3—32 to 42 inches; very pale brown (10YR 7/4) loamy sand; single grained; loose; few fine streaks of uncoated sand; very strongly acid; clear wavy boundary.

Bt1—42 to 52 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; very friable; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

Bt2—52 to 65 inches; 40 percent yellowish brown (10YR 5/8), 35 percent gray (10YR 6/1), and 25 percent brownish yellow (10YR 6/6) sandy clay loam; weak coarse subangular blocky structure; friable; common faint clay films on faces of peds; areas of gray are iron depletions; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where lime has been applied.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 8. It is sand, loamy sand, or loamy fine sand.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8; or it has no dominant matrix color and is multicolored in shades of brown, yellow, and red. It has few or common redoximorphic accumulations in shades of brown, yellow, and red. The number of redoximorphic depletions in shades of gray is few or common. The texture is sandy loam or sandy clay loam.

Conecuh Series

The Conecuh series consists of very deep, moderately well drained soils that formed in clayey marine sediments. These soils are on ridgetops and side slopes in the uplands. Slopes range from 1 to 8 percent. These soils are fine, smectitic, thermic Vertic Hapludults.

Conecuh soils are commonly associated on the landscape with Gritney, Hannon, and Luverne soils. Gritney and Hannon soils are in positions similar to those of the Conecuh soils but are at lower elevations. Gritney soils have mixed clay mineralogy. Hannon soils have accumulations of calcium carbonate in the upper part of the subsoil. Luverne soils are in positions similar to those of the Conecuh soils but are at higher elevations and have mixed clay mineralogy.

Typical pedon of Conecuh fine sandy loam, 1 to 3 percent slopes; about 3 miles south of Hurtsboro, 300 feet south and 100 feet west of the northeast corner of sec. 24, T. 14 N., R. 26 E.

Ap—0 to 3 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt wavy boundary.

Bt1—3 to 10 inches; red (2.5YR 4/6) silty clay; moderate fine subangular blocky structure; firm; many fine roots; common faint clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—10 to 22 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure parting to strong fine angular blocky; firm; few fine and medium roots; common faint clay films on faces of peds; few fine distinct light brownish gray (10YR 6/2) iron depletions; strongly acid; clear wavy boundary.

Bt3—22 to 43 inches; red (2.5YR 4/6) clay; strong medium angular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; common medium distinct light brownish gray (10YR 6/2) iron depletions; very strongly acid; clear wavy boundary.

Bt4—43 to 55 inches; 25 percent light brownish gray (2.5Y 6/2), 25 percent light yellowish brown (2.5Y 6/4), 25 percent red (2.5YR 4/6), and 25 percent strong brown (7.5YR 5/6) silty clay; weak coarse angular blocky structure; firm; few fine flakes of mica; areas of light brownish gray are iron depletions; strongly acid; clear wavy boundary.

C1—55 to 68 inches; light olive brown (2.5Y 5/4) silty clay; massive; firm; many fine flakes of mica; few fine prominent red (2.5YR 4/6) masses of iron

accumulation; common medium faint grayish brown (2.5Y 5/2) iron depletions; extremely acid; clear smooth boundary.

C2—68 to 80 inches; olive (5Y 5/3) silty clay loam; moderate medium platy rock structure; firm; few fine concretions of manganese oxide; many fine flakes of mica; common medium distinct olive yellow (2.5Y 6/6) masses of iron accumulation; common medium distinct gray (5Y 5/1) iron depletions; extremely acid.

The thickness of the solum ranges from 40 to 60 inches. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. The texture is loam or fine sandy loam.

The upper part of the Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. The number of redoximorphic accumulations in shades of red, yellow, and brown ranges from none to common. The number of redoximorphic depletions in shades of gray ranges from none to common. The lower part of the horizon has the same range in color as the upper part, or it has no dominant matrix color and is multicolored in shades of red, yellow, brown, and gray. It has common or many redoximorphic accumulations in shades of red and brown and common or many redoximorphic depletions in shades of gray. The texture is clay or silty clay.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 7, and chroma of 2 to 6; or it has no dominant matrix color and is multicolored in shades of red, yellow, brown, and gray. It is massive or has platy rock structure. It has few to many redoximorphic accumulations in shades of red, yellow, and brown and few to many redoximorphic depletions in shades of gray. The texture dominantly ranges from sandy loam to clay. In some pedons, however, the C horizon is clayey shale.

Congaree Series

The Congaree series consists of very deep, well drained soils that formed in loamy alluvium. These soils are on high parts of natural levees adjacent to major streams. Slopes range from 0 to 3 percent. These soils are fine-loamy, mixed, active, nonacid, thermic Typic Udifluvents.

Congaree soils are associated on the landscape with Riverview and Toccoa soils. Riverview soils are in positions similar to those of the Congaree soils but are at slightly higher elevations. They have a loamy cambic horizon. Toccoa soils are in landscape positions similar to those of the Congaree soils and are coarse-loamy.

Typical pedon of Congaree loam, in an area of Congaree-Toccoa complex, gently undulating, occasionally flooded; about 1.5 miles northeast of Lake Bickerstaff, 800 feet east and 1,900 feet north of the southwest corner of sec. 12, T. 16 N., R.30 E.

Ap—0 to 7 inches; brown (10YR 4/3) loam; weak fine granular structure; very friable; common fine and medium roots; many fine flakes of mica; strongly acid; abrupt smooth boundary.

A—7 to 14 inches; dark brown (10YR 3/3) loam; weak fine granular structure; very friable; common fine and medium roots; few fine flakes of mica; moderately acid; clear wavy boundary.

C1—14 to 35 inches; brown (10YR 4/3) loam; massive; friable; few fine roots; common fine flakes of mica; moderately acid; gradual wavy boundary.

C2—35 to 50 inches; brown (10YR 4/3) fine sandy loam; massive; friable; many fine and medium flakes of mica; moderately acid; gradual wavy boundary.

C3—50 to 80 inches; dark yellowish brown (10YR 4/4) fine sandy loam; massive; friable; many fine and medium flakes of mica; common fine distinct pale brown (10YR 6/3) iron depletions; moderately acid.

Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The Ap and A horizons have hue of 5YR to 10YR, value of 3 or 4, and chroma of 2 to 4. The texture is loam or fine sandy loam.

The C horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 6. The texture is silty clay loam, loam, sandy loam, or fine sandy loam.

Cowarts Series

The Cowarts series consists of very deep, well drained soils that formed in loamy marine sediments. These soils are on ridgetops and side slopes in the uplands. Slopes range from 2 to 15 percent. These soils are fine-loamy, kaolinitic, thermic Typic Kanhapludults.

Cowarts soils are associated on the landscape with Blanton, Marvyn, Springhill, and Uchee soils. Blanton, Springhill, and Uchee soils are in landscape positions similar to those of the Cowarts soils. Blanton and Uchee soils have a thick sandy epipedon. Springhill soils have a reddish subsoil. Marvyn soils are on broad ridgetops at slightly higher elevations than the Cowarts soils. They have a solum that is more than 40 inches thick.

Typical pedon of Cowarts loamy sand, 2 to 5 percent slopes; about 3.5 miles east of Marvyn, 1,800 feet east and 1,200 feet south of the northwest corner of sec. 25, T. 17 N., R. 27 E.

Ap—0 to 6 inches; brown (10YR 5/3) loamy sand; weak fine granular structure; very friable; common fine and few medium roots; very strongly acid; abrupt wavy boundary.

Bt1—6 to 11 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; common faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—11 to 28 inches; brownish yellow (10YR 6/6) sandy clay loam; weak medium subangular blocky structure; friable; common faint clay films on faces of peds; common medium distinct yellowish red (5YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

C—28 to 60 inches; 45 percent yellowish brown (10YR 5/4), 35 percent red (2.5YR 4/5), and 20 percent gray (10YR 6/1) sandy clay loam; massive; firm; areas of gray are relic iron depletions; very strongly acid.

The thickness of the solum ranges from 20 to 40 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. The content of quartz gravel ranges from 0 to 15 percent in the surface and subsurface horizons and from 0 to 10 percent in the subsoil.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4. The texture is loamy sand or sandy loam.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. The texture is loamy sand or sandy loam.

The BE horizon, if it occurs, has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. The texture is sandy loam or fine sandy loam.

The Bt horizon commonly has hue of 10YR, value of 5 or 6, and chroma of 4 to 8. In some pedons, however, it has hue of 7.5YR, value of 4 or 5, and chroma of 4 to 6. In some pedons, it has relic redoximorphic accumulations in shades of red, brown, and yellow and redoximorphic depletions in shades of gray. The texture is sandy clay loam or clay loam.

The BC horizon, if it occurs, has hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8; or it has no dominant matrix color and is multicolored in shades of red, brown, yellow, and gray. The texture varies, ranging from sandy loam to sandy clay.

The C horizon has the same range in color as the BC horizon. The texture varies, ranging from loamy sand to clay. The C horizon is commonly stratified with fine- and coarse-textured materials.

Dogue Series

The Dogue series consists of very deep, moderately well drained soils that formed in clayey and loamy fluvial deposits. These soils are on low stream terraces adjacent to major streams. Slopes range from 0 to 2 percent. These soils are fine, mixed, semiactive, thermic Aquic Hapludults.

Dogue soils are commonly associated on the landscape with Bladen, Goldsboro, Lynchburg, and Wahee soils. The poorly drained Bladen and somewhat poorly drained Lynchburg and Wahee soils are in slightly lower positions on the terraces than the Dogue soils. Goldsboro soils are in slightly higher positions than the Dogue soils and are fine-loamy.

Typical pedon of Dogue fine sandy loam, 0 to 2 percent slopes, rarely flooded; about 2.5 miles southeast of Pittsview, 1,600 feet west and 2,000 feet north of the southeast corner of sec. 28, T. 14 N., R. 29 E.

Ap1—0 to 4 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.

Ap2—4 to 11 inches; brown (10YR 5/3) fine sandy loam; weak fine granular structure; very friable; few fine roots; very strongly acid; abrupt wavy boundary.

Bt1—11 to 17 inches; strong brown (7.5YR 5/6) clay; strong medium subangular blocky structure; firm; few medium and fine roots; common faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—17 to 24 inches; strong brown (7.5YR 5/6) clay; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; few fine distinct brownish yellow (10YR 6/6) and few medium distinct yellowish red (5YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

Bt3—24 to 37 inches; yellowish brown (10YR 5/6) clay; weak medium subangular blocky structure; firm; common faint clay films on faces of peds; common medium distinct light brownish gray (10YR 6/2) iron depletions; very strongly acid; gradual wavy boundary.

BC—37 to 52 inches; yellowish brown (10YR 5/6) sandy clay loam; weak coarse subangular blocky structure; friable; common medium distinct light

brownish gray (10YR 6/2) iron depletions; very strongly acid; gradual wavy boundary.

Cg1—52 to 62 inches; light brownish gray (10YR 6/2) loam; massive; many fine flakes of mica; common fine distinct strong brown (7.5YR 5/6) and few fine distinct yellowish red (5YR 4/6) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Cg2—62 to 70 inches; light brownish gray (10YR 6/2) loam; massive; common medium distinct yellowish red (5YR 5/6) and brownish yellow (10YR 6/8) masses of iron accumulation; very strongly acid.

The thickness of the solum ranges from 40 to 60 inches. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. It has few or common redoximorphic accumulations in shades of yellow, brown, and red and few or common redoximorphic depletions in shades of gray. The texture is clay loam or clay.

The BC horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 8. It has common or many redoximorphic accumulations in shades of red and yellow and common or many redoximorphic depletions in shades of gray. The texture is sandy clay loam or sandy clay.

The C horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8. It has common or many redoximorphic accumulations in shades of brown, red, and yellow and common or many redoximorphic depletions in shades of gray. The texture is loamy sand, sandy loam, or loam.

Dothan Series

The Dothan series consists of very deep, well drained soils that formed in loamy sediments. These soils are on broad ridgetops in the uplands. Slopes range from 0 to 5 percent. These soils are fine-loamy, kaolinitic, thermic Plinthic Kandiudults.

Dothan soils are commonly associated on the landscape with Fuquay, Orangeburg, Springhill, and Red Bay soils. Fuquay and Orangeburg soils are in slightly higher positions than the Dothan soils. Fuquay soils have a thick sandy epipedon. Orangeburg soils have a reddish subsoil and do not have significant accumulations of plinthite. Springhill soils are on side slopes and have a reddish subsoil. Red Bay soils are in positions similar to those of the Dothan soils but are at slightly higher elevations. They have a dark red subsoil.

Typical pedon of Dothan fine sandy loam, 0 to 2 percent slopes; about 1.5 miles south of Jernigan, 2,100 feet west and 1,500 feet south of the northeast corner of sec. 24, T. 13 N., R. 29 E.

Ap—0 to 6 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; common fine roots; slightly acid; abrupt wavy boundary.

Bt1—6 to 18 inches; brownish yellow (10YR 6/6) sandy clay loam; weak fine subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—18 to 34 inches; yellowish brown (10YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

Btv1—34 to 50 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; 10 percent nodular plinthite; strongly acid; clear wavy boundary.

Btv2—50 to 65 inches; 35 percent strong brown (7.5YR 5/6), 30 percent yellowish brown (10YR 5/6), 20 percent dark red (2.5YR 3/6), and 15 percent gray (10YR 6/1) sandy clay loam; weak coarse subangular blocky structure; firm; few faint clay films on faces of peds; 10 percent nodular plinthite; areas of gray are iron depletions; strongly acid.

The solum is more than 60 inches thick. The depth to horizons that contain 5 percent or more plinthite ranges from 24 to 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. The texture is fine sandy loam or sandy loam.

The BE or BA horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6. The texture is sandy loam or fine sandy loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. The texture is sandy loam or sandy clay loam.

The Btv horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 8; or it has no dominant matrix color and is multicolored in shades of red, yellow, brown, and gray. The content of nodular plinthite ranges

from 5 to 25 percent, by volume. The texture is sandy clay loam or clay loam.

Fuquay Series

The Fuquay series consists of very deep, well drained soils that formed in sandy and loamy sediments. These soils are on broad ridgetops in the uplands. Slopes range from 0 to 5 percent. These soils are loamy, kaolinitic, thermic Arenic Plinthic Kandiudults.

Fuquay soils are commonly associated on the landscape with Blanton, Dothan, Orangeburg, and Red Bay soils. Blanton soils are in landscape positions similar to those of the Fuquay soils and have a sandy epipedon that is 40 to 80 inches thick. Dothan soils are in slightly lower positions than the Fuquay soils and do not have a thick sandy epipedon. Orangeburg and Red Bay soils are in slightly higher positions than the Fuquay soils. They do not have a thick sandy epipedon and have a reddish subsoil.

Typical pedon of Fuquay loamy fine sand, 0 to 5 percent slopes; about 4.5 miles south of Fort Mitchell, 2,000 feet west and 1,000 feet north of the southeast corner of sec. 21, T. 15 N., R. 30 E.

Ap—0 to 8 inches; brown (10YR 4/3) loamy fine sand; weak fine granular structure; very friable; common fine roots; slightly acid; abrupt wavy boundary.

E1—8 to 16 inches; light yellowish brown (10YR 6/4) loamy sand; single grained; loose; common fine roots; moderately acid; clear wavy boundary.

E2—16 to 28 inches; very pale brown (10YR 7/4) loamy sand; single grained; loose; common fine roots; moderately acid; clear wavy boundary.

Bt—28 to 48 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; moderately acid; clear wavy boundary.

Btv—48 to 65 inches; yellowish brown (10YR 5/8) sandy clay loam; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; 15 percent nodular plinthite; common medium distinct strong brown (7.5YR 5/6) and prominent red (2.5YR 4/6) masses of iron accumulation; common fine and medium distinct gray (10YR 6/1) iron depletions; moderately acid.

The solum is more than 60 inches thick. The depth to horizons that contain 5 percent or more plinthite ranges from 35 to 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where lime has been applied.

The Ap or A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 6. The texture is loamy sand or loamy fine sand.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. The texture is sandy loam or sandy clay loam.

The Btv horizon has hue of 5YR to 10YR, value of 4 to 8, and chroma of 4 to 8. The redoximorphic accumulations in shades of red, yellow, and brown and redoximorphic depletions in shades of gray are in a reticulate pattern. The content of nodular plinthite ranges from 5 to 25 percent, by volume. The texture is sandy clay loam or sandy loam.

Goldsboro Series

The Goldsboro series consists of very deep, moderately well drained soils that formed in loamy sediments. These soils are on low terraces adjacent to major streams. Slopes range from 0 to 2 percent. These soils are fine-loamy, siliceous, semiactive, thermic Aquic Paleudults.

Goldsboro soils are commonly associated on the landscape with Dogue, Gritney, Lynchburg, and Ocilla soils. Dogue soils are in slightly lower positions than the Goldsboro soils and have a clayey argillic horizon. Gritney soils are in higher positions than the Goldsboro soils and have a clayey argillic horizon. The somewhat poorly drained Lynchburg and Ocilla soils are in slightly lower positions than the Goldsboro soils.

Typical pedon of Goldsboro loamy fine sand, 0 to 2 percent slopes; about 4 miles west of Glenville, 1,200 feet east and 50 feet north of the southwest corner of sec. 4, T. 13 N., R. 28 E.

Ap—0 to 9 inches; dark brown (10YR 4/3) loamy fine sand; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; abrupt wavy boundary.

E—9 to 17 inches; light yellowish brown (2.5Y 6/4) loamy fine sand; weak coarse subangular blocky structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.

Bt1—17 to 28 inches; light olive brown (2.5Y 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—28 to 43 inches; light yellowish brown (10YR 6/4) clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; common medium prominent dark red (2.5YR 3/6) and strong brown (7.5YR 5/8)

masses of iron accumulation; few medium distinct light brownish gray (10YR 6/2) iron depletions; very strongly acid; gradual wavy boundary.

Btg—43 to 64 inches; light brownish gray (10YR 6/2) clay loam; weak medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; common medium prominent strong brown (7.5YR 5/8) and red (2.5YR 4/8) masses of iron accumulation; very strongly acid; clear wavy boundary.

Cg—64 to 80 inches; light gray (10YR 7/2) sandy clay loam; massive; common thin strata of sandy loam; common medium prominent strong brown (7.5YR 5/8) and yellowish red (5YR 5/8) masses of iron accumulation; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4.

The E horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 4. It is loamy fine sand, fine sandy loam, or sandy loam.

The BE horizon, if it occurs, has hue of 10YR and 2.5Y, value of 5 or 6, and chroma of 4 to 6. The texture is fine sandy loam or sandy loam.

The Bt horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 4 to 8. The number of redoximorphic accumulations in shades of brown and red is none or few in the upper part and few or common in the lower part. The number of redoximorphic depletions in shades of gray is none or few in the upper part and few or common in the lower part. The texture is sandy loam, loam, clay loam, or sandy clay loam.

The Btg horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It has common or many redoximorphic accumulations in shades of red and brown. The texture is clay loam or loam.

The Cg horizon, if it occurs, has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2. It has few to many redoximorphic accumulations in shades of red and brown. The texture commonly is sandy clay loam or sandy loam. In some pedons, however, the horizon contains stratified sandy, loamy, and clayey materials.

Gritney Series

The Gritney series consists of very deep, moderately well drained soils that formed in clayey marine sediments. These soils are on ridgetops and toeslopes in the uplands. Slopes range from 2 to 5 percent. These soils are fine, mixed, semiactive, thermic Aquic Hapludults.

Gritney soils commonly are associated on the landscape with Conecuh, Goldsboro, and Luverne soils. Conecuh and Luverne soils are in landscape positions similar to those of the Gritney soils but are at higher elevations. Conecuh soils have smectitic clay mineralogy. Luverne soils do not have low-chroma redoximorphic depletions in the upper part of the argillic horizon. Goldsboro soils are in lower positions than the Gritney soils and are fine-loamy.

Typical pedon of Gritney fine sandy loam, 2 to 5 percent slopes; about two miles east of Rutherford, 2,000 feet east and 300 feet north of the southwest corner of sec. 13, T. 14 N., R. 27 E.

Ap—0 to 7 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; few fine and medium roots; moderately acid; abrupt wavy boundary.

E—7 to 13 inches; pale brown (10YR 6/3) fine sandy loam; weak coarse subangular blocky structure; very friable; few fine and medium roots; moderately acid; clear wavy boundary.

Bt1—13 to 25 inches; yellowish brown (10YR 5/6) sandy clay; moderate medium subangular blocky structure; firm; few fine roots; common faint clay films on faces of peds; common medium prominent yellowish red (5YR 4/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

Bt2—25 to 39 inches; strong brown (7.5YR 5/6) clay; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; common medium prominent red (2.5YR 4/6) masses of iron accumulation; common medium distinct light brownish gray (10YR 6/2) iron depletions; very strongly acid; gradual wavy boundary.

Bt3—39 to 49 inches; yellowish brown (10YR 5/6) sandy clay; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; common medium prominent dark red (10R 3/6) masses of iron accumulation; few medium distinct light gray (10YR 6/2) iron depletions; very strongly acid; gradual wavy boundary.

C—49 to 80 inches; 40 percent light brownish gray (10YR 6/2), 40 percent dark red (10R 3/6), and 20 percent yellowish brown (10YR 5/6) sandy clay loam; massive; firm; few thin strata of sandy loam; areas of light brownish gray are iron depletions; very strongly acid.

The thickness of the solum ranges from 35 to 60 inches. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4. The texture is fine sandy loam.

The E horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 or 4. It is loamy sand, sandy loam, or fine sandy loam.

The upper part of the Bt horizon has hue of 10YR, value of 4 to 6, and chroma of 4 to 8. The middle and lower parts of the Bt horizon have hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 8; or they have no dominant matrix color and are multicolored in shades of gray, brown, red, and yellow. The number of redoximorphic accumulations in shades of red or brown ranges from none to common in the upper part and is common or many in the lower part. The number of redoximorphic depletions in shades of gray ranges from none to common in the upper part and is common or many in the lower part. The texture is clay or sandy clay.

The BC or CB horizon, if it occurs, has color and texture similar to those of the lower part of the Bt horizon.

The C horizon is multicolored in shades of red, yellow, brown, and gray. The texture is loam, sandy clay loam, or clay loam. In most pedons the horizon has thin strata of loamy sand, sandy loam, or sandy clay.

Hannon Series

The Hannon series consists of very deep, moderately well drained soils that formed in clayey sediments overlying soft limestone (chalk) or alkaline clays. These soils are on broad ridgetops and on side slopes in the uplands. Slopes range from 1 to 25 percent. These soils are fine, smectitic, thermic Chromic Hapluderts.

Hannon soils are commonly associated on the landscape with Conecuh, Luverne, and Sumter soils. Conecuh and Luverne soils are in landscape positions similar to those of the Hannon soils but are at higher elevations. They do not have alkaline materials within a depth of 60 inches. Sumter soils are in slightly lower positions on the ridgetops and side slopes than the Hannon soils. They are calcareous to the surface.

Typical pedon of Hannon clay, 5 to 8 percent slopes, eroded; about 3 miles east of Hurtsboro, 1,000 feet west and 400 feet south of the northeast corner of sec. 31, T. 15 N., R. 27 E.

Ap—0 to 2 inches; dark brown (10YR 4/3) clay; weak fine granular structure; friable; common fine and medium roots; strongly acid; abrupt wavy boundary.

Bt—2 to 10 inches; red (2.5YR 4/6) clay; strong medium angular blocky structure; firm; many fine roots; common pressure faces; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid; clear wavy boundary.

Btss1—10 to 18 inches; red (2.5YR 4/6) clay; strong medium angular blocky structure; firm; common fine roots; few large intersecting slickensides that have prominent polished and grooved surfaces; many pressure faces; common medium distinct light olive brown (2.5Y 5/4) masses of iron accumulation; strongly acid; clear wavy boundary.

Btss2—18 to 26 inches; red (2.5YR 4/6) clay; moderate coarse angular blocky structure parting to strong medium angular blocky; firm; common fine roots flattened on faces of peds; common large intersecting slickensides that have prominent polished and grooved surfaces; many pressure faces; many medium distinct strong brown (7.5YR 4/6) masses of iron accumulation; few fine and medium distinct grayish brown (2.5Y 5/2) iron depletions on surfaces of peds; moderately acid; clear wavy boundary.

Bkss1—26 to 33 inches; clay, light olive brown (2.5Y 5/4) interior and olive gray (5Y 5/2) exterior; moderate coarse angular blocky structure parting to strong fine and medium angular blocky; firm; few fine roots on faces of peds; common large intersecting slickensides that have distinct polished and grooved surfaces; few fine and medium rounded soft masses of calcium carbonate; few fine black concretions of iron and manganese oxides; few medium distinct yellowish red (5YR 4/6) masses of iron accumulation; olive gray surfaces of slickensides and peds are iron depletions; slightly effervescent; slightly alkaline; clear wavy boundary.

Bkss2—33 to 65 inches; silty clay, olive (5Y 5/4) interior and olive gray (5Y 5/2) exterior; moderate coarse angular blocky structure parting to strong fine and medium angular blocky; firm; common large intersecting slickensides that have distinct polished and grooved surfaces; many pressure faces; many fine and medium soft masses of calcium carbonate; olive gray surfaces of slickensides and peds are iron depletions; strongly effervescent; moderately alkaline.

The depth to soft limestone (chalk) bedrock that is characterized as paralithic is more than 80 inches. The depth to horizons that have accumulations of calcium carbonate ranges from 12 to 30 inches.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. Reaction ranges from strongly acid to neutral. The texture is clay loam or clay.

The Bt and Btss horizons have hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 4 to 8. The number of redoximorphic accumulations in shades of red and brown ranges from none to common. The number of redoximorphic depletions in shades of gray ranges from none to common. Reaction ranges from very strongly acid to neutral. The texture is clay or silty clay.

The Bkss horizon has hue of 10YR to 5Y and value of 4 to 6. It has chroma of 4 to 6 in ped interiors and 2 to 4 on exterior surfaces of peds. It has few to many redoximorphic accumulations in shades of brown and red and few to many redoximorphic depletions in shades of gray. The content of soft masses and nodules or concretions of calcium carbonate ranges from few to many. The content of soft black masses and concretions of iron and manganese oxides ranges from none to common. Reaction is slightly alkaline or moderately alkaline. The texture is clay or silty clay.

The BC or CB horizon, if it occurs, has a range in color similar to that of the Bkss horizon, or it has no dominant matrix color and is multicolored in shades of olive, gray, and brown. The texture is loam, clay loam, sandy clay loam, or silty clay loam. The content of soft masses or concretions or both of calcium carbonate ranges from common to many. The content of soft masses and concretions of iron and manganese oxides ranges from none to common.

The 2C or C horizon, if it occurs, is commonly stratified. It has hue of 2.5Y or 5Y, value of 5 or 6, and chroma of 2 to 6. Strata that have chroma of 4 to 6 are generally thinner and have less clay than those that have chroma of 2 or 3. The horizon is massive or has platy rock structure. The texture ranges from sandy loam to clay. Some pedons have strata of soft limestone (chalk) or oyster shells.

Iuka Series

The Iuka series consists of very deep, moderately well drained soils that formed in stratified loamy and sandy alluvium. These soils are on high parts of natural levees on flood plains along streams throughout the county. Slopes are 0 to 1 percent. These soils are coarse-loamy, siliceous, active, acid, thermic Aquic Udifluvents.

Iuka soils are commonly associated on the landscape with Kinston, Mantachie, and Mooreville soils. The poorly drained Kinston and somewhat poorly drained Mantachie soils are in lower, less convex positions on the flood plains than the Iuka soils and are fine-loamy. The well drained Mooreville soils are in slightly lower positions on the natural levees than the Iuka soils and are fine-loamy.

Typical pedon of Iuka fine sandy loam in an area of Kinston, Mantachie, and Iuka soils, 0 to 1 percent slopes, frequently flooded; about 2 miles southeast of Hurtsboro, 200 feet west and 300 feet south of the northeast corner of sec. 13, T. 14 N., R. 26 E.

Ap—0 to 8 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

C1—8 to 16 inches; yellowish brown (10YR 5/4) fine sandy loam; massive; very friable; few fine and medium roots; few fine faint light brownish gray iron depletions; strongly acid; gradual wavy boundary.

C2—16 to 32 inches; yellowish brown (10YR 5/4) fine sandy loam; massive; very friable; few fine roots; few fine distinct brownish yellow (10YR 6/8) masses of iron accumulation; common medium faint light brownish gray (10YR 6/2) iron depletions; very strongly acid; gradual wavy boundary.

C3—32 to 45 inches; yellowish brown (10YR 5/6) fine sandy loam; massive; very friable; few thin strata of loamy sand; few medium distinct light yellowish brown (10YR 6/4) masses of iron accumulation; common medium distinct light brownish gray (10YR 6/2) iron depletions; very strongly acid; gradual wavy boundary.

C4—45 to 80 inches; yellowish brown (10YR 5/6) fine sandy loam; massive; very friable; few thin strata of loamy sand; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation; common medium distinct light brownish gray (10YR 6/2) iron depletions; very strongly acid.

Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. The texture is fine sandy loam.

The C horizon has hue of 10YR, value of 4 to 6, and chroma of 3 to 6. It has few or common redoximorphic accumulations in shades of brown and yellow in the upper part and common or many in the lower part. It has few or common redoximorphic depletions in shades of gray in the upper part and common or many in the lower part. The texture is fine sandy loam or sandy loam. Thin strata of finer- and coarser-textured materials are in most pedons.

The Cg horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It has common or many redoximorphic accumulations in shades of brown, yellow, and red. The texture is loamy sand, fine sandy loam, sandy loam, silt loam, or loam. In most pedons the horizon has thin strata of finer- or coarser-textured materials.

Kinston Series

The Kinston series consists of very deep, poorly drained soils that formed in stratified loamy alluvium. These soils are on low parts of flood plains. Slopes are 0 to 1 percent. These soils are fine-loamy, siliceous, semiactive, acid, thermic Typic Fluvaquents.

Kinston soils are commonly associated on the landscape with Iuka, Mantachie, and Mooreville soils. These associated soils are in slightly higher, more convex positions on the flood plains than the Kinston soils. Iuka soils are moderately well drained and are coarse-loamy. Mantachie soils are somewhat poorly drained. Mooreville soils are moderately well drained.

Typical pedon of Kinston sandy loam, in an area of Kinston, Mantachie, and Iuka soils, 0 to 1 percent slopes, frequently flooded; about 4 miles east of Marvyn, 1,600 feet west and 1,800 feet south of northeast corner of sec. 4, T. 16 N., R. 27 E.

A—0 to 3 inches; dark gray (10YR 4/1) sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

Ag—3 to 14 inches; gray (10YR 5/1) loam; weak fine granular structure; friable; many fine roots; common fine distinct strong brown (7.5YR 4/6) masses of iron accumulation in root channels; very strongly acid; clear smooth boundary.

Cg1—14 to 38 inches; light gray (10YR 6/1) clay loam; massive; friable; few fine roots; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Cg2—38 to 65 inches; gray (10YR 5/1) clay loam; massive; friable; few thin strata of sandy loam; common fine distinct strong brown (7.5YR 5/6) masses of iron accumulation; very strongly acid.

Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 to 3. The Ag horizon, if it occurs, has hue of 10YR, value 4 or 5, and chroma of 1 or 2. It is loam, sandy loam, or silt loam.

The Cg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. It has few to many redoximorphic accumulations in shades of brown and yellow. The texture dominantly is loam, silt loam, or clay loam in the upper part and sandy loam or clay loam in the lower part. Most pedons have strata of finer- and coarser-textured materials. In some pedons the horizon has gravelly layers below a depth of 40 inches.

Kolomoki Series

The Kolomoki series consists of very deep, well drained soils that formed in clayey sediments. These soils are on low stream terraces adjacent to major streams. Slopes range from 0 to 2 percent. These soils are fine, kaolinitic, thermic Typic Hapludults.

Kolomoki soils are commonly associated on the landscape with Annemaine, Maxton, Riverview, and Wickham soils. Annemaine soils are in slightly lower positions on the terraces than the Kolomoki soils. They have low-chroma iron depletions in the upper part of the argillic horizon. Maxton and Wickham soils are in slightly higher positions on the terraces than the Kolomoki soils and are fine-loamy. Riverview soils are on flood plains adjacent to areas of the Kolomoki soils and are fine-loamy.

Typical pedon of Kolomoki fine sandy loam, 0 to 2 percent slopes, rarely flooded; about 10 miles southeast of Fort Mitchell, 1,400 feet west and 300 feet south of the northeast corner of sec. 8, T. 14 N., R. 31 E.

Ap—0 to 6 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt wavy boundary.

Bt1—6 to 14 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm; many fine and few medium roots; few faint clay films on faces of peds; few black stains on faces of peds; strongly acid; gradual wavy boundary.

Bt2—14 to 22 inches; yellowish red (5YR 5/6) clay; moderate medium subangular blocky structure; firm; common fine and medium roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—22 to 36 inches; yellowish red (5YR 5/6) sandy clay; weak medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

BC—36 to 48 inches; strong brown (7.5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; very strongly acid; abrupt wavy boundary.

C—48 to 65 inches; strong brown (7.5YR 5/6) loamy sand; single grained; loose; very strongly acid.

The thickness of the solum ranges from 36 to 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. The texture is fine sandy loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. The texture is clay loam, sandy clay, or clay.

The BC horizon, if it occurs, has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. The texture is sandy loam or sandy clay loam.

The C horizon has hue of 5YR to 10YR, value of 5 or 6, and chroma of 4 to 8. The texture is sandy loam, loamy sand, or sand.

Luverne Series

The Luverne series consists of very deep, well drained soils that formed in stratified clayey and loamy marine sediments. These soils are on ridgetops and side slopes in the uplands. Slopes range from 2 to 25 percent. These soils are fine, mixed, semiactive, thermic Typic Hapludults.

Luverne soils are commonly associated on the landscape with Conecuh, Gritney, Hannon, Springhill, and Troup soils. Conecuh, Gritney, and Hannon soils are in landscape positions similar to those of the Luverne soils but are at lower elevations. Conecuh soils have smectitic mineralogy. Gritney soils are brownish in the upper part of the subsoil. Hannon soils have smectitic mineralogy and are alkaline in the lower part of the subsoil. Springhill soils are in positions similar to those of the Luverne soils and are fine-loamy. Troup soils are in higher positions than the Luverne soils and have a thick sandy epipedon.

Typical pedon of Luverne sandy loam, 2 to 5 percent slopes; about 2 miles southeast of Glenville, about 1,400 feet west and 700 feet south of the northeast corner of sec. 29, T. 13 N., R. 29 E.

Ap—0 to 4 inches; dark brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt wavy boundary.

E—4 to 10 inches; light yellowish brown (10YR 6/4) loamy fine sand; single grained; loose; many fine and medium roots; very strongly acid; abrupt wavy boundary.

Bt1—10 to 18 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm; many fine and medium roots; common faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—18 to 31 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm; few fine roots; common faint clay films on faces of peds; common medium prominent brownish yellow (10YR 6/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

BC—31 to 48 inches; red (2.5YR 4/6) sandy clay; weak coarse subangular blocky structure; firm; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; few fine distinct light brownish gray (10YR 6/2) iron depletions; the iron accumulations and depletions are relict redoximorphic features; very strongly acid; clear wavy boundary.

C—48 to 65 inches; thinly stratified red (2.5YR 4/6), yellowish brown (10YR 5/6), strong brown (7.5YR 5/6), and light brownish gray (10YR 6/2) sandy clay loam and sandy loam; massive; friable; areas of red, yellowish brown, and strong brown are masses of iron accumulation; areas of light brownish gray are iron depletions; very strongly acid.

The thickness of the solum ranges from 20 to 50 inches. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4.

The E horizon, if it occurs, has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 2 to 4. It is loamy sand, loamy fine sand, or sandy loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. The number of redoximorphic accumulations in shades of brown and yellow ranges from none to common. The number of redoximorphic depletions in shades of gray ranges from none to common. The accumulations and depletions are relict redoximorphic features. The texture is clay loam, sandy clay, or clay.

The BC horizon, if it occurs, has a range in color similar to that of the Bt horizon, or it has no dominant matrix color and is multicolored in shades of red, yellow, gray, and brown. The texture is sandy clay or sandy clay loam.

The C horizon consists of stratified sediments having a high content of mica. The texture of individual strata ranges from loamy sand to clay. Color varies, but the sandier textured strata commonly have hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8. Clayey strata are generally grayish. In some pedons the horizon has thin lenses or strata of shale or ironstone.

Lynchburg Series

The Lynchburg series consists of very deep, somewhat poorly drained soils that formed in loamy sediments. These soils are on low terraces. Slopes range from 0 to 2 percent. These soils are fine-loamy, siliceous, semiactive, thermic Aeric Paleaquults.

Lynchburg soils commonly are associated on the landscape with Bladen, Dogue, Goldsboro, and Ocilla soils. The poorly drained Bladen soils are in lower positions than those of the Lynchburg soils. Dogue, Goldsboro, and Ocilla soils are in slightly higher, more convex positions than those of the Lynchburg soils. Dogue soils are moderately well drained and have a clayey argillic horizon. Goldsboro soils are moderately well drained. Ocilla soils have a thick sandy epipedon.

Typical pedon of Lynchburg loamy fine sand, 0 to 2 percent slopes, rarely flooded; about 2 miles east of Rutherford, 2,500 feet west and 1,200 feet north of the southeast corner of sec. 24, T. 14 N., R. 27 E.

Ap—0 to 7 inches; very dark gray (10YR 3/1) loamy fine sand; weak fine granular structure; very friable; many fine roots; slightly acid; gradual wavy boundary.

E—7 to 15 inches; very pale brown (10YR 7/3) loamy fine sand; weak fine granular structure; very friable; many fine roots; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; slightly acid; gradual wavy boundary.

Bt—15 to 32 inches; light olive brown (2.5Y 5/4) sandy clay loam; weak medium subangular blocky structure; friable; many fine roots; few faint clay films on faces of peds; common medium distinct strong brown (7.5YR 5/8) masses of iron accumulation; strongly acid; clear wavy boundary.

Btg1—32 to 45 inches; grayish brown (2.5Y 5/2) sandy clay loam; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; common medium prominent strong brown (7.5YR 5/8) and red (2.5YR 4/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

Btg2—45 to 65 inches; grayish brown (2.5Y 5/2) clay loam; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; common medium prominent strong brown (7.5YR 5/8) and yellowish brown (10YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

The solum is more than 60 inches thick. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2.

The Bt horizon has hue of 2.5Y, value of 5 or 6, and chroma of 4 to 8. It has common or many redoximorphic accumulations in shades of red, brown, and yellow and common or many redoximorphic depletions in shades of gray. The texture is sandy loam or sandy clay loam.

The Btg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It has common or many redoximorphic accumulations in shades of brown, yellow, and red. The texture is sandy clay loam or clay loam.

Mantachie Series

The Mantachie series consists of very deep, somewhat poorly drained soils that formed in loamy alluvium. These soils are on low to intermediate parts of flood plains. Slopes are 0 to 1 percent. These soils are fine-loamy, siliceous, active, acid, thermic Aeric Endoaquepts.

Mantachie soils are commonly associated on the landscape with Iuka and Kinston soils. The moderately well drained Iuka soils are in slightly higher, more convex positions than those of the Mantachie soils and are coarse-loamy. The poorly drained Kinston soils are in slightly lower, more concave positions than those of the Mantachie soils.

Typical pedon of Mantachie fine sandy loam, in an area of Kinston, Mantachie, and Iuka soils, 0 to 1 percent slopes, frequently flooded; about 3 miles southeast of Marvyn, 2,400 feet west and 2,200 feet north of the southeast corner of sec. 35, T. 16 N., R. 27 E.

A—0 to 4 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; many fine and medium roots; strongly acid; clear smooth boundary.

Bw—4 to 10 inches; brown (10YR 5/3) loam; weak medium subangular blocky structure; friable; many fine and medium roots; few medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in root channels; common medium distinct grayish brown (10YR 5/2) iron depletions; strongly acid; clear wavy boundary.

Bg1—10 to 28 inches; grayish brown (2.5Y 5/2) loam; weak medium subangular blocky structure; friable; many fine and medium roots; common medium distinct yellowish brown (10YR 5/4) and few fine

distinct strong brown (7.5YR 5/6) masses of iron accumulation; common dark concretions of iron and manganese oxides; strongly acid; gradual wavy boundary.

Bg2—28 to 45 inches; grayish brown (2.5Y 5/2) loam; weak medium subangular blocky structure; friable; common fine and medium roots; common medium prominent strong brown (7.5YR 5/6) and yellowish red (5YR 4/6) masses of iron accumulation; few fine dark concretions of iron and manganese oxides; very strongly acid; gradual wavy boundary.

Bg3—45 to 65 inches; gray (10YR 6/1) sandy clay loam; weak coarse subangular blocky structure; friable; few fine roots; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation; very strongly acid.

The thickness of the solum ranges from 30 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. The texture is fine sandy loam.

The Bw horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 to 6; or it has no dominant matrix color and is multicolored in shades of yellow, brown, and gray. It has common or many redoximorphic accumulations in shades of red, yellow, and brown and common or many redoximorphic depletions in shades of gray. The texture is loam, sandy clay loam, or clay loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It has few to many redoximorphic accumulations in shades of red, yellow, and brown. The texture is loam, sandy clay loam, or clay loam.

Marvyn Series

The Marvyn series consists of very deep, well drained soils that formed in loamy marine sediments. These soils are on ridgetops in the uplands. Slopes range from 2 to 5 percent. These soils are fine-loamy, kaolinitic, thermic Typic Kanhapludults.

Marvyn soils are commonly associated on the landscape with Blanton, Cowarts, and Uchee soils. Blanton and Uchee soils are in slightly higher positions than those of the Marvyn soils. They have a thick sandy epipedon. Cowarts soils are on side slopes adjacent to areas of the Marvyn soils and have a solum that is less than 40 inches thick.

Typical pedon of Marvyn loamy sand, 2 to 5 percent slopes; about 2 miles southwest of Crawford, 400 feet west and 1,400 feet north of the southeast corner of sec. 27, T. 17 N., R. 28 E.

Ap—0 to 6 inches; dark brown (10YR 4/3) loamy sand; weak medium granular structure; very friable; common fine roots; slightly acid; abrupt wavy boundary.

Bt1—6 to 16 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; very friable; common fine roots; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—16 to 38 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; common faint clay films on faces of peds; strongly acid; clear wavy boundary.

Bt3—38 to 44 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; common faint clay films on faces of peds; few medium distinct yellowish red (5YR 4/6) masses of iron accumulation; strongly acid; gradual wavy boundary.

BC—44 to 49 inches; yellowish brown (10YR 5/6) sandy loam; weak coarse subangular blocky structure; very friable; common medium prominent red (2.5YR 4/6) masses of iron accumulation, which are relict redoximorphic features; strongly acid; gradual wavy boundary.

C—49 to 65 inches; 45 percent strong brown (7.5YR 5/4), 35 percent light brownish gray (10YR 6/2), and 20 percent red (2.5YR 4/6) sandy loam; massive; very friable; few thin strata of sandy clay loam and loamy sand; areas of light brownish gray are iron depletions, which are relict redoximorphic features; very strongly acid.

The thickness of the solum ranges from 40 to 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. The texture is sandy loam or sandy clay loam.

The BC horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 4 to 8; or it has no dominant matrix color and is multicolored in shades of red, yellow, brown, and gray.

The C horizon commonly has no dominant matrix color and is multicolored in shades of red, yellow, brown, and gray. The texture is sandy loam or sandy

clay loam. Most pedons have strata or pockets of finer- and coarser-textured materials.

Maxton Series

The Maxton series consists of very deep, well drained soils that formed in stratified loamy and sandy sediments. These soils are on low terraces adjacent to the Chattahoochee River and other large streams. Slopes range from 0 to 2 percent. These soils are fine-loamy over sandy or sandy-skeletal, siliceous, subactive, thermic Typic Hapludults.

Maxton soils are commonly associated on the landscape with Annemaine, Kolomoki, Riverview, and Wickham soils. Annemaine and Kolomoki soils are in slightly lower positions than those of the Maxton soils. They have a clayey argillic horizon. Riverview soils are on flood plains adjacent to areas of the Maxton soils. They have a loamy cambic horizon. Wickham soils are in positions similar to those of the Maxton soils. They do not have a sandy substratum.

Typical pedon of Maxton loamy sand, 0 to 2 percent slopes, rarely flooded; about 6 miles east of Loflin, 700 feet west and 800 feet north of the southeast corner of sec. 5, T. 14 N., R. 31 E.

Ap—0 to 10 inches; dark brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; many fine and medium roots; slightly acid; abrupt wavy boundary.

Bt1—10 to 18 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; many fine and medium roots; few faint clay films on surfaces of peds; few fine flakes of mica; strongly acid; clear wavy boundary.

Bt2—18 to 27 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; many medium and few fine roots; few faint clay films on faces of peds; few fine flakes of mica; strongly acid; clear wavy boundary.

Bt3—27 to 38 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; very strongly acid; abrupt wavy boundary.

2C1—38 to 55 inches; reddish yellow (5YR 6/8) sand; single grained; loose; very strongly acid; clear wavy boundary.

2C2—55 to 75 inches; strong brown (7.5YR 5/6) sand; single grained; loose; strongly acid.

The thickness of the solum ranges from 20 to 40 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The Ap or A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. It is sandy loam or sandy clay loam.

The 2C horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. The texture is coarse sand, sand, loamy sand, or very gravelly sand.

Mooreville Series

The Mooreville series consists of very deep, moderately well drained soils that formed in loamy alluvium. These soils are on flood plains along major streams. Slopes range from 0 to 2 percent. These soils are fine-loamy, siliceous, active, thermic Fluvaquentic Dystrochrepts.

Mooreville soils are commonly associated on the landscape with Una and Urbo soils. The somewhat poorly drained Urbo soils are in slightly lower positions than those of the Mooreville soils. The poorly drained Una soils are in depressions on the flood plains.

Typical pedon of Mooreville fine sandy loam, in an area of Urbo-Mooreville-Una complex, 0 to 2 percent slopes, frequently flooded; about 1,600 feet north and 1,700 feet west of the southeast corner of sec. 15, T. 14 N., R. 26 E.

A—0 to 6 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; common fine and medium roots; strongly acid; clear smooth boundary.

Bw1—6 to 15 inches; yellowish brown (10YR 5/4) sandy clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; few fine faint light yellowish brown (10YR 6/4) masses of iron accumulation; strongly acid; clear wavy boundary.

Bw2—15 to 28 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; few medium distinct light brownish gray (10YR 6/2) iron depletions; strongly acid; gradual wavy boundary.

Bw3—28 to 45 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few medium distinct strong brown (7.5YR 5/6) masses of iron accumulation; common medium distinct grayish brown (10YR 5/2) and light gray (10YR 7/2) iron depletions; strongly acid; gradual wavy boundary.

C—45 to 70 inches; 40 percent yellowish brown (10YR 5/4), 30 percent grayish brown (10YR 5/2),

and 30 percent strong brown (7.5YR 5/8) sandy loam; massive; friable; few thin strata of loamy sand; few streaks of pale brown (10YR 7/3) uncoated sand; areas of yellowish brown and strong brown are masses of iron accumulation; areas of grayish brown are iron depletions; strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 8. It has few to many redoximorphic accumulations in shades of red or brown and few to many redoximorphic depletions in shades of gray. The texture is loam, sandy clay loam, or clay loam.

The C horizon commonly has no dominant matrix color and is multicolored in shades of red, brown, and gray. The texture is loam, sandy loam, or sandy clay loam. Most pedons have strata of finer- and coarser-textured materials.

Ocilla Series

The Ocilla series consists of very deep, somewhat poorly drained soils that formed in sandy and loamy sediments. These soils are on low stream terraces. Slopes range from 0 to 2 percent. These soils are loamy, siliceous, semiactive, thermic Aquic Arenic Paleudults.

Ocilla soils are commonly associated on the landscape with Bladen, Goldsboro, and Lynchburg soils. The poorly drained Bladen soils are in slightly lower positions than those of the Ocilla soils. The moderately well drained Goldsboro soils are in slightly higher positions than those of the Ocilla soils. They do not have a thick sandy epipedon. Lynchburg soils are in landscape positions similar to those of the Ocilla soils and do not have a thick sandy epipedon.

Typical pedon of Ocilla loamy fine sand, 0 to 2 percent slopes, rarely flooded; about 6 miles south of Hurtsboro, 200 feet west and 700 feet north of the southeast corner of sec. 36, T. 14 N., R. 26 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loamy fine sand; weak fine granular structure; very friable; common fine and medium roots; slightly acid; abrupt wavy boundary.

E1—8 to 20 inches; yellowish brown (10YR 5/4) loamy fine sand; single grained; loose; common fine roots; few fine faint very pale brown iron depletions; strongly acid; clear wavy boundary.

E2—20 to 28 inches; very pale brown (10YR 7/3) loamy fine sand; single grained; loose; few fine and medium roots; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid; clear wavy boundary.

Bt1—28 to 35 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation; common medium distinct light brownish gray (10YR 6/2) iron depletions; very strongly acid; clear wavy boundary.

Bt2—35 to 48 inches; 40 percent yellowish brown (10YR 5/6), 30 percent light brownish gray (10YR 6/2), and 30 percent strong brown (7.5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; common faint clay films on faces of peds; areas of yellowish brown and strong brown are masses of iron accumulation; areas of light brownish gray are iron depletions; strongly acid; clear wavy boundary.

Bt3—48 to 65 inches; 40 percent yellowish brown (10YR 5/6), 30 percent light brownish gray (10YR 6/2), and 30 percent strong brown (7.5YR 5/6) sandy clay; moderate medium subangular blocky structure; friable; common faint clay films on faces of peds; areas of yellowish brown and strong brown are masses of iron accumulation; areas of light brownish gray are iron depletions; strongly acid.

The thickness of the solum ranges from 60 to more than 80 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where lime has been applied.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma 2 to 4. The number of redoximorphic accumulations in shades of brown and yellow ranges from none to common. The number of redoximorphic depletions in shades of gray ranges from none to common. The texture is loamy sand or loamy fine sand.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 8; or it has no dominant matrix color and is multicolored in shades of brown, yellow, red, and gray. It has common or many redoximorphic accumulations in shades of red, yellow, and brown and common or many redoximorphic depletions in shades of gray. The texture is sandy loam, sandy clay loam, or sandy clay.

Orangeburg Series

The Orangeburg series consists of very deep, well drained soils that formed in loamy marine sediments. These soils are on ridgetops in the uplands. Slopes range from 0 to 8 percent. These soils are fine-loamy, kaolinitic, thermic Typic Kandiudults.

Orangeburg soils are commonly associated on the landscape with Dothan, Fuquay, Red Bay, and Springhill soils. Dothan, Fuquay, and Red Bay soils are in landscape positions similar to those of the Orangeburg soil. Dothan soils have a brownish argillic horizon and have significant accumulations of plinthite in the lower part of the kandic horizon. Fuquay soils have a thick sandy epipedon. Red Bay soils have a dark red kandic horizon. Springhill soils are on side slopes adjacent to areas of the Orangeburg soils and have a significant decrease in clay content in the lower part of the kandic horizon.

Typical pedon of Orangeburg fine sandy loam, 0 to 2 percent slopes; about 2 miles west of Oswichee, 400 feet east and 1,100 feet south of the northwest corner of sec. 21, T. 15 N., R. 30 E.

Ap—0 to 8 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; many fine and few medium roots; very strongly acid; abrupt wavy boundary.

BA—8 to 15 inches; brown (7.5YR 4/4) fine sandy loam; weak fine subangular blocky structure; very friable; many fine and medium roots; very strongly acid; clear wavy boundary.

Bt1—15 to 30 inches; yellowish red (5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few medium roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—30 to 40 inches; red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation, which are relict redoximorphic features; very strongly acid; clear wavy boundary.

Bt3—40 to 80 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It is fine sandy loam, sandy loam, loamy sand, or loamy fine sand.

The BA or BE horizon, if it occurs, has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. The texture is fine sandy loam or sandy loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. The texture is sandy clay loam.

Pacolet Series

The Pacolet series consists of very deep, well drained soils that formed in material weathered from acid crystalline rocks. These soils are on side slopes in the uplands. Slopes range from 15 to 25 percent. These soils are fine, kaolinitic, thermic Typic Kanhapludults.

Pacolet soils are commonly associated on the landscape with Orangeburg and Springhill soils. These associated soils are in higher positions than those of the Pacolet soils. They are fine-loamy.

Typical pedon of Pacolet sandy loam, 15 to 25 percent slopes; about one mile north of Phenix City, 200 feet west and 300 feet south of the northeast corner of sec. 2, T. 18 N., R. 30 E.

Ap—0 to 4 inches; dark reddish brown (5YR 3/3) sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

BA—4 to 9 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; many fine roots; strongly acid; gradual wavy boundary.

Bt1—9 to 15 inches; red (2.5YR 4/6) sandy clay; moderate medium subangular blocky structure; firm; many fine and medium roots; common faint clay films on faces of peds; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bt2—15 to 22 inches; red (2.5YR 4/6) sandy clay; moderate medium subangular blocky structure; firm; few medium roots; common faint clay films on faces of peds; common fine flakes of mica; 10 percent quartz gravel; strongly acid; clear wavy boundary.

C—22 to 80 inches; 50 percent red (2.5YR 4/8) and 50 percent reddish yellow (7.5YR 6/6) saprolite that has a texture of sandy loam; massive; friable; many fine and medium flakes of mica; very strongly acid.

The solum is less than 30 inches thick. The depth to hard bedrock is more than 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4.

The BA horizon, if it occurs, has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. The texture is loam, sandy clay loam, or sandy loam.

The Bt horizon has hue of 2.5YR, value of 4 or 5, and chroma of 6 to 8. The texture is clay, clay loam, or sandy clay.

The BC horizon, if it occurs, has hue of 10R to 5YR, value of 4 or 5, and chroma of 6 to 8. The content of rock fragments ranges from 0 to 15 percent. The texture is sandy loam, sandy clay loam, or clay loam.

The C horizon has hue of 10R to 5YR, value of 4 or 5, and chroma of 6 to 8. It is loamy saprolite that weathered from felsic crystalline rock. The texture is loam, sandy loam, or sandy clay loam.

Red Bay Series

The Red Bay series consists of very deep, well drained soils that formed in loamy sediments. These soils are on broad ridgetops in the uplands. Slopes range from 0 to 2 percent. These soils are fine-loamy, kaolinitic, thermic Rhodic Kandiudults.

Red Bay soils are commonly associated on the landscape with Dothan, Fuquay, and Orangeburg soils. These associated soils are in landscape positions similar to those of the Red Bay soils. Dothan soils have a brownish kandic horizon that has significant accumulations of plinthite in the lower part. Fuquay soils have a thick sandy epipedon. Orangeburg soils do not have a dark red kandic horizon.

Typical pedon of Red Bay sandy loam, 0 to 2 percent slopes; about 1 mile southeast of Oswichee, 1,500 feet east and 300 feet north of the southwest corner of sec. 23, T. 15 N., R. 30 E.

Ap—0 to 9 inches; reddish brown (5YR 4/3) sandy loam; weak fine granular structure; very friable; common fine and medium roots; moderately acid; abrupt wavy boundary.

Bt1—9 to 29 inches; dark red (2.5YR 3/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—29 to 45 inches; dark reddish brown (2.5YR 3/4) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; common faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—45 to 65 inches; dark red (10R 3/6) sandy clay loam; moderate medium subangular blocky structure; friable; common faint clay films on faces of peds; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from very strongly acid to moderately acid in the upper part of the solum and is very strongly acid or strongly acid in the lower part.

The A or Ap horizon has hue of 2.5YR or 5YR, value of 3 or 4, and chroma of 2 to 4.

The Bt horizon has hue of 10R or 2.5YR, value of 3, and chroma of 4 to 6. The texture is sandy loam or sandy clay loam.

Riverview Series

The Riverview series consists of very deep, well drained soils that formed in loamy alluvium. These soils are on low terraces and natural levees along the Chattahoochee River. Slopes are 0 to 1 percent. These soils are fine-loamy, mixed, active, thermic Fluventic Dystrochrepts.

Riverview soils are commonly associated on the landscape with Congaree, Kolomoki, Maxton, Toccoa, and Wickham soils. Congaree and Toccoa soils are in landscape positions similar to those of the Riverview soils but are at lower elevations. Congaree soils do not have a cambic horizon. Toccoa soils do not have a cambic horizon and are coarse-loamy. Kolomoki, Maxton, and Wickham soils are in landscape positions similar to those of the Riverview soils but are at higher elevations. Kolomoki soils have a clayey argillic horizon. Maxton and Wickham soils have a fine-loamy argillic horizon.

Typical pedon of Riverview loam, 0 to 1 percent slopes, occasionally flooded; about 5 miles southeast of Phenix City, 1,600 feet north and 2,000 feet east of the southwest corner of sec. 13, T. 16 N., R. 30 E.

Ap—0 to 8 inches; dark brown (10YR 4/3) loam; weak medium granular structure; friable; many fine roots; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bw—8 to 25 inches; dark yellowish brown (10YR 4/6) loam; weak medium subangular blocky structure; friable; many fine roots; many fine flakes of mica; very strongly acid; clear wavy boundary.

Ab—25 to 30 inches; very dark grayish brown (10YR 3/2) silt loam; weak medium subangular blocky structure; friable; many fine flakes of mica; very strongly acid; clear wavy boundary.

B'w—30 to 43 inches; dark brown (7.5YR 4/4) loam; weak coarse subangular blocky structure; friable; many fine flakes of mica; very strongly acid; clear wavy boundary.

C—43 to 65 inches; yellowish brown (10YR 5/4) loam; massive; friable; few thin strata of sandy loam; many fine flakes of mica; very strongly acid.

The thickness of the solum ranges from 24 to 60 inches. Reaction ranges from very strongly acid to slightly acid in the A horizon and is very strongly acid or strongly acid in the B and C horizons. Some pedons have a buried A or B horizon or both below a depth of 20 inches. These buried horizons have the same range in color and texture as the A or B horizon.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. The texture is loam or silt loam.

The Bw horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8. The number of redoximorphic accumulations in shades of brown and red is none or few. The texture is loam, silt loam, silty clay loam, or clay loam.

The C horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 6. The number of redoximorphic accumulations in shades of yellow, brown, and red ranges from none to common. The number of redoximorphic depletions in shades of gray ranges from none to common. The texture is loamy sand, fine sandy loam, or loam. Most pedons have thin strata of finer- or coarser-textured material.

Springhill Series

The Springhill series consists of very deep, well drained soils that formed in loamy sediments. These soils are on narrow ridgetops and on side slopes in the uplands. Slopes range from 2 to 30 percent. These soils are fine-loamy, kaolinitic, thermic Typic Kanhapludults.

Springhill soils are commonly associated on the landscape with Alaga, Cowarts, Luverne, Orangeburg, Pacolet, and Troup soils. Alaga, Orangeburg, and Troup soils are in higher landscape positions than those of the Springhill soils. Alaga soils are sandy throughout. Orangeburg soils do not have a significant decrease in clay content within a depth of 60 inches. Troup soils have a thick sandy epipedon. Cowarts and Luverne soils are in positions similar to those of the Springhill soils. Cowarts soils have a brownish kandic horizon. Luverne soils have a clayey argillic horizon. Pacolet soils are in lower landscape positions than those of the Springhill soils. They have a clayey kandic horizon.

Typical pedon of Springhill loamy sand, in an area of Troup-Springhill-Luverne complex, 10 to 30 percent slopes; about 0.5 mile east of Glenville, 2,600 feet west and 1,200 feet south of the northeast corner of sec. 18, T. 13 N., R. 29 E.

Ap—0 to 4 inches; dark brown (10YR 4/4) loamy sand; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear wavy boundary.

E—4 to 12 inches; brown (7.5YR 4/4) loamy sand; weak fine granular structure; very friable; few fine and medium roots; very strongly acid; clear wavy boundary.

Bt1—12 to 31 inches; red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; few medium roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—31 to 38 inches; red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—38 to 45 inches; yellowish red (5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt4—45 to 65 inches; yellowish red (5YR 5/8) sandy loam; moderate medium subangular blocky structure; friable; common fine distinct yellowish brown (10YR 5/8) and red (2.5YR 4/8) masses of iron accumulation, which are relict redoximorphic features; very strongly acid.

The solum is more than 40 inches thick. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. The content of rounded quartz gravel or fragments of ironstone or both ranges from 0 to 10 percent throughout the profile.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. The texture is loamy sand or sandy loam.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. The texture is loamy sand or sandy loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. The texture is sandy clay loam in the upper part and sandy clay loam or sandy loam in the lower part. The number of redoximorphic accumulations in shades of yellow, brown, or red ranges from none to common in the lower part. The accumulations are considered to be relict features.

The C horizon, if it occurs, has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. It is commonly stratified. The texture ranges from sandy clay loam to loamy sand.

Sumter Series

The Sumter series consists of moderately deep, well drained soils that formed in materials weathered from alkaline clays and soft limestone (chalk). These soils are on side slopes in uplands of the Blackland Prairie. Slopes range from 5 to 25 percent. These soils

are fine-silty, carbonatic, thermic Rendollic Eutrochrepts.

Sumter soils are commonly associated on the landscape with Hannon soils. Hannon soils are in slightly higher positions than those of the Sumter soils. They have a reddish argillic horizon and are acid in the upper part of the subsoil.

Typical pedon of Sumter silty clay loam, in an area of Sumter-Hannon complex, 12 to 25 percent slopes, severely eroded; about 5 miles south of Marvyn, 1,800 feet east and 2,000 feet north of the southwest corner of sec. 12, T. 16 N., R. 26 E.

Ap—0 to 3 inches; very dark grayish brown (2.5Y 3/2) silty clay loam; weak coarse granular structure; firm; many fine roots; common fragments of fossil oyster shell; common fine soft masses of calcium carbonate; strongly effervescent; moderately alkaline; clear wavy boundary.

Bk1—3 to 21 inches; pale olive (5Y 6/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine and medium roots; few fine fragments of soft limestone (chalk); many fine, medium, and coarse soft masses of calcium carbonate; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bk2—21 to 28 inches; light olive brown (2.5Y 5/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; common fine fragments of soft limestone (chalk); few fossil oyster shells; many fine, medium, and coarse soft masses of calcium carbonate; strongly effervescent; moderately alkaline; clear wavy boundary.

Bk3—28 to 38 inches; light olive brown (2.5Y 5/6) silty clay loam; moderate medium subangular blocky structure; firm; common fine fragments of soft limestone (chalk); few fossil oyster shells; many fine, medium, and coarse soft masses of calcium carbonate; common medium distinct pale olive (5Y 6/3) iron depletions; strongly effervescent; moderately alkaline; clear wavy boundary.

Cr—38 to 80 inches; weathered, soft limestone (chalk) bedrock; massive; very firm; common thin strata of fossil oyster shell; violently effervescent; moderately alkaline.

The thickness of the solum and depth to soft bedrock ranges from 20 to 40 inches. Reaction is slightly alkaline or moderately alkaline throughout the profile.

The A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2. The texture is silty clay loam or silty clay.

The Bk horizon has hue of 2.5Y or 5Y, value of 4 to 7, and chroma of 3 to 6. It has common or many soft masses or concretions or both of calcium carbonate. The texture is silty clay loam, silty clay, or clay.

The Cr horizon is weathered, soft limestone (chalk) bedrock. It is massive or has thick platy rock structure. It can be cut with difficulty using hand tools and is rippable by heavy equipment. In most pedons it has strata of fossil oyster shell. These strata range in thickness from a few inches to a few feet.

Toccoa Series

The Toccoa series consists of very deep, well drained soils that formed in loamy and sandy alluvium. These soils are on high parts of natural levees along major streams. Slopes range from 0 to 3 percent. These soils are coarse-loamy, mixed, active, nonacid, thermic Typic Udifluvents.

Toccoa soils are commonly associated on the landscape with Congaree, Riverview, and Wickham soils. Congaree and Riverview soils are in positions similar to those of the Toccoa soils. They are fine-loamy. Wickham soils are on terraces at higher elevations than the Toccoa soils and are fine-loamy.

Typical pedon of Toccoa fine sandy loam, in an area of Congaree-Toccoa complex, gently undulating, occasionally flooded; about 2 miles northeast of Lake Bickerstaff, 1,900 feet west and 2,400 feet north of the southeast corner of sec. 12, T. 16 N., R. 30 E.

Ap—0 to 5 inches; dark brown (7.5YR 3/4) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; few fine flakes of mica; moderately acid; abrupt wavy boundary.

C1—5 to 17 inches; strong brown (7.5YR 4/6) fine sandy loam; massive; faint bedding planes; very friable; many fine and medium roots; common fine flakes of mica; moderately acid; clear wavy boundary.

C2—17 to 22 inches; yellowish brown (10YR 5/6) fine sandy loam; massive; faint bedding planes; very friable; common fine flakes of mica; moderately acid; clear wavy boundary.

C3—22 to 37 inches; strong brown (7.5YR 4/6) loam; massive; faint bedding planes; very friable; common fine flakes of mica; moderately acid; clear wavy boundary.

C4—37 to 65 inches; light yellowish brown (10YR 6/4) sandy loam; massive; faint bedding planes; very friable; few thin strata of loam; common fine flakes of mica; moderately acid.

Reaction is strongly acid or moderately acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4.

The C horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 6. The texture is fine sandy loam, sandy loam, or loam. Most pedons have strata of finer- or coarser-textured materials.

Troup Series

The Troup series consists of very deep, somewhat excessively drained soils that formed in sandy and loamy marine sediments. These soils are on ridgetops and side slopes in the uplands. Slopes range from 0 to 30 percent. These soils are loamy, kaolinitic, thermic Grossarenic Kandiudults.

Troup soils are commonly associated on the landscape with Alaga, Luverne, and Springhill soils. Alaga soils are in positions similar to those of the Troup soils. They have sandy textures to a depth of more than 80 inches. Luverne and Springhill soils are in lower landscape positions than those of the Troup soils and do not have a thick sandy epipedon. Luverne soils have a clayey argillic horizon.

Typical pedon of Troup loamy fine sand, in an area of Troup-Alaga complex, 0 to 5 percent slopes; about 1 mile north of Sandfort, 800 feet east and 600 feet south of the northwest corner of sec. 27, T. 16 N., R. 28 E.

A—0 to 4 inches; brown (10YR 5/3) loamy fine sand; weak fine granular structure; very friable; common fine roots; strongly acid; clear wavy boundary.

E1—4 to 10 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; common fine roots; strongly acid; clear wavy boundary.

E2—10 to 27 inches; light yellowish brown (10YR 6/4) loamy sand; single grained; loose; few fine and medium roots; strongly acid; gradual wavy boundary.

E3—27 to 45 inches; brownish yellow (10YR 6/6) loamy sand; single grained; loose; strongly acid; gradual wavy boundary.

E4—45 to 54 inches; very pale brown (10YR 7/4) loamy sand; single grained; loose; strongly acid; clear wavy boundary.

Bt1—54 to 64 inches; yellowish red (5YR 5/6) sandy loam; weak medium subangular blocky structure; very friable; sand grains are bridged and coated with clay; very strongly acid; clear wavy boundary.

Bt2—64 to 80 inches; yellowish red (5YR 5/8) sandy loam; weak medium subangular blocky structure; very friable; sand grains bridged and coated with clay; very strongly acid.

The solum is more than 80 inches thick. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where lime has been applied.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4. The texture is loamy sand or loamy fine sand.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 8. The texture is loamy sand or loamy fine sand.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. The texture is sandy loam or sandy clay loam.

Uchee Series

The Uchee series consists of very deep, well drained soils that formed in sandy and loamy marine sediments. These soils are on ridgetops and side slopes in the uplands. Slopes range from 0 to 15 percent. These soils are loamy, kaolinitic, thermic Arenic Kanhapludults.

Uchee soils are commonly associated on the landscape with Blanton, Cowarts, and Marvyn soils. Blanton and Cowarts soils are in landscape positions similar to those of the Uchee soils. Blanton soils have a sandy epipedon that is 40 to 80 inches thick. Cowarts soils do not have a thick sandy epipedon. Marvyn soils are on broad ridgetops at slightly higher elevations than the Uchee soils and do not have a thick sandy epipedon.

Typical pedon of Uchee loamy sand, in an area of Uchee-Cowarts complex, 0 to 5 percent slopes; about 0.5 mile south of Crawford, 600 feet east and 2,400 feet south of the northwest corner of sec. 24, T. 17 N., R. 28 E.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) loamy sand; single grained; loose; common fine and medium roots; strongly acid; abrupt smooth boundary.

E1—7 to 16 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; few fine and medium roots; very strongly acid; gradual wavy boundary.

E2—16 to 30 inches; light yellowish brown (10YR 6/4) loamy sand; single grained; loose; few medium roots; very strongly acid; gradual wavy boundary.

Bt1—30 to 42 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; very friable; sand grains coated and bridged with clay; few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Bt2—42 to 54 inches; yellowish brown (10YR 5/4) sandy clay loam; moderate medium subangular blocky structure; friable; common faint clay films on faces of peds; common medium distinct strong

brown (7.5YR 5/8) masses of iron accumulation; common fine and medium distinct light gray (10YR 7/1) iron depletions; very strongly acid; clear wavy boundary.

C—54 to 80 inches; 35 percent yellowish brown (10YR 5/8), 35 percent red (2.5YR 4/6), and 30 percent light gray (10YR 7/1) sandy loam; massive; friable; few thin strata and streaks of loamy sand; areas of light gray are iron depletions; very strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where lime has been applied. The content of rounded quartz gravel ranges from 0 to 10 percent throughout the profile.

The Ap or A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. It is sand or loamy sand.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. It has few or common redoximorphic depletions in shades of gray below a depth of 30 inches. The texture is sandy loam or sandy clay loam.

The C horizon commonly has no dominant matrix color and is multicolored in shades of red, brown, yellow, and gray. The texture is loamy sand, sandy loam, or sandy clay loam. Most pedons have strata and streaks of finer- and coarser-textured materials.

Una Series

The Una series consists of very deep, poorly drained soils that formed in clayey alluvium. These soils are in depressional areas on flood plains. Slopes are 0 to 1 percent. These soils are fine, mixed, active, acid, thermic Typic Epiaquepts.

Una soils are commonly associated on the landscape with Mooreville and Urbo soils. The moderately well drained Mooreville and somewhat poorly drained Urbo soils are in slightly higher, more convex positions on the flood plains than the Una soils. Mooreville soils are fine-loamy. Urbo soils have vertic properties.

Typical pedon of Una silty clay loam, in an area of Urbo-Mooreville-Una complex, 0 to 2 percent slopes, frequently flooded; about 3 miles south of Huguley, 1,800 feet north and 1,900 feet west of the southeast corner of sec. 9, T. 16 N., R. 28 E.

A—0 to 3 inches; very dark gray (10YR 3/1) silty clay loam; weak fine granular structure; friable; common fine and medium roots; strongly acid; clear smooth boundary.

Bg1—3 to 8 inches; gray (10YR 5/1) clay; weak medium subangular blocky structure; firm; common fine and medium roots; few fine soft black masses of iron and manganese oxides; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in root channels; strongly acid; gradual wavy boundary.

Bg2—8 to 36 inches; gray (10YR 5/1) clay; weak medium subangular blocky structure; firm; few fine roots; few fine soft black masses of iron and manganese oxides; few medium distinct yellowish brown (10YR 5/4) masses of iron accumulation; strongly acid; gradual wavy boundary.

Bg3—36 to 42 inches; grayish brown (2.5Y 5/2) clay; weak medium subangular blocky structure; firm; few fine soft black masses of iron and manganese oxides; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid; gradual wavy boundary.

Bg4—42 to 65 inches; gray (5Y 5/1) clay; weak coarse subangular blocky structure; firm; few fine soft black masses of iron and manganese oxides; few medium prominent strong brown (7.5YR 5/6) masses of iron accumulation; strongly acid.

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

The A horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 or 2. The number of redoximorphic accumulations in shades of red, brown, and yellow ranges from none to common.

The Bg horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2. It has few to many redoximorphic accumulations in shades of red, yellow, and brown. In most pedons the horizon has few or common soft masses or concretions or both of iron and manganese oxides. The texture is silty clay loam, silty clay, or clay.

Urbo Series

The Urbo series consists of very deep, somewhat poorly drained soils that formed in clayey alluvium. These soils are in low areas on flood plains. Slopes range from 0 to 2 percent. These soils are fine, mixed, active, acid, thermic Vertic Epiaquepts.

Urbo soils are commonly associated on the landscape with Mooreville and Una soils. The moderately well drained Mooreville soils are in slightly higher positions on the flood plains than the Urbo soils and are fine-loamy. The poorly drained Una soils are in

slightly lower depressional positions on the flood plains than the Urbo soils.

Typical pedon of Urbo clay loam, in an area of Urbo-Mooreville-Una complex, 0 to 2 percent slopes, frequently flooded; about 3 miles south of Huguley, 2,100 feet west and 1,800 feet north of the southeast corner of sec. 9, T. 16 N., R. 28 E.

A1—0 to 3 inches; dark brown (10YR 4/3) clay loam; weak fine granular structure; friable; few fine roots; strongly acid; abrupt smooth boundary.

A2—3 to 8 inches; dark brown (10YR 4/3) clay loam; weak fine granular structure; friable; few fine roots; few fine distinct dark brown (7.5YR 4/4) masses of iron accumulation; common medium distinct grayish brown (10YR 5/2) iron depletions; few fine soft black masses of iron and manganese oxides; very strongly acid; clear smooth boundary.

Bg—8 to 18 inches; grayish brown (2.5Y 5/2) clay; weak medium subangular blocky structure; firm; few fine roots; common fine soft black masses of iron and manganese oxides; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.

Bssg1—18 to 35 inches; gray (10YR 5/1) clay; weak medium subangular blocky structure; firm; few large intersecting slickensides that have polished and faintly grooved faces; many fine soft black masses of iron and manganese oxides; common medium distinct yellowish brown (10YR 5/4) masses of iron accumulation; very strongly acid; gradual wavy boundary.

Bssg2—35 to 65 inches; grayish brown (2.5Y 5/2) silty clay loam; weak coarse subangular blocky structure; firm; few large intersecting slickensides that have polished and faintly grooved faces; common fine and medium distinct yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 5/6) masses of iron accumulation; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3.

The Bg and Bssg horizons have hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 or 2. They have few or common redoximorphic accumulations in shades of red, yellow, and brown. These horizons have few to many soft masses or concretions or both of iron and manganese oxides. The texture is silty clay, clay, silty clay loam, or clay loam.

The Bw horizon, if it occurs, has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4; or it has no dominant matrix color and is multicolored in shades of brown, yellow, and gray. It is thin and has common or many redoximorphic depletions in shades of gray. The texture is silty clay, clay, silty clay loam, or clay loam.

Wahee Series

The Wahee series consists of very deep, somewhat poorly drained soils that formed in clayey sediments. These soils are on low stream terraces. Slopes are 0 to 1 percent. These soils are fine, mixed, semiactive, thermic Aeric Endoaquults.

Wahee soils are commonly associated on the landscape with Bladen and Dogue soils. The poorly drained Bladen soils are in slightly lower positions than those of the Wahee soils, and the moderately well drained Dogue soils are in slightly higher, more convex positions.

Typical pedon of Wahee loam, in an area of Wahee-Bladen complex, 0 to 1 percent slopes, occasionally flooded; about 3.5 miles southwest of Rutherford, 2,600 feet west and 700 feet south of the northeast corner of sec. 30, T. 14 N., R. 26 E.

Ap—0 to 4 inches; dark brown (10YR 4/3) loam; weak fine granular structure; friable; many fine and medium roots; strongly acid; clear wavy boundary.

Bt—4 to 15 inches; light olive brown (2.5Y 5/4) clay; moderate medium subangular blocky structure; firm; common fine and medium roots; few faint clay films on faces of peds; few fine distinct light brownish gray (10YR 6/2) iron depletions; strongly acid; clear wavy boundary.

Btg1—15 to 25 inches; light gray (10YR 6/1) clay; moderate medium subangular blocky structure; firm; few fine roots; common faint clay films on faces of peds; few fine prominent strong brown (7.5YR 5/6) and yellowish brown (10YR 5/4) masses of iron accumulation; strongly acid; gradual wavy boundary.

Btg2—25 to 38 inches; light brownish gray (10YR 6/2) clay; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation; strongly acid; gradual wavy boundary.

Btg3—38 to 46 inches; gray (10YR 5/1) clay; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; common medium prominent red (2.5YR 4/6) and yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid; clear wavy boundary.

BCg—46 to 65 inches; light gray (10YR 6/1) sandy clay

loam; weak coarse subangular blocky structure; friable; few fine streaks of uncoated sand; few fine prominent yellowish red (5YR 4/6) and few medium prominent strong brown (7.5YR 4/6) masses of iron accumulation; strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 8. The number of redoximorphic depletions in shades of gray ranges from none to common. The texture is clay loam, sandy clay, or clay.

The Btg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. It has common or many redoximorphic accumulations in shades of red, yellow, and brown. The texture is sandy clay, clay loam, or clay.

The BCg horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2; or it has no dominant matrix color and is multicolored in shades of brown, yellow, and gray. The texture is sandy clay, clay loam, or sandy clay loam.

Wickham Series

The Wickham series consists of very deep, well drained soils that formed in loamy sediments. These soils are on broad terraces adjacent to the Chattahoochee River. Slopes range from 0 to 2 percent. These soils are fine-loamy, mixed, semiactive, thermic Typic Hapludults.

Wickham soils are commonly associated on the landscape with Annemaine, Kolomoki, Maxton, Riverview, and Toccoa soils. Annemaine and Kolomoki soils are in slightly lower positions on the terraces than the Wickham soils. They have a clayey argillic horizon. Maxton soils are in landscape positions similar to those of the Wickham soils. They have a sandy substratum. Riverview and Toccoa soils are on flood plains at lower elevations than the Wickham soils. They do not have an argillic horizon.

Typical pedon of Wickham fine sandy loam, 0 to 2 percent slopes, rarely flooded; about 7 miles east of Oswichee, 225 feet east and 2,200 feet south of the northwest corner of sec. 28, T. 15 N., R. 31 E.

Ap—0 to 4 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; few fine and medium roots; moderately acid; abrupt wavy boundary.

Bt1—4 to 14 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; moderately acid; gradual wavy boundary.

Bt2—14 to 26 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—26 to 40 inches; yellowish red (5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

BC—40 to 55 inches; reddish yellow (5YR 6/8) sandy loam; weak coarse subangular blocky structure; friable; many fine flakes of mica; strongly acid; clear wavy boundary.

C—55 to 70 inches; strong brown (7.5YR 5/6) fine sandy loam; massive; very friable; many fine flakes of mica; strongly acid.

The thickness of the solum ranges from 36 to more than 60 inches. Reaction ranges from very strongly acid to moderately acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4.

The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8. The texture is loam, sandy clay loam, or clay loam.

The BC horizon, if it occurs, has hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8. The texture is sandy loam or fine sandy loam.

The C horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 3 to 8. The texture is loamy sand, sandy loam, fine sandy loam, loam, or sandy clay loam.

Formation of the Soils

In this section, the factors of soil formation are related to the soils in Russell County and the processes of horizon differentiation are explained.

Factors of Soil Formation

Soil is a natural, three-dimensional body on the earth's surface that supports plants. It forms through weathering and other processes that act on deposited or accumulated geologic material. The kind of soil that forms depends on the type of parent material; the climate under which soil material has existed since accumulation; the relief, or lay of the land; the plant and animal life in and on the soil; and the length of time that the forces of soil formation have acted on the soil material. The relative importance of each of these factors differs from place to place; in some areas, one factor is more important, and in other areas another may dominate. A modification or variation in any of the factors results in a different kind of soil.

Climate and living organisms are the active factors of soil formation. They act on parent material and change it to a natural body with definite characteristics. The effects of climate and living organisms are conditioned by relief, which influences surface drainage, the amount of water that percolates through the soil, the rate of erosion, and the kind of vegetation that grows on the soil. The nature of the parent material also affects the kind of soil profile that is formed. Time is needed for the parent material to change into a soil. The development of a distinct soil horizon normally requires a long period of time.

Parent Material

The soils of Russell County formed mainly in two kinds of parent material—marine sediments that have undergone considerable weathering in place and water-deposited material on stream terraces and flood plains. Conecuh, Cowarts, Dothan, Hannon, Luverne, and Orangeburg soils formed in weathered marine sediments. Congaree, Dogue, Kinston, Kolomoki, Riverview, and Urbo soils formed in the water-deposited material on stream terraces and flood plains.

Climate

The climate of Russell County is warm and humid. Summers are long and hot. Winters are short and mild, and the ground rarely freezes to a depth of more than a few inches. The climate is fairly even throughout the county and accounts for few differences between the soils. Rainfall averages 51 inches a year.

This mild, humid climate favors rapid decomposition of organic matter and increases the rate of chemical reactions in the soil. The plentiful rainfall leaches large amounts of soluble bases and carries the less soluble fine particles downward, resulting in acid and sandy soils that are low in natural fertility. The large amount of moisture and the warm temperature favor the growth of bacteria and fungi and speed the decomposition of organic matter, resulting in soils that are low in organic matter content.

Relief

Relief influences the formation of soil through its effect on drainage, runoff, and erosion. In Russell County, the topography ranges from nearly level to steep. The elevation ranges from about 200 to 530 feet above sea level. Large, flat areas and depressions generally are poorly drained, and accumulated water, received mainly as runoff from adjacent areas, slows the formation of soils. As slope increases, the hazard of erosion and the runoff rate increase and leaching decreases. In places, the rate of erosion nearly keeps pace with the rate of soil formation. Thus, the steeper soils are generally thin and weakly developed.

The aspect of the slope affects the microclimate. Soils on south- or southwest-facing slopes warm up somewhat earlier in spring and generally reach a higher temperature each day than soils on north-facing slopes. The warmer soil temperature results in accelerated chemical weathering. The soils on north-facing slopes retain moisture longer because they are in shade for longer periods and the temperature is lower. In Russell County, differences caused by the direction of the slope are slight and are of minor importance to the formation of soils.

Plants and Animals

Living organisms greatly influence the processes of soil formation and the characteristics of the soils. Trees, grasses, earthworms, rodents, fungi, bacteria, and other forms of plant and animal life are affected by the other soil-forming factors. Animal activity is largely confined to the surface layer of the soil. The soil is continually mixed by this activity, which improves water infiltration. Plant roots create channels through which air and water move more rapidly, thereby improving soil structure and increasing the rate of chemical reactions in the soil.

Micro-organisms are important in the decomposition of organic matter, which releases plant nutrients and chemicals into the soil. These nutrients are either used by the plants or are leached from the soil. Human activities have a strong influence on plant and animal populations in the soil and thus affect the future rate of soil formation.

The native vegetation in the uplands in Russell County consisted dominantly of coniferous and deciduous trees. The understory species were sumac, waxmyrtle, holly, panicums, bluestems, American beautyberry, Indiangrass, longleaf uniola, and flowering dogwood. These species represent only a very limited number of species that once grew in the county. They can be used as a guide to the plants that currently grow in the county.

The plant communities in the area are reflected in the distribution of species of fauna. Animals, in turn, have an impact on the soil properties of a particular area. For example, ants, worms, moles, armadillo, and gophers can improve aeration in a compacted soil. Microbes that thrive in a particular plant community will react to various soil conditions and consequently influence the soil profile by providing decayed organic matter and nitrogen to the soil matrix.

Time

If all other factors of soil formation are equal, the degree of soil formation is in direct proportion to time. If soil-forming factors have been active for a long time, horizon development is stronger than if these same factors have been active for a relatively short time.

Geologically, the soils in Russell County are relatively young. The youngest soils are the alluvial soils on active flood plains along streams and rivers. These soils receive deposits of sediment and are undergoing a cumulative soil-forming process. In most cases, these young soils have very weakly defined horizons, mainly because the soil-forming processes have been active for only a short time.

Soils on terraces along the Chattahoochee River are older than soils on flood plains but are still relatively young. Although they formed in material deposited by the river, these soils are no longer reached by overflow because the river channel is now deeper. Many of these soils have relatively strong horizon development.

The oldest soils in the county are in the uplands. They formed in marine sediments that have undergone considerable weathering.

Processes of Horizon Differentiation

The processes involved in the formation of soil horizons are accumulation of organic matter, leaching of calcium carbonate and bases, reduction and transfer of iron, and formation and translocation of silicate clay minerals. These processes can occur in combination or individually, depending on the integration of the factors of soil formation.

Most soils have four main horizons. The A horizon is the surface layer. It is the horizon of maximum accumulation of organic matter. The E horizon, usually called the subsurface layer, is the horizon of maximum loss of soluble or suspended material. Fuquay soils have an A horizon and an E horizon. Other soils, such as Riverview soils, have an A horizon but do not have an E horizon. In all soils in Russell County, organic matter has accumulated in the surface layer to form an A horizon. The content of organic matter varies in different soils because of differences in relief, wetness, and natural fertility.

The B horizon, usually called the subsoil, lies directly below the A or E horizon. It is the horizon of maximum accumulation of dissolved or suspended material, such as iron or clay. The B horizon has not yet developed in very young soils, such as Iuka soils.

The C horizon is the substratum. It has been affected very little by soil-forming processes, but it may be somewhat modified by weathering.

The chemical reduction and transfer of iron, called gleying, is evident in the wet soils in the county. Gleying results in gray colors in the subsoil and gray mottles in other horizons. The gray colors indicate the reduction and loss of iron and manganese. The horizons of some soils, such as Dothan and Fuquay soils, have red or reddish-brown masses of iron accumulation, which indicate a segregation of iron.

Leaching of carbonates and bases has occurred in most of the soils in the county. This process contributes to the development of distinct horizons and to the naturally low fertility and acid reaction of some soils. Some other soils, such as Hannon and Sumter soils, formed in material weathered from soft limestone (chalk) and maintain a high content of bases and an alkaline reaction.

In uniform materials, natural drainage generally is

closely associated with slope or relief. It generally affects the color of the soil. Soils that formed under good drainage conditions, such as Orangeburg and Springhill soils, have a subsoil that is uniformly bright in color. Soils that formed under poor drainage conditions, such as Bladen and Kinston soils, are grayish. Soils that formed where drainage is intermediate have a subsoil that is mottled in shades of gray and brown. Lynchburg and Wahee soils are examples. The grayish color persists even if artificial drainage is provided.

In steeper areas, the surface soil erodes. In low areas or in depressions, soil materials commonly accumulate and add to the thickness of the surface layer. In some areas, the formation of soil materials and the rates of removal are in equilibrium with soil development. The degree of relief also affects the eluviation of clay from the E horizon to the Bt horizon.

Surface Geology

The geologic units exposed in Russell County range in age from Precambrian to Quaternary. They are mostly of sedimentary origin, except for the Precambrian unit, which is of metamorphic origin. The sedimentary materials consist mainly of sand, gravel, clay, silt, sandstone, and limestone. The metamorphic materials consist mainly of gneiss. The units, from oldest to youngest, are the Phenix City Gneiss, which is of Precambrian age; the Tuscaloosa Group undifferentiated, the Eutaw Formation, the Blufftown Formation, the Mooreville Chalk, and the Cusseta Sand member of the Ripley Formation, which are of Cretaceous age; and terrace and alluvial deposits, which are of Quaternary age *(11, 12)*.

The Phenix City Gneiss is the oldest formation. It crops out on the lower parts of slopes in the extreme northeastern part of the county. The outcrop consists mainly of diorite gneiss and biotite-hornblende gneiss. Pacolet soils formed in material weathered from the Phenix City Gneiss.

The Tuscaloosa Group undifferentiated overlies the Phenix City Gneiss in the northern part of the county. It consists of white, yellowish-orange, and gray sand and gravel interbedded with vari-colored and gray clay that contains thin strata of sandstone. Blanton, Marvyn, and Uchee soils formed in material weathered from the Tuscaloosa Group undifferentiated.

The Eutaw Formation unconformably overlies the Tuscaloosa Group undifferentiated and crops out in a narrow eastward trending belt south of Uchee Creek. It consists mainly of gray, sandy, calcareous, fossiliferous sandstone and limestone. Sumter, Hannon, and Conecuh soils formed in material weathered from the Eutaw Formation.

The Blufftown Formation overlies the Eutaw Formation and crops out throughout the central part of the county. The lower part of this formation consists of fine- to coarse-grained sand and sandy clay. The upper part consists of gray, calcareous sandy clay that contains thin strata of sand and calcareous sandstone. Luverne, Gritney, Cowarts, Alaga, Orangeburg, Springhill, and Troup soils formed in material weathered from the Blufftown Formation.

The Mooreville Chalk crops out in a narrow belt from Hurtsboro to Hatchechubbee, where it merges with the lower part of the Blufftown Formation. It consists of clay, marl, and soft limestone (chalk). Hannon, Sumter, and Conecuh soils formed in material weathered from the Mooreville Chalk.

The Cusseta Sand member of the Ripley Formation crops out in the southern part of the county from Glenville and Cottonton southward to Barbour County. It consists of yellowish-orange to gray, fine- to coarse-grained sand and sandy clay. Dothan, Fuquay, Blanton, Cowarts, and Orangeburg soils formed in material weathered from the Cusseta Sand member of the Ripley Formation.

The Quaternary System consists of high terraces, low terraces, and alluvium. The high terrace deposits, which indicate that the level of the flood plain previously was higher, are adjacent to the valley of the Chattahoochee River. These deposits consist of sand, gravel, and sandy clay. Orangeburg, Red Bay, Springhill, and Troup soils formed in material weathered from these deposits. The low terrace deposits and alluvium are found on the flood plains along the Chattahoochee River and other major streams. They consist of layers of sand, clay, and gravel. They are generally thinner than the high terrace deposits. Annemaine, Bladen, Dogue, Goldsboro, Kolomoki, Lynchburg, Maxton, Ocilla, Wahee, and Wickham soils formed in material weathered from the low terrace deposits. Congaree, Iuka, Kinston, Mantachie, Mooreville, Urbo, and Una soils formed in material weathered from the alluvium *(11, 12)*.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

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.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

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:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bottom land. The normal flood plain of a stream, subject to flooding.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

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 depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

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.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to

the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for 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 wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

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.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity, or capillary capacity.*

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and

equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai. Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

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 as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

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 overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

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 potential. The soil

properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

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.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure 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 degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly 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

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saprolite. Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

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 (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell (in tables). 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.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

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.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

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. In this survey, classes for simple slopes are as follows:

Level	0 to 1 percent
Nearly level	0 to 2 percent
Gently sloping	2 to 5 percent
Moderately sloping	5 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 30 percent

Classes for complex slopes are as follows:

Level	0 to 1 percent
Nearly level	0 to 2 percent
Gently undulating	0 to 3 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay less than	0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *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.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

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 water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is 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.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or

depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

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 soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1961-90 at Columbus, Georgia)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	° F	° F	° F	° F	° F	Units	In	In	In		In
January-----	56.1	35.0	45.5	76	9	63	4.59	2.50	6.42	7	0.2
February----	60.6	37.4	49.0	80	17	94	4.85	2.94	6.58	7	0.5
March-------	69.1	44.8	56.9	86	25	248	5.77	3.30	7.97	7	0.0
April-------	77.2	51.9	64.6	90	34	439	4.30	1.59	6.56	5	0.0
May---------	83.6	60.5	72.1	94	44	684	4.17	2.19	5.90	5	0.0
June--------	89.6	68.2	78.9	100	54	868	4.07	1.98	5.89	6	0.0
July--------	91.2	71.7	81.4	101	63	975	5.54	3.61	7.29	8	0.0
August------	90.7	71.3	81.0	99	62	960	3.73	2.14	5.14	6	0.0
September---	86.0	66.1	76.1	96	48	783	3.23	1.52	4.71	5	0.0
October-----	77.4	53.7	65.6	90	34	485	2.22	0.52	3.70	3	0.0
November----	68.1	44.7	56.4	83	25	226	3.54	2.02	4.88	5	0.0
December----	59.7	38.1	48.9	79	15	104	4.97	3.13	6.63	6	0.0
Yearly:											
Average---	75.8	53.6	64.7	---	---	---	---	---	---	---	---
Extreme---	104	-2	---	102	8	---	---	---	---	---	---
Total-----	---	---	---	---	---	5,929	50.99	43.44	58.24	70	0.7

* 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 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at Columbus, Georgia)

Probability	Temperature		
	24°F or lower	28°F or lower	32°F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Mar. 5	Mar. 19	Mar. 31
2 years in 10 later than--	Feb. 28	Mar. 11	Mar. 26
5 years in 10 later than--	Feb. 15	Feb. 26	Mar. 16
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 27	Nov. 7	Oct. 28
2 years in 10 earlier than--	Dec. 5	Nov. 15	Nov. 2
5 years in 10 earlier than--	Dec. 20	Nov. 30	Nov. 13

Table 3.--Growing Season

(Recorded in the period 1961-90 at Columbus, Georgia)

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	273	243	220
8 years in 10	285	255	227
5 years in 10	308	277	241
2 years in 10	330	299	255
1 year in 10	342	311	262

Table 4.--Suitability and Limitations of General Soil Map Units for Specified Uses

Map unit	Extent of area	Cultivated crops	Pasture and hay	Woodland	Urban uses
	Pct				
1. Congaree-Wickham-Maxton	5	Well suited	Well suited	Well suited	Poorly suited: flooding.
2. Dogue-Kinston-Lynchburg	12	Suited: wetness, flooding.	Suited: wetness, flooding.	Suited: wetness, flooding, restricted use of equipment.	Poorly suited: flooding, wetness.
3. Urbo-Mooreville-Una	2	Poorly suited: flooding, wetness.	Poorly suited: flooding, wetness.	Suited: wetness, flooding, restricted use of equipment, seedling mortality.	Poorly suited: flooding, wetness.
4. Conecuh-Luverne	22	Poorly suited: slope, hazard of erosion.	Well suited	Well suited	Poorly suited: slope, shrink-swell, very slow and moderately slow permeability.
5. Hannon	2	Poorly suited: slope, hazard of erosion, poor tilth.	Well suited	Well suited	Poorly suited: slope, shrink-swell, very slow permeability.
6. Springhill-Troup-Luverne	40	Poorly suited: slope, droughtiness.	Suited: slope, droughtiness.	Well suited	Poorly suited: slope, moderate and moderately slow permeability, seepage.
7. Sumter-Hannon	1	Poorly suited: slope, hazard of erosion, poor tilth.	Poorly suited: slope, hazard of erosion, restricted use of equipment.	Suited: restricted use of equipment, hazard of erosion, seedling mortality, excessive alkalinity.	Poorly suited: slope, very slow permeability, shrink-swell.
8. Cowarts-Uchee-Marvyn	10	Suited: slope, droughtiness, hazard of erosion.	Well suited	Well suited	Suited: slope, moderate and moderately slow permeability, droughtiness.
9. Dothan-Fuquay-Orangeburg	6	Well suited	Well suited	Well suited	Well suited.

Table 5.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AnA	Annemaine fine sandy loam, 0 to 2 percent slopes, rarely flooded	2,600	0.6
BdA	Bladen fine sandy loam, 0 to 1 percent slope, occasionally flooded	2,950	0.7
BeA	Bladen loam, 0 to 1 percent slopes, ponded	2,600	0.6
BnB	Blanton loamy sand, 0 to 5 percent slopes	4,870	1.2
CnB	Conecuh fine sandy loam, 1 to 3 percent slopes	23,150	5.6
CoC2	Conecuh loam, 3 to 8 percent slopes, eroded	39,920	9.6
CtB	Congaree-Toccoa complex, gently undulating, occasionally flooded	5,390	1.3
CwB	Cowarts loamy sand, 2 to 5 percent slopes	5,830	1.4
DgA	Dogue fine sandy loam, 0 to 2 percent slopes, rarely flooded	14,100	3.4
DoA	Dothan fine sandy loam, 0 to 2 percent slopes	6,780	1.6
DoB	Dothan fine sandy loam, 2 to 5 percent slopes	3,470	0.8
FpA	Fluvaquents, ponded	1,170	0.3
FuB	Fuquay loamy fine sand, 0 to 5 percent slopes	6,220	1.5
GoA	Goldsboro loamy fine sand, 0 to 2 percent slopes	3,180	0.8
GrB	Gritney fine sandy loam, 2 to 5 percent slopes	5,010	1.2
HaB	Hannon clay loam, 1 to 3 percent slopes	2,590	0.6
HnC2	Hannon clay, 3 to 5 percent slopes, eroded	2,500	0.6
HnD2	Hannon clay, 5 to 8 percent slopes, eroded	3,570	0.9
HsE2	Hannon-Sumter complex, 5 to 12 percent slopes, eroded	870	0.2
KMA	Kinston, Mantachie, and Iuka soils, 0 to 1 percent slopes, frequently flooded	40,230	9.8
KoA	Kolomoki fine sandy loam, 0 to 2 percent slopes, rarely flooded	1,190	0.3
LnB	Luverne sandy loam, 2 to 5 percent slopes	7,420	1.8
LnC2	Luverne sandy loam, 5 to 10 percent slopes, eroded	8,790	2.1
LsE	Luverne-Springhill complex, 15 to 25 percent slopes	40,410	9.8
LyA	Lynchburg loamy fine sand, 0 to 2 percent slopes, rarely flooded	7,710	1.9
MnB	Marvyn loamy sand, 2 to 5 percent slopes	4,350	1.1
MxA	Maxton loamy sand, 0 to 2 percent slopes, rarely flooded	2,530	0.6
OcA	Ocilla loamy fine sand, 0 to 2 percent slopes, rarely flooded	4,240	1.0
OrA	Orangeburg fine sandy loam, 0 to 2 percent slopes	2,450	0.6
OuC	Orangeburg-Urban land complex, 1 to 8 percent slopes	3,090	0.7
PaE	Pacolet sandy loam, 15 to 25 percent slopes	320	0.1
Pt	Pits	2,730	0.7
RbA	Red Bay sandy loam, 0 to 2 percent slopes	780	0.2
RvA	Riverview loam, 0 to 1 percent slopes, occasionally flooded	1,440	0.3
SbB	Springhill sandy loam, 2 to 5 percent slopes	5,340	1.3
ScD	Springhill-Cowarts-Urban land complex, 8 to 15 percent slopes	940	0.2
ShE3	Sumter-Hannon complex, 12 to 25 percent slopes, severely eroded	3,730	0.9
TaB	Troup-Alaga complex, 0 to 5 percent slopes	9,750	2.4
TsE	Troup-Springhill-Luverne complex, 10 to 30 percent slopes	70,780	17.1
UcB	Uchee-Cowarts complex, 0 to 5 percent slopes	5,950	1.4
UcD	Uchee-Cowarts complex, 5 to 15 percent slopes	24,070	5.8
UdA	Udorthents-Urban land complex, 0 to 2 percent slopes	1,700	0.4
Ur	Urban land	820	0.2
UuA	Urbo-Mooreville-Una complex, 0 to 2 percent slopes, frequently flooded	4,390	1.1
WbA	Wahee-Bladen complex, 0 to 1 percent slopes, occasionally flooded	8,690	2.1
WkA	Wickham fine sandy loam, 0 to 2 percent slopes, rarely flooded	5,010	1.2
	Water	8,320	2.0
	Total	413,940	100.0

Table 6.--Land Capability and Yields per Acre of Crops

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Cotton lint	Corn	Soybeans	Grain sorghum	Wheat	Peanuts
		Lbs	Bu	Bu	Bu	Bu	Lbs
AnA---------- Annemaine	IIw	800	100	35	100	40	2,900
BdA---------- Bladen	IVw	---	---	---	40	---	---
BeA---------- Bladen	VIw	---	---	---	---	---	---
BnB---------- Blanton	IIIs	---	60	25	65	30	2,200
CnB---------- Conecuh	IIIe	500	50	30	75	30	---
CoC2---------- Conecuh	IVe	---	---	25	50	25	---
CtB---------- Congaree-Toccoa	IIw	---	130	30	75	---	---
CwB---------- Cowarts	IIe	650	80	30	85	45	2,400
DgA---------- Dogue	IIw	750	100	35	100	40	3,000
DoA---------- Dothan	I	900	115	40	110	50	4,000
DoB---------- Dothan	IIe	800	105	35	110	45	3,800
FpA---------- Fluvaquents	VIIw	---	---	---	---	---	---
FuB---------- Fuquay	IIs	650	85	25	90	35	3,200
GoA---------- Goldsboro	IIw	700	125	40	100	50	3,000
GrB---------- Gritney	IIIe	600	90	30	75	40	2,900
HaB---------- Hannon	IIe	550	65	30	85	35	---
HnC2---------- Hannon	IIIe	500	60	30	75	30	---
HnD2---------- Hannon	IVe	450	50	25	65	30	---
HsE2---------- Hannon-Sumter	VIe	---	---	---	---	---	---

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops--Continued

Soil name and map symbol	Land capability	Cotton lint	Corn	Soybeans	Grain sorghum	Wheat	Peanuts
		Lbs	Bu	Bu	Bu	Bu	Lbs
KMA---------- Kinston, Mantachie, and Iuka	Vw	---	---	---	---	---	---
KoA---------- Kolomoki	I	875	115	45	110	50	4,000
LnB---------- Luverne	IIIe	700	75	35	80	25	2,800
LnC2---------- Luverne	IVe	600	70	30	75	25	---
LsE---------- Luverne-Springhill	VIIe	---	---	---	---	---	---
LyA---------- Lynchburg	IIw	675	115	40	85	30	---
MnB---------- Marvyn	IIe	750	70	45	90	45	3,000
MxA---------- Maxton	I	750	110	45	100	60	3,000
OcA---------- Ocilla	IIIw	550	95	35	75	---	2,200
OrA---------- Orangeburg	I	900	110	35	100	50	4,000
OuC*. Orangeburg-Urban land							
PaE---------- Pacolet	VIIe	---	---	---	---	---	---
Pt*---------- Pits	VIIIs	---	---	---	---	---	---
RbA---------- Red Bay	I	800	110	35	100	50	3,800
RvA---------- Riverview	IIw	700	130	40	110	55	---
SbB---------- Springhill	IIe	700	100	30	90	45	3,000
ScD*. Springhill-Cowarts-Urban land							
ShE3---------- Sumter-Hannon	VIIe	---	---	---	---	---	---

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops--Continued

Soil name and map symbol	Land capability	Cotton lint	Corn	Soybeans	Grain sorghum	Wheat	Peanuts
		Lbs	Bu	Bu	Bu	Bu	Lbs
TaB---------- Troup-Alaga	IIIs	---	60	---	60	25	2,200
TsE---------- Troup- Springhill- Luverne	VIIe	---	---	---	---	---	---
UcB----------		550	75	25	65	35	2,200
Uchee----------	IIs						
Cowarts--------	IIe						
UcD---------- Uchee-Cowarts	VIe	---	---	---	---	---	---
UdA*. Udorthents- Urban land							
Ur*---------- Urban land	VIIIs	---	---	---	---	---	---
UuA---------- Urbo- Mooreville-Una	Vw	---	---	---	---	---	---
WbA----------		500	60	30	60	25	---
Wahee----------	IIIw						
Bladen---------	IVw						
WkA---------- Wickham	I	800	125	40	110	50	4,000

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 7.--Yields per Acre of Pasture and Hay

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Improved bermuda-grass	Improved bermuda-grass hay	Bahiagrass	Tall fescue	Cool season annuals	Warm season annuals	Alfalfa hay
	AUM*	Tons	AUM*	AUM*	AUM*	AUM*	Tons
AnA---------- Annemaine	8.5	4.5	9.0	7.0	4.0	6.5	2.5
BdA---------- Bladen	---	---	---	5.0	---	---	---
BeA. Bladen							
BnB---------- Blanton	8.0	4.0	7.0	---	4.5	4.0	2.0
CnB---------- Conecuh	6.5	3.0	6.5	8.0	4.0	4.0	2.0
CoC2---------- Conecuh	6.5	3.0	5.5	7.0	4.0	3.5	---
CtB---------- Congaree-Toccoa	10.0	5.0	8.0	---	---	6.0	---
CwB---------- Cowarts	8.0	4.0	8.0	---	4.5	4.5	4.0
DgA---------- Dogue	8.5	4.5	9.0	7.0	4.0	5.0	2.0
DoA---------- Dothan	10.0	5.0	9.0	---	5.0	5.0	5.5
DoB---------- Dothan	10.0	5.0	9.0	---	5.0	5.0	5.0
FpA. Fluvaquents							
FuB---------- Fuquay	8.0	4.0	7.0	---	4.5	4.0	2.0
GoA---------- Goldsboro	8.5	4.5	9.0	8.5	5.0	5.0	2.5
GrB---------- Gritney	8.5	4.5	8.5	8.0	4.5	4.5	2.0
HaB---------- Hannon	---	---	---	8.0	4.0	---	2.5
HnC2---------- Hannon	---	---	---	8.0	4.0	---	---
HnD2---------- Hannon	---	---	---	8.0	4.0	---	---
HsE2. Hannon-Sumter							

See footnotes at end of table.

Table 7.--Yields per Acre of Pasture and Hay--Continued

Soil name and map symbol	Improved bermuda-grass	Improved bermuda-grass hay	Bahiagrass	Tall fescue	Cool season annuals	Warm season annuals	Alfalfa hay
	AUM*	Tons	AUM*	AUM*	AUM*	AUM*	Tons
KMA. Kinston, Mantachie, and Iuka							
KoA Kolomoki	10.0	5.5	7.0	---	5.0	5.0	5.0
LnB Luverne	7.5	4.0	7.0	6.5	4.5	4.0	3.5
LnC2 Luverne	7.0	3.5	7.0	6.5	4.0	4.0	3.0
LsE. Luverne-Springhill							
LyA Lynchburg	---	---	7.5	6.0	---	4.0	---
MnB Marvyn	9.0	4.5	10.0	---	5.0	4.5	5.0
MxA Maxton	9.0	4.5	8.5	---	4.5	4.5	5.0
OcA Ocilla	7.0	3.5	7.5	6.0	---	4.0	---
OrA Orangeburg	10.5	5.5	9.0	---	5.0	5.0	5.5
OuC**. Orangeburg-Urban land							
PaE. Pacolet							
Pt**. Pits							
RbA Red Bay	9.5	5.0	9.0	---	5.0	5.0	5.5
RvA Riverview	10.0	5.5	8.0	---	5.0	6.0	3.0
SbB Springhill	8.0	4.0	8.0	---	4.5	4.5	4.5
ScD**. Springhill-Cowarts-Urban land							
ShE3. Sumter-Hannon							

See footnotes at end of table.

Table 7.--Yields per Acre of Pasture and Hay--Continued

Soil name and map symbol	Improved bermuda-grass	Improved bermuda-grass hay	Bahiagrass	Tall fescue	Cool season annuals	Warm season annuals	Alfalfa hay
	AUM*	Tons	AUM*	AUM*	AUM*	AUM*	Tons
TaB---------- Troup-Alaga	6.5	3.0	7.0	---	4.0	4.0	---
TsE. Troup- Springhill- Luverne							
UcB---------- Uchee-Cowarts	8.0	4.0	7.5	---	4.5	4.0	2.5
UcD---------- Uchee-Cowarts	6.0	3.0	6.0	---	---	3.5	---
UdA**. Udorthents- Urban land							
Ur**. Urban land							
UuA. Urbo- Mooreville-Una							
WbA---------- Wahee-Bladen	---	---	6.0	---	---	---	---
WkA---------- Wickham	9.5	5.5	9.0	7.0	5.0	5.0	5.5

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

Table 8.--Woodland Management and Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Volume*	Trees to plant
AnA Annemaine	9W	Slight	Moderate	Slight	Severe	Loblolly pine	90	2.2	Loblolly pine, yellow-poplar, sweetgum, American sycamore, water oak, cherrybark oak.
						Shortleaf pine	80	---	
						Water oak	90	---	
						Yellow-poplar	85	---	
						Sweetgum	95	---	
						American sycamore	90	---	
BdA Bladen	8W	Slight	Severe	Severe	Severe	Loblolly pine	85	2.1	Loblolly pine, willow oak, sweetgum, water oak, Shumard oak.
						Sweetgum	90	---	
						Water oak	70	---	
						Willow oak	70	---	
BeA Bladen	8W	Slight	Severe	Severe	Severe	Loblolly pine	85	2.1	Loblolly pine, sweetgum, water oak, willow oak.
						Sweetgum	90	---	
						Water oak	70	---	
						Willow oak	70	---	
BnB Blanton	8S	Slight	Moderate	Moderate	Slight	Loblolly pine	85	2.1	Loblolly pine, longleaf pine.
						Longleaf pine	80	---	
						Water oak	---	---	
						Sweetgum	---	---	
						Southern red oak	---	---	
CnB Conecuh	9C	Slight	Moderate	Slight	Moderate	Loblolly pine	90	2.2	Loblolly pine.
						Shortleaf pine	80	---	
						Water oak	---	---	
						Sweetgum	---	---	
CoC2 Conecuh	9C	Slight	Moderate	Slight	Moderate	Loblolly pine	90	2.2	Loblolly pine.
						Shortleaf pine	80	---	
						Water oak	---	---	
						Sweetgum	---	---	
CtB**:									
Congaree	11A	Slight	Moderate	Slight	Moderate	Loblolly pine	100	2.7	Loblolly pine, sweetgum, yellow-poplar, American sycamore, water oak, cherrybark oak, green ash.
						Sweetgum	100	---	
						Yellow-poplar	110	---	
						Cherrybark oak	110	---	
						American Sycamore	100	---	
						Water oak	100	---	
						Willow oak	95	---	
						Green ash	95	---	
Toccoa	12A	Slight	Slight	Slight	Moderate	Loblolly pine	105	2.9	Loblolly pine, yellow-poplar, sweetgum, American sycamore, cherrybark oak, water oak, green ash.
						Yellow-poplar	115	---	
						Sweetgum	110	---	
						American sycamore	115	---	
						Green ash	90	---	
CwB Cowarts	8A	Slight	Slight	Slight	Moderate	Loblolly pine	85	2.1	Loblolly pine, longleaf pine.
						Longleaf pine	70	---	

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Volume*	Trees to plant
DgA---------- Dogue	9W	Slight	Moderate	Slight	Moderate	Loblolly pine-----	90	2.2	Loblolly pine,
						Water oak---------	90	---	sweetgum,
						Sweetgum----------	85	---	cherrybark oak,
						Yellow-poplar-----	90	---	water oak, willow
						White oak---------	80	---	oak, white oak.
DoA, DoB------- Dothan	9A	Slight	Slight	Slight	Moderate	Loblolly pine-----	90	2.2	Loblolly pine,
						Shortleaf pine----	80	---	longleaf pine.
						Longleaf pine-----	80	---	
						Sweetgum----------	---	---	
						Water oak---------	---	---	
FpA**. Fluvaquents									
FuB---------- Fuquay	9S	Slight	Moderate	Moderate	Moderate	Loblolly pine-----	90	2.2	Loblolly pine,
						Longleaf pine-----	80	---	longleaf pine.
GoA---------- Goldsboro	9A	Slight	Slight	Moderate	Moderate	Loblolly pine-----	90	2.2	Loblolly pine,
						Sweetgum----------	90	---	sweetgum,
						American sycamore-	85	---	American sycamore,
						Water oak---------	85	---	water oak,
						Yellow-poplar-----	90	---	willow oak,
									yellow-poplar,
									cherrybark oak.
GrB---------- Gritney	8A	Slight	Moderate	Slight	Moderate	Loblolly pine-----	85	2.1	Loblolly pine.
						Shortleaf pine----	80	---	
						Southern red oak--	---	---	
						Sweetgum----------	---	---	
						Yellow-poplar-----	---	---	
HaB, HnC, HnD2---------- Hannon	7C	Slight	Moderate	Severe	Moderate	Loblolly pine-----	80	1.8	Loblolly pine.
						Shortleaf pine----	70	---	
						Eastern redcedar--	---	---	
HsE2**:									
Hannon--------	7C	Slight	Moderate	Severe	Moderate	Loblolly pine-----	80	1.8	Loblolly pine.
						Shortleaf pine----	70	---	
						Eastern redcedar--	---	---	
Sumter--------	3C	Moderate	Moderate	Severe	Slight	Eastern redcedar--	40	***	Eastern redcedar.
KMA**:									
Kinston-------	9W	Slight	Severe	Severe	Severe	Loblolly pine-----	90	2.2	Loblolly pine,
						Water oak---------	80	---	water oak,
						Sweetgum----------	85	---	willow oak,
						Green ash---------	---	---	green ash,
									sweetgum.
Mantachie-----	11W	Slight	Severe	Severe	Severe	Loblolly pine-----	100	2.7	Loblolly pine,
						Cherrybark oak----	90	---	water oak,
						Green ash---------	85	---	willow oak,
						Sweetgum----------	95	---	cherrybark oak,
						Yellow-poplar-----	90	---	green ash,
						Water oak---------	85	---	sweetgum,
									yellow-poplar.

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Volume*	Trees to plant
KMA**:									
Iuka	12W	Slight	Moderate	Moderate	Severe	Loblolly pine	105	2.9	Loblolly pine,
						Sweetgum	100	---	water oak,
						American sycamore	110	---	sweetgum,
						Water oak	100	---	yellow-poplar,
						Yellow-poplar	110	---	American sycamore,
									green ash.
KoA	8A	Slight	Slight	Slight	Moderate	Loblolly pine	85	2.1	Loblolly pine.
Kolomoki						Sweetgum	90	---	
						Southern red oak	---	---	
						Water oak	---	---	
LnB, LnC2	9C	Slight	Moderate	Slight	Moderate	Loblolly pine	90	2.2	Loblolly pine.
Luverne						Shortleaf pine	80	---	
LsE**:									
Luverne	9R	Moderate	Moderate	Slight	Moderate	Loblolly pine	90	2.2	Loblolly pine.
						Shortleaf pine	80	---	
Springhill	9R	Moderate	Moderate	Moderate	Moderate	Loblolly pine	90	2.2	Loblolly pine.
						Longleaf pine	75	---	
						Shortleaf pine	80	---	
LyA	9W	Slight	Moderate	Moderate	Severe	Loblolly pine	90	2.2	Loblolly pine,
Lynchburg						Yellow-poplar	85	---	sweetgum,
						Sweetgum	90	---	cherrybark oak,
						Water oak	85	---	water oak,
						Willow oak	85	---	willow oak.
						Blackgum	---	---	
MnB	9A	Slight	Slight	Moderate	Moderate	Loblolly pine	90	2.2	Loblolly pine,
Marvyn						Shortleaf pine	80	---	longleaf pine.
						Longleaf pine	80	---	
MxA	9A	Slight	Slight	Slight	Moderate	Loblolly pine	90	2.2	Loblolly pine,
Maxton						Sweetgum	90	---	sweetgum,
						Yellow-poplar	90	---	yellow-poplar,
						Southern red oak	80	---	cherrybark oak,
						White oak	---	---	water oak,
									American sycamore.
OcA	9W	Slight	Moderate	Moderate	Moderate	Loblolly pine	90	2.2	Loblolly pine,
Ocilla						Sweetgum	100	---	sweetgum,
						American sycamore	95	---	American sycamore,
						Water oak	90	---	water oak,
									willow oak.
OrA	9A	Slight	Slight	Slight	Moderate	Loblolly pine	90	2.2	Loblolly pine,
Orangeburg						Shortleaf pine	75	---	longleaf pine.
						Longleaf pine	75	---	
OuC**.									
Orangeburg-									
Urban land									

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Volume*	Trees to plant
PaE---------- Pacolet	7R	Moderate	Moderate	Slight	Slight	Loblolly pine-----	80	1.8	Loblolly pine.
						Shortleaf pine----	70	---	
						Yellow-poplar-----	90	---	
						Southern red oak--	---	---	
						White oak---------	---	---	
RbA---------- Red Bay	9A	Slight	Slight	Slight	Moderate	Loblolly pine-----	90	2.2	Loblolly pine,
						Longleaf pine-----	75	---	longleaf pine.
RvA---------- Riverview	11A	Slight	Slight	Slight	Severe	Loblolly pine-----	100	2.7	Loblolly pine,
						Yellow-poplar-----	100	---	yellow-poplar,
						Sweetgum----------	105	---	sweetgum,
						Cherrybark oak----	105	---	cherrybark oak,
						American sycamore-	105	---	water oak,
						Water oak---------	100	---	American sycamore,
									green ash.
SbB---------- Springhill	9A	Slight	Slight	Moderate	Moderate	Loblolly pine-----	90	2.2	Loblolly pine,
						Longleaf pine-----	75	---	longleaf pine.
						Shortleaf pine----	80	---	
						Sweetgum----------	---	---	
						Water oak---------	---	---	
						Southern red oak--	---	---	
ScD**. Springhill-Cowarts-Urban land									
ShE3**:									
Sumter--------	3R	Moderate	Moderate	Moderate	Slight	Eastern redcedar--	40	***	Eastern redcedar.
Hannon--------	7R	Moderate	Severe	Severe	Moderate	Loblolly pine-----	80	1.8	Loblolly pine.
						Shortleaf pine----	70	---	
						Eastern redcedar--	---	---	
TaB**:									
Troup---------	8S	Slight	Moderate	Moderate	Moderate	Loblolly pine-----	85	2.1	Loblolly pine,
						Longleaf pine-----	75	---	longleaf pine.
Alaga---------	8S	Slight	Moderate	Moderate	Moderate	Loblolly pine-----	85	2.1	Loblolly pine,
						Longleaf pine-----	80	---	longleaf pine.
TsE**:									
Troup---------	8R	Moderate	Moderate	Moderate	Moderate	Loblolly pine-----	85	2.1	Loblolly pine,
						Longleaf pine-----	70	---	longleaf pine.
Springhill----	9R	Moderate	Moderate	Moderate	Moderate	Loblolly pine-----	90	2.2	Loblolly pine,
						Longleaf pine-----	75	---	longleaf pine.
						Shortleaf pine----	80	---	
						Sweetgum----------	---	---	
						Water oak---------	---	---	
						Southern red oak--	---	---	
Luverne-------	9R	Moderate	Moderate	Slight	Moderate	Loblolly pine-----	90	2.2	Loblolly pine,
						Shortleaf pine----	80	---	longleaf pine.

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordi-nation symbol	Management concerns: Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Plant competi-tion	Potential productivity: Common trees	Site index	Volume*	Trees to plant
UcB**, UcD**:									
Uchee---------	8S	Slight	Moderate	Moderate	Moderate	Loblolly pine-----	85	2.1	Loblolly pine,
						Longleaf pine-----	70	---	longleaf pine.
						Shortleaf pine----	---	---	
Cowarts-------	8A	Slight	Slight	Slight	Moderate	Loblolly pine-----	85	2.1	Loblolly pine,
						Longleaf pine-----	70	---	longleaf pine.
UdA**. Udorthents-Urban land									
UuA**:									
Urbo----------	10W	Slight	Severe	Severe	Severe	Loblolly pine-----	95	2.5	Loblolly pine,
						Cherrybark oak----	95	---	sweetgum,
						Green ash---------	85	---	American sycamore,
						Sweetgum----------	95	---	cherrybark oak,
						Water oak---------	90	---	water oak,
						American sycamore-	90	---	willow oak,
									yellow-poplar.
Mooreville----	12W	Slight	Moderate	Severe	Severe	Loblolly pine-----	105	2.9	Loblolly pine,
						Cherrybark--------	100	---	cherrybark oak,
						Green ash---------	85	---	American sycamore,
						Sweetgum----------	105	---	green ash,
						Yellow-poplar-----	100	---	water oak, sweetgum,
						Water oak---------	100	---	yellow-poplar.
Una----------	7W	Slight	Severe	Severe	Severe	Water tupelo------	70	0.5	Baldcypress,
						Baldcypress-------	80	---	water tupelo,
						Swamp tupelo------	---	---	swamp tupelo.
WbA**:									
Wahee---------	9W	Slight	Moderate	Moderate	Severe	Loblolly pine-----	90	2.2	Loblolly pine,
						Sweetgum----------	95	---	sweetgum,
						Water oak---------	90	---	American sycamore,
						Swamp chestnut oak	85	---	water oak,
						Willow oak--------	90	---	cherrybark oak.
WbA**:									
Bladen--------	8W	Slight	Severe	Severe	Severe	Loblolly pine-----	85	2.1	Loblolly pine,
						Sweetgum----------	80	---	water oak,
						Water oak---------	70	---	willow oak.
						Willow oak--------	70	---	
WkA---------- Wickham	9A	Slight	Slight	Slight	Moderate	Loblolly pine-----	90	2.2	Loblolly pine,
						Yellow-poplar-----	90	---	cherrybark oak,
						Cherrybark oak----	90	---	American sycamore
						Sweetgum----------	90	---	yellow-poplar,
						American sycamore-	85	---	water oak,
						Water oak---------	80	---	sweetgum.

* Volume is the average yearly growth in cords per acre per year for fully stocked natural stands calculated at 25 years of age for loblolly pine and at 30 years of age for oak and tupelo.

** See description of the map unit for composition and behavior characteristics of the map unit.

*** Volume for eastern redcedar is 140 board feet per acre per year calculated at 40 years of age for fully stocked natural stands.

Table 9.--Recreational Development

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AnA Annemaine	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
BdA Bladen	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
BeA Bladen	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
BnB Blanton	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
CnB Conecuh	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Slight	Moderate: droughty.
CoC2 Conecuh	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: droughty.
CtB*:					
Congaree	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
Toccoa	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
CwB Cowarts	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight	Moderate: droughty.
DgA Dogue	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
DoA Dothan	Slight	Slight	Slight	Slight	Slight.
DoB Dothan	Slight	Slight	Moderate: slope.	Slight	Slight.
FpA Fluvaquents	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
FuB Fuquay	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
GoA Goldsboro	Slight	Slight	Slight	Slight	Slight.
GrB Gritney	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.

See footnote at end of table.

Table 9.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HaB Hannon	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Slight	Moderate: droughty.
HnC2 Hannon	Severe: percs slowly, too clayey.	Severe: too clayey, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey.	Severe: too clayey.
HnD2 Hannon	Severe: percs slowly, too clayey.	Severe: too clayey, percs slowly.	Severe: slope, too clayey, percs slowly.	Severe: too clayey.	Severe: too clayey.
HsE2*:					
Hannon	Severe: percs slowly, too clayey.	Severe: too clayey, percs slowly.	Severe: slope, too clayey, percs slowly.	Severe: too clayey.	Severe: too clayey.
Sumter	Severe: too clayey.	Severe: too clayey.	Severe: slope, too clayey.	Severe: too clayey, erodes easily.	Severe: too clayey.
KMA*:					
Kinston	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Mantachie	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
Iuka	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
KoA Kolomoki	Severe: flooding.	Slight	Slight	Slight	Slight.
LnB Luverne	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
LnC2 Luverne	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight	Slight.
LsE*:					
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Springhill	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
LyA Lynchburg	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
MnB Marvyn	Slight	Slight	Moderate: slope.	Slight	Slight.

See footnote at end of table.

Table 9.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MxA Maxton	Severe: flooding.	Slight	Slight	Slight	Moderate: droughty.
OcA Ocilla	Severe: flooding.	Moderate: wetness, too sandy.	Moderate: wetness, too sandy.	Moderate: wetness, too sandy.	Moderate: wetness, droughty.
OrA Orangeburg	Slight	Slight	Slight	Slight	Slight.
OuC*:					
Orangeburg	Slight	Slight	Moderate: slope.	Slight	Slight.
Urban land	Variable	Variable	Variable	Variable	Variable.
PaE Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Pt* Pits	Variable	Variable	Variable	Variable	Variable.
RbA Red Bay	Slight	Slight	Slight	Slight	Slight.
RvA Riverview	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
SbB Springhill	Slight	Slight	Moderate: slope.	Slight	Slight.
ScD*:					
Springhill	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
Cowarts	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: droughty, slope.
Urban land	Variable	Variable	Variable	Variable	Variable.
ShE3*:					
Sumter	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Hannon	Severe: slope, percs slowly, too clayey.	Severe: slope, too clayey, percs slowly.	Severe: slope, too clayey, percs slowly.	Severe: too clayey.	Severe: slope, too clayey.
TaB*:					
Troup	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
Alaga	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.

See footnote at end of table.

Table 9.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
TsE*:					
Troup	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too sandy.	Severe: slope.
Springhill	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
UcB*:					
Uchee	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, small stones.	Moderate: too sandy.	Moderate: droughty.
Cowarts	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight	Moderate: droughty.
UcD*:					
Uchee	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
Cowarts	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: droughty, slope.
UdA*:					
Udorthents	Variable	Variable	Variable	Variable	Variable.
Urban land	Variable	Variable	Variable	Variable	Variable.
Ur*	Variable	Variable	Variable	Variable	Variable.
Urban land					
UuA*:					
Urbo	Severe: flooding, wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
Mooreville	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: flooding.
Una	Severe: flooding, ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
WbA*:					
Wahee	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Bladen	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
WkA	Severe: flooding.	Slight	Slight	Slight	Slight.
Wickham					

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 10.--Wildlife Habitat

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that 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
AnA Annemaine	Good	Good	Good	Good	Good	Good	Good	Good	Good	Poor.
BdA, BeA Bladen	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
BnB Blanton	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CnB Conecuh	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
CoC2 Conecuh	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CtB*:										
Congaree	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Toccoa	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CwB Cowarts	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
DgA Dogue	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
DoA, DoB Dothan	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FpA Fluvaquents	Very poor.	Poor	Poor	Poor	Very poor.	Good	Good	Poor	Poor	Good.
FuB Fuquay	Fair	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
GoA Goldsboro	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
GrB Gritney	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HaB, HnC2, HnD2 Hannon	Fair	Fair	Fair	Fair	Fair	Poor	Poor	Fair	Good	Poor.
HsE2*:										
Hannon	Fair	Fair	Fair	Fair	Fair	Poor	Poor	Fair	Good	Poor.
Sumter	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
KMA*:										
Kinston	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
Mantachie	Poor	Fair	Fair	Good	---	Fair	Fair	Fair	Good	Fair.

See footnote at end of table.

Table 10.--Wildlife Habitat--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
KMA*:										
Iuka	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
KoA Kolomoki	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LnB Luverne	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LnC2 Luverne	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LsE*:										
Luverne	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Springhill	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LyA Lynchburg	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
MnB Marvyn	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MxA Maxton	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OcA Ocilla	Fair	Fair	Good	Fair	Good	Fair	Fair	Fair	Good	Fair.
OrA Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OuC*:										
Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land.										
PaE Pacolet	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Pt* Pits	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
RbA Red Bay	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RvA Riverview	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
SbB Springhill	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ScD*:										
Springhill	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

Table 10.--Wildlife Habitat--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
ScD*:										
Cowarts	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Urban land.										
ShE3*:										
Sumter	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Hannon	Poor	Poor	Poor	Fair	Fair	Poor	Poor	Poor	Good	Poor.
TaB*:										
Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Alaga	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
TsE*:										
Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Springhill	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Luverne	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
UcB*:										
Uchee	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Cowarts	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
UcD*:										
Uchee	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Cowarts	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
UdA*:										
Udorthents	Fair	Fair	Fair	Fair	Good	Poor	Poor	Fair	Fair	Poor.
Urban land.										
Ur*.										
Urban land										
UuA*:										
Urbo	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Fair	Fair.
Mooreville	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
Una	Poor	Very poor.	Very poor.	Poor	Poor	Good	Good	Very poor.	Very poor.	Good.

See footnote at end of table.

Table 10.--Wildlife Habitat--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
WbA*:										
Wahee	Fair	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
Bladen	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
WkA Wickham	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 11.--Building Site Development

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AnA: Annemaine	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength.	Moderate: wetness.
BdA: Bladen	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: low strength, wetness, flooding.	Severe: wetness.
BeA: Bladen	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding.	Severe: ponding.
BnB: Blanton	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
CnB, CoC2: Conecuh	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: droughty.
CtB*:						
Congaree	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Toccoa	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
CwB: Cowarts	Slight	Slight	Slight	Slight	Slight	Moderate: droughty.
DgA: Dogue	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength.	Moderate: wetness.
DoA, DoB: Dothan	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Slight.
FpA: Fluvaquents	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
FuB: Fuquay	Slight	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
GoA: Goldsboro	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Slight.
GrB: Gritney	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.

See footnote at end of table.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
HaB---------- Hannon	Severe: cutbanks cave.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: droughty.
HnC2, HnD2-------- Hannon	Severe: cutbanks cave.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: too clayey.
HsE2*:						
Hannon----------	Severe: cutbanks cave.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Severe: too clayey.
Sumter----------	Moderate: depth to rock, too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Severe: too clayey.
KMA*:						
Kinston----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Mantachie--------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.
Iuka----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.
KoA---------- Kolomoki	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: low strength, flooding.	Slight.
LnB---------- Luverne	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
LnC2---------- Luverne	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
LsE*:						
Luverne----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Springhill-------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
LyA---------- Lynchburg	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness.
MnB---------- Marvyn	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
MxA---------- Maxton	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty.

See footnote at end of table.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
OcA: Ocilla	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Moderate: wetness, droughty.
OrA: Orangeburg	Slight	Slight	Slight	Slight	Slight	Slight.
OuC*:						
Orangeburg	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
PaE: Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Pt*: Pits	Variable	Variable	Variable	Variable	Variable	Variable.
RbA: Red Bay	Slight	Slight	Slight	Slight	Slight	Slight.
RvA: Riverview	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
SbB: Springhill	Slight	Slight	Slight	Slight	Slight	Slight.
ScD*:						
Springhill	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Cowarts	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
ShE3*:						
Sumter	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
Hannon	Severe: cutbanks cave, slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, too clayey.
TaB*:						
Troup	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
Alaga	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
TsE*:						
Troup	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
TsE*:						
Springhill	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
UcB*:						
Uchee	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
Cowarts	Slight	Slight	Slight	Slight	Slight	Moderate: droughty.
UcD*:						
Uchee	Severe: cutbanks cave.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Cowarts	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
UdA*:						
Udorthents	Variable	Variable	Variable	Variable	Variable	Variable.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Ur* Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
UuA*:						
Urbo	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Severe: flooding.
Mooreville	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength, flooding.	Severe: flooding.
Una	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding, flooding.
WbA*:						
Wahee	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.
Bladen	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: low strength, wetness, flooding.	Severe: wetness.
WkA Wickham	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Slight.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 12.--Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AnA Annemaine	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
BdA Bladen	Severe: wetness, flooding, percs slowly.	Severe: flooding, wetness.	Severe: wetness, flooding, too clayey.	Severe: wetness. flooding.	Poor: too clayey, hard to pack, wetness.
BeA Bladen	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
BnB Blanton	Moderate: wetness.	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Fair: too sandy.
CnB, CoC2 Conecuh	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
CtB*:					
Congaree	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Good.
Toccoa	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Good.
CwB Cowarts	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
DgA Dogue	Severe: wetness, percs slowly.	Severe: seepage.	Severe: seepage, wetness.	Severe: wetness.	Poor: too clayey, hard to pack.
DoA Dothan	Severe: wetness, percs slowly.	Moderate: seepage.	Moderate: wetness.	Slight	Good.
DoB Dothan	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Moderate: wetness.	Slight	Good.
FpA Fluvaquents	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, ponding.

See footnote at end of table.

Table 12.--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
FuB	Severe: percs slowly, poor filter.	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Fair: too sandy.
GoA Goldsboro	Severe: wetness.	Severe: wetness.	Severe: wetness, too acid.	Severe: wetness.	Fair: wetness.
GrB Gritney	Severe: wetness, percs slowly.	Moderate: slope.	Severe: seepage, wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
HaB, HnC2, HnD2 Hannon	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
HsE2*:					
Hannon	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
Sumter	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
KMA*:					
Kinston	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Mantachie	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Iuka	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
KoA Kolomoki	Moderate: flooding.	Severe: seepage.	Severe: seepage.	Moderate: flooding.	Fair: thin layer.
LnB Luverne	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
LnC2 Luverne	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
LsE*:					
Luverne	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Springhill	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.

See footnote at end of table.

Table 12.--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
LyA---------- Lynchburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
MnB---------- Marvyn	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----------	Fair: hard to pack.
MxA---------- Maxton	Moderate: flooding.	Severe: seepage, flooding.	Severe: seepage, too sandy.	Severe: seepage.	Fair: thin layer.
OcA---------- Ocilla	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness, too sandy.
OrA---------- Orangeburg	Slight----------	Moderate: seepage.	Slight----------	Slight----------	Good.
OuC*:					
Orangeburg---------	Slight----------	Moderate: seepage, slope.	Slight----------	Slight----------	Good.
Urban land---------	Variable---------	Variable---------	Variable---------	Variable---------	Variable.
PaE---------- Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Pt*---------- Pits	Variable---------	Variable---------	Variable---------	Variable---------	Variable.
RbA---------- Red Bay	Slight----------	Moderate: seepage.	Slight----------	Slight----------	Good.
RvA---------- Riverview	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Good.
SbB---------- Springhill	Slight----------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
ScD*:					
Springhill---------	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: slope.
Cowarts----------	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
Urban land---------	Variable---------	Variable---------	Variable---------	Variable---------	Variable.
ShE3*:					
Sumter----------	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.

See footnote at end of table.

Table 12.--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
ShE3*:					
Hannon	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
TaB*:					
Troup	Slight	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Poor: seepage.
Alaga	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage.
TsE*:					
Troup	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: seepage, slope.	Poor: seepage, slope.
Springhill	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Luverne	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
UcB*:					
Uchee	Severe: wetness, percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
Cowarts	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
UcD*:					
Uchee	Severe: wetness, percs slowly.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too sandy, slope.
Cowarts	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
UdA*:					
Udorthents	Variable	Variable	Variable	Variable	Variable.
Urban land	Variable	Variable	Variable	Variable	Variable.
Ur*	Variable	Variable	Variable	Variable	Variable.
Urban land					
UuA*:					
Urbo	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.

See footnote at end of table.

Table 12.--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
UuA*:					
Mooreville	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.
Una	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
WbA*:					
Wahee	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
Bladen	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
WkA Wickham	Moderate: flooding, percs slowly.	Moderate: seepage.	Moderate: flooding, too clayey.	Moderate: flooding.	Good.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 13.--Construction Materials

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AnA Annemaine	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
BdA, BeA Bladen	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
BnB Blanton	Good	Probable	Improbable: too sandy.	Fair: too sandy.
CnB, CoC2 Conecuh	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
CtB*:				
Congaree	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Toccoa	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
CwB Cowarts	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
DgA Dogue	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
DoA, DoB Dothan	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
FpA Fluvaquents	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
FuB Fuquay	Good	Improbable: thin layer.	Improbable: excess fines.	Fair: too sandy.
GoA Goldsboro	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
GrB Gritney	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, too acid.
HaB, HnC2, HnD2 Hannon	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
HsE2*:				
Hannon	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

See footnote at end of table.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
HsE2*:				
Sumter	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
KMA*:				
Kinston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Mantachie	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Iuka	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
KoA Kolomoki	Good	Probable	Improbable: excess fines.	Poor: too clayey.
LnB, LnC2 Luverne	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
LsE*:				
Luverne	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Springhill	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
LyA Lynchburg	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
MnB Marvyn	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, thin layer.
MxA Maxton	Good	Probable	Improbable: excess fines.	Fair: thin layer.
OcA Ocilla	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
OrA Orangeburg	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
OuC*:				
Orangeburg	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Urban land	Variable	Variable	Variable	Variable.
PaE Pacolet	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Pt* Pits	Variable	Variable	Variable	Variable.

See footnote at end of table.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
RbA: Red Bay	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
RvA: Riverview	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
SbB: Springhill	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
ScD*:				
Springhill	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Cowarts	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Urban land	Variable	Variable	Variable	Variable.
ShE3*:				
Sumter	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Hannon	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
TaB*:				
Troup	Good	Probable	Improbable: excess fines.	Fair: too sandy.
Alaga	Good	Probable	Improbable: too sandy.	Fair: too sandy.
TsE*:				
Troup	Fair: slope.	Probable	Improbable: excess fines.	Poor: slope.
Springhill	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Luverne	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
UcB*:				
Uchee	Good	Improbable: thin layer.	Improbable: excess fines.	Fair: too sandy.
Cowarts	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
UcD*:				
Uchee	Good	Improbable: thin layer.	Improbable: excess fines.	Fair: too sandy.
Cowarts	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.

See footnote at end of table.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
UdA*:				
Udorthents	Variable	Improbable: excess fines.	Improbable: excess fines.	Variable.
Urban land	Variable	Variable	Variable	Variable.
Ur* Urban land	Variable	Variable	Variable	Variable.
UuA*:				
Urbo	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Mooreville	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Una	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
WbA*:				
Wahee	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Bladen	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
WkA Wickham	Good	Improbable: excess fines.	Improbable: excess fines.	Good.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 14.--Water Management

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
AnA Annemaine	Moderate: seepage.	Severe: hard to pack, wetness.	Percs slowly	Wetness, percs slowly.	Wetness, percs slowly.	Percs slowly.
BdA Bladen	Slight	Severe: wetness.	Percs slowly	Wetness, flooding, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
BeA Bladen	Slight	Severe: ponding.	Ponding, percs slowly.	Percs slowly, ponding.	Ponding, percs slowly.	Wetness, percs slowly.
BnB Blanton	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
CnB Conecuh	Slight	Severe: hard to pack.	Deep to water	Percs slowly	Percs slowly	Droughty.
CoC2 Conecuh	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly.	Erodes easily, percs slowly.	Erodes easily, droughty.
CtB*:						
Congaree	Moderate: seepage.	Severe: piping.	Flooding	Flooding	Erodes easily, wetness.	Erodes easily.
Toccoa	Severe: seepage.	Severe: piping.	Flooding	Flooding	Favorable	Favorable.
CwB Cowarts	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, droughty, fast intake.	Soil blowing, percs slowly.	Droughty, rooting depth.
DgA Dogue	Severe: seepage.	Severe: wetness.	Percs slowly	Wetness, soil blowing.	Wetness	Percs slowly.
DoA Dothan	Moderate: seepage.	Moderate: piping.	Deep to water	Favorable	Favorable	Favorable.
DoB Dothan	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope	Favorable	Favorable.
FpA Fluvaquents	Slight	Severe: piping, ponding.	Ponding, percs slowly, flooding.	Ponding, percs slowly, flooding.	Ponding, percs slowly.	Wetness, percs slowly.
FuB Fuquay	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
GoA Goldsboro	Moderate: seepage.	Moderate: piping, wetness.	Percs slowly	Wetness, droughty, fast intake.	Wetness	Droughty, rooting depth.

See footnote at end of table.

Table 14.--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
GrB Gritney	Moderate: slope.	Moderate: hard to pack, wetness.	Percs slowly, slope.	Slope, wetness, droughty.	Wetness, percs slowly.	Droughty, percs slowly.
HaB Hannon	Slight	Severe: hard to pack.	Deep to water	Percs slowly, droughty.	Percs slowly	Droughty, percs slowly.
HnC2, HnD2 Hannon	Moderate: slope.	Severe: hard to pack.	Deep to water	Slow intake, slope, droughty.	Percs slowly	Droughty, percs slowly.
HsE2*:						
Hannon	Severe: slope.	Severe: hard to pack.	Deep to water	Slow intake, slope, droughty.	Slope, percs slowly.	Slope, droughty, percs slowly.
Sumter	Severe: slope.	Severe: thin layer.	Deep to water	Slope, slow intake, percs slowly.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
KMA*:						
Kinston	Moderate: seepage.	Severe: wetness.	Flooding	Wetness, flooding.	Wetness	Wetness.
Mantachie	Moderate: seepage.	Severe: piping, wetness.	Flooding	Wetness, flooding.	Wetness	Wetness.
Iuka	Moderate: seepage.	Severe: piping, wetness.	Flooding	Wetness, flooding.	Wetness	Wetness.
KoA Kolomoki	Severe: seepage.	Severe: thin layer.	Deep to water	Favorable	Favorable	Favorable.
LnB, LnC2 Luverne	Moderate: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Favorable	Favorable.
LsE*:						
Luverne	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Slope	Slope.
Springhill	Severe: seepage, slope.	Severe: piping.	Deep to water	Fast intake, slope.	Slope	Slope.
LyA Lynchburg	Moderate: seepage.	Severe: piping, wetness.	Favorable	Wetness, fast intake, soil blowing.	Wetness, soil blowing.	Wetness.
MnB Marvyn	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Fast intake, slope.	Favorable	Favorable.
MxA Maxton	Severe: seepage.	Slight	Deep to water	Droughty, fast intake.	Favorable	Droughty.

See footnote at end of table.

Table 14.--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
OcA: Ocilla	Severe: seepage.	Severe: piping, wetness.	Favorable	Wetness, droughty, fast intake.	Wetness, soil blowing.	Droughty.
OrA: Orangeburg	Moderate: seepage.	Moderate: piping.	Deep to water	Favorable	Soil blowing	Favorable.
OuC*:						
Orangeburg	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope	Soil blowing	Favorable.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
PaE: Pacolet	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope, soil blowing.	Slope.
Pt*: Pits	Variable	Variable	Variable	Variable	Variable	Variable.
RbA: Red Bay	Moderate: seepage.	Slight	Deep to water	Favorable	Favorable	Favorable.
RvA: Riverview	Severe: seepage.	Severe: piping.	Deep to water	Flooding	Favorable	Favorable.
SbB: Springhill	Severe: seepage.	Severe: piping.	Deep to water	Slope	Favorable	Favorable.
ScD*:						
Springhill	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope	Slope	Slope.
Cowarts	Severe: slope.	Severe: piping.	Deep to water	Slope, droughty, fast intake.	Slope, soil blowing, percs slowly.	Slope, droughty, rooting depth.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
ShE3*:						
Sumter	Severe: slope.	Severe: thin layer.	Deep to water	Slope, percs slowly.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
Hannon	Severe: slope.	Severe: hard to pack.	Deep to water	Slow intake, slope, droughty.	Slope, percs slowly.	Slope, droughty, percs slowly.
TaB*:						
Troup	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake.	Soil blowing	Droughty.
Alaga	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty, rooting depth.

See footnote at end of table.

Table 14.--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
TsE*:						
Troup	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy, soil blowing.	Slope, droughty.
Springhill	Severe: seepage, slope.	Severe: piping.	Deep to water	Fast intake, slope.	Slope	Slope.
Luverne	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Slope	Slope.
UcB*:						
Uchee	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake.	Too sandy	Droughty.
Cowarts	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, droughty, fast intake.	Soil blowing, percs slowly.	Droughty, rooting depth.
UcD*:						
Uchee	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy.	Slope, droughty.
Cowarts	Severe: slope.	Severe: piping.	Deep to water	Slope, droughty, fast intake.	Slope, soil blowing, percs slowly.	Slope, droughty, rooting depth.
UdA*:						
Udorthents	Variable	Variable	Variable	Variable	Variable	Variable.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Ur* Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
UuA*:						
Urbo	Slight	Severe: wetness.	Percs slowly, flooding.	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
Mooreville	Moderate: seepage.	Severe: wetness.	Flooding	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Erodes easily.
Una	Slight	Severe: ponding.	Ponding, percs slowly, flooding.	Ponding, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
WbA*:						
Wahee	Slight	Severe: hard to pack, wetness.	Percs slowly, flooding.	Wetness	Wetness, percs slowly.	Wetness, percs slowly.
Bladen	Slight	Severe: wetness.	Percs slowly, flooding.	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
WkA Wickham	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Favorable	Favorable.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 15.--Engineering Index Properties

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In								Pct	
AnA---------- Annemaine	0-4	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4	95-100	95-100	70-95	40-75	<20	NP-5
	4-12	Clay, clay loam, silty clay.	CL	A-6, A-7	95-100	95-100	85-100	70-98	30-50	10-25
	12-20	Clay, silty clay, silty clay loam.	CH, MH, CL, ML	A-7	95-100	95-100	90-100	80-99	45-70	20-35
	20-42	Sandy clay loam, loam, clay loam.	SC, CL	A-4, A-6	95-100	95-100	80-100	36-80	20-35	8-15
	42-65	Sandy clay loam, fine sandy loam, sandy loam.	SM, SC-SM, SC	A-2, A-4	95-100	95-100	60-90	30-50	<20	NP-10
BdA---------- Bladen	0-14	Fine sandy loam	SM	A-2, A-4	100	97-100	60-85	20-50	<20	NP
	14-65	Clay, sandy clay	CL, CH	A-7	100	99-100	75-100	55-85	45-67	23-45
BeA---------- Bladen	0-3	Loam----------	CL, ML, CL-ML	A-4	100	98-100	80-100	51-90	<30	NP-10
	3-45	Clay, sandy clay	CL, CH	A-7	100	99-100	75-100	55-85	45-67	23-45
	45-65	Clay, sandy clay, clay loam.	CL, CH, SC	A-4, A-6, A-7	100	89-99	75-95	45-75	25-60	8-35
BnB---------- Blanton	0-42	Loamy sand-------	SM	A-2-4	100	95-100	85-100	13-25	<20	NP
	42-52	Sandy loam, loamy sand, loamy coarse sand.	SM	A-2-4	100	95-100	65-96	13-30	<25	NP-3
	52-65	Sandy clay loam, sandy loam, sandy clay.	SC, SC-SM, SM	A-4, A-2-4, A-2-6, A-6	100	95-100	69-100	25-50	12-45	3-22
CnB---------- Conecuh	0-3	Fine sandy loam	SM, ML, CL-ML, SC-SM	A-4	95-100	95-100	70-100	40-70	<20	NP-5
	3-68	Clay, silty clay	ML, MH, CH	A-7	95-100	95-100	90-100	80-98	45-70	15-45
	68-80	Variable---------	---	---	---	---	---	---	---	---
CoC2---------- Conecuh	0-3	Loam----------	CL-ML, CL	A-4, A-6	95-100	95-100	80-100	60-85	20-35	5-15
	3-65	Clay, silty clay	ML, MH, CH	A-7	95-100	95-100	90-100	80-98	45-70	15-45
CtB*:										
Congaree--------	0-14	Loam----------	CL-ML, ML, CL	A-4	95-100	95-100	70-100	51-90	20-35	3-10
	14-80	Silty clay loam, fine sandy loam, loam.	SC, ML, CL, SM	A-4, A-6, A-7	95-100	95-100	70-100	40-90	25-50	3-22
Toccoa----------	0-5	Fine sandy loam	SM, ML	A-2, A-4	95-100	95-100	50-85	30-55	<30	NP-4
	5-65	Sandy loam, loam	SM, ML	A-2, A-4	95-100	90-100	60-100	30-55	<30	NP-4
CwB---------- Cowarts	0-6	Loamy sand-------	SM	A-2	90-100	85-100	50-80	13-30	<20	NP
	6-28	Fine sandy loam, sandy loam, sandy clay loam.	SC-SM, SC, SM	A-2, A-4, A-6	95-100	90-100	60-95	23-45	20-40	NP-15
	28-65	Sandy loam, sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	85-100	80-100	60-95	25-58	25-53	5-20

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In								Pct	
DgA---------- Dogue	0-11	Fine sandy loam	SM, SC, SC-SM	A-2, A-4	95-100	75-100	50-100	20-50	<25	NP-10
	11-37	Clay loam, clay, sandy clay.	CL, CH, SC	A-6, A-7	95-100	75-100	65-100	40-90	35-60	16-40
	37-70	Stratified sand to sandy clay loam.	SM, SC, SP-SM, SC-SM	A-2, A-4, A-1	80-100	60-100	35-100	10-40	<30	NP-10
DoA---------- Dothan	0-6	Fine sandy loam	SM, SP-SM	A-2, A-4	95-100	92-100	75-90	20-40	<25	NP-5
	6-34	Sandy clay loam, sandy loam, fine sandy loam.	SC-SM, SC, SM	A-2, A-4, A-6	95-100	92-100	60-90	23-49	<40	NP-16
	34-65	Sandy clay loam, sandy clay.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	95-100	92-100	70-95	30-53	25-45	4-23
DoB---------- Dothan	0-5	Fine sandy loam	SM, SP-SM	A-2, A-4	95-100	92-100	75-90	20-40	<25	NP-5
	5-39	Sandy clay loam, sandy loam, fine sandy loam.	SC-SM, SC, SM	A-2, A-4, A-6	95-100	92-100	60-90	23-49	<40	NP-16
	39-65	Sandy clay loam, sandy clay.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	95-100	92-100	70-95	30-53	25-45	4-23
FpA---------- Fluvaquents	0-6	Sandy loam--------	SM, ML, CL-ML	A-2, A-4	100	90-100	60-90	30-60	<25	NP-7
	6-80	Stratified sandy loam to clay.	ML, CL	A-7, A-4, A-6	100	90-100	75-100	60-95	20-45	8-22
FuB---------- Fuquay	0-28	Loamy fine sand	SP-SM, SM	A-2, A-3	95-100	90-100	50-83	5-35	10-20	NP
	28-48	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	85-100	85-100	70-90	23-45	20-45	NP-13
	48-65	Sandy clay loam	SC, SC-SM, SM	A-2, A-4, A-6, A-7-6	95-100	90-100	58-90	28-49	25-45	4-13
GoA---------- Goldsboro	0-9	Loamy fine sand	SM	A-2	95-100	95-100	50-95	13-30	10-20	NP
	9-28	Sandy clay loam, sandy loam.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	98-100	95-100	60-100	25-55	20-37	4-18
	28-64	Sandy clay loam, clay loam, sandy clay.	SC, CL, CL-ML, CH	A-4, A-6, A-7-6	95-100	90-100	65-95	36-70	25-55	6-32
	64-90	Variable---------	---	---	---	---	---	---	---	---
GrB---------- Gritney	0-13	Fine sandy loam	SM, SC, SC-SM, ML	A-2, A-4	90-100	80-100	60-95	30-90	20-30	NP-8
	13-49	Clay, sandy clay, clay loam.	CH, CL, SC	A-7	95-100	90-100	80-100	45-80	45-70	22-40
	49-80	Stratified loamy sand to sandy clay loam.	SM, SC, ML, CL	A-1, A-2, A-4, A-6	70-100	55-100	30-90	20-60	20-40	NP-25
HaB---------- Hannon	0-4	Clay loam--------	CL	A-6, A-7	100	100	90-100	75-95	32-50	20-30
	4-12	Clay, silty clay	CH	A-7	100	100	95-100	90-100	55-75	35-50
	12-21	Clay, silty clay	CH	A-7	100	100	95-100	90-100	55-75	35-50
	21-65	Clay loam, clay, silty clay.	CL, CH	A-7	100	100	90-100	85-95	42-65	30-45

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In								Pct	
HnC2---------- Hannon	0-2	Clay----------	CH, CL	A-7	100	100	90-100	90-100	42-64	30-40
	2-7	Clay, silty clay	CH	A-7	100	100	95-100	90-100	55-75	35-50
	7-12	Clay, silty clay	CH	A-7	100	100	95-100	90-100	55-75	35-50
	12-65	Clay loam, clay, silty clay.	CL, CH	A-7	100	100	90-100	85-95	42-65	30-45
HnD2---------- Hannon	0-2	Clay----------	CH, CL	A-7	100	100	90-100	90-100	42-64	30-40
	2-10	Clay, silty clay	CH	A-7	100	100	95-100	90-100	55-75	35-50
	10-26	Clay, silty clay	CH	A-7	100	100	95-100	90-100	55-75	35-50
	26-65	Clay loam, clay, silty clay.	CL, CH	A-7	100	100	90-100	85-95	42-65	30-45
HsE2*:										
Hannon----------	0-5	Clay----------	CH, CL	A-7	100	100	90-100	90-100	42-64	30-40
	5-16	Clay, silty clay	CH	A-7	100	100	95-100	90-100	55-75	35-50
	16-22	Clay, silty clay	CH	A-7	100	100	95-100	90-100	55-75	35-50
	22-65	Clay loam, clay, silty clay.	CL, CH	A-7	100	100	90-100	85-95	42-65	30-45
Sumter----------	0-4	Silty clay-------	CL	A-7, A-6	90-100	85-100	80-98	75-90	35-50	16-25
	4-29	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	85-100	78-98	75-95	75-95	35-55	16-32
	29-34	Silty clay loam, silty clay.	CH, CL	A-6, A-7	80-100	65-98	60-95	55-95	35-55	16-32
	34-65	Weathered bedrock	---	---	---	---	---	---	---	---
KMA*:										
Kinston---------	0-3	Sandy loam-------	ML, CL, CL-ML	A-4, A-6	100	98-100	85-100	50-97	17-40	4-15
	3-65	Loam, clay loam, sandy clay loam.	CL	A-4, A-6, A-7	100	95-100	75-100	60-95	20-45	8-22
Mantachie-------	0-4	Fine sandy loam	CL-ML, SC-SM, SM, ML	A-4	95-100	90-100	60-85	40-60	<20	NP-5
	4-65	Loam, clay loam, sandy clay loam.	CL, SC, SC-SM, CL-ML	A-4, A-6	95-100	90-100	80-95	45-80	20-40	5-15
Iuka----------	0-8	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4, A-2	95-100	90-100	70-100	30-60	<20	NP-7
	8-80	Fine sandy loam, loam, sandy loam.	SM, SC-SM, ML, CL-ML	A-4	95-100	85-100	65-100	36-75	<30	NP-7
KoA---------- Kolomoki	0-6	Fine sandy loam	SM, ML, CL-ML	A-2, A-4	95-100	95-100	80-98	30-55	0-25	NP-6
	6-36	Sandy clay, clay	CL	A-6, A-7	95-100	95-100	95-100	60-90	36-50	14-22
	36-48	Sandy clay loam, sandy loam.	SM, SC, SC-SM	A-4, A-2	95-100	95-100	90-99	30-49	<30	NP-10
	48-65	Loamy sand, sand	SM, SP-SM	A-2	95-100	95-100	60-98	10-35	<20	NP
LnB---------- Luverne	0-10	Sandy loam-------	ML, SM	A-4, A-2	87-100	84-100	80-100	30-60	<20	NP
	10-48	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	95-100	90-100	85-100	50-95	38-70	8-30
	48-65	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	90-100	85-100	70-100	25-65	28-49	3-16

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In								Pct	
LnC2---------- Luverne	0-4	Sandy loam-------	ML, SM	A-4, A-2	87-100	84-100	80-100	30-60	<20	NP
	4-33	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	95-100	90-100	85-100	50-95	38-70	8-30
	33-65	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	90-100	85-100	70-100	25-65	28-49	3-16
LsE*:										
Luverne---------	0-3	Sandy loam-------	ML, SM	A-4, A-2	87-100	84-100	80-100	30-60	<20	NP
	3-23	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	95-100	90-100	85-100	50-95	38-70	8-30
	23-29	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	95-100	85-100	85-100	36-76	32-56	2-14
	29-65	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	90-100	85-100	70-100	25-65	28-49	3-16
Springhill------	0-4	Loamy sand-------	SM	A-2	98-100	95-100	60-87	14-28	<20	NP
	4-12	Sandy loam, fine sandy loam.	SM	A-2	98-100	95-100	70-96	25-35	<30	NP-4
	12-65	Sandy loam, sandy clay loam.	SC, CL, SC-SM	A-6, A-4	98-100	95-100	70-96	40-65	22-46	8-21
LyA---------- Lynchburg	0-15	Loamy fine sand	SM, SP-SM	A-2, A-4	92-100	90-100	60-100	12-40	<25	NP-4
	15-65	Sandy clay loam, sandy loam, clay loam.	SC-SM, SC, CL, CL-ML	A-2, A-4, A-6	92-100	90-100	70-100	25-67	15-40	4-18
	65-80	Sandy clay loam, sandy clay, clay.	SC-SM, SC, CL, CL-ML	A-2, A-4, A-6	95-100	92-100	70-100	25-73	15-40	4-20
MnB---------- Marvyn	0-6	Loamy sand-------	SM	A-2	95-100	90-100	50-80	13-30	<20	NP
	6-49	Sandy clay loam, sandy loam.	ML, SM	A-4, A-2, A-6, A-7	95-100	90-100	60-80	30-55	24-45	3-15
	49-65	Loamy sand, sandy loam, sandy clay loam.	SM, ML	A-1, A-2, A-4	95-100	90-100	45-85	20-55	<40	NP-10
MxA---------- Maxton	0-10	Loamy sand-------	SM, SP-SM	A-2	90-100	90-100	70-95	10-25	10-20	NP
	10-38	Sandy clay loam, sandy loam.	SC, SC-SM	A-4, A-6, A-2	90-100	85-100	75-90	30-49	20-40	4-15
	38-75	Stratified loamy sand to sand.	SM, SP-SM, SP	A-2, A-3	90-100	75-100	50-90	4-25	10-20	NP
OcA---------- Ocilla	0-28	Loamy fine sand	SM, SP-SM	A-2, A-3	100	95-100	75-100	8-35	0-14	NP
	28-48	Sandy loam, sandy clay loam, fine sandy loam.	SM, CL, SC, ML	A-2, A-4, A-6	100	95-100	80-100	20-55	20-40	NP-18
	48-65	Sandy clay loam, sandy clay, sandy loam.	SC, CL	A-4, A-6, A-7	100	95-100	80-100	36-60	20-45	7-20
OrA---------- Orangeburg	0-8	Fine sandy loam	SM	A-2	98-100	95-100	75-95	20-35	<20	NP
	8-15	Sandy loam-------	SM	A-2	98-100	95-100	70-96	25-35	<30	NP-4
	15-80	Sandy clay loam, sandy loam.	SC, CL, SM, SC-SM	A-6, A-4	98-100	95-100	71-96	38-58	22-40	3-19

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In								Pct	
OuC*:										
Orangeburg------	0-8	Fine sandy loam	SM	A-2	98-100	95-100	75-95	20-35	<20	NP
	8-15	Sandy loam-------	SM	A-2	98-100	95-100	70-96	25-35	<30	NP-4
	15-80	Sandy clay loam, sandy loam.	SC, CL, SM, SC-SM	A-6, A-4	98-100	95-100	71-96	38-58	22-40	3-19
Urban land------	0-6	Variable---------	---	---	---	---	---	---	---	---
PaE---------- Pacolet	0-4	Sandy loam-------	SM, SC-SM	A-2, A-1-b, A-4	85-100	80-100	42-90	16-42	<28	NP-7
	4-22	Sandy clay, sandy clay loam, clay.	ML, MH, CL	A-6, A-7	80-100	80-100	60-100	51-75	38-65	11-33
	22-80	Sandy loam, fine sandy loam, loam.	SM, SC-SM	A-4, A-2-4	80-100	70-100	60-90	25-50	<28	NP-6
Pt*---------- Pits	0-60	Variable---------	---	---	---	---	---	---	---	---
RbA---------- Red Bay	0-9	Sandy loam-------	SM, SC-SM	A-2, A-4	100	95-100	60-85	15-45	<20	NP-4
	9-29	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4	100	95-100	60-85	15-50	<35	NP-10
	29-65	Sandy clay loam	SC-SM, SC	A-2, A-4, A-6	100	95-100	70-90	24-50	18-40	4-16
RvA---------- Riverview	0-8	Loam----------	CL, CL-ML, ML	A-4, A-6	100	100	90-100	60-80	15-30	3-14
	8-43	Sandy clay loam, silty clay loam, loam.	CL, ML, CL-ML	A-4, A-6	100	100	90-100	60-95	20-40	3-20
	43-65	Loamy fine sand, sandy loam, sand.	SM, SC-SM	A-2, A-4	100	100	50-95	15-45	<20	NP-7
SbB---------- Springhill	0-7	Sandy loam-------	SM	A-2	98-100	95-100	75-85	20-35	<20	NP
	7-42	Sandy loam, sandy clay loam.	SC, CL, SC-SM	A-6, A-4	98-100	95-100	70-96	40-65	22-46	8-21
	42-65	Loamy sand, sandy loam.	SM, SC-SM	A-2, A-4	98-100	95-100	70-96	15-45	<30	3-16
ScD*:										
Springhill------	0-4	Loamy sand-------	SM	A-2	98-100	95-100	75-85	20-35	<20	NP
	4-12	Sandy loam, fine sandy loam.	SM	A-2	98-100	95-100	70-96	25-35	<30	NP-4
	12-65	Sandy loam, sandy clay loam.	SC, CL, SC-SM	A-6, A-4	98-100	95-100	70-96	40-65	22-46	8-21
Cowarts---------	0-6	Loamy sand-------	SM	A-2	90-100	85-100	50-80	13-30	<20	NP
	6-24	Fine sandy loam, sandy loam, sandy clay loam.	SC-SM, SC, SM	A-2, A-4, A-6	95-100	90-100	60-95	23-45	20-40	NP-15
	24-65	Sandy loam, sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	85-100	80-100	60-95	25-58	25-53	5-20
Urban land------	0-6	Variable---------	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
ShE3*:										
Sumter----------	0-3	Silty clay loam	CL	A-7, A-6	90-100	85-100	80-98	75-90	35-50	16-25
	3-38	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	85-100	78-98	75-95	75-95	35-55	16-32
	38-80	Weathered bedrock	---	---	---	---	---	---	---	---
Hannon----------	0-2	Clay----------	CH, CL	A-7	100	100	90-100	90-100	42-64	30-40
	2-11	Clay, silty clay	CH	A-7	100	100	95-100	90-100	55-75	35-50
	11-22	Clay, silty clay	CH	A-7	100	100	95-100	90-100	55-75	35-50
	22-40	Clay loam, clay, silty clay.	CL, CH	A-7	100	100	90-100	85-95	42-65	30-45
	40-80	Stratified sandy loam to clay.	CL, CH	A-6, A-7	100	90-100	80-90	75-85	35-55	15-30
TaB*:										
Troup----------	0-56	Loamy fine sand	SM, SP-SM	A-2, A-4	95-100	90-100	50-90	10-40	<20	NP
	56-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SC-SM, CL-ML, CL	A-4, A-2, A-6	95-100	90-100	60-90	24-55	19-40	4-20
Alaga----------	0-4	Loamy fine sand	SM, SW-SM, SP-SM	A-2, A-1-B	100	100	40-80	10-35	<20	NP-4
	4-80	Loamy sand, loamy fine sand, fine sand.	SM, SW-SM, SP-SM	A-2	100	100	50-85	10-35	<20	NP-4
TsE*:										
Troup----------	0-50	Loamy sand-------	SM, SP-SM	A-2, A-4	95-100	90-100	50-90	10-40	<20	NP
	50-65	Sandy clay loam, sandy loam, fine sandy loam.	SC, SC-SM, CL-ML, CL	A-4, A-2, A-6	95-100	90-100	60-90	24-55	19-40	4-20
Springhill------	0-4	Loamy sand-------	SM	A-2	98-100	95-100	60-87	14-28	<20	NP
	4-12	Sandy loam, fine sandy loam.	SM	A-2	98-100	95-100	70-96	25-35	<30	NP-4
	12-65	Sandy loam, sandy clay loam.	SC, CL, SC-SM	A-6, A-4	98-100	95-100	70-96	40-65	22-46	8-21
Luverne---------	0-8	Sandy loam-------	ML, SM	A-4, A-2	87-100	84-100	80-100	30-60	<20	NP
	8-53	Clay loam, sandy clay, clay.	ML, MH	A-5, A-7, A-4	95-100	90-100	85-100	50-95	38-70	8-30
	53-65	Stratified loamy sand to sandy clay loam.	SM, ML	A-4, A-6, A-2, A-7	90-100	85-100	70-100	25-65	28-49	3-16
UcB*:										
Uchee----------	0-30	Loamy sand-------	SM	A-2, A-1-b	90-100	80-100	40-70	15-30	<20	NP
	30-54	Sandy loam, sandy clay loam.	SC, SC-SM	A-2, A-4, A-6	90-100	80-100	50-80	25-50	20-40	6-20
	54-80	Sandy loam, loamy sand.	SP-SM, SM, SC-SM	A-2, A-1-b	95-100	90-100	40-70	10-35	<25	NP-7
Cowarts---------	0-12	Loamy sand-------	SM	A-2	90-100	85-100	50-80	13-30	<20	NP
	12-34	Sandy clay loam, sandy clay, clay loam.	SM, SC	A-6, A-7, A-2-6	95-100	90-100	60-95	25-50	20-54	5-25
	34-65	Sandy loam, sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	85-100	80-100	60-95	25-58	25-53	5-20

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In								Pct	
UcD*:										
Uchee	0-28	Loamy sand	SM	A-2, A-1-b	90-100	80-100	40-70	15-30	<20	NP
	28-44	Sandy loam, sandy clay loam.	SC, SC-SM	A-2, A-4, A-6	90-100	80-100	50-80	25-50	20-40	6-20
	44-65	Sandy loam, loamy sand.	SP-SM, SM, SC-SM	A-2, A-1-b	95-100	90-100	40-70	10-35	<25	NP-7
Cowarts	0-6	Loamy sand	SM	A-2	90-100	85-100	50-80	13-30	<20	NP
	6-24	Fine sandy loam, sandy loam, sandy clay loam.	SC-SM, SC, SM	A-2, A-4, A-6	95-100	90-100	60-95	23-45	20-40	NP-15
	24-65	Sandy loam, sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	85-100	80-100	60-95	25-58	25-53	5-20
UdA*:										
Udorthents	0-80	Variable	---	---	---	---	---	---	---	---
Urban land	0-6	Variable	---	---	---	---	---	---	---	----
Ur*.										
Urban land										
UuA*:										
Urbo	0-8	Clay loam	CL, CH	A-7	100	100	95-100	80-98	44-62	20-36
	8-65	Silty clay, clay loam, silty clay loam.	CL, CH	A-7	100	100	95-100	80-98	44-62	20-36
Mooreville	0-6	Fine sandy loam	CL-ML, CL, SC-SM, SC	A-4	100	100	80-100	40-85	20-30	5-10
	6-45	Sandy clay loam, clay loam, loam.	CL, SC	A-6, A-7	100	100	80-95	45-80	28-50	15-30
	45-70	Loam, sandy clay loam, clay loam.	SC, CL	A-6, A-7	100	100	80-95	45-80	28-50	15-30
Una	0-3	Silty clay loam	CH, CL	A-7	100	94-100	90-100	75-95	41-65	20-40
	3-65	Clay, silty clay loam, silty clay.	CH, CL	A-7	100	94-100	90-100	75-95	41-65	20-40
WbA*:										
Wahee	0-4	Loam	ML, CL-ML, CL	A-4	100	100	90-98	51-75	20-35	2-10
	4-65	Clay, clay loam, silty clay.	CL, CH	A-6, A-7	100	100	85-100	51-92	38-81	16-54
Bladen	0-10	Fine sandy loam	SM	A-2, A-4	100	97-100	60-85	20-50	<20	NP
	10-51	Clay, sandy clay	CL, CH	A-7	100	99-100	75-100	55-85	45-67	23-45
	51-65	Clay, sandy clay, clay loam.	CL, CH, SC	A-4, A-6, A-7	100	89-99	75-95	45-75	25-60	8-35
WkA Wickham	0-4	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4	95-100	90-100	70-100	45-80	15-25	NP-7
	4-40	Sandy clay loam, clay loam, loam.	CL-ML, CL, SC, SM	A-2, A-4, A-6, A-7-6	95-100	90-100	75-100	30-70	20-41	3-15
	40-65	Variable	---	---	---	---	---	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 16.--Physical and Chemical Properties of the Soils

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
AnA---------- Annemaine	0-4	10-20	1.30-1.55	0.6-2.0	0.12-0.16	4.5-6.5	Low----------	0.28	5	.5-2
	4-12	35-50	1.30-1.45	0.06-0.2	0.14-0.18	4.5-5.5	Moderate-----	0.37		
	12-20	35-60	1.25-1.40	0.06-0.2	0.14-0.18	4.5-5.5	Moderate-----	0.37		
	20-42	20-35	1.30-1.60	0.2-0.6	0.14-0.18	4.5-5.5	Low----------	0.37		
	42-65	5-25	1.40-1.60	0.2-2.0	0.14-0.18	4.5-5.5	Low----------	0.32		
BdA---------- Bladen	0-14	10-20	1.35-1.45	0.6-2.0	0.10-0.13	3.6-5.5	Low----------	0.24	5	1-3
	14-65	35-55	1.60-1.70	0.06-0.2	0.12-0.16	3.6-5.5	Moderate-----	----		
BeA---------- Bladen	0-3	15-27	1.30-1.40	0.6-2.0	0.14-0.18	3.6-5.5	Low----------	0.37	5	2-5
	3-45	35-55	1.60-1.70	0.06-0.2	0.12-0.16	3.6-5.5	Moderate-----	----		
	45-65	35-70	1.60-1.70	0.06-0.2	0.12-0.16	3.6-5.5	Moderate-----	----		
BnB---------- Blanton	0-42	5-13	1.35-1.60	6.0-20	0.05-0.10	4.5-6.0	Low----------	0.10	5	.5-2
	42-52	10-18	1.50-1.65	2.0-6.0	0.10-0.15	4.5-5.5	Low----------	0.15		
	52-65	12-40	1.60-1.70	0.2-2.0	0.10-0.15	4.5-5.5	Low----------	0.20		
CnB---------- Conecuh	0-3	7-25	1.40-1.60	0.6-2.0	0.10-0.15	3.6-5.5	Low----------	0.28	5	.5-2
	3-68	45-70	1.30-1.55	<0.06	0.08-0.19	3.6-5.5	High----------	0.32		
	68-80	---	---	<0.06	---	---	----------	----		
CoC2---------- Conecuh	0-3	10-25	1.35-1.60	0.6-2.0	0.15-0.24	3.6-5.5	Low----------	0.37	5	.5-2
	3-65	45-70	1.30-1.55	<0.06	0.08-0.19	3.6-5.5	High----------	0.32		
CtB*:										
Congaree--------	0-14	10-25	1.20-1.40	0.6-2.0	0.12-0.20	4.5-7.3	Low----------	0.37	5	1-4
	14-80	18-35	1.20-1.50	0.6-2.0	0.12-0.20	4.5-7.3	Low----------	0.37		
Toccoa----------	0-5	2-15	1.40-1.55	2.0-6.0	0.09-0.12	5.1-6.5	Low----------	0.10	5	1-2
	5-65	2-19	1.40-1.50	2.0-6.0	0.09-0.12	5.1-6.5	Low----------	0.20		
CwB---------- Cowarts	0-6	3-10	1.30-1.70	2.0-6.0	0.06-0.10	4.5-5.5	Low----------	0.15	4	.5-2
	6-28	10-30	1.30-1.50	0.6-2.0	0.10-0.16	4.5-5.5	Low----------	0.28		
	28-65	18-35	1.65-1.80	0.06-0.6	0.10-0.14	4.5-5.5	Low----------	0.24		
DgA---------- Dogue	0-11	5-10	1.35-1.50	2.0-6.0	0.08-0.15	3.5-5.5	Low----------	0.28	5	.5-2
	11-37	35-50	1.45-1.60	0.2-0.6	0.12-0.19	3.5-5.5	Moderate-----	0.28		
	37-70	5-30	1.30-1.50	0.6-6.0	0.05-0.14	3.5-5.5	Low----------	0.17		
DoA---------- Dothan	0-6	10-18	1.30-1.70	2.0-6.0	0.08-0.13	4.5-6.0	Low----------	0.24	5	.5-2
	6-34	18-35	1.40-1.60	0.6-2.0	0.12-0.16	4.5-6.0	Low----------	0.28		
	34-65	18-40	1.45-1.70	0.2-0.6	0.08-0.12	4.5-6.0	Low----------	0.28		
DoB---------- Dothan	0-5	10-18	1.30-1.70	2.0-6.0	0.08-0.13	4.5-6.0	Low----------	0.24	5	.5-2
	5-39	18-35	1.40-1.60	0.6-2.0	0.12-0.16	4.5-6.0	Low----------	0.28		
	39-65	18-40	1.45-1.70	0.2-0.6	0.08-0.12	4.5-6.0	Low----------	0.28		
FpA---------- Fluvaquents	0-6	2-18	1.25-1.35	2.0-6.0	0.10-0.15	3.6-5.5	Low----------	0.20	5	3-10
	6-80	15-45	1.35-1.60	0.06-0.2	0.10-0.20	3.6-5.5	Low----------	0.37		
FuB---------- Fuquay	0-28	2-10	1.60-1.70	>6.0	0.04-0.09	4.5-6.0	Low----------	0.10	5	.5-2
	28-48	10-35	1.40-1.60	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.20		
	48-65	20-35	1.40-1.60	0.06-0.2	0.10-0.13	4.5-6.0	Low----------	0.20		

See footnote at end of table.

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
GoA---------- Goldsboro	0-9	2-8	1.55-1.75	6.0-20	0.06-0.11	3.5-5.5	Low----------	0.17	5	.5-2
	9-28	18-30	1.30-1.50	0.6-2.0	0.11-0.17	3.5-5.5	Low----------	0.24		
	28-64	20-34	1.30-1.40	0.6-2.0	0.11-0.20	3.5-5.5	Low----------	0.24		
	64-90	---	---	---	---	---	----------	----		
GrB---------- Gritney	0-13	10-25	1.30-1.50	2.0-6.0	0.08-0.12	3.5-6.0	Low----------	0.28	4	.5-2
	13-49	35-60	1.30-1.50	0.06-0.2	0.10-0.17	3.5-5.5	Moderate-----	0.32		
	49-80	10-35	1.30-1.50	0.06-6.0	0.06-0.12	3.5-5.5	Low----------	0.20		
HaB---------- Hannon	0-4	27-40	1.10-1.40	0.06-0.2	0.13-0.17	5.1-7.3	Moderate-----	0.32	5	1-4
	4-12	50-75	1.10-1.30	0.01-0.06	0.05-0.10	5.1-7.3	Very high----	0.32		
	12-21	50-75	1.10-1.30	0.01-0.06	0.05-0.10	5.6-7.8	Very high----	0.32		
	21-65	35-60	1.10-1.40	0.01-0.06	0.08-0.12	7.4-8.4	High---------	0.32		
HnC2---------- Hannon	0-2	40-60	1.10-1.30	0.01-0.06	0.12-0.16	5.1-7.3	High---------	0.32	5	1-4
	2-7	50-75	1.10-1.30	0.01-0.06	0.05-0.10	5.1-7.3	Very high----	0.32		
	7-12	50-75	1.10-1.30	0.01-0.06	0.05-0.10	5.6-7.8	Very high----	0.32		
	12-65	35-60	1.10-1.40	0.01-0.06	0.08-0.12	7.4-8.4	High---------	0.32		
HnD2---------- Hannon	0-2	40-60	1.10-1.30	0.01-0.06	0.12-0.16	5.1-7.3	High---------	0.32	5	1-4
	2-10	50-75	1.10-1.30	0.01-0.06	0.05-0.10	5.1-7.3	Very high----	0.32		
	10-26	50-75	1.10-1.30	0.01-0.06	0.05-0.10	5.6-7.8	Very high----	0.32		
	26-65	35-60	1.10-1.40	0.01-0.06	0.08-0.12	7.4-8.4	High---------	0.32		
HsE2*:										
Hannon----------	0-5	40-60	1.10-1.30	0.01-0.06	0.12-0.16	5.1-7.3	High---------	0.32	5	1-4
	5-16	50-75	1.10-1.30	0.01-0.06	0.05-0.10	5.1-7.3	Very high----	0.32		
	16-22	50-75	1.10-1.30	0.01-0.06	0.05-0.10	5.6-7.8	Very high----	0.32		
	22-65	35-60	1.10-1.40	0.01-0.06	0.08-0.12	7.4-8.4	High---------	0.32		
Sumter----------	0-4	32-50	1.30-1.60	0.06-2.0	0.12-0.17	6.6-8.4	High---------	0.37	3	2-5
	4-29	35-57	1.15-1.55	0.06-2.0	0.12-0.17	7.4-8.4	High---------	0.37		
	29-34	35-57	1.15-1.50	0.06-2.0	0.11-0.16	7.4-8.4	Moderate-----	0.32		
	34-65	---	---	0.00-0.01	---	---	----------	----		
KMA*:										
Kinston---------	0-3	5-27	1.30-1.50	0.6-2.0	0.14-0.20	4.5-6.0	Low----------	0.37	5	2-5
	3-65	18-35	1.30-1.50	0.6-2.0	0.14-0.18	4.5-5.5	Low----------	0.32		
Mantachie-------	0-4	8-20	1.50-1.60	0.6-2.0	0.16-0.20	4.5-5.5	Low----------	0.28	5	1-3
	4-65	18-34	1.50-1.60	0.6-2.0	0.14-0.20	4.5-5.5	Low----------	0.28		
Iuka----------	0-8	6-15	---	2.0-6.0	0.10-0.15	5.1-6.0	Low----------	0.24	5	.5-2
	8-80	8-18	---	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.28		
KoA---------- Kolomoki	0-6	10-14	1.35-1.45	2.0-6.0	0.06-0.09	4.5-6.5	Low----------	0.24	4	.5-3
	6-36	35-55	1.60-1.70	0.6-2.0	0.13-0.16	4.5-6.0	Low----------	0.32		
	36-48	10-35	1.50-1.60	0.6-2.0	0.06-0.11	4.5-6.0	Low----------	0.24		
	48-65	2-15	1.50-1.60	6.0-20	0.05-0.08	4.5-6.0	Low----------	0.20		
LnB---------- Luverne	0-10	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low----------	0.24	5	.5-2
	10-48	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate-----	0.28		
	48-65	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.28		
LnC2---------- Luverne	0-4	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low----------	0.24	5	.5-2
	4-33	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate-----	0.28		
	33-65	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.28		

See footnote at end of table.

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
LsE*:										
Luverne---------	0-3	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low----------	0.24	5	.5-2
	3-23	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate-----	0.28		
	23-29	20-40	1.35-1.65	0.2-0.6	0.12-0.18	3.6-5.5	Low----------	0.28		
	29-65	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.28		
Springhill------	0-4	4-10	1.30-1.60	6.0-20	0.06-0.10	4.5-5.5	Low----------	0.15	5	.5-2
	4-12	7-18	1.30-1.50	2.0-6.0	0.07-0.12	4.5-5.5	Low----------	0.20		
	12-65	18-35	1.40-1.60	0.6-2.0	0.11-0.14	4.5-5.5	Low----------	0.24		
LyA---------- Lynchburg	0-15	2-10	1.40-1.70	6.0-20	0.07-0.10	3.6-6.0	Low----------	0.15	5	.5-5
	15-65	18-35	1.30-1.50	0.6-2.0	0.12-0.16	3.6-5.5	Low----------	0.20		
	65-80	20-50	1.30-1.45	0.6-2.0	0.12-0.18	3.6-5.5	Low----------	0.20		
MnB---------- Marvyn	0-6	2-12	1.35-1.70	2.0-6.0	0.06-0.11	4.5-6.0	Low----------	0.15	5	.5-2
	6-49	18-35	1.30-1.60	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.32		
	49-65	10-30	1.40-1.60	0.2-2.0	0.07-0.14	4.5-6.0	Low----------	0.32		
MxA---------- Maxton	0-10	0-8	1.60-1.75	2.0-6.0	0.06-0.10	4.5-6.0	Low----------	0.15	5	.5-2
	10-38	18-35	1.40-1.60	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.24		
	38-75	0-10	1.60-1.75	6.0-20	0.03-0.06	4.5-5.5	Low----------	0.10		
OcA---------- Ocilla	0-28	4-10	1.45-1.65	2.0-20	0.05-0.08	4.5-5.5	Low----------	0.10	5	1-2
	28-48	15-35	1.55-1.70	0.6-2.0	0.09-0.12	4.5-5.5	Low----------	0.24		
	48-65	15-40	1.55-1.70	0.2-2.0	0.09-0.12	4.5-5.5	Low----------	0.24		
OrA---------- Orangeburg	0-8	7-15	1.30-1.50	2.0-6.0	0.07-0.10	4.5-6.0	Low----------	0.20	5	.5-2
	8-15	7-18	1.50-1.65	2.0-6.0	0.09-0.12	4.5-6.0	Low----------	0.20		
	15-80	18-35	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	Low----------	0.24		
OuC*:										
Orangeburg------	0-8	7-15	1.30-1.50	2.0-6.0	0.07-0.10	4.5-6.0	Low----------	0.20	5	.5-2
	8-15	7-18	1.50-1.65	2.0-6.0	0.09-0.12	4.5-6.0	Low----------	0.20		
	15-80	18-35	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	Low----------	0.24		
Urban land------	0-6	---	---	---	---	---	----------	----	---	---
PaE---------- Pacolet	0-4	8-20	1.00-1.50	2.0-6.0	0.08-0.12	4.5-6.5	Low----------	0.20	3	.5-2
	4-22	30-60	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.28		
	22-80	10-25	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28		
Pt*. Pits										
RbA---------- Red Bay	0-9	7-20	1.40-1.55	2.0-6.0	0.07-0.14	4.5-6.0	Low----------	0.20	5	.5-2
	9-29	10-25	1.30-1.60	0.6-6.0	0.10-0.14	4.5-6.0	Low----------	0.15		
	29-65	18-35	1.30-1.50	0.6-2.0	0.12-0.17	4.5-5.5	Low----------	0.17		
RvA---------- Riverview	0-8	10-27	1.30-1.60	0.6-2.0	0.16-0.24	4.5-6.5	Low----------	0.32	5	.5-2
	8-43	18-35	1.20-1.40	0.6-2.0	0.15-0.22	4.5-6.0	Low----------	0.24		
	43-65	4-18	1.20-1.50	2.0-6.0	0.07-0.11	4.5-6.0	Low----------	0.17		
SbB---------- Springhill	0-7	7-15	1.30-1.50	2.0-6.0	0.09-0.12	4.5-5.5	Low----------	0.20	5	.5-2
	7-42	18-35	1.40-1.60	0.6-2.0	0.11-0.14	4.5-5.5	Low----------	0.24		
	42-65	5-25	1.40-1.65	2.0-6.0	0.07-0.12	4.5-5.5	Low----------	0.20		
ScD*:										
Springhill------	0-4	7-15	1.30-1.50	2.0-6.0	0.09-0.12	4.5-5.5	Low----------	0.20	5	.5-2
	4-12	7-18	1.30-1.50	2.0-6.0	0.07-0.12	4.5-5.5	Low----------	0.20		
	12-65	18-35	1.40-1.60	0.6-2.0	0.11-0.14	4.5-5.5	Low----------	0.24		

See footnote at end of table.

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
ScD*:										
Cowarts---------	0-6	3-10	1.30-1.70	2.0-6.0	0.06-0.10	4.5-5.5	Low----------	0.15	4	.5-2
	6-24	10-30	1.30-1.50	0.6-2.0	0.10-0.16	4.5-5.5	Low----------	0.28		
	24-65	18-35	1.65-1.80	0.06-0.6	0.10-0.14	4.5-5.5	Low----------	0.24		
Urban land------	0-6	---	---	---	---	---	----------	----	---	---
ShE3*:										
Sumter----------	0-3	32-50	1.30-1.60	0.06-2.0	0.12-0.17	6.6-8.4	High---------	0.37	2	2-5
	3-38	35-57	1.15-1.55	0.06-2.0	0.12-0.17	7.4-8.4	High---------	0.37		
	38-80	---	---	0.00-0.01	---	---	----------	----		
Hannon----------	0-2	40-60	1.10-1.30	0.01-0.06	0.12-0.16	5.1-7.3	High---------	0.32	5	1-4
	2-11	50-75	1.10-1.30	0.01-0.06	0.05-0.10	5.1-7.3	Very high----	0.32		
	11-22	50-75	1.10-1.30	0.01-0.06	0.05-0.10	5.6-7.8	Very high----	0.32		
	22-40	35-60	1.10-1.40	0.01-0.06	0.08-0.12	7.4-8.4	High---------	0.32		
	40-80	25-60	1.15-1.50	0.01-0.06	0.05-0.10	7.9-8.4	Moderate-----	0.28		
TaB*:										
Troup----------	0-56	2-12	1.30-1.70	6.0-20	0.05-0.10	4.5-6.0	Low----------	0.10	5	.5-2
	56-80	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20		
Alaga----------	0-4	2-12	1.60-1.75	6.0-20	0.05-0.09	3.6-6.0	Low----------	0.10	5	.5-2
	4-80	2-12	1.60-1.75	6.0-20	0.05-0.09	3.6-6.0	Low----------	0.10		
TsE*:										
Troup----------	0-50	2-12	1.30-1.70	6.0-20	0.05-0.10	4.5-6.0	Low----------	0.10	5	.5-2
	50-65	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20		
Springhill------	0-4	4-10	1.30-1.60	6.0-20	0.06-0.10	4.5-5.5	Low----------	0.15	5	.5-2
	4-12	7-18	1.30-1.50	2.0-6.0	0.07-0.12	4.5-5.5	Low----------	0.20		
	12-65	18-35	1.40-1.60	0.6-2.0	0.11-0.14	4.5-5.5	Low----------	0.24		
Luverne---------	0-8	7-20	1.35-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low----------	0.24	5	.5-2
	8-53	35-50	1.25-1.55	0.2-0.6	0.12-0.18	3.6-5.5	Moderate-----	0.28		
	53-65	10-35	1.35-1.65	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.28		
UcB*:										
Uchee----------	0-30	3-10	1.30-1.70	6.0-20	0.05-0.10	4.5-5.5	Low----------	0.10	5	.2-2
	30-54	8-30	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.24		
	54-80	5-15	1.40-1.60	0.6-6.0	0.06-0.12	4.5-5.5	Low----------	0.24		
Cowarts---------	0-12	3-10	1.30-1.70	2.0-6.0	0.06-0.10	4.5-5.5	Low----------	0.15	4	.5-2
	12-34	25-40	1.30-1.50	0.2-2.0	0.10-0.16	4.5-5.5	Low----------	0.28		
	34-65	18-35	1.65-1.80	0.06-0.6	0.10-0.14	4.5-5.5	Low----------	0.24		
UcD*:										
Uchee----------	0-28	3-10	1.30-1.70	6.0-20	0.05-0.10	4.5-5.5	Low----------	0.10	5	.2-2
	28-44	8-30	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.24		
	44-60	5-15	1.40-1.60	0.6-6.0	0.06-0.12	4.5-5.5	Low----------	0.24		
Cowarts---------	0-6	3-10	1.30-1.70	2.0-6.0	0.06-0.10	4.5-5.5	Low----------	0.15	4	.5-2
	6-24	10-30	1.30-1.50	0.6-2.0	0.10-0.16	4.5-5.5	Low----------	0.28		
	24-65	18-35	1.65-1.80	0.06-0.6	0.10-0.14	4.5-5.5	Low----------	0.24		
UdA*:										
Udorthents------	0-80	---	---	---	---	3.6-5.5	Low----------	----	5	<.5
Urban land------	0-6	---	---	---	---	---	----------	----	---	---

See footnote at end of table.

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Ur*---------- Urban land	0-6	---	---	---	---	---	----------	----	---	---
UuA*:										
Urbo----------	0-8	28-55	1.45-1.55	0.06-0.2	0.18-0.20	4.5-5.5	Moderate-----	0.28	5	1-3
	8-65	35-55	1.45-1.55	<0.06	0.18-0.20	4.5-5.5	Moderate-----	0.28		
Mooreville------	0-6	5-27	1.40-1.50	0.6-2.0	0.14-0.20	4.5-5.5	Low----------	0.37	5	.5-2
	6-45	18-35	1.40-1.50	0.6-2.0	0.14-0.18	4.5-5.5	Moderate-----	0.28		
	45-70	10-40	1.40-1.60	0.6-2.0	0.14-0.18	4.5-5.5	Moderate-----	0.28		
Una----------	0-3	28-45	1.40-1.60	<0.06	0.15-0.20	4.5-5.5	High---------	0.32	5	1-3
	3-65	35-55	1.40-1.60	<0.06	0.15-0.20	4.5-5.5	High---------	0.28		
WbA*:										
Wahee----------	0-4	10-27	1.20-1.50	0.2-2.0	0.15-0.20	4.5-6.0	Low----------	0.28	5	.5-5
	4-65	35-70	1.40-1.60	0.06-0.2	0.12-0.20	3.6-5.5	Moderate-----	0.28		
Bladen----------	0-10	10-20	1.35-1.45	0.6-2.0	0.10-0.13	3.6-5.5	Low----------	0.24	5	1-3
	10-51	35-55	1.60-1.70	0.06-0.2	0.12-0.16	3.6-5.5	Moderate-----	----		
	51-65	35-70	1.60-1.70	0.06-0.2	0.12-0.16	3.6-5.5	Moderate-----	----		
WkA---------- Wickham	0-4	8-15	1.45-1.65	2.0-6.0	0.11-0.16	4.5-6.0	Low----------	0.24	5	.5-2
	4-40	18-35	1.30-1.50	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.24		
	40-65	---	---	---	---	---	----------	----		

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 17.--Soil and Water Features

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In			
AnA Annemaine	C	Rare	---	---	1.5-2.5	Apparent	Jan-Mar	>60	---	High	High.
BdA Bladen	D	Occasional	Brief	Jan-Apr	0-1.0	Apparent	Dec-May	>60	---	High	High.
BeA Bladen	D	None	---	---	+1-1.0	Apparent	Dec-May	>60	---	High	High.
BnB Blanton	A	None	---	---	4.0-6.0	Perched	Jan-Mar	>60	---	High	High.
CnB, CoC2 Conecuh	D	None	---	---	>6.0	---	---	>60	---	High	High.
CtB*:											
Congaree	B	Occasional	Brief	Jan-Apr	2.5-4.0	Apparent	Dec-Apr	>60	---	Moderate	Moderate.
Toccoa	B	Occasional	Brief	Jan-Apr	2.5-5.0	Apparent	Dec-Apr	>60	---	Low	Moderate.
CwB Cowarts	C	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
DgA Dogue	C	Rare	---	---	1.5-3.0	Apparent	Jan-Mar	>60	---	High	High.
DoA, DoB Dothan	B	None	---	---	3.0-5.0	Perched	Jan-Mar	>60	---	Moderate	Moderate.
FpA Fluvaquents	D	Frequent	Brief	Jan-Apr	+2-1.0	Apparent	Jan-Dec	>60	---	High	High.
FuB Fuquay	B	None	---	---	2.0-4.0	Perched	Jan-Mar	>60	---	Low	High.
GoA Goldsboro	B	None	---	---	2.0-3.0	Apparent	Jan-Mar	>60	---	Moderate	High.
GrB Gritney	C	None	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	High	High.
HaB, HnC2, HnD2 Hannon	D	None	---	---	>6.0	---	---	>60	---	High	Low.
HsE2*:											
Hannon	D	None	---	---	>6.0	---	---	>60	---	High	Low.
Sumter	C	None	---	---	>6.0	---	---	20-40	Soft	Moderate	Low.
KMA*:											
Kinston	D	Frequent	Brief	Jan-Apr	0-1.0	Apparent	Dec-Apr	>60	---	High	High.
Mantachie	C	Frequent	Brief	Jan-Apr	1.0-1.5	Apparent	Dec-Apr	>60	---	High	High.

See footnote at end of table.

Table 17.--Soil and Water Features--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hard-ness	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In			
KMA*:											
Iuka	C	Frequent	Brief	Jan-Apr	1.0-3.0	Apparent	Dec-Apr	>60	---	Moderate	High.
KoA Kolomoki	B	Rare	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
LnB, LnC2 Luverne	C	None	---	---	>6.0	---	---	>60	---	High	High.
LsE*:											
Luverne	C	None	---	---	>6.0	---	---	>60	---	High	High.
Springhill	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
LyA Lynchburg	C	Rare	---	---	0.5-1.5	Apparent	Jan-Mar	>60	---	High	High.
MnB Marvyn	B	None	---	---	>6.0	---	---	>60	---	Moderate	High.
MxA Maxton	B	Rare	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
OcA Ocilla	C	Rare	---	---	1.0-2.5	Perched	Jan-Mar	>60	---	High	Moderate.
OrA Orangeburg	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
OuC*:											
Orangeburg	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Urban land	---	None	---	---	---	---	---	---	---	---	---
PaE Pacolet	B	None	---	---	>6.0	---	---	>60	---	High	High.
Pt* Pits	---	None	---	---	>6.0	---	---	>60	---	---	---
RbA Red Bay	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
RvA Riverview	B	Occasional	Brief	Jan-Apr	3.0-5.0	Apparent	Dec-Apr	>60	---	Low	Moderate.
SbB Springhill	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
ScD*:											
Springhill	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Cowarts	C	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Urban land	---	None	---	---	>2.0	---	---	>10	---	---	---
ShE3*:											
Sumter	C	None	---	---	>6.0	---	---	20-40	Soft	Moderate	Low.
Hannon	D	None	---	---	>6.0	---	---	>60	---	High	Low.

See footnote at end of table.

Table 17.--Soil and Water Features--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hard-ness	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In			
TaB*:											
Troup	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Alaga	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
TsE*:											
Troup	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Springhill	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Luverne	C	None	---	---	>6.0	---	---	>60	---	High	High.
UcB*, UcD*:											
Uchee	A	None	---	---	3.5-5.0	Perched	Jan-Mar	>60	---	Low	High.
Cowarts	C	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
UdA*:											
Udorthents	C	None	---	---	>6.0	---	---	>60	---	High	High.
Urban land	---	None	---	---	---	---	---	---	---	---	---
Ur* Urban land	---	None	---	---	---	---	---	---	---	---	---
UuA*:											
Urbo	D	Frequent	Brief	Jan-Apr	1.0-2.0	Perched	Dec-Apr	>60	---	High	High.
Mooreville	C	Frequent	Brief	Jan-Apr	1.5-3.0	Apparent	Jan-Mar	>60	---	Moderate	High.
Una	D	Frequent	Brief	Jan-Apr	+2-0.5	Perched	Dec-Apr	>60	---	High	High.
WbA*:											
Wahee	D	Occasional	Brief	Jan-Apr	0.5-1.5	Apparent	Jan-Mar	>60	---	High	High.
Bladen	D	Occasional	Brief	Jan-Apr	0-1.0	Apparent	Dec-May	>60	---	High	High.
WkA Wickham	B	Rare	---	---	>6.0	---	---	>60	---	Moderate	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 18.--Physical Analyses of Selected Soils

(These soils are the typical pedons for the series in Russell County. For the description and location of the pedons, see the section "Soil Series and Their Morphology." Analyses by the Agronomy and Soils Clay Mineralogy Laboratory, Auburn University, and the Alabama Agricultural Experiment Station)

Soil name and sample number	Depth	Horizon	Particle-size distribution (Percent less than 2.0 mm)		
			Sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)
	In				
Goldsboro:					
(S92AL-113-3)	0-9	Ap	74.0	22.4	3.6
	9-17	E	71.9	21.8	6.3
	17-28	Bt1	58.3	20.4	21.3
	28-43	Bt2	40.1	22.6	37.3
	43-64	Btg	44.6	22.7	32.7
	64-80	Cg	67.5	16.3	16.2
Gritney:					
(S92AL-113-4)	0-7	Ap	74.5	20.4	5.1
	7-13	E	68.4	25.5	6.1
	13-25	Bt1	43.3	16.9	39.8
	25-39	Bt2	42.6	14.9	42.5
	39-49	Bt3	48.9	13.1	38.0
	49-80	C	64.3	8.5	27.2
Maxton:					
(S92AL-113-2)	0-10	Ap	82.4	10.2	7.4
	10-18	Bt1	64.5	12.5	23.0
	18-27	Bt2	59.7	12.7	27.6
	27-38	Bt3	66.8	7.5	25.7
	38-55	2C1	90.2	3.0	6.8
	55-75	2C2	97.1	0.4	2.5
Springhill:					
(S92AL-113-1)	0-4	Ap	80.6	10.3	9.1
	4-12	E	82.2	9.5	8.3
	12-31	Bt1	65.8	4.8	29.4
	31-38	Bt2	72.9	2.6	24.5
	38-45	Bt3	75.0	2.9	22.1
	45-65	Bt4	73.9	4.2	21.9
Uchee:					
(S92AL-113-1)	0-7	Ap	86.4	11.6	2.0
	7-16	E1	82.9	13.8	3.3
	16-30	E2	82.7	13.9	3.4
	30-42	Bt1	70.6	9.9	19.5
	42-54	Bt2	58.4	4.5	37.1
	54-80	C	66.7	3.5	29.8

Table 19.--Chemical Analyses of Selected Soils

(These soils are the typical pedons for the series in Russell County. For the description and location of the pedons, see the section "Soil Series and Their Morphology." Analyses by the Agronomy and Soils Clay Mineralogy Laboratory, Auburn University, and the Alabama Agricultural Experiment Station)

Soil name and sample number	Depth	Horizon	Extractable bases				Extract-able acidity	Cation-exchange capacity	Base saturation	Reaction
			Ca	K	Mg	Na				
	In		Meq/100g				Meq/100g	Meq/100g	Pct	pH
Goldsboro:										
(S92AL-113-3)	0-9	Ap	0.59	0.09	0.46	0.10	0.82	4.75	40	4.9
	9-17	E	0.24	0.08	0.28	0.10	0.53	1.80	36	5.2
	17-28	Bt1	0.64	0.16	0.60	0.11	2.71	5.80	26	4.9
	28-43	Bt2	0.64	0.17	1.91	0.12	7.03	12.46	28	4.9
	43-64	Btg	0.55	0.16	1.99	0.14	7.08	12.08	30	4.9
	64-80	Cg	0.31	0.10	0.87	0.15	3.77	6.22	26	4.8
Gritney:										
(S92AL-113-4)										
	0-7	Ap	0.92	0.08	0.51	0.10	0.03	3.05	57	5.9
	7-13	E	0.36	0.05	0.40	0.10	0.19	1.47	51	5.6
	13-25	Bt1	1.05	0.09	0.67	0.12	3.28	8.46	26	4.9
	25-39	Bt2	1.01	0.12	0.69	0.13	5.74	10.54	23	4.8
	39-49	Bt3	1.10	0.13	0.65	0.13	5.72	10.32	23	4.8
	49-80	C	0.66	0.11	0.38	0.13	4.19	7.19	19	4.7
Maxton:										
(S92AL-113-2)	0-10	Ap	0.80	0.16	0.46	0.09	0.00	2.34	59	6.3
	10-18	Bt1	0.67	0.10	1.04	0.13	0.10	4.04	49	5.5
	18-27	Bt2	0.59	0.07	1.14	0.11	0.43	5.39	41	5.1
	27-38	Bt3	0.75	0.07	0.70	0.12	0.60	4.38	27	4.9
	38-55	2C1	0.19	0.04	0.16	0.10	0.27	1.19	25	5.0
	55-75	2C2	0.20	0.04	0.12	0.09	0.03	0.63	57	5.3
Springhill:										
(S92AL-113-1)	0-4	Ap	0.11	0.07	0.09	0.12	1.64	4.81	10	4.6
	4-12	E	0.07	0.04	0.07	0.09	0.82	2.00	13	4.7
	12-31	Bt1	0.10	0.06	0.39	0.12	1.40	3.66	20	4.9
	31-38	Bt2	0.05	0.04	0.23	0.13	1.83	3.68	13	4.8
	38-45	Bt3	0.05	0.04	0.17	0.12	1.97	3.19	11	4.8
	45-65	Bt4	0.05	0.04	0.13	0.13	1.38	2.59	8	4.8
Uchee:										
(S92AL-113-8)	0-7	Ap	0.49	0.05	0.18	0.10	0.03	1.64	54	5.7
	7-16	E1	0.09	0.03	0.18	0.08	0.09	1.21	35	5.5
	16-30	E2	0.06	0.04	0.09	0.08	0.20	0.51	27	5.1
	30-42	Bt1	0.29	0.05	0.24	0.11	1.24	4.16	20	4.8
	42-54	Bt2	0.28	0.04	0.19	0.14	3.50	5.27	11	4.5
	54-80	C	0.12	0.04	0.11	0.14	3.04	5.01	8	4.5

Table 20.--Engineering Index Test Data

(Dashes indicate data were not available. NP means non plastic. These soils are the typical pedons for the series in Russell County. For the description and location of the pedons, see the section "Soil Series and Their Morphology." Analyses by the Alabama Department of Highways and Transportation, Montgomery, Alabama)

Soil name, report number, horizon, and depth in inches	Classification: AASHTO	Classification: Unified	Grain-size distribution, Percentage Passing Sieve: #4	#10	#40	#200	Liquid Limit	Plasticity Index	Moisture Density: Max. Dry Density	Optimum Moisture
								Pct	Lb/cu ft	Pct
Goldsboro:										
(S92AL-113-3)										
Ap-----0 to 9	A-4(0)	SM	100	100	98	42	NP	NP	105.9	13.6
E-----9 to 17	A-4(0)	SM	100	100	99	44	NP	NP	115.0	9.5
Bt1--17 to 28	A-6(5)	CL	100	100	99	54	34	15	113.7	13.7
Bt2--28 to 43	A-7-6(13)	CL	100	100	100	70	46	20	104.0	16.3
Btg--43 to 64	A-7-6(12)	CL	100	100	100	62	42	20	109.1	16.2
Cg---64 to 80	A-4(0)	CL	100	100	100	43	30	8	112.8	12.8
Gritney:										
(S92AL-113-4)										
Ap-----0 to 7	A-4(0)	SM	100	99	98	41	NP	NP	107.5	8.5
E-----7 to 13	A-4(0)	SM	100	100	99	45	NP	NP	113.6	10.7
Bt1--13 to 25	A-7-6(18)	CH	100	100	99	66	51	28	103.0	18.3
Bt2--25 to 39	A-7-6(22)	CH	100	100	100	68	58	35	100.5	20.3
Bt3--39 to 49	A-7-6(16)	CH	100	100	99	61	52	28	102.6	18.0
C----49 to 80	A-6(4)	CL	100	100	99	41	40	22	109.4	15.8
Maxton:										
(S92AL-113-2)										
Ap----0 to 10	A-2-4(0)	SM	100	100	85	20	NP	NP	113.4	11.5
Bt1--10 to 18	A-4(0)	CL	100	100	92	39	27	10	117.8	12.1
Bt2--18 to 27	A-6(2)	CL	100	100	93	44	32	14	114.8	14.5
Bt3--27 to 38	A-2-4(0)	CL	100	100	100	34	28	9	118.9	12.0
2C1--38 to 55	A-3(0)	SM	100	99	73	8	NP	NP	103.5	9.4
2C2--55 to 75	A-3(0)	SP	100	98	74	2	NP	NP	99.0	9.4
Springhill:										
(S92AL-113-1)										
E-----4 to 12	A-2-4(0)	SM	100	99	77	21	NP	NP	120.8	11.1
Bt1--12 to 31	A-2-7(2)	ML	100	100	82	40	46	18	109.2	15.9
Bt2--31 to 38	A-2-6(0)	CL	100	100	85	27	40	17	110.3	15.5
Bt3--38 to 45	A-2-6(0)	ML	100	100	93	28	38	13	110.5	13.9
Bt4--45 to 65	A-2-4(0)	ML	100	100	92	26	31	6	111.5	14.0
Uchee:										
(S92AL-113-8)										
Ap----0 to 7	A-2-4(0)	SM	100	99	70	17	NP	NP	119.6	8.9
E1----7 to 16	A-2-4(0)	SM	99	98	66	19	NP	NP	122.8	8.0
E2---16 to 30	A-2-4(0)	SM	98	95	66	20	NP	NP	123.5	7.6
Bt1--30 to 42	A-2-4(0)	SM	100	97	62	25	16	1	128.5	7.5
Bt2--42 to 54	A-2-7(5)	CH	100	96	57	35	59	34	113.3	12.7
C----54 to 80	A-2-7(5)	CH	100	99	51	---	66	45	111.2	14.6

Table 21.--Classification of the Soils

Soil name	Family or higher taxonomic class
Alaga	Thermic, coated Typic Quartzipsamments
Annemaine	Fine, mixed, semiactive, thermic Aquic Hapludults
Bladen	Fine, mixed, semiactive, thermic Typic Albaquults
Blanton	Loamy, siliceous, subactive, thermic Grossarenic Paleudults
Conecuh	Fine, smectitic, thermic Vertic Hapludults
Congaree	Fine-loamy, mixed, active, nonacid, thermic Typic Udifluvents
Cowarts	Fine-loamy, kaolinitic, thermic Typic Kanhapludults
Dogue	Fine, mixed, semiactive, thermic Aquic Hapludults
Dothan	Fine-loamy, kaolinitic, thermic Plinthic Kandiudults
Fluvaquents	Typic Fluvaquents
Fuquay	Loamy, kaolinitic, thermic Arenic Plinthic Kandiudults
Goldsboro	Fine-loamy, siliceous, semiactive, thermic Aquic Paleudults
Gritney	Fine, mixed, semiactive, thermic Aquic Hapludults
Hannon	Fine, smectitic, thermic Chromic Hapluderts
Iuka	Coarse-loamy, siliceous, active, acid, thermic Aquic Udifluvents
Kinston	Fine-loamy, siliceous, semiactive, acid, thermic Typic Fluvaquents
Kolomoki	Fine, kaolinitic, thermic Typic Hapludults
Luverne	Fine, mixed, semiactive, thermic Typic Hapludults
Lynchburg	Fine-loamy, siliceous, semiactive, thermic Aeric Paleaquults
Mantachie	Fine-loamy, siliceous, active, acid, thermic Aeric Endoaquepts
Marvyn	Fine-loamy, kaolinitic, thermic Typic Kanhapludults
Maxton	Fine-loamy over sandy or sandy-skeletal, siliceous, subactive, thermic Typic Hapludults
Mooreville	Fine-loamy, siliceous, active, thermic Fluvaquentic Dystrochrepts
Ocilla	Loamy, siliceous, semiactive, thermic Aquic Arenic Paleudults
Orangeburg	Fine-loamy, kaolinitic, thermic Typic Kandiudults
Pacolet	Fine, kaolinitic, thermic Typic Kanhapludults
Red Bay	Fine-loamy, kaolinitic, thermic Rhodic Kandiudults
Riverview	Fine-loamy, mixed, active, thermic Fluventic Dystrochrepts
Springhill	Fine-loamy, kaolinitic, thermic Typic Kanhapludults
Sumter	Fine-silty, carbonatic, thermic Rendollic Eutrochrepts
Toccoa	Coarse-loamy, mixed, active, nonacid, thermic Typic Udifluvents
Troup	Loamy, kaolinitic, thermic Grossarenic Kandiudults
Uchee	Loamy, kaolinitic, thermic Arenic Kanhapludults
Udorthents	Typic Udorthents
Una	Fine, mixed, active, acid, thermic Typic Epiaquepts
Urbo	Fine, mixed, active, acid, thermic Vertic Epiaquepts
Wahee	Fine, mixed, semiactive, thermic Aeric Endoaquults
Wickham	Fine-loamy, mixed, semiactive, thermic Typic Hapludults