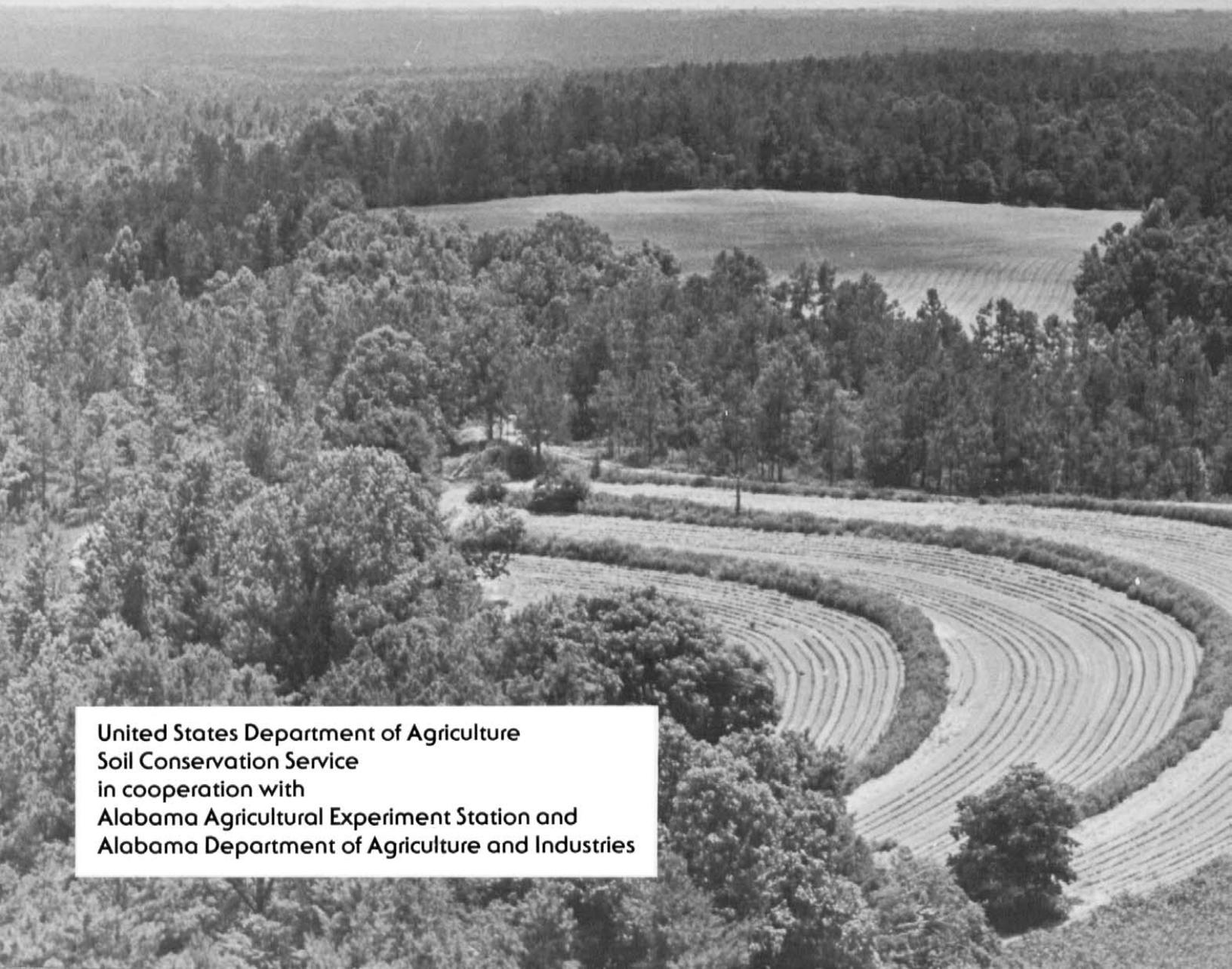
SOIL SURVEY OF

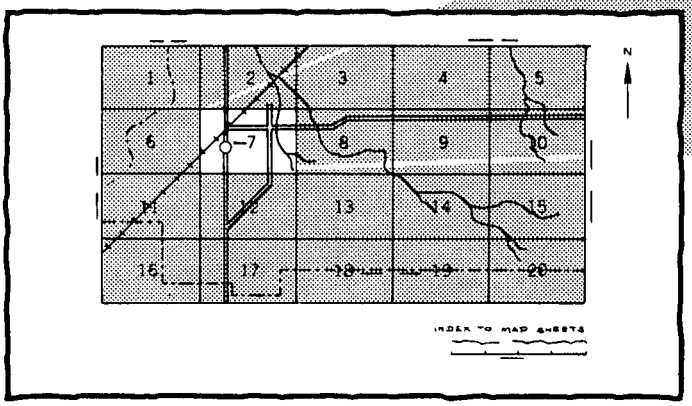
COFFEE COUNTY, ALABAMA

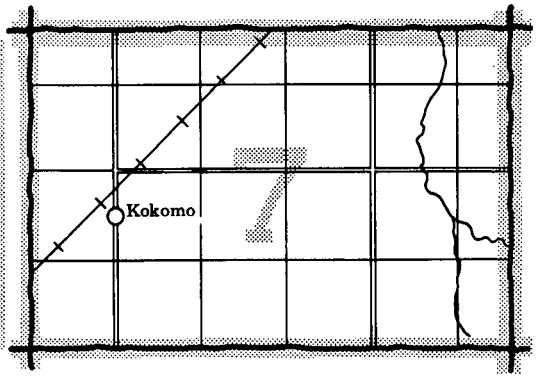


United States Department of Agriculture
Soil Conservation Service
in cooperation with
Alabama Agricultural Experiment Station and
Alabama Department of Agriculture and Industries

HOW TO USE

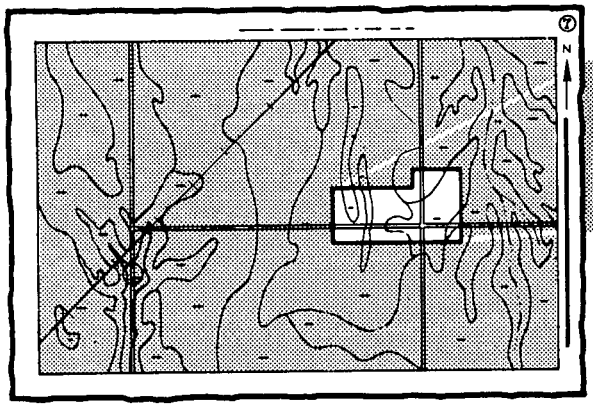
1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

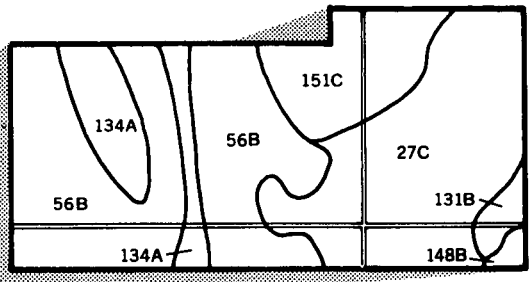




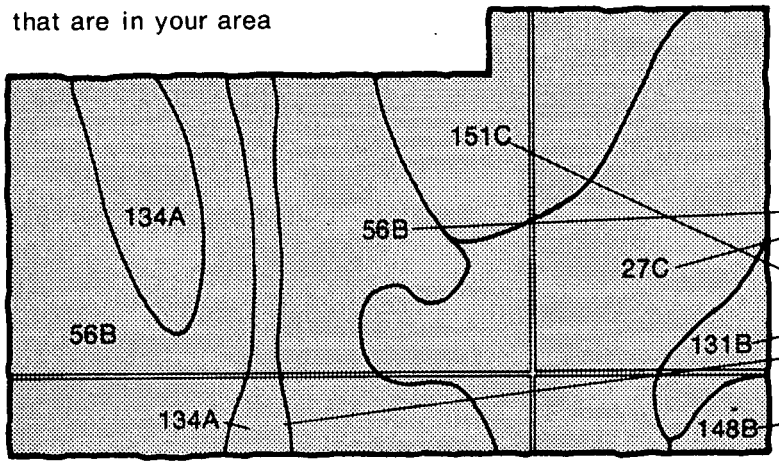
2. Note the number of the map sheet and turn to that sheet.

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





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

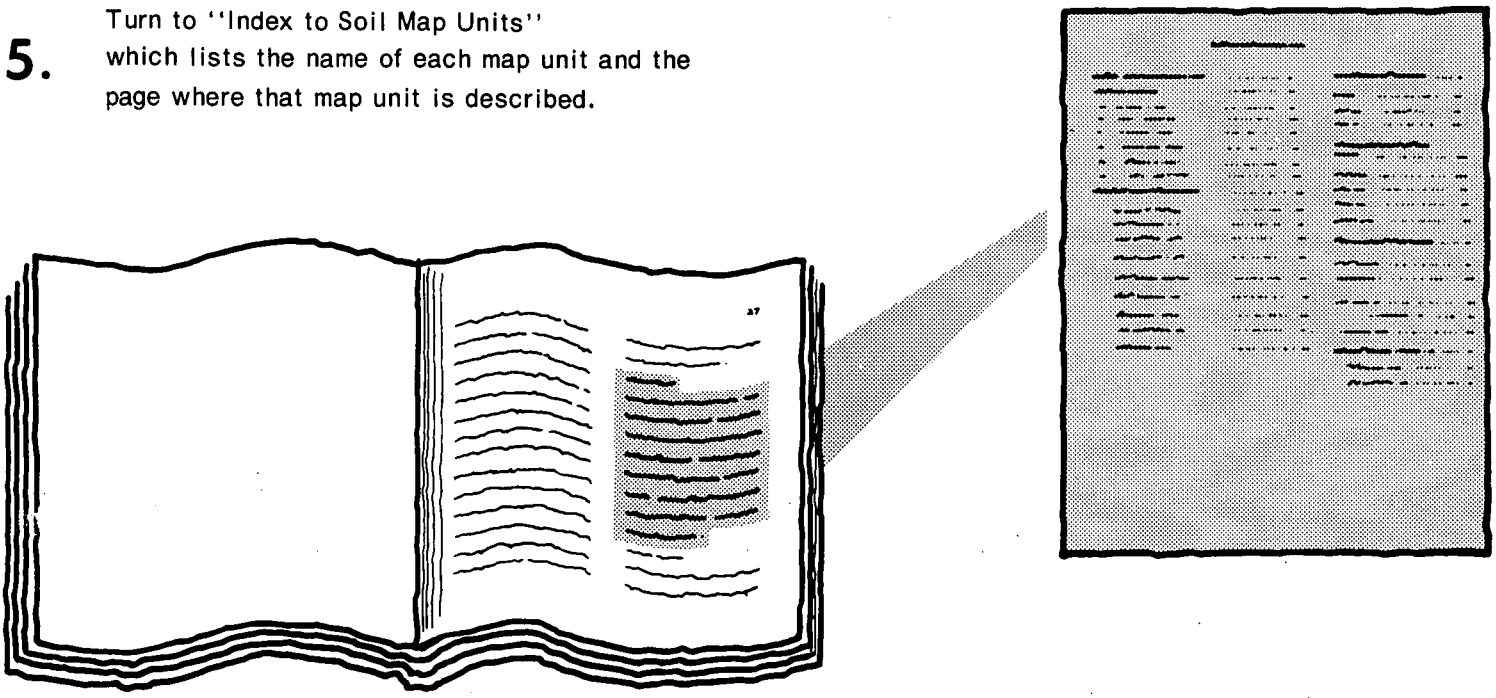


Symbols

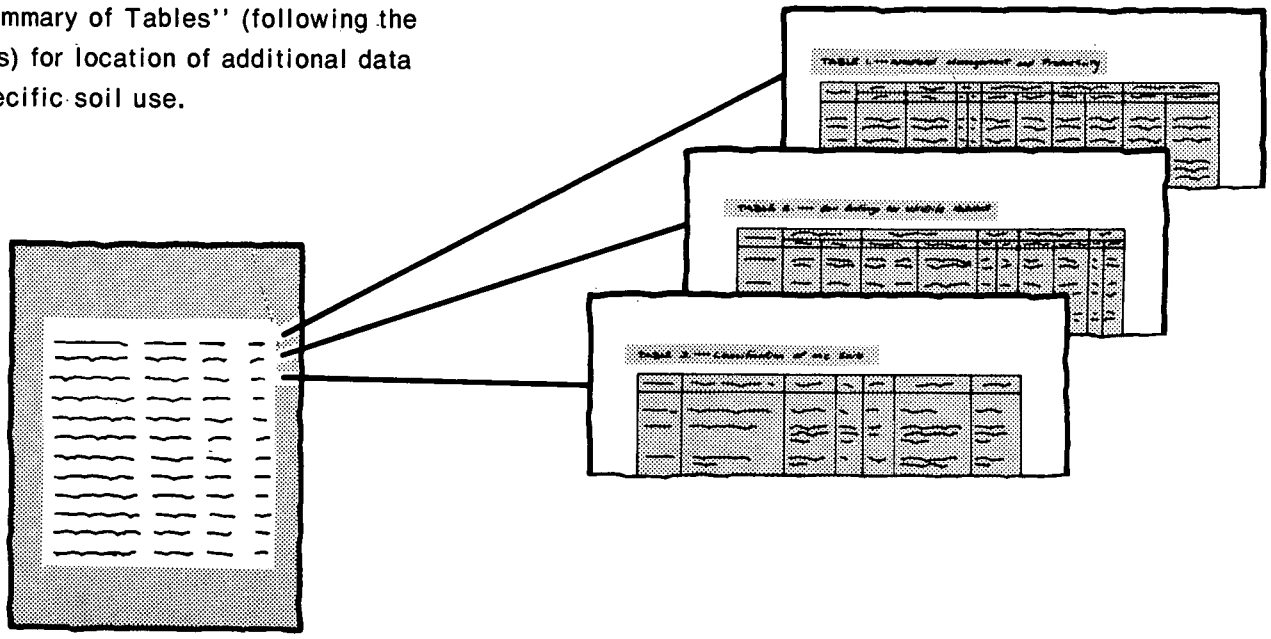
- 27C
- 56B
- 131B
- 134A
- 148B
- 151C

THIS SOIL SURVEY

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



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



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

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

Major fieldwork for this soil survey was completed in the period 1972-76. Soil names and descriptions were approved in 1976. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1976. This survey was made cooperatively by the Soil Conservation Service, the Alabama Agricultural Experiment Station, and the Alabama Department of Agriculture and Industries. It is part of the technical assistance furnished to the Coffee County Soil and Water Conservation District.

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

Cover: This is an area of the Luverne-Lucy unit on the general soil map. The small cultivated fields on the ridgetops are dominantly Lucy soils, and the steeper, wooded slopes are dominantly Luverne soils.

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Issued March 1979

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Foreword

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

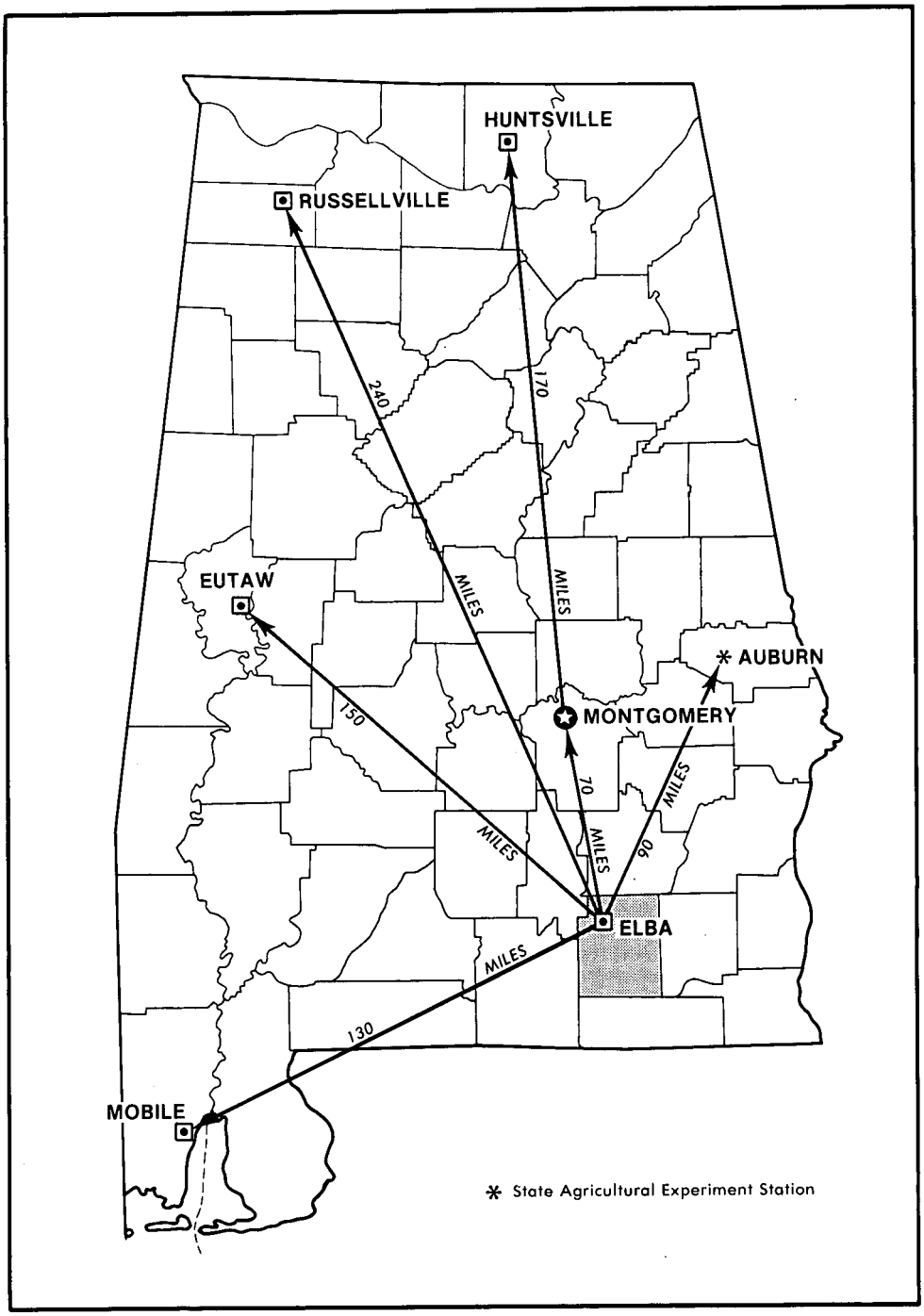
This soil survey has been prepared for many different users. Farmers, ranchers, foresters, and agronomists can use it to determine the potential of the soil and the management practices required for food and fiber production. Planners, community officials, engineers, developers, builders, and homebuyers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

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

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

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

W.B. Lingle
State Conservationist
Soil Conservation Service



Location of Coffee County in Alabama.

SOIL SURVEY OF COFFEE COUNTY, ALABAMA

By C. Joel Childs, Soil Conservation Service

Fieldwork by C. Joel Childs and MacArthur C. Harris, Soil Conservation Service
United States Department of Agriculture, Soil Conservation Service, in cooperation with the
Alabama Agricultural Experiment Station and Alabama Department of Agriculture and Industries

COFFEE COUNTY is in the southeastern part of Alabama (see map on facing page). Elba, the county seat, has a population of 4,634; Enterprise, the largest town, has a population of 15,591. The total population of the county is 34,872, and the total area is 433,088 acres, or 677 square miles.

The county is in the Southern Coastal Plain Land Resource Area. The Pea River has cut a shallow valley from the northeast corner to the southwest corner of the county. The northern half of the county is a mass of low hills with narrow, winding ridgetops, gently rolling and rolling side slopes, and narrow drainageways. The southern half of the county is broad, nearly level and gently sloping ridges with moderately sloping side slopes and narrow drainageways (*1*). Elevation of the land ranges from about 150 feet above sea level in the Pea River Valley in the southwestern part of the county to more than 500 feet on ridges in the northern part.

General nature of the county

The settlement of Coffee County and its natural resources, farming, climate, and drainage are briefly described in this section.

Settlement

The area now known as Coffee County was once part of the Mississippi Territory. At that time this part of the territory was the Reservation of the Lower Creek Indians. After the Creek Indian Cession in 1814, the Mississippi Territory was divided five times into increasingly small counties. Coffee County was established in 1841.

The early settlers located along major rivers and streams before 1810. When Coffee County was established, the county seat was established at Welborn, a settlement near what is now the Damascus community. In 1852, the county seat was moved to its present site at Elba, at that time the largest town in the county. Other early settlements were at Clintonville, Haw Ridge (now part of the Fort Rucker Military Reservation), New Brockton, Kinston, Victoria, and Enterprise.

The flow of settlers into Coffee County increased in the years just before the Civil War. These people came mostly from Georgia, Virginia, South Carolina, Tennessee, and other parts of Alabama. The war interrupted the movement of new people into the areas, and although more people moved into the county after the war, most settlers moved farther west (*12*).

Natural resources

Soil is the most important natural resource in the county. Livestock, timber, and crops are marketable products derived from the soil.

Mineral resources such as clay, brown iron ore, lignite, and sand are available in varying quantities, but only sand is commercially mined in Coffee County.

Surface water and ground water are plentiful. The Pea River contains the largest area of surface water in the county, and there are many lakes, ponds, and streams. The ground water in the county is an important source of fresh water, and it helps maintain stream flow between periods of precipitation.

Farming

The first settlers in Coffee County were farmers from cotton-growing areas. These early settlers grew cotton when they moved into the county; however, the land was low in natural fertility and yields were poor. To bolster their income, the early settlers began to raise livestock since ample native feedstuffs were available. With the advent of commercial fertilizers in the latter part of the 19th century, cotton regained prominence as the major source of income for the farmers of the county. Much of the county was cleared, and cotton reigned as undisputed king until about 1915, when the Mexican boll weevil reached this area and destroyed about 65 percent of the cotton crop (fig. 1).

In about 1916 peanuts were introduced into Coffee County, and they proved to be adapted to the county. Income from peanuts began to replace the lost income

caused by the boll weevil. The introduction of insecticides to control the boll weevil brought renewed life to cotton, but never again did the crop regain its former dominance on the agricultural scene.

Today only a small acreage of cotton is grown in the county. Relatively low yields and high production costs have reduced cotton acreage in favor of more profitable crops such as corn and soybeans. Today peanuts rank as the number one cash crop in the county, and livestock has returned to a place of high importance. Cattle, swine, and poultry production have increased sufficiently to make Coffee County one of the leading Alabama counties in livestock production. Forest products are also an important source of income. Pulpwood, sawtimber, and poles are produced in the county (*12*).

Climate

Coffee County has long, hot summers because moist tropical air from the Gulf of Mexico persistently covers the area. Winters are cool and fairly short, with only a rare cold wave that moderates in 1 or 2 days. Precipitation is fairly heavy throughout the year. It reaches a slight peak in winter, and prolonged droughts are rare. Summer precipitation, mainly afternoon thundershowers, is normally adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area, as recorded at Ozark, Alabama, in adjoining Dale County, for the period 1951 to 1974. 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 51 degrees F, and the average daily minimum temperature is 40 degrees. The lowest temperature on record, which occurred at Ozark on December 13, 1962, is 3 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 August 14, 1954, is 107 degrees.

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

Of the total annual precipitation, 28 inches, or 52 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 22 inches. The heaviest 1-day rainfall during the period of record was 8.44 inches at Ozark on September 24, 1956. Thunderstorms occur on about 60 days each year, and most occur in summer.

Snowfall is rare; in 60 percent of the winters, there is no measurable snowfall. In 95 percent, the snowfall, usually of short duration, is less than 1 inch. The heaviest 1-day snowfall on record was less than 1 inch.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The percentage of possible sunshine is 65 in summer and 50 in winter. The prevailing wind is from the south. Average windspeed is highest, 9 miles per hour, in March.

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

Drainage

The major drainage system in Coffee County is the Pea River and its tributaries. This system drains the northern and southwestern parts of the county. The west-central edge of the county is drained by small streams which flow westward into the Yellow River in adjoining Covington County. The southeastern part of the county is drained by small streams that flow easterly and southerly and eventually empty into the Choctawhatchee River in adjoining Geneva and Dale Counties.

How this survey was made

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

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

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

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

While a soil survey is in progress, samples of soils are taken as needed for laboratory measurements and for en-

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

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

General soil map for broad land use planning

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

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

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

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

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

Map unit descriptions

1. Luverne-Lucy

Undulating to rolling, well drained soils that have a loamy or clayey subsoil; formed in marine sediments deposited as stratified sands, silts, and clays

Most areas of this map unit are in the northern half of the county. The landscape is mainly a mass of low hills with narrow winding ridgetops, gently rolling and rolling side slopes, and narrow drainageways.

This unit makes up about 31 percent of the county. About 45 percent of the unit is Luverne soils, 20 percent is Lucy soils, and the remaining 35 percent is soils of minor extent.

Luverne and Lucy soils are on side slopes and ridgetops; Lucy soils are mainly on higher ridgetops. Both are well drained. Luverne soils have a surface layer of fine sandy loam, and Lucy soils have a surface layer of loamy sand.

Minor soils are the poorly drained Bibb soils in narrow drainageways and the well drained Orangeburg and Troup soils on side slopes and ridgetops.

Potential for woodland is good and this is the main use, but some small areas are used for cultivated crops and pasture. This unit has poor potential for cultivated crops and fair potential for pasture. The steepness and irregular shape of slopes are the main limitations to use of these soils for cultivated crops.

This unit has poor potential for residential and other urban uses. The moderate shrink-swell potential and the low strength of the Luverne soils and the steepness of slopes are the main limitations for urban uses. In addition, Luverne soils have a slow percolation rate, which is a severe limitation for septic tank absorption fields. Potential for development of habitat for woodland wildlife is good.

2. Orangeburg-Dothan

Nearly level to moderately sloping, well drained soils that have a loamy subsoil which, in places, contains plinthite; formed in marine sediments

Areas of this map unit are in the south-central, western, and northeastern parts of the county. The landscape consists of broad, nearly level and gently sloping ridges with moderately sloping side slopes and narrow drainageways.

This unit makes up about 23 percent of the county. About 46 percent of the unit is Orangeburg soils, 22 percent is Dothan soils, and the remaining 32 percent is soils of minor extent.

Orangeburg and Dothan soils are on side slopes and ridgetops. Both are well drained. Orangeburg soils have a surface layer of sandy loam, and Dothan soils have a surface layer of fine sandy loam.

Minor soils are the well drained Bonifay, Cowarts, Lucy, Red Bay, and Troup soils on ridgetops and side slopes and the poorly drained Bibb soils in narrow drainageways.

This unit is used mainly for cultivated crops and pasture.

This unit has good potential for cultivated crops, pasture, woodland, and urban uses. Potential for development of habitat for openland or woodland wildlife is good.

3. Red Bay-Orangeburg

Nearly level to moderately sloping, well drained soils that have a loamy subsoil; formed in marine sediments

Areas of this map unit are in the southeastern and central parts of the county. The landscape consists of broad, nearly level and gently sloping ridges with moderately sloping side slopes and narrow drainageways.

This unit makes up about 20 percent of the county. About 43 percent of the unit is Red Bay soils, 32 percent is Orangeburg soils, and the remaining 25 percent is soils of minor extent.

Red Bay and Orangeburg soils are on ridgetops and side slopes. Both are well drained. Red Bay soils have a surface layer of loamy sand, and Orangeburg soils have a surface layer of sandy loam.

Minor soils are the well drained Cowarts, Dothan, Lucy, and Troup soils on ridgetops and side slopes and the poorly drained Bibb soils in narrow drainageways.

This unit is used mainly for cultivated crops and pasture.

This unit has good potential for cultivated crops, pasture, woodland, and urban uses. Potential for development of habitat for openland or woodland wildlife is good.

4. Troup-Lucy

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

Areas of this map unit are in the west-central, east-central, and northeastern parts of the county. The landscape is broad, gently sloping ridges with moderately sloping and strongly sloping side slopes and narrow drainageways.

This unit makes up about 12 percent of the county. About 50 percent of the unit is Troup soils, 20 percent is Lucy soils, and the remaining 30 percent is soils of minor extent.

Troup and Lucy soils are on ridgetops and side slopes. Both are well drained, and both have a surface layer of loamy sand.

Minor soils are the well drained Orangeburg, Fuquay, and Bonifay soils on ridgetops and side slopes and the poorly drained Bibb soils in narrow drainageways.

This unit is used mainly for pasture and cultivated crops.

This unit has fair potential for pasture, cultivated crops, and woodland. The low available water capacity is the main limitation. These soils have good potential for most urban uses. Potential for development of habitat for openland or woodland wildlife is fair.

5. Eunola-Bladen

Nearly level, moderately well drained and poorly drained soils that have a loamy or clayey subsoil; formed in fluvial deposits

Areas of this map unit are on terraces of the Pea River and its tributaries. The soils are nearly level.

This unit makes up about 8 percent of the county. About 36 percent of the unit is Eunola soils, 29 percent is Bladen soils, and the remaining 35 percent is soils of minor extent.

Eunola soils are at a slightly higher elevation than Bladen soils. Eunola soils are moderately well drained, and Bladen soils are poorly drained. Eunola soils have a surface layer of loamy sand, and Bladen soils have a surface layer of fine sandy loam. Both have a seasonal high water table.

Minor soils are the poorly drained Chastain soils on flood plains, the well drained Kalmia soils on slightly higher elevations, and the excessively drained Bigbee soils on low terraces.

Potential is good for woodland and this is the main use, but some tracts are used for pasture and cultivated crops and potential for these uses is fair.

The poorly drained Bladen soils have poor potential for cultivated crops; however, the other soils have good potential. Potential for urban uses is poor because of the seasonal high water table and the risk of flooding. Potential for development of habitat for wetland and woodland wildlife is good.

6. Shadygrove-Luverne

Undulating to rolling, moderately well drained and well drained soils that have a clayey subsoil; formed in marine sediments

Areas of this map unit are in the northwest corner and the north-central part of the county. The soils are undulating to rolling. The landscape is mainly a mass of low hills with narrow winding ridgetops, rolling side slopes, and narrow drainageways.

This unit makes up about 6 percent of the county. About 40 percent of the unit is Shadygrove soils, 20 percent is Luverne soils, and the remaining 40 percent is soils of minor extent.

Shadygrove and Luverne soils are on side slopes and ridgetops. Shadygrove soils are moderately well drained, and Luverne soils are well drained. Both have a surface layer of fine sandy loam.

Minor soils are the poorly drained Bibb soils in narrow drainageways and the well drained Orangeburg, Lucy, and Troup soils mainly on ridgetops.

Potential is good for woodland and this is the main use, but some tracts are used for pasture. This unit has poor potential for cultivated crops and pasture. The steepness and shape of the slopes are the main limitations to use of these soils for cultivated crops. Also, the clayey subsoil has poor tilth.

This unit has poor potential for most urban uses. The moderate to high shrink-swell potential, the low strength, and the steepness of the slopes are the main limitations for urban uses. Slow percolation is a severe limitation for septic tank absorption fields. Potential for development of habitat for woodland wildlife is good.

Broad land use considerations

Each year considerable land is being developed for urban uses in Enterprise, Elba, and other towns in the county. The general soil map is most helpful for planning the general outline of urban areas; it cannot, however, be used for the selection of sites for specific urban structures. In general, the soils of the county that have good potential for cultivated crops also have good potential for urban development. The data about specific soils in this survey can be helpful in planning future land use patterns.

Areas in which soil properties are so unfavorable that urban development is prohibitive are not extensive in the county. Parts of the Eunola-Bladen map unit, however, are subject to flooding, which is a severe limitation for urban uses. Also, the clayey areas of the Luverne-Lucy and Shadygrove-Luverne units have poor potential for urban development because of low strength and moderate to high shrink-swell potential.

In large areas of the county are soils that can be developed for urban uses at lower costs than can the soils named above. These include the parts of the Eunola-Bladen unit that are not subject to flooding, the Lucy soils in the Luverne-Lucy unit, the Orangeburg-Dothan unit, the Red Bay-Orangeburg unit, and the Troup-Lucy unit.

The parts of the Eunola-Bladen unit not subject to flooding and the Orangeburg-Dothan and Red Bay-Orangeburg units, however, are excellent farmland; this potential should not be overlooked when broad land uses are considered. The Troup-Lucy unit has fair potential for farming due to the low available water capacity of the sandy soils.

All soils in the county have fair to good potential as woodland. Commercially valuable trees are less common and generally do not grow so rapidly on the wetter soils of the Eunola-Bladen unit or on the clayey soils of the Shadygrove-Luverne unit as they do on other soils.

The rolling Luverne-Lucy and Shadygrove-Luverne units have good potential as sites for parks and extensive recreation areas. These areas are dominantly wooded. The undrained marshes and swamps of the Eunola-Bladen unit are good nature study areas. All the units provide habitat for many important species of wildlife.

Soil maps for detailed planning

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

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

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

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

Soils of one series can differ in texture of the surface layer or in the underlying substratum and in slope, erosion, stoniness, salinity, wetness, or other characteristics that affect their use. On the basis of such differences, a soil series is divided into phases. The name of a *soil phase* commonly indicates a feature that affects use or management. For example, Orangeburg sandy loam, 2 to 5 percent slopes, is one of several phases within the Orangeburg series.

Some map units are made up of two or more dominant kinds of soil. Such map units are called soil complexes, soil associations, and undifferentiated groups.

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

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

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because there is little value in separating them. The pattern and proportion of the soils are not uniform. An area shown on the map has at least one of the dominant (named) soils or may have all of them. Bibb soils is an undifferentiated group in this survey area.

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

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

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

2—Bibb soils. These poorly drained, nearly level soils are on flood plains of streams in the Coastal Plain. Slope ranges from 0 to 2 percent. Individual areas range from 5 to 800 acres.

Typically, the surface layer is about 6 inches of dark grayish brown silt loam over 6 inches of dark gray, mottled loam. The underlying material is gray, mottled fine sandy loam and sandy loam that contains thin layers of loamy sand and sand and that extends to a depth of 60 inches or more.

These soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout. Permeability is moderate, and available water capacity is high. The root zone is deep and easily penetrated by plant roots. The water table, within 8 inches of the surface during late winter and in spring each year, limits the rooting depth of many plants.

Included with these soils in mapping are natural levees of highly stratified sandy deposits, seep areas that have a surface layer high in content of organic matter, and a few small areas of soils that are similar to Bibb soils except that they have more clay in the underlying material. Also included are a few intermingled areas of Bladen soils and adjacent areas of Dothan, Lucy, Luverne, and Shadygrove soils at higher elevations. Included soils make up about 25 percent of this map unit.

These soils have poor potential for cultivated crops and fair potential for pasture. Frequent flooding and wetness caused by the high seasonal water table are limitations to these uses.

Potential is good for eastern cottonwood, loblolly pine, and sweetgum. Seedling mortality and equipment limitations are severe because of wetness and frequent flooding. These limitations, however, can be overcome by logging during drier seasons.

These soils have poor potential for most urban uses because of flooding and wetness. These limitations are very difficult to overcome. Capability subclass Vw; woodland suitability group 2w9.

3—Bigbee sand. This excessively drained, nearly level soil is on low terraces along stream flood plains. Slope ranges from 0 to 2 percent. Individual areas range from 5 to 100 acres.

Typically, the surface layer is dark yellowish brown sand about 7 inches thick. The upper part of the underlying material is yellowish brown sand that extends to a depth of 44 inches. The lower part is white and pale yellow, mottled sand that extends to a depth of 99 inches or more.

This soil is low in natural fertility and organic matter content. It is medium acid through very strongly acid. Permeability is rapid, and available water capacity is low. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of soils that are similar to Bigbee soils except that they have finer textured material underlying the thick, sandy surface layer. Also included are a few small areas of Bladen, Eunola, and Kalmia soils. Included soils make up about 15 percent of this map unit.

This soil has poor potential for cultivated crops because of low available water capacity. It has fair potential for pasture. Droughtiness is a moderate hazard because of low available water capacity.

Potential is good for loblolly pine. Moderate equipment limitations and seedling mortality are the main management concerns.

This soil has poor potential for most urban uses. Flooding is a moderate limitation for septic tank absorption fields or for roads and streets and a severe limitation for dwellings and industrial sites. This limitation can usually be overcome if flood control measures are installed. Capability subclass IIIs; woodland suitability group 2s2.

4—Bladen fine sandy loam. This poorly drained, nearly level soil is on stream terraces of the Coastal Plain. Slope ranges from 0 to 2 percent. Individual areas range from 5 to 100 acres.

Typically, the surface layer is dark gray fine sandy loam about 4 inches thick. The subsurface layer is grayish brown fine sandy loam that extends to a depth of 13 inches. The upper part of the subsoil is gray, mottled sandy clay that extends to a depth of 65 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout. Permeability is slow, and available water capacity is moderate. The soil has fair tilth and can be worked throughout a fairly wide range of moisture content; when wet, however, the soil does not afford traction or support for farm equipment. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of soils that are similar to Bladen soils except that they do not have a clayey subsoil. Also included are a few small areas of Bibb soils along the centers of narrow drainageways and small areas of Bigbee, Eunola, and Kalmia soils. Included soils make up about 20 percent of this map unit.

This soil has poor potential for cultivated crops and fair potential for pasture because of flooding and wetness. The soil has slow internal drainage, which restricts the use of farm equipment during periods of high rainfall. This affects the choice of crops to be grown in some years. When drained, this soil has fair potential for cultivated crops and good potential for pasture.

Potential is good for loblolly pine, slash pine, and American sycamore. Seedling mortality and equipment limitations are severe because of wetness and flooding. These limitations, however, can be overcome by logging during drier seasons.

This soil has poor potential for most urban uses because of wetness and flooding. These limitations are very difficult to overcome. Capability subclass Vw; woodland suitability group 2w9.

5—Bonifay loamy sand, 1 to 5 percent slopes. This well drained, nearly level to gently sloping soil is on broad ridgetops of Coastal Plain uplands. Slope ranges from 1 to 5 percent. Individual areas range from 5 to 500 acres.

Typically, the surface layer is dark grayish brown loamy sand about 9 inches thick. The subsurface layer is yellowish brown and brownish yellow loamy sand that extends to a depth of 45 inches. The upper part of the subsoil is brownish yellow, mottled sandy loam that extends to a depth of 53 inches. The lower part is yellowish brown and light yellowish brown, mottled sandy clay loam that contains plinthite nodules and that extends to a depth of 70 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Available water capacity is low. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of soils that are similar to Bonifay soils except that content of plinthite nodules is less than 5 percent. Also included are a few areas of Dothan, Fuquay, and Troup soils. Included soils make up about 15 percent of this map unit.

This soil has fair potential for cultivated crops because of the erosion hazard and low available water capacity. Contour farming, minimum tillage, and the use of cover crops help reduce runoff and control erosion. This soil has fair potential for pasture because of low available water capacity. Good tilth is easily maintained by returning crop residues to the soil.

Potential is fair for slash pine, loblolly pine, and longleaf pine. Moderate equipment limitations and seedling mortality are the main management concerns.

This soil has good potential for most urban uses. There are no significant limitations for most urban uses. Capability subclass IIIs; woodland suitability group 3s2.

6—Cowarts fine sandy loam, 5 to 10 percent slopes. This well drained, gently sloping to moderately sloping soil is on short slopes between drainageways and broad interfluves in prominently dissected Coastal Plain uplands. Slope ranges from 5 to 10 percent. Individual areas range from 5 to 75 acres.

Typically, the surface layer is dark yellowish brown fine sandy loam about 6 inches thick. The upper part of the subsoil is strong brown sandy clay loam that extends to a depth of 13 inches. The lower part is strong brown, mottled sandy clay loam that extends to a depth of 25 inches. The underlying material is mottled brownish, reddish, and grayish sandy clay loam that extends to a depth of 62 inches or more.

This soil is low in natural fertility and organic matter content. Is is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate in the subsoil and moderately slow or slow in the underlying material. Available water capacity is moderate. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is moderately deep.

Included with this soil in mapping are a few small areas of soils that are similar to Cowarts soils except that they have a surface layer of loamy sand. Also included are a few small areas of Dothan and Red Bay soils. Included soils make up about 15 percent of this map unit.

This soil has fair potential for cultivated crops. Its potential is limited because of the irregularly shaped slopes (fig. 2), which hinder the use of modern farm equipment. Potential is good for pasture. There are no significant limitations.

Potential is good for loblolly pine and slash pine. There are no significant limitations to woodland use or management.

This soil has fair potential for most urban uses. Slow percolation is a severe limitation for septic tank absorption fields, and slope is a moderate limitation for industrial sites. These limitations can usually be overcome by

proper engineering design. There are no significant limitations for dwellings or for roads and streets. Capability subclass IIIe; woodland suitability group 2o1.

7—Dothan fine sandy loam, 0 to 2 percent slopes. This well drained, nearly level soil is on ridges and side slopes of Coastal Plain uplands. Slope ranges from 0 to 2 percent. Individual areas range from 5 to 40 acres.

Typically, the surface layer is brown fine sandy loam about 8 inches thick. The upper part of the subsoil is yellowish brown sandy loam that extends to a depth of 18 inches. The lower part is yellowish brown, mottled sandy clay loam that extends to a depth of 80 inches or more. Content of plinthite nodules ranges from 4 to 12 percent between depths of 27 and 49 inches.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the layers that contain plinthite. Available water capacity is moderate. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of soils that are similar to Dothan soils except that content of plinthite nodules is less than 5 percent. Also included are a few small areas of Bibb soils along the centers of narrow drainageways and small areas of Bonifay, Cowarts, and Orangeburg soils. Included soils make up about 20 percent of the map unit.

This soil has good potential for cultivated crops and pasture. There are no significant limitations.

Potential is good for slash pine and loblolly pine. There are no significant limitations to woodland use or management.

This soil has fair potential for most urban uses. Slow percolation and wetness are severe limitations for septic tank absorption fields, and wetness is a moderate limitation for dwellings with basements. These limitations can usually be overcome by proper engineering design. There are no significant limitations for industrial sites or for roads and streets. Capability class I; woodland suitability group 2o1.

8—Dothan fine sandy loam, 2 to 5 percent slopes. This well drained, gently sloping soil is on ridges and side slopes of Coastal Plain uplands. Slope ranges from 2 to 5 percent. Individual areas range from 5 to 300 acres.

Typically, the surface layer is brown fine sandy loam about 8 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam that extends to a depth of 18 inches. The lower part is yellowish brown, mottled sandy clay loam that extends to a depth of 80 inches or more. Content of plinthite nodules ranges from 4 to 12 percent between depths of 27 and 49 inches.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the layers that contain plinthite. Available water capacity is moderate. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of soils that are similar to Dothan soils except that content of plinthite nodules is less than 5 percent. Also included are a few small areas of Bibb soils along the centers of narrow drainageways and small areas of Bonifay, Cowarts, and Orangeburg soils. Included soils make up about 20 percent of the map unit.

This soil has good potential for cultivated crops. Erosion is a moderate hazard. Terraces, contour farming, minimum tillage, and the use of cover crops help reduce runoff and control erosion. This soil has good potential for pasture; there are no significant limitations.

Potential is good for slash pine and loblolly pine. There are no significant limitations to woodland use or management.

This soil has fair potential for most urban uses. Slow percolation and wetness are severe limitations for septic tank absorption fields, and wetness is a moderate limitation for dwellings with basements. These limitations can usually be overcome by proper engineering design. There are no significant limitations for dwellings without basements, for industrial sites, or for roads and streets. Capability subclass IIe; woodland suitability group 2o1.

9—Dothan fine sandy loam, 5 to 8 percent slopes. This well drained, gently sloping soil is on ridges and side slopes of Coastal Plain uplands. Slope ranges from 5 to 8 percent. Individual areas range from 5 to 150 acres.

Typically, the surface layer is brown fine sandy loam about 8 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam that extends to a depth of 18 inches. The lower part is yellowish brown, mottled sandy clay loam that extends to a depth of 80 inches or more. Content of plinthite nodules ranges from 4 to 12 percent between depths of 27 and 49 inches.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the layers that contain plinthite. Available water capacity is moderate. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of soils similar to Dothan soils except that content of plinthite nodules is less than 5 percent. Also included are a few small areas of Bibb soils along the centers of narrow drainageways and small areas of Bonifay, Cowarts, and Orangeburg soils. Included soils make up about 20 percent of the map unit.

This soil has fair potential for cultivated crops. Erosion is a moderate hazard because of the slope. Terraces, contour farming, minimum tillage, and the use of cover crops

help reduce runoff and control erosion. This soil has good potential for pasture; there are no significant limitations.

Potential is good for slash pine and loblolly pine. There are no significant limitations to woodland use or management.

This soil has fair potential for most urban uses. Slow percolation and wetness are severe limitations for septic tank absorption fields, and wetness is a moderate limitation for dwellings with basements. Slope is a moderate limitation for industrial sites. These limitations can usually be overcome by proper engineering design. There are no significant limitations for dwellings without basements or for roads and streets. Capability subclass IIIe; woodland suitability group 2o1.

10—Dothan-Urban land complex, 0 to 8 percent slopes. This map unit consists of Dothan soils and Urban land in small areas that are so intermingled it was not practical to map them separately. The well drained Dothan soils and the Urban land are level to gently sloping. They are on ridges and side slopes of Coastal Plain uplands. Individual areas range from 30 to 300 acres.

Dothan fine sandy loam makes up about 65 percent of each mapped area. Typically, the surface layer is brown fine sandy loam about 8 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam that extends to a depth of 18 inches. The lower part is yellowish brown, mottled sandy clay loam that extends to a depth of 80 inches or more. Content of plinthite nodules ranges from 4 to 12 percent between depths of 27 and 49 inches.

Dothan soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the layers that contain plinthite. Available water capacity is moderate.

Urban land makes up about 20 percent of each mapped area. It consists of areas which have been altered to the extent that classification is not practical. These include areas covered by buildings, garages, sidewalks, patios, driveways, parking lots, streets, schools, and churches, and areas that have been significantly disturbed by cutting, filling, or grading.

Included in mapping are a few small areas of Bibb, Bonifay, Cowarts, and Orangeburg soils. Included soils make up about 15 percent of this map unit.

Dothan soils have good potential as recreation areas. Slope is a moderate limitation for playgrounds, and there are no significant limitations for most other recreation uses.

Dothan soils have fair potential for most engineering uses. The risk of corrosion of uncoated steel and concrete is moderate. Erosion is also a moderate hazard if soils are disturbed and left bare or if they are used as a watercourse without adequate vegetative cover.

Dothan soils have fair potential for most urban uses. Slow percolation and wetness are severe limitations for septic tank absorption fields, and slope is a moderate limitation for industrial sites. These limitations can usually be overcome by proper engineering design. There are no significant limitations for dwellings without basements or for roads and streets. Not assigned to a capability subclass or a woodland suitability group.

11—Eunola loamy sand. This moderately well drained, nearly level soil is on stream terraces of the Coastal Plain. Slope ranges from 0 to 2 percent. Individual areas range from 5 to 300 acres. This soil is flooded occasionally.

Typically, the surface layer is brown loamy sand about 8 inches thick. The subsoil is yellowish brown sandy loam to a depth of 12 inches; yellowish brown, mottled sandy clay loam to a depth of 24 inches; mottled yellowish brown, light gray, strong brown, and red, or yellowish red sandy clay loam to a depth of 44 inches; and mottled light gray, brownish yellow, strong brown, and yellowish red sandy loam to a depth of 52 inches. The underlying material is mottled light gray, yellowish brown, and strong brown, mottled sandy loam that extends to a depth of 65 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and available water capacity is moderate. At least once every 3 years, this soil is flooded between December and April. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Bigbee, Bladen, and Kalmia soils. Also included are a few small areas of soils that are similar to Eunola soils except that they have a clayey subsoil. Included soils make up about 15 percent of this map unit.

This soil has good potential for cultivated crops. Farming operations are often delayed several days after a rain unless surface drains are installed. This soil has good potential for pasture. Good tilth is easily maintained by returning crop residues to the soil.

Potential is good for loblolly pine, slash pine, sweetgum, and yellow-poplar. Moderate equipment limitations are the main management concern.

This soil has poor potential for most urban uses. Flooding is a severe limitation for industrial sites or for roads and streets. Wetness and flooding are severe limitations for septic tank absorption fields or for dwellings. These limitations can be overcome only by major flood control measures. Capability subclass IIw; woodland suitability group 2w8.

12—Eunola-Urban land complex. This map unit consists of Eunola soils and Urban land in small areas that are so intermingled that it was not practical to map them separately. The moderately well drained Eunola soils and the Urban land are nearly level. They are on stream terraces of the Coastal Plain. Slope ranges from 0 to 2 percent. Individual areas range from 30 to 500 acres. These areas are flooded occasionally.

Eunola loamy sand makes up about 55 percent of each mapped area. Typically, the surface layer is brown loamy sand about 8 inches thick. The subsoil is yellowish brown sandy loam to a depth of 12 inches; yellowish brown, mottled sandy clay loam to a depth of 24 inches; mottled yellowish brown, light gray, strong brown, and red or yellowish red sandy clay loam to a depth of 44 inches; and mottled light gray, brownish yellow, strong brown, and yellowish red sandy loam to a depth of 52 inches. The underlying material is mottled light gray, yellowish brown, and strong brown, mottled sandy loam that extends to a depth of 65 inches or more.

Eunola soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and available water capacity is moderate. At least once every 3 years this soil is flooded between December and April, and the water table is within 2 feet of the surface during this period.

Urban land makes up about 30 percent of each mapped area. It consists of areas which have been altered to the extent that classification is not practical. These include areas covered by buildings, garages, sidewalks, patios, driveways, parking lots, streets, schools, and churches, and areas that have been significantly disturbed by cutting, filling, or grading.

Included in mapping are a few small areas of Bigbee, Bladen, and Kalmia soils. Included soils make up about 15 percent of this map unit.

Eunola soils have fair potential for most recreation uses. Wetness and flooding are moderate limitations for playgrounds and severe limitations for camp areas. There are no significant limitations for most other recreation uses.

Potential for most engineering uses of Eunola soils is fair. The risk of corrosion of concrete is high.

Eunola soils have poor potential for most urban uses. Flooding is a severe limitation for industrial sites or for roads and streets. Wetness and flooding are severe limitations for septic tank absorption fields or for dwellings. These limitations can be overcome only by major flood control measures. There are no significant limitations for vegetable gardens and plants used in landscaping. The small, included areas of Kalmia soils are better suited to most urban uses than the other soils in this map unit. Not assigned to a capability subclass or a woodland suitability group.

13—Eunola-Chastain association. This map unit consists of moderately well drained and poorly drained, nearly level to sloping soils on flood plains and stream terraces of the Coastal Plain. These soils formed in clayey alluvium and sandy fluvial or marine deposits. Slope ranges from 0 to 6 percent. Mapped areas are mostly long and narrow and range from 50 to 500 acres.

Moderately well drained Eunola soils make up about 70 percent of the unit. Typically, the surface layer is brown loamy sand about 8 inches thick. The subsoil is yellowish brown sandy loam to a depth of 12 inches; yellowish brown, mottled sandy clay loam to a depth of 24 inches; mottled yellowish brown, light gray, strong brown, and red or yellowish red sandy clay loam to a depth of 44 inches; and mottled light gray, brownish yellow, strong brown, and yellowish red sandy loam to a depth of 52 inches. The underlying material is mottled light gray, yellowish brown, and strong brown sandy loam that extends to a depth of 65 inches or more.

Eunola soils have moderate permeability. Available water capacity is moderate. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

Poorly drained Chastain soils make up about 20 percent of the unit. Typically, the surface layer is grayish brown silt loam about 8 inches thick. The upper part of the underlying material is grayish brown silty clay loam that extends to a depth of 18 inches. The lower part is gray silty clay to a depth of 44 inches over gray, stratified sandy loam and loamy sand to a depth of 60 inches or more.

Chastain soils have slow permeability and high available water capacity. The soil is strongly acid or very strongly acid. It is flooded or ponded frequently and has a water table at or near the surface most of the time.

Included with these soils in mapping are a few areas of Bigbee and Kalmia soils. The excessively drained Bigbee soils formed in thick, sandy sediments on low terraces along stream flood plains. The well drained Kalmia soils formed in sandy marine or fluvial deposits on stream terraces of the Coastal Plain. Included soils make up about 10 percent of this map unit.

These soils have poor potential for cultivated crops because of flooding. Planting is often delayed—and in some years the crop is destroyed or severely damaged—by flooding. Potential for pasture is fair because the wetness hazard makes seeding and fertilizing operations difficult. Moderate equipment limitations are the main management concern.

Potential is good for loblolly pine, slash pine, sweetgum, and yellow-poplar. Wetness is a severe limitation to equipment use in woodland use and management, but this limitation can be overcome by logging during drier seasons.

These soils have poor potential for most urban uses. Flooding and wetness are severe limitations and can by overcome only by major flood control measures. Eunola soils in capability subclass IIw; woodland suitability group 2w8. Chastain soils in capability subclass VIIw; woodland suitability group 2w9.

14—Fuquay loamy sand, 1 to 5 percent slopes. This well drained, nearly level to gently sloping soil is on ridgetops of the Coastal Plain uplands. Slopes are smooth. Individual areas range from 5 to 100 acres.

Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer is yellowish brown and brownish yellow loamy sand that extends to a depth of 26 inches. The upper part of the subsoil is yellowish brown sandy loam and mottled sandy loam that extends to a depth of 59 inches. The lower part

is sandy clay loam that is mottled in shades of brown, yellow, red, and gray and that extends to a depth of 90 inches or more. Plinthite content ranges from 6 to 20 percent between depths of 35 and 69 inches.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and slow in the lower part. Available water capacity is moderate. Typically, a perched water table occurs above the plinthic layer briefly during wet periods. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of soils that are similar to Fuquay soils except that they do not contain plinthite nodules. Also included are a few small areas of Bonifay and Orangeburg soils. Included soils make up about 20 percent of this map unit.

This soil has good potential for cultivated crops and pasture. Erosion is a moderate hazard where cultivated crops are grown. Terracing, minimum tillage, and the use of cover crops help reduce runoff and control erosion.

Potential is good for slash pine and loblolly pine. Moderate seedling mortality is the main management concern.

This soil has good potential for most urban uses. Slow percolation is a moderate limitation for septic tank absorption fields. This limitation can usually be overcome by proper engineering design. There are no significant limitations for dwellings, industrial sites, and roads and streets on this soil. Capability subclass IIs; woodland suitability group 3s2.

15—Grady loam. This poorly drained, nearly level soil is in saucer-shaped depressions on Coastal Plain uplands. The water table is at or above the surface for 6 to 8 months yearly. Individual areas range from 3 to 40 acres.

Typically, the surface layer is black loam about 7 inches thick. The upper part of the subsoil is gray, mottled clay that extends to a depth of 55 inches. The lower part is gray sandy clay loam that extends to a depth of 62 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid to extremely acid throughout except for the surface layer in limed areas. Permeability is slow, and available water capacity is moderate. Clods form on the surface if the soil is plowed when too wet, and seedbed preparation is difficult. The water table is seasonally high and is at or within 12 inches of the surface during winter and spring. The root zone is deep, but the clayey subsoil offers some resistance to penetration by plant roots.

Included with this soil in mapping are a few small areas of soils that are similar to Grady soils except that they do not have clayey texture. Also included are a few small areas of Orangeburg and Red Bay soils. Included soils make up about 15 percent of this map unit.

This soil has poor potential for cultivated crops and pasture because of wetness and flooding. When drained, this soil has fair potential for pasture.

Potential is good for loblolly pine, slash pine, sweetgum, and water tupelo. Seedling mortality and equipment limitations are severe because of wetness and flooding. These limitations, however, can be overcome by logging during drier seasons.

This soil has poor potential for most urban uses because of flooding and wetness. Slow percolation is also a severe limitation for septic tank absorption fields. These limitations are very difficult to overcome. Capability subclass Vw; woodland suitability group 2w9.

16—Kalmia fine sandy loam. This well drained, nearly level soil is on stream terraces of the Coastal Plain. Slope ranges from 0 to 2 percent. Individual areas range from 5 to 100 acres.

Typically, the surface layer is yellowish brown fine sandy loam about 5 inches thick. The subsoil is strong brown and yellowish brown sandy clay loam that extends to a depth of 31 inches. The underlying material is yellowish brown and pale brown, mottled loamy sand that extends to a depth of 65 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid except for the surface layer in limed areas. Permeability is moderate, and available water capacity is low. This soil is subject to rare flooding during periods of unusually high rainfall. This soil has good tilth and can be worked throughout a wide range of moisture content.

Included with this soil in mapping are a few small areas of Bigbee, Bladen, and Eunola soils. Included soils make up about 20 percent of this map unit.

This soil has good potential for cultivated crops and pasture. There are no significant limitations.

Potential is good for loblolly pine, slash pine, yellow-poplar, and cherrybark oak. There are no significant limitations to woodland use or management.

This soil has poor potential for most urban uses. Flooding is a moderate limitation for septic tank absorption fields or for roads and streets and a severe limitation for dwellings and industrial sites. These limitations can usually be overcome if flood control measures are installed. Capability class I; woodland suitability group 2o7.

17—Lucy loamy sand, 0 to 5 percent slopes. This well drained, nearly level to gently sloping soil is on broad ridgetops of the Coastal Plain uplands. Slopes are smooth and convex. Individual areas range from 5 to 100 acres.

Typically, the surface layer is brown loamy sand about 6 inches thick. The subsurface layer is strong brown and yellowish red loamy sand that extends to a depth of 33 inches. The upper part of the subsoil is yellowish red sandy loam that extends to a depth of 42 inches. The lower part is red sandy clay loam that extends to a depth of 75 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

Permeability is rapid in the thick, loamy sand surface and subsurface layers and moderate in the subsoil. Available water capacity is low. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Bibb, Luverne, Orangeburg, and Troup soils. Included soils make up about 20 percent of this map unit.

This soil has fair potential for cultivated crops. The moderate erosion hazard and low available water capacity are the main limitations. Potential is good for pasture; there are no significant limitations.

This soil has good potential for slash pine, longleaf pine, and loblolly pine. Moderate seedling mortality and equipment limitations are the main management concerns.

Potential is good for most urban uses; there are no significant limitations. Capability subclass IIs; woodland suitability group 3s2.

18—Lucy loamy sand, 5 to 8 percent slopes. This well drained, moderately sloping soil is on side slopes of Coastal Plain uplands. Slopes are smooth and convex. Individual areas range from 5 to 75 acres.

Typically, the surface layer is brown loamy sand about 6 inches thick. The subsurface layer is strong brown and yellowish red loamy sand that extends to a depth of 33 inches. The upper part of the subsoil is yellowish red sandy loam that extends to a depth of 42 inches. The lower part is red sandy clay loam that extends to a depth of 75 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is rapid in the thick, loamy sand surface and subsurface layers and moderate in the subsoil. Available water capacity is low. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Bibb, Luverne, Orangeburg, and Troup soils. Included soils make up about 20 percent of this map unit.

This soil has fair potential for cultivated crops. The moderate erosion hazard and low available water capacity are the main limitations. Contour farming, minimum tillage, and the use of cover crops help reduce runoff and control erosion. This soil has good potential for pasture; there are no significant limitations.

Potential is good for slash pine, longleaf pine, and loblolly pine. Moderate seedling mortality and equipment limitations are the main management concerns.

This soil has good potential for most urban uses. Slope is a moderate limitation for industrial sites. This limitation can usually be overcome by proper engineering design. There are no significant limitations for septic tank absorption fields, for dwellings, or for roads and streets. Capability subclass IIIs; woodland suitability group 3s2.

19—Luverne-Lucy association, rolling. This map unit consists of well drained, rolling to steep soils on dissected uplands of the Coastal Plain. These soils formed in stratified marine sediments. Slope ranges from 5 to 25 percent. Mapped areas range from 200 to 1,500 acres.

Well drained Luverne soils make up about 60 percent of the unit. Typically, the surface layer is brown fine sandy loam about 5 inches thick. The subsoil is yellowish red, mottled clay that extends to a depth of 36 inches. The underlying material is stratified gray, mottled clay, sandy clay loam, and sandy loam that extends to a depth of 65 inches or more.

Luverne soils have moderately slow permeability. Available water capacity is moderate. The soil is strongly acid to extremely acid.

Well drained Lucy soils make up about 20 percent of the unit. Typically, the surface layer is brown loamy sand about 6 inches thick. The subsurface layer is strong brown and yellowish red loamy sand to a depth of 33 inches. The upper part of the subsoil is yellowish red sandy loam that extends to a depth of 42 inches. The lower part is red sandy loam that extends to a depth of 75 inches or more.

Lucy soils have rapid permeability in the surface and subsurface layers and moderate permeability in the subsoil. Available water capacity is low. The soil is strongly acid or very strongly acid throughout.

Included with these soils in mapping are a few areas of Bibb, Orangeburg, and Troup soils. The poorly drained Bibb soils formed in loamy and sandy fluvial sediments on flood plains of streams. The well drained Orangeburg soils formed in loamy and clayey sediments on broad ridgetops and side slopes. The well drained Troup soils formed in unconsolidated sandy and loamy marine sediments on ridges and side slopes. Included soils make up about 20 percent of this map unit.

These soils have poor potential for cultivated crops. Slope and the erosion hazard are severe limitations. The soils have fair potential for pasture. Slope is the main limitation.

These soils are used mainly as woodland. Potential is good for loblolly pine, slash pine, and longleaf pine. Moderate equipment limitations are the main management concern.

These soils have poor potential for most urban uses. Slope and slow percolation are severe limitations for septic tank absorption fields. Slope and low strength are severe limitations for dwellings, for industrial sites, or for roads and streets. These limitations can usually be overcome by proper engineering design. Luverne soils in capability subclass VIe; woodland suitability group 3c2. Lucy soils in capability subclass IVs; woodland suitability group 3s2.

20—Orangeburg sandy loam, 0 to 2 percent slopes. This well drained, nearly level soil is on broad ridgetops of Coastal Plain uplands. Slopes are smooth and convex. Individual areas range from 5 to 100 acres.

Typically, the surface layer is brown sandy loam about 8 inches thick. The upper part of the subsoil is yellowish red sandy loam that extends to a depth of 15 inches. The lower part is red and dark red sandy clay loam that extends to a depth of 82 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and available water capacity is moderate. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Dothan, Fuquay, Grady, Lucy, Red Bay, and Troup soils. Included soils make up about 10 percent of this map unit.

This soil has good potential for cultivated crops and pasture. There are no significant limitations.

Potential is good for slash pine and loblolly pine. There are no significant limitations to woodland use or management.

This soil has good potential for most urban uses; there are no significant limitations. Capability class I; woodland suitability group 2o1.

21—Orangeburg sandy loam, 2 to 5 percent slopes. This well drained, gently sloping soil is on broad ridgetops of Coastal Plain uplands. Slopes are smooth and convex. Individual areas range from 5 to 600 acres.

Typically, the surface layer is brown sandy loam about 8 inches thick. The upper part of the subsoil is yellowish red sandy loam that extends to a depth of 15 inches. The lower part is red and dark red sandy clay loam that extends to a depth of 82 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and available water capacity is moderate. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Dothan, Fuquay, Grady, Lucy, Red Bay, and Troup soils. Included soils make up about 15 percent of this map unit.

This soil has good potential for cultivated crops and pasture. Erosion is a moderate hazard where cultivated crops are grown. Contour farming, minimum tillage, and the use of cover crops help reduce runoff and control erosion (figs. 3 and 4).

Potential is good for slash pine and loblolly pine. There are no significant limitations to woodland use or management.

This soil has good potential for most urban uses; there are no significant limitations. Capability subclass IIe; woodland suitability group 2o1.

22—Orangeburg sandy loam, 5 to 8 percent slopes. This well drained, moderately sloping soil is on side slopes of Coastal Plain uplands. Slopes are smooth and convex. Individual areas range from 5 to 200 acres.

Typically, the surface layer is brown sandy loam about 8 inches thick. The upper part of the subsoil is yellowish red sandy loam that extends to a depth of 15 inches. The lower part is red and dark red sandy clay loam that extends to a depth of 82 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and available water capacity is moderate. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Dothan, Fuquay, Grady, Lucy, Red Bay, and Troup soils. Included soils make up about 25 percent of this map unit.

This soil has fair potential for cultivated crops. Steepness of slope and the moderate erosion hazard are the main limitations. Terraces, contour farming, minimum tillage, and the use of cover crops help reduce runoff and control erosion. Potential is good for pasture; there are no significant limitations.

This soil has good potential for slash pine and loblolly pine. There are no significant limitations to woodland use or management.

This soil has good potential for most urban uses. Slope is a moderate limitation for industrial sites. This limitation can usually be overcome by proper engineering design. There are no significant limitations for septic tank absorption fields, for dwellings, or for roads and streets on this soil. Capability subclass IIIe; woodland suitability group 2o1.

23—Orangeburg-Urban land complex, 0 to 8 percent slopes. This map unit consists of Orangeburg soils and Urban land in small areas that are so intermingled that it was not practical to map them separately. The well drained Orangeburg soils and the Urban land are nearly level to gently sloping. They are on broad ridgetops and side slopes of Coastal Plain uplands. Slopes are smooth and convex. Individual areas range from 30 to 500 acres.

Orangeburg sandy loam makes up about 60 percent of each mapped area. Typically, the surface layer is brown sandy loam about 8 inches thick. The upper part of the subsoil is yellowish red sandy loam that extends to a depth of 15 inches. The lower part is red and dark red sandy clay loam that extends to a depth of 82 inches or more.

Orangeburg soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability and available water capacity are moderate.

Urban land makes up about 25 percent of each mapped area. It consists of areas which have been altered to the extent that classification is not practical. These include areas covered by buildings, garages, sidewalks, patios, driveways, parking lots, streets, schools, and churches, and areas that have been significantly disturbed by cutting, filling, or grading.

Included in mapping are a few small areas of Dothan, Fuquay, Grady, Lucy, Red Bay, and Troup soils. Included soils make up about 15 percent of this map unit.

Orangeburg soils have good potential for most recreation uses. Playgrounds, however, are moderately limited in more sloping areas. There are no significant limitations for most other recreation uses.

Potential for most engineering uses of Orangeburg soils is good. The risk of corrosion of uncoated steel and concrete is moderate.

Most urban uses have good potential on Orangeburg soils. Slope is a moderate limitation for industrial sites. This limitation can usually be overcome by proper engineering design. There are no significant limitations for septic tank absorption fields, dwellings, roads and streets, and vegetable gardens and plants used in landscaping. Not assigned to a capability subclass or a woodland suitability group.

24—Orangeburg-Troup association, undulating. This map unit consists of well drained, nearly level to gently sloping soils on broad ridgetops and side slopes of Coastal Plain uplands. These soils formed in unconsolidated marine sediments. Slope ranges from 1 to 8 percent. Mapped areas range from 50 to 500 acres.

Well drained Orangeburg soils make up about 50 percent of the unit. Typically, the surface layer is brown sandy loam about 8 inches thick. The upper part of the subsoil is yellowish red sandy loam that extends to a depth of 15 inches. The lower part is red and dark red sandy clay loam that extends to a depth of 82 inches or more.

Orangeburg soils have moderate permeability. Available water capacity is moderate. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

Well drained Troup soils make up about 45 percent of the unit. Typically, the surface layer is dark brown loamy sand about 7 inches thick. The upper part of the subsurface layer is yellowish brown and strong brown loamy sand that extends to a depth of 29 inches; the lower part is yellowish red sand that extends to a depth of 57 inches. The subsoil is red sandy loam that extends to a depth of 85 inches or more.

Troup soils have rapid permeability in the thick loamy sand surface and subsurface layers and moderate permeability in the finer textured subsoil. Available water capacity is low. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

Included with these soils in mapping are a few areas of Bonifay, Dothan, Fuquay, Grady, Lucy, and Red Bay soils. The well drained Bonifay and Fuquay soils formed in thick beds of sandy and loamy marine sediments on ridgetops. Dothan soils are well drained and formed in thick, unconsolidated, medium textured and fine textured sediments on ridges and side slopes. Grady soils are poorly drained and formed in clayey marine sediments in saucer-shaped depressions. The well drained Lucy soils formed in unconsolidated sandy and loamy marine sediments on broad ridgetops and side slopes. Red Bay soils are well drained and formed in unconsolidated marine sediments on broad ridgetops and side slopes. Included soils make up about 5 percent of this map unit.

These soils have fair potential for cultivated crops. Steepness of slope and the moderate to severe erosion hazard are the main limitations. Potential for pasture is good. Low available water capacity is a moderate limitation on Troup soils.

These soils are used mainly as woodland. Potential is good for loblolly pine, slash pine, and longleaf pine. Moderate seedling mortality and equipment limitations are the main management concerns on Troup soils because of sandiness.

These soils have fair potential for most urban uses. Slope is a moderate limitation for dwellings or for roads and streets and a severe limitation for industrial sites. These limitations can usually be overcome by proper engineering design. There are no significant limitations for septic tank absorption fields. Orangeburg soils in capability subclass IIIe; woodland suitability group 2o1. Troup soils in capability subclass IVs; woodland suitability group 3s2.

25—Pits. This map unit consists of areas from which the original soil has been removed. These areas are scattered throughout the county. They range in size from 5 to 20 acres.

On uplands, this unit has been a source of base material for highways, building foundations, or fill material. Areas of this unit on uplands were originally Orangeburg, Red Bay, or Lucy soils. The soil has been removed to a depth of 5 to 25 feet. Normally the sides of the pits are very steep.

On stream terraces, this unit has been a source of sand and gravel. Areas of this unit on stream terraces were originally Kalmia and Bigbee soils. The soil has been removed to a depth of 5 to 15 feet. Normally, the sides of the pits are moderately to strongly sloping.

Most of these areas have been abandoned. The exposed subsoil and parent material have very low fertility. These areas have poor potential for cultivated crops, pasture, and urban uses. Potential is fair for woodland. Not assigned to a capability subclass or a woodland suitability group.

26—Red Bay loamy sand, 0 to 2 percent slopes. This well drained, nearly level soil is on broad ridgetops of Coastal Plain uplands. Slopes are smooth and convex. Individual areas range from 5 to 100 acres.

Typically, the surface layer is dark reddish brown loamy sand about 6 inches thick. The upper part of the subsoil is dark reddish brown sandy loam that extends to a depth of 13 inches. The lower part is dark red sandy clay loam that extends to a depth of 85 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and available water capacity is moderate. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Grady, Orangeburg, and Troup soils. Also included are a few small areas of soils that are similar to Red Bay soils except that they have a sandy loam subsoil. Included soils make up about 15 percent of this map unit.

This soil has good potential for cultivated crops and pasture; there are no significant limitations.

Potential is good for loblolly pine and slash pine. There are no significant limitations to woodland use or management.

This soil has good potential for most urban uses; there are no significant limitations. Capability class I; woodland suitability group 2o1.

27—Red Bay loamy sand, 2 to 5 percent slopes. This well drained, gently sloping soil is on broad ridgetops of Coastal Plain uplands. Slopes are smooth and convex. Individual areas range from 5 to 500 acres.

Typically, the surface layer is dark reddish brown loamy sand about 6 inches thick. The upper part of the subsoil is dark reddish brown sandy loam that extends to a depth of 13 inches. The lower part is dark red sandy clay loam that extends to a depth of 85 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and available water capacity is moderate. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Grady, Orangeburg, and Troup soils. Also included are a few small areas of soils that are similar to Red Bay soils except that they have a sandy loam subsoil. Included soils make up about 15 percent of this map unit.

This soil has good potential for cultivated crops and pasture. Erosion is a moderate hazard where cultivated crops are grown. Terraces, contour farming, minimum tillage, and the use of cover crops help reduce runoff and control erosion.

Potential is good for loblolly pine and slash pine. There are no significant limitations to woodland use or managment.

This soil has good potential for most urban uses; there are no significant limitations. Capability subclass IIe; woodland suitability group 2o1.

28—Red Bay loamy sand, 5 to 8 percent slopes. This well drained, moderately sloping soil is on side slopes of Coastal Plain uplands. Slopes are smooth and convex. Individual areas are 5 to 300 acres.

Typically, the surface layer is dark reddish brown loamy sand about 6 inches thick. The upper part of the subsoil is dark reddish brown sandy loam that extends to a depth of 13 inches. The lower part is dark red sandy clay loam that extends to a depth of 85 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and available water capacity is moderate. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Grady, Orangeburg, and Troup soils. Also included are a few areas of soils that are similar to Red Bay soils except that they have a sandy loam subsoil. Included soils make up about 15 percent of the map unit.

This soil has fair potential for cultivated crops. Steepness of slope and the moderate erosion hazard are the main limitations. Terraces, contour farming, minimum tillage, and the use of cover crops help reduce runoff and control erosion. Potential is good for pasture; there are no significant limitations.

This soil has good potential for loblolly pine and slash pine. There are no significant limitations to woodland use or management.

Potential is good for most urban uses. Slope is a moderate limitation for industrial sites. This limitation can usually be overcome by proper engineering design. There are no significant limitations for septic tank absorption fields, for dwellings, or for roads and streets. Capability subclass IIIe; woodland suitability group 2o1.

29—Shadygrove-Luverne association, rolling. This map unit consists of moderately well drained and well drained, rolling to steep soils on dissected uplands of the Coastal Plain. These soils formed in clayey fossiliferous and stratified marine sediments. Slope ranges from 5 to 20 percent. Mapped areas range from 500 to 1,000 acres.

Moderately well drained Shadygrove soils make up about 55 percent of the unit. Typically, the surface layer is very dark grayish brown sandy loam about 6 inches thick. The subsoil is clay, mottled in shades of brown, red, and gray, that extends to a depth of 23 inches. The underlying material is flaggy clay and very flaggy clay loam mottled in shades of gray, brown, yellow, and red. Claystone fragments make up 30 to 80 percent of the underlying material.

Shadygrove soils have very slow permeability. Available water capacity is moderate. The soil is strongly acid or very strongly acid.

Well drained Luverne soils make up about 20 percent of the unit. Typically the surface layer is brown fine sandy loam about 5 inches thick. The subsoil is yellowish red, mottled clay loam that extends to a depth of 36 inches. The underlying material is stratified gray, mottled clay, sandy clay loam, and sandy loam that extends to a depth of 65 inches or more.

Luverne soils have moderately slow permeability. Available water capacity is moderate. The soil is strongly acid to extremely acid.

Included with these soils in mapping are a few areas of Bibb soils. The poorly drained Bibb soils formed in loamy and sandy fluvial sediments on flood plains of streams. Also included are a few areas of somewhat poorly drained and poorly drained, sandy soils that formed from materials eroded from higher-lying soils and deposited on the lower parts of toe slopes. Included soils make up about 25 percent of this map unit.

These soils have poor potential for cultivated crops. Slope and the erosion hazard are severe limitations. Potential for pasture is fair because slope and rock fragments on the surface restrict the use of equipment in some areas.

These soils are used mainly as woodland. They have good potential for loblolly pine (fig. 5). Moderate seedling mortality and equipment limitations are the main management concerns.

Potential is poor for most urban uses. Wetness and slow percolation are severe limitations for septic tank absorption fields. Low strength and high shrink-swell potential are severe limitations for dwellings and roads and streets. Slope, low strength, and high shrink-swell potential are severe limitations for industrial sites. Limitations for most urban uses are very difficult to overcome. Capability subclass VIe; woodland suitability group 3c2.

30—Troup loamy sand, 1 to 5 percent slopes. This well drained, gently sloping soil is on broad ridgetops and level benches on side slopes on Coastal Plain uplands. Slopes are smooth and convex. Individual areas range from 5 to 500 acres.

Typically, the surface layer is dark brown loamy sand about 7 inches thick. The upper part of the subsurface layer is yellowish brown and strong brown loamy sand that extends to a depth of 29 inches; the lower part is yellowish red sand that extends to a depth of 57 inches. The subsoil is red sandy loam that extends to a depth of 85 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is rapid in the thick, loamy sand surface and subsurface layers and moderate in the subsoil. Available water capacity is low. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Bonifay, Lucy, Orangeburg, and Red Bay soils. Also included are a few small areas of soils that are similar to Troup soils except that they have loamy sand texture throughout. Included soils make up about 15 percent of this map unit.

This soil has fair potential for cultivated crops. Low available water capacity and the moderate erosion hazard are the main limitations. Contour farming, minimum tillage, and the use of cover crops help reduce runoff and control erosion. This soil has fair potential for pasture. Its potential is limited because of the low available water capacity. Good tilth is easily maintained by returning crop residues to the soil.

Potential is good for loblolly pine and slash pine. Moderate seedling mortality and equipment limitations are the main management concerns.

This soil has good potential for most urban uses; there are no significant limitations. Capability subclass IIIs; woodland suitability group 3s2.

31—Troup loamy sand, 5 to 8 percent slopes. This well drained, moderately sloping soil is on side slopes of Coastal Plain uplands. Slopes are smooth and convex. Individual areas range from 5 to 200 acres.

Typically, the surface layer is dark brown loamy sand about 7 inches thick. The upper part of the subsurface layer is yellowish brown and strong brown loamy sand that extends to a depth of 29 inches; the lower part is yellowish red sand that extends to a depth of 57 inches. The subsoil is red sandy loam that extends to a depth of 85 inches or more.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is rapid in the thick, loamy sand surface and subsurface layers and moderate in the subsoil. Available water capacity is low. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are a few small areas of Bonifay, Lucy, Orangeburg, and Red Bay soils. Also included are a few small areas of soils that are similar to Troup soils except that they have loamy sand texture throughout. Included soils make up about 20 percent of this map unit.

This soil has poor potential for cultivated crops. Steepness of slope, low available water capacity, and the severe erosion hazard are the main limitations. The soils have fair potential for pasture. Low available water capacity and steepness of slope are moderate limitations.

Potential is good for loblolly pine and slash pine. Moderate seedling mortality and equipment limitations are the main management concerns.

This soil has good potential for most urban uses; there are no significant limitations. Capability subclass IVs; woodland suitability group 3s2.

32—Troup-Orangeburg loamy sands, 8 to 15 percent slopes. This map unit consists of areas of Troup and Orangeburg soils that are so intermingled that it was not practical to map them separately. These moderately sloping soils are on side slopes adjacent to drainageways. Individual areas of each soil range from 1 to 5 acres.

Troup loamy sand makes up about 50 percent of each mapped area. Typically, the surface layer is dark brown loamy sand about 7 inches thick. The upper part of the subsurface layer is yellowish brown and strong brown sand that extends to a depth of 29 inches; the lower part is yellowish red sand that extends to a depth of 57 inches. The subsoil is red sandy loam that extends to a depth of 85 inches or more.

Troup soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout. Permeability is rapid in the thick, loamy sand surface and subsurface layers and moderate in the subsoil. Available water capacity is low.

Orangeburg loamy sand makes up about 40 percent of each mapped area. Typically, the surface layer is yellowish brown loamy sand about 7 inches thick. The subsoil

is yellowish red sandy clay loam that extends to a depth of 60 inches or more.

Orangeburg soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout. Permeability is moderate, and available water capacity is moderate.

Included with these soils in mapping are a few small areas of Bonifay, Lucy, and Red Bay soils. Included soils make up about 10 percent of this map unit.

These soils have poor potential for cultivated crops. Steepness of slope and the erosion hazard are severe limitations. The soils have fair potential for pasture. Low to moderate available water capacity and steepness of slope are moderate limitations.

Potential is good for loblolly pine and slash pine. Moderate seedling mortality and equipment limitations are the main management concerns.

These soils have fair potential for most urban uses. Slope is a moderate limitation for septic tank absorption fields, for dwellings, or for roads and streets. Slope is a severe limitation for industrial sites. These limitations can usually be overcome by proper engineering design. Both soils in capability subclass VIs; Troup soil in woodland suitability group 3s2, Orangeburg soil in woodland suitability group 2o1.

33—Troup-Urban land complex, 1 to 8 percent slopes. This map unit consists of Troup soils and Urban land so intermingled that it was not practical to map them separately. The well drained Troup soils and the Urban land are gently sloping. They are on ridges and side slopes of Coastal Plain uplands. Individual areas are 20 to 100 acres.

Troup loamy sand makes up about 55 percent of each mapped area. Typically, the surface layer is dark brown loamy sand about 7 inches thick. The upper part of the subsurface layer is yellowish brown and strong brown loamy sand that extends to a depth of 29 inches; the lower part is yellowish red sand that extends to a depth of 57 inches. The subsoil is red sandy loam that extends to a depth of 85 inches or more.

Troup soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout. Permeability is rapid in the thick, loamy sand surface and subsurface layers and moderate in the subsoil. Available water capacity is low.

Urban land makes up about 35 percent of each mapped area. It consists of areas which have been altered to the extent that classification is not practical. These include areas covered by buildings, garages, sidewalks, patios, driveways, parking lots, streets, schools, and churches, and areas that have been significantly disturbed by cutting, filling, or grading.

Included in mapping are a few small areas of Bonifay, Lucy, Orangeburg, and Red Bay soils. Included soils make up about 10 percent of this map unit.

Troup soils have fair potential for most recreation uses. They are too sandy, which is the main limitation.

Potential for most engineering uses of Troup soils is fair. The risk of corrosion of concrete is moderate. Erosion is a severe hazard, especially if the soils are used as a water course.

Potential for most urban uses is good on Troup soils. Slope is a moderate limitation for industrial sites. This limitation can usually be overcome by proper engineering design. Vegetable gardens and plants used in landscaping have moderate limitations because of droughtiness and low natural fertility, but these limitations can usually be overcome by maintaining a scheduled irrigation and fertilization program. There are no significant limitations for septic tank absorption fields, dwellings, and roads and streets. Not assigned to a capability subclass or a woodland suitability group.

34—Troup-Lucy association, hilly. This map unit consists of well drained, rolling to steep soils on side slopes adjacent to drainageways. These soils formed in unconsolidated, sandy and loamy marine sediments. Slopes range from 5 to 20 percent. Mapped areas are mostly long and narrow and range from 50 to 700 acres.

Well drained Troup soils make up about 40 percent of the unit. Typically, the surface layer is dark brown loamy sand about 7 inches thick. The upper part of the subsurface layer is yellowish brown and strong brown loamy sand that extends to a depth of 29 inches; the lower part is yellowish red sand that extends to a depth of 57 inches. The subsoil is red sandy loam that extends to a depth of 85 inches or more.

Troup soils have rapid permeability in the surface and subsurface layers and moderate permeability in the subsoil. Available water capacity is low. The soil is strongly acid or very strongly acid throughout.

Well drained Lucy soils make up about 30 percent of the unit. Typically, the surface layer is brown loamy sand about 6 inches thick. The subsurface layer is strong brown and yellowish red loamy sand that extends to a depth of 33 inches. The upper part of the subsoil is yellowish red sandy loam that extends to a depth of 75 inches or more.

Lucy soils have rapid permeability in the surface and subsurface layers and moderate permeability in the subsoil. Available water capacity is low. The soil is strongly acid or very strongly acid throughout.

Included with these soils in mapping are a few areas of Bibb and Orangeburg soils. The poorly drained Bibb soils formed in loamy and sandy fluvial sediments on flood plains of streams. The well drained Orangeburg soils formed in loamy and clayey sediments on broad ridgetops and side slopes. Also included are a few areas of somewhat poorly drained and poorly drained, sandy soils that formed in materials eroded from soils at higher elevations and deposited on the lower parts of the toe slopes. Included soils make up about 30 percent of this map unit.

These soils have poor potential for cultivated crops. Slope gradient is a severe limitation, and the erosion hazard is severe. The soils have fair potential for pasture.

Low available water capacity and slope gradient are moderate limitations.

These soils are used mainly as woodland. They have good potential for loblolly pine and slash pine. Moderate seedling mortality and equipment limitations are the main management concerns.

Potential is fair for most urban uses. Slope is a moderate limitation for septic tank absorption fields, for dwellings, or for roads and streets. Slope is a severe limitation for industrial sites. These limitations can usually be overcome by proper engineering design. Troup soil in capability subclass VIs, Lucy soil in capability subclass IVs; both soils in woodland suitability group 3s2.

Use and management of the soils

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

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

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

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

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

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

Crops and pasture

LEWIS D. WILLIAMS, conservation agronomist, Soil Conservation Service, helped prepare this section.

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

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

The Alabama Conservation Needs Inventory (*2*) shows that more than 157,000 acres in Coffee County was cropland or pastureland in 1967. Of this total, 36,000 acres was used for permanent pasture, and the remaining 121,000 acres was used for either crops or orchards.

Most of the cropland is in the southern half and the northeast corner of the county. In these areas cropland is on broad ridgetops and gently sloping side slopes, and pasture or woodland is on the stronger sloping side slopes and along the drainageways. In other parts of the county, only small, irregularly shaped fields on narrow ridgetops are cropland; the rest of the area is pasture or woodland.

Potential of the soils in Coffee County for increased production of food is good. About 20,000 acres of potentially good cropland is currently used as pasture, and about 54,000 acres is used as woodland. In addition to the reserve production capacity represented by this land, food production could also be increased considerably by extending the latest crop production technology to all cropland in the county. This soil survey can greatly facilitate the application of such technology.

Acreage in crops and pasture has gradually been decreasing as more and more land is used for urban development. In 1977 there were about 13,352 acres of urban and built-up land in the county; this figure has been growing each year. The use of this soil survey to help make land use decisions that will influence the future role of farming in the county is discussed in the section "General soil map for broad land use planning."

Soil erosion is the major soil concern on about three-fourths of the cropland and pastureland in Coffee County. Where slope is more than 1 percent, erosion is a hazard. Soils such as Orangeburg, Red Bay, Lucy, Troup, and Dothan are easily eroded (fig. 6).

Loss of the surface layer through erosion is damaging for two reasons. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on the soils that have a finer textured subsoil and that are used to grow peanuts. Peanuts require a friable, porous surface layer for the pegs to penetrate and produce high yields and also for ease of harvesting. Loss of the surface layer by erosion also results in the loss of soil fertility through the direct removal of plant nutrients in the eroded soil. Second, soil erosion on farmland results in sedimentation of streams. Control of erosion minimizes the pollution of streams by sediment, fertilizers, and chemicals and improves the quality of water for municipal use, for recreation, and for fish and wildlife.

In many sloping fields, preparing a good seedbed and tilling are difficult on clayey areas because the original, friable surface soil has been eroded away. Such areas are common in areas of Dothan, Red Bay, and Orangeburg soils having slopes of 5 to 8 percent.

Erosion control practices provide protective surface cover, reduce runoff, and increase infiltration. A cropping system that keeps vegetative cover on the soil for extended periods can hold soil losses to amounts that will not reduce the productive capacity of the soils. On livestock farms, which require pasture and hay, the legume and grass forage crops in the cropping system reduce erosion on sloping land and also provide nitrogen and improve tilth for the following crop.

Slopes are so irregular that contour tillage or terracing is not practical in most areas of the sloping Cowarts, Luverne, and Shadygrove soils. On these soils, cropping systems that provide substantial vegetative cover are required to control erosion unless minimum tillage is practiced. Minimizing tillage and leaving crop residues on the surface help increase infiltration and reduce the hazards of runoff and erosion. These practices can be adapted to most soils in the county. No-till farming for corn and grain sorghum is increasing in use, is effective in reducing erosion on sloping land, and can be adapted to most soils in the county. It is more difficult to practice successfully, however, on eroded soils due to the poor tilth of the surface layer.

Terraces and diversions reduce the length of slope and reduce runoff and erosion. They are more practical on deep, well drained soils that have regular slopes. Red Bay, Orangeburg, and Dothan soils are suitable for terraces. Other soils are less suitable. These include soils that have irregular slopes or soils that are deep and sandy, such as Bonifay or Troup soils, in which terrace channels would be unstable.

Contour farming, especially in conjunction with terracing, is an excellent erosion control practice. This is best adapted to soils that have smooth, uniform slopes, including most of the acreage of the sloping Lucy, Troup, Red Bay, Orangeburg, and Dothan soils.

Soil blowing, especially in early spring, is a hazard on many of the soils in the county. This not only results in soil loss but often damages early crops. Maintaining vegetative cover, surface mulch, or a rough surface through proper tillage minimizes soil blowing.

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

Soil fertility is naturally low in most soils in the county. All the soils are naturally acid. The soils on flood plains, such as Bibb soils, are naturally higher in content of plant nutrients than most soils on uplands. The soils frequently require applications of ground limestone to raise the pH sufficiently for good growth of crops. Available phosphorus and potassium are naturally low in most of these soils. On all soils, additions of lime and fertlizer should be based on the results of soil tests, on the need of the crop, and on the expected level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to apply.

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

Many of the soils used for crops in the survey area have a surface layer of fine sandy loam or sandy loam that is low in content of organic matter. Generally, the structure of such soils is weak, and intense rainfall causes the formation of crust on the surface. The crust is hard when dry and nearly impervious to water. Once the crust forms, it reduces infiltration and increases runoff. Regular additions of crop residues and other organic material can help improve soil structure and reduce crust formation.

The frequent use of heavy farm machinery has resulted in compacted layers in the upper part of the subsoil in many fields that have been intensively used for row crops. These compacted layers, usually referred to as "plowpans" or "traffic pans," restrict root development of plants and retard water movement. These conditions result in reduced crop yields. Chiseling, subsoiling, and deep plowing have been used to give temporary relief from this problem. Minimum tillage is most effective in preventing the formation of compacted layers in soils.

Field crops suited to the soils and climate of the county include some that are not now commonly grown. Corn, peanuts, and soybeans are the major row crops presently grown. Grain sorghum, sunflowers, cotton, and similar crops could be grown if economic conditions were favorable. Rye, oats, and wheat are the common close-growing crops, and barley could also be produced.

A small acreage throughout the county is used for watermelons, tomatoes, cucumbers, okra, field peas, pecans, and peaches. The acreage of these crops could be increased if economic conditions were favorable.

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

Yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. Absence of an estimated yield indicates that the crop is not suited to or not commonly grown on the soil.

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

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

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

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

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

Capability classes and subclasses

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

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

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants, or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants, or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

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

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

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

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

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

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

Woodland management and productivity

JERRY L. JOHNSON, forester, Soil Conservation Service, helped prepare this section.

Forest land comprises 241,500 acres of Coffee County, or 56 percent of the total land area. The forested acreage increased 2 percent during the period 1963 to 1972. About 79 percent of the forest land is privately owned, 17 percent is owned by industry, and 4 percent is public forest land (*7*).

There are 82,800 acres of the oak-hickory forest type in Coffee County, 62,100 acres of the oak-pine forest type, 48,300 acres of the loblolly pine-shortleaf pine forest type, 34,500 acres of the oak-gum-cypress forest type, and 13,800 acres of the longleaf pine-slash pine forest type (*7*). Much of the acreage in upland hardwoods could be converted to pines; pines generally grow faster on these upland sites than hardwoods. Hardwoods usually grow well on lowland sites, on slopes having northerly aspect, and in coves.

Good stands of merchantable timber grow throughout the county. Most of the soils in Coffee County have high potential productivity (*10*). There are 75,900 acres of sawtimber, 75,900 acres of poletimber, 82,800 acres of seedlings and saplings, and 6,900 acres of nonstocked areas (*7*).

Seven wood-using plants in Coffee County employ several hundred people (*3*). The production of timber and other wood products, however, is well below the potential productivity of the soils because of the lack of adequate management.

Table 7 contains information useful to woodland owners or forest managers planning use of soils for wood crops. Map unit symbols for soils suitable for wood crops are listed, and the woodland suitability group symbol for each soil is given. All soils bearing the same symbol require the same general kinds of woodland management and have about the same potential productivity.

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

The third element in the symbol, a numeral, indicates the kind of trees for which the soils in the group are best suited and also indicates the severity of the hazard or limitation. The numerals 1, 2, and 3 indicate slight, moderate, and severe limitations, respectively, and suitability for needleleaf trees. The numerals 4, 5, and 6 indicate slight, moderate, and severe limitations, respectively, and suitability for broadleaf trees. The numerals 7, 8, 9 indicate slight, moderate, and severe limitations, respectively, and suitability for both needleleaf and broadleaf trees.

In table 7 the soils are also rated for a number of factors to be considered in management. *Slight*, *moderate*, and *severe* are used to indicate the degree of major soil limitations.

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

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

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

Considered in the ratings of *windthrow hazard* are characteristics of the soil that affect the development of tree roots and the ability of the soil to hold trees firmly. A rating of *slight* indicates that trees in wooded areas are not expected to be blown down by commonly occurring winds; *moderate*, that some trees are blown down during periods of excessive soil wetness and strong winds; and *severe*, that many trees are blown down during periods of excessive soil wetness and moderate or strong winds.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Common trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

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

Engineering

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

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

Among the soil properties and site conditions identified by a soil survey and used in determining the ratings in this section were grain-size distribution, liquid limit, plasticity index, soil reaction, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure or aggregation, and in-place soil density.

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

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

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

The information is presented mainly in tables. Table 8 shows, for each kind of soil, the degree and kind of limitations for building site development; table 9, for sanitary facilities; and table 11, for water management. Table 10 shows the suitability of each kind of soil as a source of construction materials.

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

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

Building site development

The degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, and local roads and streets are indicated in table 8. A *slight* limitation indicates that soil properties generally are favorable for the specified use; any limitation is minor and easily overcome. A *moderate* limitation indicates that soil properties and site features are unfavorable for the specified use, but the limitations can be overcome or minimized by special planning and design. A *severe* limitation indicates that one or more soil properties or site features are so unfavorable or difficult to overcome that a major increase in construction effort, special design, or intensive maintenance is required. For some soils rated severe, such costly measures may not be feasible.

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

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

Dwellings and *small commercial buildings* referred to in table 8 are built on undisturbed soil and have foundation loads of a dwelling no more than three stories high. Separate ratings are made for small commercial buildings without basements and for dwellings with and without basements. For such structures, soils should be suffi-

ciently stable that cracking or subsidence of the structure from settling or shear failure of the foundation does not occur. These ratings were determined from estimates of the shear strength, compressibility, and shrink-swell potential of the soil. Soil texture, plasticity and in-place density, potential frost action, soil wetness, and depth to a seasonal high water table were also considered. Soil wetness and depth to a seasonal high water table indicate potential difficulty in providing adequate drainage for basements, lawns, and gardens. Depth to bedrock, slope, and large stones in or on the soil are also important considerations in the choice of sites for these structures and were considered in determining the ratings. Susceptibility to flooding is a serious hazard.

Local roads and streets referred to in table 8 have an all-weather surface that can carry light to medium traffic all year. They consist of a subgrade of the underlying soil material; a base of gravel, crushed rock fragments, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. The roads are graded with soil material at hand, and most cuts and fills are less than 6 feet deep.

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

Sanitary facilities

Favorable soil properties and site features are needed for proper functioning of septic tank absorption fields, sewage lagoons, and sanitary landfills. The nature of the soil is important in selecting sites for these facilities and in identifying limiting soil properties and site features to be considered in design and installation. Also, those soil properties that affect ease of excavation or installation of these facilities will be of interest to contractors and local officials. Table 9 shows the degree and kind of limitations of each soil for such uses and for use of the soil as daily cover for landfills. It is important to observe local ordinances and regulations.

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

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

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

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

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

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

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

can be a limitation, because operating heavy equipment on a wet soil is difficult. Seepage into the refuse increases the risk of pollution of ground water.

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

Unless otherwise stated, the limitations in table 9 apply only to the soil material within a depth of about 6 feet. If the trench is deeper, a limitation of slight or moderate may not be valid. Site investigation is needed before a site is selected.

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

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

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

Construction materials

The suitability of each soil as a source of roadfill, sand, gravel, and topsoil is indicated in table 10 by ratings of good, fair, or poor. The texture, thickness, and organic-matter content of each soil horizon are important factors in rating soils for use as construction materials. Each soil is evaluated to the depth observed, generally about 6 feet.

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

The ratings apply to the soil material between the A horizon and a depth of 5 to 6 feet. It is assumed that soil horizons will be mixed during excavation and spreading. Many soils have horizons of contrasting suitability within their profile. The estimated engineering properties in table 14 provide specific information about the nature of each horizon. This information can help determine the suitability of each horizon for roadfill.

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

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 10 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand and gravel. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 14.

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

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

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

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

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

Although a rating of *good* is not based entirely on high content of organic matter, a surface horizon is generally

preferred for topsoil because of its organic-matter content. This horizon is designated as A1 or Ap in the soil series descriptions. The absorption and retention of moisture and nutrients for plant growth are greatly increased by organic matter.

Water management

Many soil properties and site features that affect water management practices have been identified in this soil survey. In table 11 the soil and site features that affect use are indicated for each kind of soil. This information is significant in planning, installing, and maintaining water control structures.

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

Aquifer-fed excavated ponds are bodies of water made by excavating a pit or dugout into a ground-water aquifer. Excluded are ponds that are fed by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Ratings in table 11 are for ponds that are properly designed, located, and constructed. Soil properties and site features that affect aquifer-fed ponds are depth to a permanent water table, permeability of the aquifer, quality of the water, and ease of excavation.

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

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

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

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

Recreation

The soils of the survey area are rated in table 12 according to limitations that affect their suitability for recreation uses. The ratings are based on such restrictive soil features as flooding, wetness, slope, and texture of the surface layer. Not considered in these ratings, but important in evaluating a site, are location and accessibility of the area, size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites available, and either access to public sewerlines or capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degree, for recreation use by the duration and intensity of flooding and the season when flooding occurs. Onsite assessment of height, duration, intensity, and frequency of flooding is essential in planning recreation facilities.

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

The information in table 12 can be supplemented by information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 9, and interpretations for dwellings without basements and for local roads and streets, given in table 8.

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

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

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

Paths and trails for walking, horseback riding, bicycling, and other uses should require little or no cutting and filling. The best soils for this use are those that are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once dur-

ing the annual period of use. They should have moderate slopes and have few or no stones or boulders on the surface.

Wildlife habitat

ROBERT E. WATERS, biologist, Soil Conservation Service, helped prepare this section.

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

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

In table 13, the soils in Coffee County are rated according to their potential to produce the elements of wildlife habitat and as habitat for the three general kinds of wildlife in the county. The information in table 13 can be used in planning for parks, wildlife refuges, nature study areas, and other developments for wildlife; selecting areas that are suitable for wildlife; selecting soils that are suitable for creating, improving, or maintaining specific elements of wildlife habitat; and determining the intensity of management needed for each element of the habitat.

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

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

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

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

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

Hardwood trees and the associated woody understory provide cover for wildlife and produce nuts or other fruit, buds, catkins, twigs, bark, or foliage that wildlife eat. Major soil properties that affect growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of hardwood trees are oaks, hickories, and dogwood.

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

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

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

The three general kinds of wildlife in the county are briefly described in the following paragraphs.

Openland wildlife are birds and mammals of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. Examples of openland wildlife are bobwhite quail, mourning dove, and cottontail rabbit. Habitat elements of most importance to openland wildlife are grain and seed crops, grasses and legumes, and wild herbaceous plants.

Woodland wildlife are birds and mammals of areas covered by either hardwoods or conifers, or a mixture of both, and associated grasses, legumes, and wild herbaceous plants. Examples of woodland wildlife are deer, squirrels, and woodpeckers. Habitat elements of most importance to woodland wildlife are hardwood trees, coniferous plants, and wild herbaceous plants.

Wetland wildlife are birds, mammals, and other vertebrates of marshy, swampy, or open water areas (fig. 7). Examples of wetland wildlife are ducks, muskrat, and turtles. Habitat elements of most importance to wetland wildlife are wetland plants and shallow water areas.

Soil properties

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

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

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

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

Engineering properties

Table 14 gives estimates of engineering properties and classifications for the major horizons of each soil in the survey area.

Most soils have, within the upper 5 or 6 feet, horizons of contrasting properties. Table 14 gives information for each of these contrasting horizons in a typical profile. *Depth* to the upper and lower boundaries of each horizon is indicated. More information about the range in depth and about other properties in each horizon is given for each soil series in the section "Soil series and morphology."

Texture is described in table 14 in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loam." Other texture terms are defined in the Glossary.

The two systems commonly used in classifying soils for engineering use are the Unified Soil Classification System (Unified) (*5*) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO) (*4*).

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

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

When laboratory data are available, the A-1, A-2, and A-7 groups are further classified as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As an additional refinement, the desirability of soils as subgrade material can be indicated by a group index number. These numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested in the survey area is given in table 18. The estimated classification is given in table 14. Also in table 14 the percentage, by weight, of rock fragments more than 3 inches in diameter is estimated for each major horizon. These estimates are determined mainly by observing volume percentage in the field and then converting that, by formula, to weight percentage.

Percentage of the soil material less than 3 inches in diameter that passes each of four sieves (U.S. standard)

is estimated for each major horizon. The estimates are based on tests of soils that were sampled in the survey area and in nearby areas and on field estimates from many borings made during the survey.

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

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

Physical and chemical properties

Table 15 shows estimated values for several soil characteristics and features that affect behavior of soils in engineering uses. These estimates are given for each major horizon, at the depths indicated, in the typical pedon of each soil. The estimates are based on field observations and on test data for these and similar soils.

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

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

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

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

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

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

Soil and water features

Table 16 contains information helpful in planning land uses and engineering projects that are likely to be affected by soil and water features.

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

The four hydrologic soil groups are:

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

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately well

drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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

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

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

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

High water table is the highest level of a saturated zone more than 6 inches thick for a continuous period of more than 2 weeks during most years. The depth to a seasonal high water table applies to undrained soils. Estimates are based mainly on the relationship between grayish colors or mottles in the soil and the depth to free water observed in many borings made during the course of the soil survey. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table, that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. Only saturated zones above a depth of 5 or 6 feet are indicated.

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

Physical and chemical analyses of selected soils

The results of physical and chemical analyses of several typical pedons are given in table 17. The data presented are for samples from soil series that are important in the survey area. All samples were collected from carefully selected sites that are typical of the series and discussed in the section "Soil series and morphology." The soil samples were analyzed by the Agronomy and Soils Mineralogy Laboratory, Auburn University.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. All capacity measurements are reported on an oven-dry basis. The methods that were used in obtaining the data are indicated in the list that follows. The codes, in parentheses, refer to published methods codes.

Sand—(0.05-2.0 mm fraction) weight percentages of materials less than 2 mm (3A1) (*9*).
Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all materials less than 2 mm (3A1) (*9*).
Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of materials less than 2 mm (3A1) (*9*).
Extractable bases—method of Hajek, Adams, and Cope (*6*).
Extractable acidity—method of Hajek, Adams, and Cope (*6*).
Base saturation—method of Hajek, Adams, and Cope (*6*).
Reaction (pH)—1:1 water dilution (8C1a) (*9*).
Cation-exchange capacity—sum of cations (5A3a) (*9*).

Engineering test data

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

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

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

The methods and codes are AASHTO classification (M-145-66); Unified classification (D-2487-66T); mechanical analysis (T88-57); liquid limit (T89-60); plasticity index (T90-56); moisture-density, method A (T99-57).

Soil series and morphology

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

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

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

Bibb series

The Bibb series consists of poorly drained, moderately permeable, nearly level soils that formed in stratified loamy and sandy alluvial sediments. These soils are on flood plains of streams in the Coastal Plain. They are flooded frequently and are subject to scouring and uneven deposition of overwash. They are saturated with water near the surface during late winter and in spring. Slope ranges from 0 to 2 percent.

Bibb soils are geographically associated with Bladen, Dothan, Lucy, Luverne, and Shadygrove soils. Bladen soils are on stream terraces and have clayey texture. Dothan, Lucy, and Luverne soils are on adjacent upland side slopes and are well drained. Shadygrove soils are on broad ridgetops and side slopes and have a clayey control section.

Typical pedon of Bibb silt loam from an area of Bibb soils, in a wooded area, 225 feet north and 500 feet west of the SE corner of sec. 4, T. 3 N., R. 21 E.:

A11—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; weak granular structure; slightly sticky, nonplastic; common medium and fine roots; strongly acid; clear smooth boundary.

A12g—6 to 12 inches; dark gray (10YR 4/1) loam; few fine distinct strong brown mottles; few streaks of clean sand; massive; nonsticky, nonplastic; common medium and fine roots; strongly acid; gradual wavy boundary.

C1g—12 to 42 inches; gray (10YR 5/1) fine sandy loam; few fine distinct dark grayish brown mottles; few streaks of clean sand; massive; nonsticky, nonplastic; few fine and medium roots; strongly acid; gradual wavy boundary.

C2g—42 to 60 inches; gray (10YR 5/1) sandy loam; many fine and medium light yellowish brown mottles; few thin strata of clean sand grains; common strata of loamy sand; massive; nonsticky, nonplastic; strongly acid.

Reaction is strongly acid or very strongly acid.

The A11 horizon has hue of 10YR, value of 2 through 4, and chroma of 1 or 2. The A12g horizon has hue of 10YR, value of 4 through 7, and chroma of 1 or 2. Mottles are in shades of brown and yellow.

The C horizon has hue of 10YR, value of 4 through 7, and chroma of 1 or 2. Texture is fine sandy loam, sandy loam, loam, or silt loam. Many pedons contain strata of loamy sand or sand. Mottles are in shades of red, yellow, and brown.

Bigbee series

The Bigbee series consists of excessively drained, rapidly permeable, nearly level soils that formed in thick sandy sediments on low terraces along stream flood plains. Slope ranges from 0 to 2 percent.

Bigbee soils are geographically associated with Bladen, Eunola, and Kalmia soils. Bladen soils are on low, flat fluvial or marine terraces and have a clayey control section. Eunola and Kalmia soils are on stream terraces of the Coastal Plain and have a fine-loamy control section.

Typical pedon of Bigbee sand, in a wooded area, 2,300 feet south and 1,800 feet west of the NE corner of sec. 2, T. 5 N., R. 20 E.:

A1—0 to 7 inches; dark yellowish brown (10YR 3/4) sand; single grained; loose; many fine roots; very strongly acid; gradual wavy boundary.

C1—7 to 16 inches; yellowish brown (10YR 5/4) sand; single grained; loose; many fine roots; strongly acid; gradual wavy boundary.

C2—16 to 44 inches; yellowish brown (10YR 5/6) sand; single grained; loose; strongly acid; gradual wavy boundary.

C3—44 to 73 inches; white (10YR 8/1) sand; few fine distinct yellow (10YR 8/6) and brownish yellow (10YR 6/6) mottles; single grained; loose; few fine mica flakes; medium acid; gradual wavy boundary.

C4—73 to 99 inches; pale yellow (2.5Y 7/4) sand; lenses of white (10YR 8/1) and strong brown (7.5YR 5/8) sand; single grained; loose; few fine and medium mica flakes; few fine quartz pebbles; strongly acid; gradual wavy boundary.

Reaction is medium acid through very strongly acid.

The A horizon has hue of 10YR with value of 3 or 4 and chroma of 2 or 4 or with value of 4 or 5 and chroma of 3.

The upper part of the C horizon has hue of 10YR with value of 5 or 7 and chroma of 6 or 8 or with value of 5 or 6 and chroma of 4 or 6, or it has hue of 7.5YR, value of 5, and chroma of 6 or 8. The lower part of the C horizon has hue of 10YR or 2.5Y with value of 6 or 7 and chroma of 3 or 4 or with value of 8 and chroma of 1 or 2. Texture of the C horizon is loamy sand, sand, or fine sand. Mottles are in shades of brown and yellow. Most pedons contain clean sand grains and few to many mica flakes. Some pedons have a few quartz pebbles in the lower part of the C horizon.

Bladen series

The Bladen series consists of poorly drained, slowly permeable, nearly level soils that formed in stratified marine sediments of clayey texture on stream terraces of the Coastal Plain. These soils have a water table at or near the surface during late winter and in spring. Slope ranges from 0 to 2 percent.

Bladen soils are geographically associated with Bibb, Bigbee, Eunola, and Kalmia soils. Bibb soils are on flood plains of streams and have sandy texture. Bigbee soils are on low terraces along stream flood plains and are excessively drained. Eunola and Kalmia soils are at slightly higher elevations on stream terraces and lack gray matrix colors in the subsoil.

Typical pedon of Bladen fine sandy loam, in a pasture, 2,400 feet south and 450 feet east of the NW corner of sec. 19, T. 5 N., R. 20 E.:

Ap—0 to 4 inches; dark gray (10YR 4/1) fine sandy loam; weak fine granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.

A2—4 to 13 inches; grayish brown (10YR 5/2) fine sandy loam; few fine distinct light yellowish brown (10YR 6/4) mottles; weak fine subangular blocky structure; very friable; common fine roots; strongly acid; clear wavy boundary.

B21tg—13 to 18 inches; gray (10YR 6/1) sandy clay; many medium distinct brownish yellow (10YR 6/6) mottles; moderate fine and medium subangular blocky structure; firm; few fine roots; patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B22tg—18 to 24 inches; gray (10YR 6/1) clay; many medium distinct brownish yellow (10YR 6/6) and red (2.5YR 5/8) mottles; moderate medium subangular blocky structure; very firm; patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B23tg—24 to 55 inches; gray (10YR 6/1) clay; common medium distinct brownish yellow (10YR 6/6) and few fine faint gray (10YR 5/1) mottles; moderate medium subangular blocky structure; very firm; patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B24tg—55 to 65 inches; gray (10YR 6/1) clay; common medium distinct brownish yellow (10YR 6/8) and few fine distinct strong brown (7.5YR 5/6), pale brown (10YR 6/3), and gray (10YR 5/1) mottles; moderate medium subangular blocky structure; very firm; strongly acid.

Solum thickness is 60 inches or more. Reaction is strongly acid to very strongly acid throughout except in limed areas.

The Ap or A1 horizon has hue of 10YR with value of 2 or 4 and chroma of 1 or with value of 3 and chroma of 2. The A2 horizon has hue of 10YR with value of 5 or 6 and chroma of 2 or with value of 6 and chroma of 1. Texture of the A horizon is fine sandy loam, sandy loam, or loam. Mottles are in shades of brown, yellow, and gray.

The Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 1. Texture of the upper part of the Btg horizon is clay or sandy clay, and texture of the lower part is clay, sandy clay, or clay loam. Mottles are in shades of brown, red, and yellow.

Bonifay series

The Bonifay series consists of well drained, rapidly permeable, gently sloping soils that formed in thick beds of sandy and loamy marine sediments on ridgetops of the Coastal Plain. Slope ranges from 1 to 5 percent.

Bonifay soils are geographically associated with Dothan, Fuquay, and Troup soils. Dothan soils are on ridges and side slopes and have an epipedon less than 20 inches thick. Fuquay soils are on ridgetops of Coastal Plain uplands and have a sandy epipedon less than 40 inches thick. Troup soils are on ridges and side slopes of Coastal Plain uplands and do not contain plinthite.

Typical pedon of Bonifay loamy sand, 1 to 5 percent slopes, in a cultivated field, 2,550 feet south and 900 feet east of the NW corner of sec. 2, T. 7 N., R. 22 E.:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loamy sand; single grained; loose; few fine roots; strongly acid; gradual wavy boundary.

A21—9 to 21 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; many clean sand grains; few fine roots; strongly acid; gradual wavy boundary.

A22—21 to 45 inches; brownish yellow (10YR 6/6) loamy sand; single grained; loose; few clean sand grains; strongly acid; gradual wavy boundary.

B1t—45 to 53 inches; brownish yellow (10YR 6/6) sandy loam; common medium distinct strong brown (7.5YR 5/6) and few fine distinct yellowish red (5YR 4/8) mottles; weak medium subangular blocky structure; very friable; about 3 percent firm, brittle nodules of plinthite; strongly acid; gradual wavy boundary.

B21t—53 to 58 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) and few medium distinct yellowish red (5YR 4/8) mottles; weak medium subangular blocky structure; friable; about 7 percent firm, brittle nodules of plinthite; strongly acid; gradual wavy boundary.

B22t—58 to 70 inches; light yellowish brown (10YR 6/4) sandy clay loam; common medium distinct strong brown (7.5YR 5/6), yellowish red (5YR 4/6), and gray (10YR 6/1) mottles; moderate medium subangular blocky structure; friable; estimated 15 percent firm, brittle nodules of plinthite; strongly acid.

Solum thickness is 60 inches or more. Reaction is strongly acid or very strongly acid except where the soil has been limed.

The A1 or Ap horizon has hue of 10YR with value of 3 through 6 and chroma of 1 through 3 or with value of 3 and chroma of 2. The A2 horizon has hue of 10YR with value of 5 or 6 and chroma of 4 through 8 or with value of 6 or 7 and chroma of 3 or 4. Bodies of uncoated sand grains occur in many pedons. Texture of the A horizon ranges from sand to loamy fine sand.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 4 through 8. Texture is sandy loam or sandy clay loam. Mottles are in shades of gray, brown, and red. Firm, brittle nodules of plinthite make up 5 to 15 percent of the B2t horizon.

Chastain series

The Chastain series consists of poorly drained, slowly permeable, nearly level soils that formed in clayey alluvium on flood plains. These soils are saturated with water at or near the surface during winter and spring. Slope ranges from 0 to 2 percent.

Chastain soils are geographically associated with Eunola and Kalmia soils. Eunola soils are at higher elevations on flood plains and have an argillic horizon. Kalmia soils are on stream terraces and are better drained.

Typical pedon of Chastain silt loam from an area of Eunola-Chastain association, in a ponded area, 2,000 feet north and 750 feet east of the SW corner of sec. 2, T. 3 N., R. 19 E.:

A1—0 to 8 inches; grayish brown (2.5Y 5/2) silt loam; massive; slightly sticky, nonplastic; many fine and medium roots; bits of partially decomposed organic matter; strongly acid; clear wavy boundary.

C1—8 to 18 inches; grayish brown (2.5Y 5/2) silty clay loam; massive; slightly sticky, slightly plastic; few fine and medium roots; bits of partially decomposed organic matter; strongly acid; gradual wavy boundary.

C2—18 to 28 inches; gray (10YR 6/1) silty clay; massive; sticky, slightly plastic; few fine roots; strongly acid; gradual wavy boundary.

C3—28 to 44 inches; gray (N 6/0) silty clay; massive; sticky, slightly plastic; strongly acid; gradual wavy boundary.

C4—44 to 60 inches; gray (10YR 6/1) stratified sandy loam and loamy sand; massive; nonsticky, nonplastic; strongly acid.

Solum thickness ranges from 40 to 72 inches. Reaction is strongly acid or very strongly acid.

The A horizon has hue of 10YR, value of 4 through 6, and chroma of 1 or 2, or it has hue of 2.5Y, value of 6 or 7, and chroma of 2.

The C horizon has hue of 10YR with value of 4 through 7 and chroma of 1 or with value of 4 or 5 and chroma of 2; hue of 2.5Y, value of 5 through 7, and chroma of 2; or neutral hue, value of 4 or 6, and chroma of 0. It is silty clay loam, clay loam, silty clay, or clay. Mottles are in shades of brown and red. Most pedons have thick, sandy strata below a depth of 40 inches.

Cowarts series

The Cowarts series consists of well drained soils that are moderately permeable in the subsoil and moderately slowly or slowly permeable in the substratum. These are moderately sloping soils that formed in loamy marine

sediments on short slopes between drainageways and broad interfluves in prominently dissected Coastal Plain uplands. Slope ranges from 5 to 10 percent.

Cowarts soils are geographically associated with Dothan and Red Bay soils. Dothan soils are on ridges and side slopes and have a solum more than 60 inches thick. Red Bay soils are on broad ridgetops and side slopes and have a thick, dark red Bt horizon.

Typical pedon of Cowarts fine sandy loam, 5 to 10 percent slopes, in an idle field, 950 feet south and 1,900 feet west of the NE corner of sec. 30, T. 3 N., R. 22 E.:

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; estimated 4 percent iron concretions; strongly acid; abrupt smooth boundary.

B21t—6 to 13 inches; strong brown (7.5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; estimated 3 percent iron concretions; very strongly acid; gradual wavy boundary.

B22t—13 to 25 inches; strong brown (7.5YR 5/6) sandy clay loam; common medium distinct brownish yellow (10YR 6/8) and red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; estimated 4 percent iron concretions; estimated 4 percent plinthite nodules; very strongly acid; gradual wavy boundary.

C1—25 to 36 inches; mottled yellowish brown (10YR 5/6), strong brown (7.5YR 5/6), very pale brown (10YR 7/3), yellowish red (5YR 4/8), and red (2.5YR 4/6) sandy clay loam; massive; firm; very strongly acid; gradual wavy boundary.

C2—36 to 62 inches; mottled yellowish brown (10YR 5/6), strong brown (7.5YR 5/6), light gray (10YR 7/2), and red (2.5YR 4/6) sandy clay loam; massive; firm; very strongly acid.

Solum thickness ranges from 20 to 40 inches. Reaction is strongly acid or very strongly acid except where the soil has been limed.

The A horizon has hue of 10YR, value of 4, and chroma of 2 through 4. Content of iron concretions ranges from 0 to 5 percent.

The Bt horizon has hue of 10YR through 5YR, value of 5 or 6, and chroma of 6 or 8. It is sandy clay loam or sandy clay. Mottles are in shades of yellow, brown, and red. Content of iron concretions ranges from 0 to 5 percent, and content of plinthite nodules ranges from 0 to 5 percent.

The C horizon is mottled in hue of 10YR through 10R, value of 4 through 8, and chroma of 1 through 8. Texture is sandy clay loam or sandy loam.

Dothan series

The Dothan series consists of well drained, moderately to moderately slowly permeable, level to gently sloping soils. These soils formed in thick, unconsolidated, medium textured and fine textured sediments on ridges and side slopes of Coastal Plain uplands. Slope ranges from 0 to 8 percent.

Dothan soils are geographically associated with Bibb, Bonifay, Cowarts, and Orangeburg soils. Bibb soils are on flood plains of streams and are poorly drained. The nearly level Bonifay soils are on ridgetops and have an epipedon more than 20 inches thick. Cowarts soils are on short slopes between drainageways and broad interfluves and have a solum less than 60 inches thick. Orangeburg soils are on broad ridgetops and side slopes, and content of plinthite nodules in the Bt horizon is less than 5 percent.

Typical pedon of Dothan fine sandy loam, 2 to 5 percent slopes, in a cultivated area, 1,600 feet south and 1,700 feet west of the NE corner of sec. 31, T. 4 N., R. 22 E.:

Ap—0 to 8 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; 2 to 3 percent iron concretions; strongly acid; clear smooth boundary.

B21t—8 to 18 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; friable; few thin patchy clay films on faces of peds; 2 to 3 percent iron concretions; strongly acid; gradual smooth boundary.

B22t—18 to 27 inches; yellowish brown (10YR 5/8) sandy clay loam; few fine distinct yellowish red (5YR 4/8) mottles; weak fine to medium subangular blocky structure; friable; thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B23t—27 to 35 inches; yellowish brown (10YR 5/6) sandy clay loam; few fine faint very pale brown (10YR 7/4), few medium distinct yellowish red (5YR 5/8), and few medium prominent dark red (2.5YR 3/6) mottles; weak to moderate medium subangular blocky structure; friable; 4 to 5 percent plinthite nodules; thin clay films on faces of peds; strongly acid; gradual wavy boundary.

B24t—35 to 49 inches; yellowish brown (10YR 5/6) sandy clay loam; few fine faint very pale brown (10YR 7/3), few medium distinct yellowish red (5YR 4/8), and few medium prominent dark red (2.5YR 3/6) mottles; moderate fine to medium subangular blocky structure; friable; 10 to 12 percent plinthite nodules; thin clay films on faces of peds; strongly acid; clear wavy boundary.

B25t—49 to 80 inches; yellowish brown (10YR 5/6) sandy clay loam; many coarse prominent white (10YR 8/1) and dark red (2.5YR 3/6) mottles; moderate medium subangular blocky structure; firm; clay films on faces of peds; strongly acid.

Solum thickness ranges from 60 to more than 80 inches. Reaction is strongly acid or very strongly acid except where the soil has been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. Content of ironstone pebbles ranges from 0 to 5 percent.

The upper part of the Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8. Texture is sandy loam or sandy clay loam. Mottles are in shades of brown and red. The lower part of the Bt horizon has hue of 10YR with value of 5 and chroma of 4 or 6 or with value of 7 and chroma of 6 or 8. Texture is sandy clay loam or sandy clay. Mottles are in shades of brown, red, and gray. Plinthite content in the lower part of the Bt horizon is 10 to 35 percent, by volume.

Eunola series

The Eunola series consists of moderately well drained, moderately permeable, nearly level soils that formed in sandy fluvial deposits on stream terraces of the Coastal Plain. These soils have a seasonal high water table within 2 feet of the surface during winter and early spring, and they are flooded occasionally. Slope is dominantly 0 to 2 percent but ranges to 6 percent.

Eunola soils are geographically associated with Bigbee, Bladen, Chastain, and Kalmia soils. Bigbee soils are on terraces along stream flood plains and are sandy throughout. Bladen soils are on low, flat, fluvial or marine terraces and have a clayey control section. Chastain soils are on flood plains and are poorly drained. Kalmia soils are on stream terraces of the Coastal Plain and are better drained.

Typical pedon of Eunola loamy sand, in a wooded area, 375 feet north and 2,300 feet east of the SW corner of sec. 2, T. 5 N., R. 20 E.:

A1—0 to 8 inches; brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; common fine to medium roots; strongly acid; clear wavy boundary.

B1—8 to 12 inches; yellowish brown (10YR 5/6) sandy loam; weak fine subangular blocky structure; friable; common fine to medium roots; sand grains bridged and coated with clay; strongly acid; clear wavy boundary.

B21t—12 to 24 inches; yellowish brown (10YR 5/6) sandy clay loam; few fine faint light gray (10YR 7/2) and yellowish red (5YR 4/6) mottles; weak fine and medium subangular blocky structure; firm; thin patchy clay films on faces of peds; few fine roots; very strongly acid; gradual wavy boundary.

B22t—24 to 32 inches; mottled yellowish brown (10YR 5/8), light gray (10YR 7/1), strong brown (7.5YR 5/8), and red (2.5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable to firm; clay films on faces of peds and in pores; few fine mica flakes; few fine roots; very strongly acid; gradual wavy boundary.

B23t—32 to 44 inches; mottled yellowish brown (10YR 5/8), light gray (10YR 7/1), strong brown (7.5YR 5/6), and yellowish red (5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable to firm; few thin patchy clay films on ped faces; common mica flakes; very strongly acid; gradual wavy boundary.

B3—44 to 52 inches; mottled light gray (10YR 7/2), brownish yellow (10YR 6/6), strong brown (7.5YR 5/8), and yellowish red (5YR 4/8) sandy loam; weak fine to medium subangular blocky structure; friable; common mica flakes; very strongly acid; gradual wavy boundary.

C1—52 to 58 inches; mottled light gray (10YR 7/1), yellowish brown (10YR 5/8), and strong brown (7.5YR 5/8) sandy loam; weak medium subangular blocky structure; very friable; common fine mica flakes; very strongly acid; gradual wavy boundary.

C2—58 to 65 inches; light gray (10YR 7/1) sandy loam; common medium distinct brownish yellow (10YR 6/6) and yellowish red (5YR 4/8) mottles; single grained; loose; common fine mica flakes; very strongly acid.

Solum thickness ranges from 40 to 60 inches. Reaction is strongly acid or very strongly acid except where the soil has been limed.

The A horizon has hue of 10YR with value of 3 or 4 and chroma of 1 through 3 or with value of 5 and chroma of 4.

The B1 horizon and the upper part of the Bt horizon have hue of 10YR, value of 5 or 6, and chroma of 4 through 8, or they have hue of 7.5YR, value of 5, and chroma of 6 or 8. Texture of the B1 horizon is sandy loam. The upper part of the Bt horizon has mottles in shades of brown, red, and gray. The lower part of the Bt horizon is mottled yellow, brown, red, and gray. Texture is sandy clay loam or sandy clay. The B3 horizon has color similar to that of the lower part of the Bt horizon.

The C horizon is mottled white, gray, yellow, brown, and red. Texture is sandy loam, loamy sand, or sand.

Fuquay series

The Fuquay series consists of well drained, moderately permeable, gently sloping soils that formed in thick beds of sandy and loamy, marine sediments. These soils are on uplands of the Coastal Plain. A water table is perched briefly above the plinthic zone during late winter and early spring. Slope ranges from 1 to 5 percent.

Fuquay soils are geographically associated with Bonifay and Orangeburg soils. The nearly level Bonifay soils are on ridgetops and have a sandy epipedon more than 40 inches thick. Orangeburg soils are on broad ridgetops and side slopes, and content of plinthite nodules in the Bt horizon is less than 5 percent.

Typical pedon of Fuquay loamy sand, 1 to 5 percent slopes, in a cultivated field, 500 feet south and 2,400 feet west of the NE corner of sec. 8, T. 3 N., R. 19 E.:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.

A21—8 to 12 inches; yellowish brown (10YR 5/4) loamy sand; weak fine granular structure; very friable; few fine roots; very strongly acid; gradual wavy boundary.

A22—12 to 26 inches; brownish yellow (10YR 6/6) loamy sand; common streaks of clean sand; weak fine granular structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

B1—26 to 35 inches; yellowish brown (10YR 5/6) sandy loam; few streaks of clean sand; weak fine granular structure; very friable; very strongly acid; clear wavy boundary.

B21t—35 to 59 inches; mottled yellowish brown (10YR 5/6), light yellowish brown (10YR 6/4), strong brown (7.5YR 5/6), and yellowish red (5YR 4/6) sandy loam; weak medium subangular blocky structure; friable; estimated 15 to 20 percent nodules of plinthite in lower part of horizon; few patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B22t—59 to 69 inches; mottled yellowish brown (10YR 5/6), brownish yellow (10YR 6/6), light gray (10YR 7/1), strong brown (7.5YR 5/6), and red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable to firm; estimated 6 to 8 percent nodules of plinthite; few patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B23t—69 to 90 inches; mottled yellowish brown (10YR 5/6), yellow (10YR 7/6), light gray (10YR 7/1), light red (2.5YR 6/6), and red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable to firm; very strongly acid.

Solum thickness exceeds 80 inches. Reaction is strongly acid or very strongly acid throughout except where the soil has been limed.

The A horizon ranges from 20 to 40 inches in thickness. The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 4 or 6. Texture is loamy sand or sand. Pockets or streaks of clean sand are present in this horizon in many pedons.

The B1 horizon, where present, has hue of 10YR, value of 5, and chroma of 6. The B2t horizon has hue of 10YR, value of 5, and chroma of 6, or it is mottled in shades of brown, red, and gray. Texture is sandy loam or sandy clay loam. Plinthite makes up 5 to 20 percent of some part of this horizon. Depth to the layer in which plinthite content is more than 5 percent ranges from 45 to 60 inches.

Grady series

The Grady series consists of poorly drained, slowly permeable, nearly level soils that formed in clayey, marine sediments. These soils are in saucer-shaped depressions on Coastal Plain uplands. They are saturated for 6 to 8 months yearly. Slope ranges from 0 to 2 percent.

Grady soils are geographically associated with Orangeburg and Red Bay soils. Orangeburg soils are on broad ridgetops and side slopes, are well drained, and have a fine-loamy control section. Red Bay soils are on broad ridgetops and side slopes, are well drained, and have a thick, dark red Bt horizon.

Typical pedon of Grady loam, in a pasture, 1,350 feet south and 100 feet west of the NE corner of sec. 29, T. 4 N., R. 22 E.:

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

B21tg—7 to 34 inches; gray (10YR 6/1) clay; weak medium subangular blocky structure; firm; very strongly acid; clear smooth boundary.

B22tg—34 to 46 inches; gray (10YR 6/1) clay; few fine distinct brownish yellow (10YR 6/6) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; very firm; very strongly acid; gradual smooth boundary.

B23tg—46 to 55 inches; gray (10YR 5/1) clay; few fine distinct brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; very firm; very strongly acid; gradual smooth boundary.

B3g—55 to 62 inches; gray (10YR 6/1) sandy clay loam; weak medium subangular blocky structure; firm; very strongly acid.

Solum thickness ranges from 60 to more than 80 inches. Reaction ranges from strongly acid to extremely acid.

The A horizon has hue of 10YR with value of 2 through 4 and chroma of 1 or with value of 3 and chroma of 2.

The Bt horizon has hue of 10YR, value of 5 through 7, and chroma of 1. The Btg horizon is sandy clay or clay. The Bg horizon has mottles in shades of brown, yellow, and red.

Kalmia series

The Kalmia series consists of well drained, moderately permeable, nearly level soils. These soils formed in sandy, marine or fluvial deposits on stream terraces of the Coastal Plain. Slope ranges from 0 to 2 percent.

Kalmia soils are geographically associated with Bigbee, Bladen, Chastain, and Eunola soils. Bigbee soils are on low terraces along stream flood plains and are excessively drained. Bladen soils are on low, flat, fluvial or marine terraces and have a clayey control section. Chastain soils are on flood plains and are poorly drained. Eunola soils are on stream terraces of the Coastal Plain and have mottles with chroma of 2 or less within 24 inches of the top of the B horizon.

Typical pedon of Kalmia fine sandy loam, in a pine plantation, 1,400 feet north and 25 feet east of the SW corner of sec. 34, T. 6 N., R. 21 E.:

Ap—0 to 5 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; very friable; many fine, medium, and coarse roots; strongly acid; clear smooth boundary.

B21t—5 to 12 inches; strong brown (7.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine, medium, and coarse roots; strongly acid; gradual wavy boundary.

B22t—12 to 31 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few medium and coarse roots; few mica flakes; strongly acid; clear wavy boundary.

C1—31 to 50 inches; yellowish brown (10YR 5/6) loamy sand; pockets of clean sand; single grained; loose; few mica flakes; strongly acid; clear wavy boundary.

C2—50 to 65 inches; pale brown (10YR 6/3) loamy sand; common medium distinct brownish yellow (10YR 6/6) and yellowish brown (10YR 5/6) mottles; pockets of clean sand; single grained; loose; few mica flakes; strongly acid.

Solum thickness ranges from 20 to 40 inches. Reaction is strongly acid or very strongly acid throughout except where the soil has been limed.

The A horizon has hue of 10YR, value of 4 through 6, and chroma of 2 through 4.

The B horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 through 8. Mottles are in shades of brown and gray.

The C horizon has hue of 10YR or 7.5YR, value of 5 through 8, and chroma of 2 through 8. Texture is loamy sand or sand. Mica flakes are common in most pedons.

Lucy series

The Lucy series consists of well drained, moderately permeable, nearly level to moderately sloping soils that formed in unconsolidated, sandy and loamy marine sediments. These soils are on Coastal Plain uplands. Slope ranges from 0 to 15 percent.

Lucy soils are geographically associated with Bibb, Luverne, Orangeburg, and Troup soils. Bibb soils are on flood plains of streams and are poorly drained. Luverne soils are on dissected uplands of the Coastal Plain and have a clayey control section. Orangeburg soils are on broad ridgetops and side slopes and have an A horizon less than 20 inches thick. Troup soils are on ridges and side slopes of Coastal Plain uplands and have an A horizon more than 40 inches thick.

Typical pedon of Lucy loamy sand, 0 to 5 percent slopes, in a pasture, 2,600 feet south and 1,700 feet east of the NW corner of sec. 17, T. 5 N., R. 19 E.:

Ap—0 to 6 inches; brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; common fine and medium roots; strongly acid; clear smooth boundary.

A2—6 to 22 inches; strong brown (7.5YR 5/6) loamy sand; weak fine granular structure; very friable; common streaks of clean sand; common fine and medium roots; strongly acid; gradual smooth boundary.

A3—22 to 33 inches; yellowish red (5YR 5/8) loamy sand; single grained; very friable; common streaks of clean sand; few fine and medium roots; strongly acid; gradual smooth boundary.

B21t—33 to 42 inches; yellowish red (5YR 4/8) sandy loam; weak fine subangular blocky structure; friable; sand grains coated and bridged with clay; few fine and medium roots; strongly acid; gradual smooth boundary.

B22t—42 to 62 inches; red (2.5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; patchy clay films on ped surfaces; strongly acid; gradual smooth boundary.

B23t—62 to 75 inches; red (2.5YR 4/6) sandy clay loam; weak and moderate medium subangular blocky structure; friable to firm; clay films on most ped surfaces; strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid except where the soil has been limed.

The Ap or A1 horizon has hue of 10YR, value of 3 through 5, and chroma of 2 or 3. The A2 horizon has hue of 10YR or 7.5YR, value of 4 through 6, and chroma of 3 through 8. Streaks of clean sand are common in the lower part of this horizon. Texture is loamy sand. The A3 horizon, where present, has hue of 5YR, value of 4 or 5, and chroma of 6 or 8.

The B2t horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. Texture is sandy loam or sandy clay loam.

Luverne series

The Luverne series consists of well drained, moderately slowly permeable, rolling soils that formed in stratified marine sediments. These soils are on dissected uplands of the Coastal Plain. Slope ranges from 1 to 35 percent but is dominantly 3 to 15 percent.

Luverne soils are geographically associated with Bibb, Lucy, Shadygrove, and Troup soils. Bibb soils are on flood plains and are poorly drained. Lucy soils are on adjacent side slopes of the Coastal Plain uplands and have a loamy control section. Shadygrove soils are on broad ridgetops and side slopes and are moderately well drained. Troup

soils are on ridges and side slopes of Coastal Plain uplands and have an A horizon more than 40 inches thick.

Typical pedon of Luverne fine sandy loam from an area of Luverne-Lucy association, rolling, in a wooded area, 1,700 feet south and 2,250 feet east of the NW corner of sec. 22, T. 6 N., R. 21 E.:

A1—0 to 5 inches; brown (7.5YR 4/4) fine sandy loam; weak fine granular structure; very friable; common fine and medium roots; strongly acid; abrupt smooth boundary.

B21t—5 to 14 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm; many fine roots; clay films on faces of peds; very strongly acid; gradual smooth boundary.

B22t—14 to 24 inches; yellowish red (5YR 4/6) clay; common fine distinct pale brown (10YR 6/3) and yellowish brown (10YR 5/6) and few fine distinct red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; patchy clay films on faces of peds; common fine flakes of mica; very strongly acid; gradual smooth boundary.

B3—24 to 36 inches; yellowish red (5YR 4/8) clay loam; common medium distinct red (2.5YR 4/8) and yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable to firm; estimated 30 to 40 percent platy structure; common fine flakes of mica; very strongly acid; clear smooth boundary.

C1—36 to 45 inches; layers of gray (10YR 6/1) soft claystone and brownish yellow (10YR 6/6) and yellowish red (5YR 4/6) sandy clay loam; moderate medium platy rock structure; firm; common fine flakes of mica; very strongly acid; gradual smooth boundary.

C2—45 to 65 inches; layers of gray (10YR 6/1) soft claystone and brownish yellow (10YR 6/6), yellowish red (5YR 4/6), and red (2.5YR 4/6) sandy loam; moderate medium platy rock structure; firm; common fine flakes of mica; very strongly acid.

Solum thickness ranges from 20 to about 40 inches. Reaction is strongly acid to extremely acid.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 through 4.

The Bt horizon has hue of 5YR or 2.5YR, value of 3 through 5, and chroma of 6 or 8. It is clay, sandy clay, or clay loam. Mottles are in shades of brown and red. There are few to common flakes of mica. The B3 horizon has colors similar to those of the Bt horizon. Texture is clay loam or sandy clay loam. Zero to 50 percent of the B3 horizon has platy rock structure. There are few to common flakes of mica.

The C horizon is stratified gray, soft claystone and fine sandy loam, sandy loam, or sandy clay loam. Color is in hue of 10YR through 2.5YR, value of 4 through 6, and chroma of 6 or 8. The claystone layers are thin to very thick. There are few to common flakes of mica. Some pedons have thin lenses of ironstone in the upper part.

Orangeburg series

The Orangeburg series consists of well drained, moderately permeable, nearly level to moderately sloping soils that formed in loamy and clayey sediments. These soils are on broad ridgetops and side slopes of Coastal Plain uplands. Slope ranges from 0 to 8 percent.

Orangeburg soils are geographically associated with Dothan, Fuquay, Grady, Lucy, Red Bay, and Troup soils. Dothan soils are on ridges and side slopes and have plinthite content of more than 5 percent in the Bt horizon. Fuquay soils are on ridgetops of Coastal Plain uplands and have a sandy epipedon more than 20 inches thick. Grady soils are in saucer-shaped depressions on Coastal Plain uplands and have a clayey control section. Lucy soils are on adjacent side slopes of Coastal Plain uplands and have a sandy epipedon more than 20 inches thick. Red Bay soils are on broad ridgetops and side slopes and have a thick, dark red Bt horizon. Troup soils are on ridges and side slopes of Coastal Plain uplands and have an A horizon more than 40 inches thick.

Typical pedon of Orangeburg sandy loam, 2 to 5 percent slopes, in a cultivated field, 2,100 feet south and 600 feet east of the NW corner of sec. 22, T. 4 N., R. 19 E.:

Ap—0 to 8 inches; brown (10YR 4/3) sandy loam; weak medium subangular blocky structure parting to weak fine granular; very friable; few fine roots; strongly acid; abrupt smooth boundary.

B1—8 to 15 inches; yellowish red (5YR 4/8) sandy loam; weak fine subangular blocky structure; friable; few fine roots; strongly acid; gradual wavy boundary.

B21t—15 to 24 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; few patchy clay films on faces of peds; few fine roots; strongly acid; gradual wavy boundary.

B22t—24 to 38 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B23t—38 to 82 inches; dark red (2.5YR 3/6) sandy clay loam; weak fine subangular blocky structure; friable; few patchy clay films on faces of peds; strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid except where the soil has been limed.

The A horizon has hue of 10YR, value of 3 through 5, and chroma of 2 through 6. Texture is loamy sand or sandy loam.

The B1 horizon has hue of 5YR, value of 4 or 5, and chroma of 6 or 8. The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. The lower part of this horizon has value of 3 in some pedons. Mottles are in shades of brown in the lower part.

Red Bay series

The Red Bay series consists of well drained, moderately permeable, nearly level to gently sloping soils that formed in unconsolidated marine sediments. These soils are on broad ridgetops and side slopes of Coastal Plain uplands. Slope ranges from 0 to 8 percent.

Red Bay soils are geographically associated with Grady, Orangeburg, and Troup soils. Grady soils are in saucer-shaped depressions on Coastal Plain uplands and have a clayey control section. Orangeburg soils are on broad ridgetops and side slopes and do not have a thick, dark red Bt horizon. Troup soils are on ridges and side slopes of Coastal Plain uplands and have an A horizon more than 40 inches thick.

Typical pedon of Red Bay loamy sand, 2 to 5 percent slopes, in a clearcut pine plantation, 850 feet north and 2,150 feet east of the SW corner of sec 10, T. 3 N., R. 22 E.:

Ap—0 to 6 inches; dark reddish brown (5YR 3/4) loamy sand; weak fine granular structure; very friable; many fine and medium roots; medium acid; clear wavy boundary.

B1—6 to 13 inches; dark reddish brown (2.5YR 3/4) sandy loam; weak fine subangular blocky structure; friable; common fine and medium roots; strongly acid; gradual smooth boundary.

B21t—13 to 57 inches; dark red (2.5YR 3/6) sandy clay loam; weak fine subangular blocky structure; friable; few patchy clay films on faces of peds; few fine, medium, and coarse roots; strongly acid; gradual smooth boundary.

B22t—57 to 85 inches; dark red (2.5YR 3/6) light sandy clay loam; weak fine subangular blocky structure; friable; few patchy clay films on faces of peds; few coarse roots; strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid except where the soil has been limed.

The A horizon has hue of 7.5YR or 5YR, value of 3, and chroma of 2 through 4.

The B1 horizon has hue of 5YR or 2.5YR, value of 3, and chroma of 4, or it has hue of 2.5YR, value of 3, and chroma of 6.

The B2t horizon has hue of 2.5YR or 10R, value of 3, and chroma of 6.

Shadygrove series

The Shadygrove series consists of moderately well drained, very slowly permeable, rolling soils that formed in clayey fossiliferous sediments of marine origin. These soils are on uplands of the Southern Coastal Plain. Slope ranges from 5 to 20 percent.

Shadygrove soils are geographically associated with Bibb and Luverne soils. Bibb soils are on flood plains and are poorly drained. Luverne soils are on dissected uplands of the Coastal Plain and are well drained.

Typical pedon of Shadygrove sandy loam from an area of Shadygrove-Luverne association, rolling, in a pine plantation, 450 feet south and 1,700 feet west of the NE corner of sec. 3, T. 7 N., R. 19 E.:

A1—0 to 6 inches; very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; very friable, nonsticky; common fine and medium roots; few thin flat fragments of fossiliferous claystone; strongly acid; clear smooth boundary.

B21t—6 to 16 inches; mottled yellowish brown (10YR 5/6), pale brown (10YR 6/3), yellowish red (5YR 4/6), and red (2.5YR 4/6) clay; moderate fine and medium subangular blocky structure; firm, very sticky; common fine and medium roots; thick continuous clay films on faces of peds; few thick flat fragments of fossiliferous claystone; very strongly acid; gradual wavy boundary.

B22t—16 to 23 inches; mottled yellowish brown (10YR 5/6), pale brown (10YR 6/3), gray (10YR 6/1), yellowish red (5YR 4/6), and red (2.5YR 4/6) clay; strong medium and coarse subangular blocky structure that parts to moderate fine and medium angular blocky; firm, very sticky; common fine roots; thin clay films on faces of peds; few thick flat fragments of fossiliferous claystone; strongly acid; clear wavy boundary.

C1—23 to 30 inches; mottled yellowish brown (10YR 5/6), pale brown (10YR 6/3), gray (5Y 5/1), yellowish red (5YR 4/6), and red (2.5YR 4/6) flaggy clay; massive; firm, sticky; few thin patchy clay films on horizontal surfaces of fragments; few small stress surfaces; common fine roots in cracks and along surfaces of fragments; about 30 percent by volume thick flat fragments and cobblestones of fossiliferous claystone; strongly acid; gradual wavy boundary.

C2—30 to 56 inches; mottled gray (5Y 5/1), grayish brown (2.5Y 5/2), brownish yellow (10YR 6/6), strong brown (7.5YR 5/6), and yellowish red (5YR 4/6) very flaggy clay loam; massive; firm, sticky; few small stress surfaces; about 70 percent thick flat fragments and cobblestones of fossiliferous claystone; few fine roots in cracks and along surfaces of fragments; strongly acid.

Solum thickness ranges from 20 to 40 inches but is commonly less than 25 inches. Reaction is strongly acid or very strongly acid. The solum contains few to common thin to very thick flat fragments and cobblestones in most pedons.

The A1 or Ap horizon has hue of 10YR, value of 3 through 5, and chroma of 2 through 4. The A2 horizon, where present, has hue of 10YR, value of 4 through 6, and chroma of 3 through 6. Texture is sandy loam or fine sandy loam.

The B21t horizon is mottled in hue of 2.5YR, 5YR, 7.5YR, and 10YR, value of 4 through 7, and chroma of 3 through 8, or it has a matrix color in the hue, value, and chroma listed above and has many mottles of two or more of the other colors. Texture is clay loam, sandy clay, or clay.

The B22t horizon is mottled in hue of 2.5YR, 5YR, 7.5YR, and 10YR, value of 4 through 7, and chroma of 1 through 6, or it has a matrix color in the hue, value, and chroma listed above and has common to many red, brown, and gray mottles.

The C horizon is mottled in hue of 2.5YR through 5Y, value of 4 through 7, and chroma of 1 through 8, or it has a matrix color in hue of 10YR, 2.5Y, or 5Y, value of 4 through 7, and chroma of 1 through 8 and has common to many red, brown, and gray mottles. Content of thin to very thick, flat fragments and cobblestones of fossiliferous claystone is 20 to 80 percent. Fine earth material of silty clay loam, clay loam, clay, or sandy clay texture fills the cracks between fragments of claystone.

Troup series

The Troup series consists of well drained, moderately permeable, nearly level to moderately steep soils that formed in unconsolidated sandy and loamy marine sediments. These soils are on ridges and side slopes of Coastal Plain uplands. Slope ranges from 1 to 20 percent.

Troup soils are geographically associated with Bonifay, Lucy, Orangeburg, and Red Bay soils. The nearly level Bonifay soils are on ridgetops and have plinthite content of more than 5 percent in the Bt horizon. Lucy, Orangeburg, and Red Bay soils are on broad ridgetops and side slopes and have an A horizon less than 40 inches thick.

Typical pedon of Troup loamy sand, 1 to 5 percent slopes, in an idle field, 1,100 feet south and 450 feet west of the NE corner of sec. 26, T. 3 N., R. 22 E.:

Ap—0 to 7 inches; dark brown (10YR 3/3) loamy sand; single grained; loose; common fine roots; medium acid; abrupt smooth boundary.

A21—7 to 15 inches; yellowish brown (10YR 5/4) loamy sand; weak fine granular structure; very friable; few fine roots; strongly acid; gradual wavy boundary.

A22—15 to 29 inches; strong brown (7.5YR 5/6) loamy sand; weak fine granular structure; very friable; few streaks of clean sand grains; few fine roots; very strongly acid; gradual wavy boundary.

A23—29 to 57 inches; yellowish red (5YR 5/6) sand; weak fine granular structure; very friable; common streaks of clean sand grains; strongly acid; gradual wavy boundary.

B21t—57 to 62 inches; red (2.5YR 4/8) sandy loam; weak fine subangular blocky structure; friable; strongly acid; gradual wavy boundary.

B22t—62 to 85 inches; red (2.5YR 4/6) sandy loam; weak fine subangular blocky structure; friable; strongly acid.

Solum thickness is more than 80 inches. Reaction is strongly acid or very strongly acid except where the soil has been limed.

The A horizon ranges from 40 to 72 inches in thickness. The Ap or A1 horizon has hue of 10YR or 7.5YR, value of 3 through 5, and chroma of 3. The A2 horizon has hue of 10YR or 7.5YR, value of 4 through 6, and chroma of 4 through 8, or it has hue of 5YR, value of 4 or 5, and chroma of 6 or 8. Texture is loamy sand or sand. Streaks of clean sand are common.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8, or it has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8. Texture is sandy loam or sandy clay loam.

Classification of the soils

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. Readers interested in further details about the system should refer to "Soil taxonomy" (*11*).

The system of classification has six categories. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. In this system the classification is based on the different soil properties that can be observed in the field or those that can be inferred either from other properties that are observable in the field or from the combined data of soil science and other disciplines. The properties selected for the higher categories are the result of soil genesis or of factors that affect soil genesis. In table 19, the soils of the survey area are classified according to the system. Categories of the system are discussed in the following paragraphs.

ORDER. Ten soil orders are recognized as classes in the system. The properties used to differentiate among orders are those that reflect the kind and degree of dominant soil-forming processes that have taken place. Each order is identified by a word ending in *sol*. An example is Ultisol.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis and are important to plant growth or that are selected to reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning moist, 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 expression of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and a prefix that suggests something about the properties of the soil. An example is Hapludults (*Hapl*, meaning simple horizons, plus *udult*, the suborder of Ultisols that have a udic moisture regime).

SUBGROUP. Each great group may be divided into three subgroups: the central (typic) concept of the great groups, which is not necessarily the most extensive subgroup; the intergrades, or transitional forms to other orders, suborders, or great groups; and the extragrades, which have some properties that are representative of the great groups but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that is thought to typify the great group. An example is Typic Hapludults.

FAMILY. Families are established within a subgroup on the basis of similar physical and chemical properties that affect management. Among the properties considered in horizons of major biological activity below plow depth are particle-size distribution, mineral content, temperature regime, thickness of the soil penetrable by roots, consistence, moisture equivalent, soil slope, and permanent cracks. A family name consists of the name of a subgroup and a series of adjectives. The adjectives are the class names for the soil properties used as family differentiae. An example is clayey, mixed, thermic Typic Hapludults.

SERIES. The series consists of soils that formed in a particular kind of material and have horizons that, except for texture of the surface soil or of the underlying substratum, are similar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineral and chemical composition.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

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.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	More than 9

Base saturation. The degree to which material having base exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the exchange capacity.

Bottom land. The normal flood plain of a stream, subject to frequent flooding.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that loosen the subsoil and bring clods to the surface. A form of emergency tillage to control soil blowing.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coat, clay skin.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

Coarse textured (light textured) soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the bases of steep slopes.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures is difficult.

Complex, soil. A map unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping (or contour farming). Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is 40 or 80 inches (1 or 2 meters).

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically for long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients, as for example in "hillpeats" and "climatic moors."

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by running water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes a bare surface.

Excess fines. Excess silt and clay. The soil does not provide a source of gravel or sand for construction purposes.

Favorable. Favorable soil features for the specified use.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fine textured (heavy textured) soil. Sandy clay, silty clay, and clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flooding. The temporary covering of soil with water from overflowing streams, runoff from adjacent slopes, and tides. Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; *November-May*, for example, means that flooding can occur during the period November through May. Water standing for short periods after rainfall or commonly covering swamps and marshes is not considered flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forage. Plant material used as feed by domestic animals. Forage can be grazed or cut for hay.

Forb. Any herbaceous plant not a grass or a sedge.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Gleyed soil. A soil having one or more neutral gray horizons as a result of waterlogging and lack of oxygen. The term "gleyed" also designates gray horizons and horizons having yellow and gray mottles as a result of intermittent waterlogging.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

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.

Habitat. The natural abode of a plant or animal; refers to the kind of environment in which a plant or animal normally lives, as opposed to the range or geographical distribution.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:

O horizon.—An organic layer, fresh and decaying plant residue, at the surface of a mineral soil.

A horizon.—The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.

A2 horizon.—A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered, but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Infiltration. The downward entry of water into the immediate surface of soil or other material, 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.

Irrigation. Application of water to soils to assist in production of crops. Only sprinkler irrigation is used in Coffee County. In this method, water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Large stones. Rock fragments 10 inches (25 centimeters) or more across. Large stones adversely affect the specified use.

Leaching. The removal of soluble material from soil or other material by percolating water.

Light textured soil. Sand and loamy sand.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. Inadequate strength for supporting loads.

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 greater than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous areas. Areas that have little or no natural soil, are too nearly inaccessible for orderly examination, or cannot otherwise be feasibly classified.

Moderately coarse textured (moderately light textured) soil. Sandy loam and fine sandy loam.

Moderately fine textured (moderately heavy textured) soil. Clay loam, sandy clay loam, and silty clay loam.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters

(about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Pan. A compact, dense layer in a soil. A pan impedes the movement of water and the growth of roots. The word "pan" is commonly combined with other words that more explicitly indicate the nature of the layer; for example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly. The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality that enables the soil to transmit water or air, measured as the number of inches per hour that water moves through the soil. Terms describing permeability are *very slow* (less than 0.06 inch), *slow* (0.06 to 0.20 inch), *moderately slow* (0.2 to 0.6 inch), *moderate* (0.6 to 2.0 inches), *moderately rapid* (2.0 to 6.0 inches), *rapid* (6.0 to 20 inches), and *very rapid* (more than 20 inches).

Phase, soil. A subdivision of a soil series or other unit in the soil classification system based on differences in the soil that affect its management. A soil series, for example, may be divided into phases on the bases of differences in slope, stoniness, thickness, or some other characteristic that affects management. These differences are too small to justify separate series.

pH value. (See Reaction, soil). A numerical designation of acidity and alkalinity in soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from a semisolid to a plastic state.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents that commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on exposure to repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade, whereas ironstone cannot be cut but can be broken or shattered with a spade. Plinthite is one form of the material that has been called laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Poorly graded. Refers to soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets. Surface or subsurface drainage outlets difficult or expensive to install.

Productivity (soil). The capability of a soil for producing a specified plant or sequence of plants under a specified system of management. Productivity is measured in terms of output, or harvest, in relation to input.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulates over disintegrating rock.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth. Shallow root zone. The soil is shallow over a layer that greatly restricts roots. See Root zone.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged in stream channels from a drainage area. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-size particles.

Seepage. The rapid movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils, formed from a particular type of parent material, having horizons that, except for the texture of the A or surface horizon, are similar in all profile characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineralogical and chemical composition.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slow refill. The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones. Rock fragments 3 to 10 inches (7.5 to 25 centimeters) in diameter. Small stones adversely affect the specified use.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: *very coarse sand* (2.0 millimeters to 1.0 millimeter); *coarse sand* (1.0 to 0.5 millimeter); *medium sand* (0.5 to 0.25 millimeter); *fine sand*

(0.25 to 0.10 millimeter); *very fine sand* (0.10 to 0.05 millimeter); *silt* (0.05 to 0.002 millimeter); and *clay* (less than 0.002 millimeter).

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it can soak into the soil or flow slowly to a prepared outlet without harm. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. A marine terrace, generally wide, was deposited by the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer. Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The condition of the soil, especially the soil structure, as related to the growth of plants. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil (engineering). Presumably a fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water.

Water table, apparent. A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table, artesian. A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water table, perched. A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Illustrations

Figure 1.—This statue erected in Enterprise depicts the boll weevil as the victor in its struggle against cotton farmers in the early years of the century.

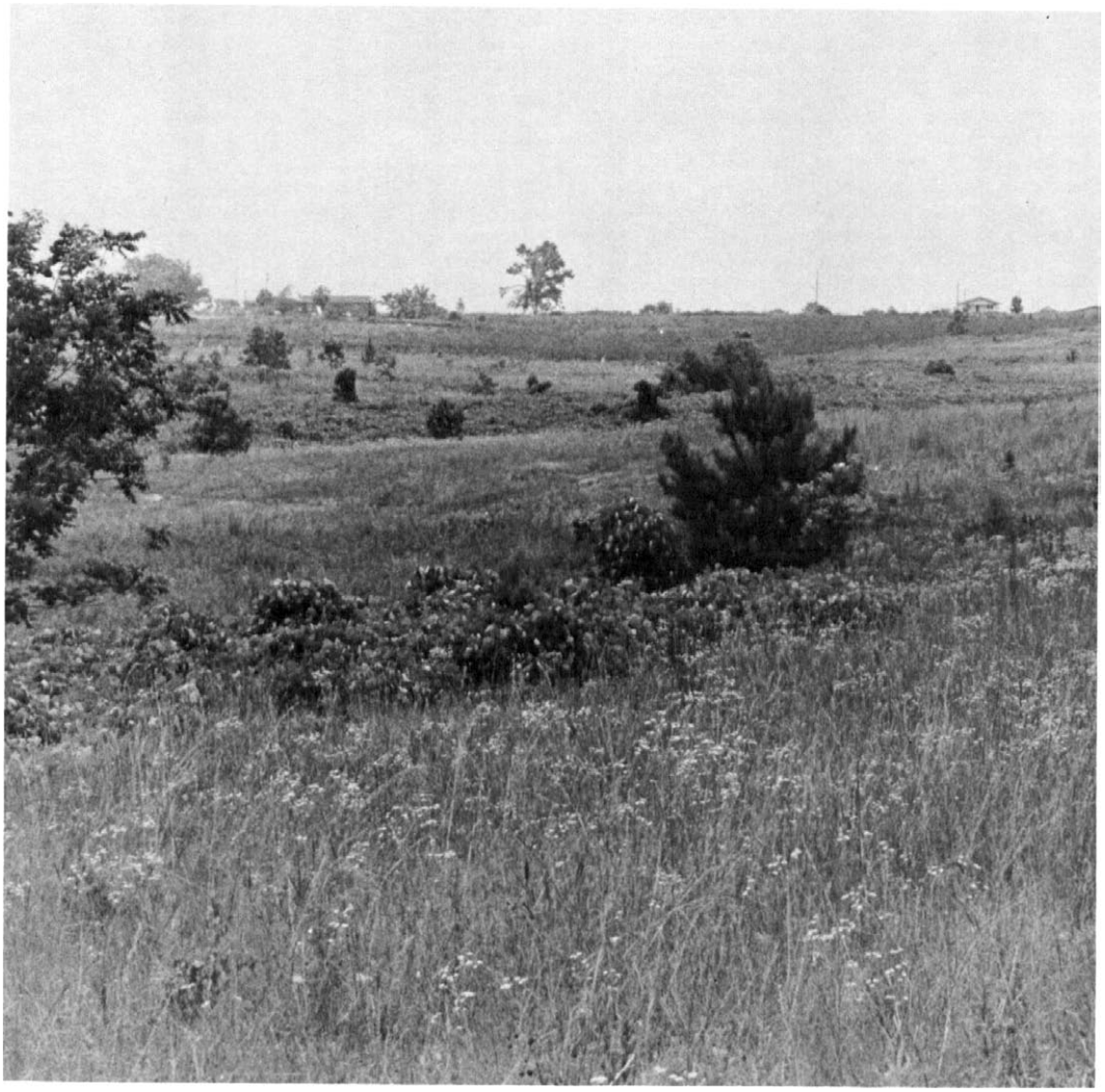

Figure 2.—Cowarts fine sandy loam, 5 to 10 percent slopes, on a typical, irregularly shaped side slope.

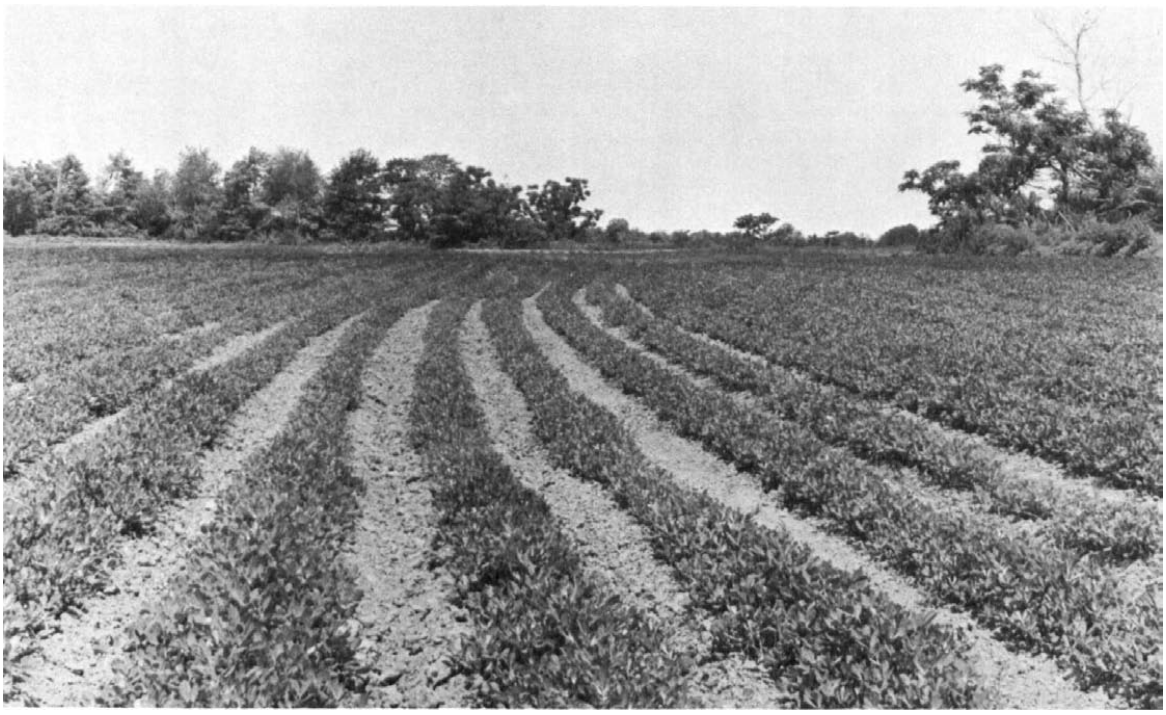

Figure 3.—Peanuts planted on the contour in an area of Orangeburg sandy loam, 2 to 5 percent slopes.

Figure 4.—Peanuts ready for harvest in an area of Orangeburg sandy loam, 2 to 5 percent slopes. The crop was grown on the contour and terraced to reduce runoff and control erosion.

Figure 5.—Regeneration of loblolly pine following a clearcutting operation in an area of Shadygrove-Luverne association, rolling.

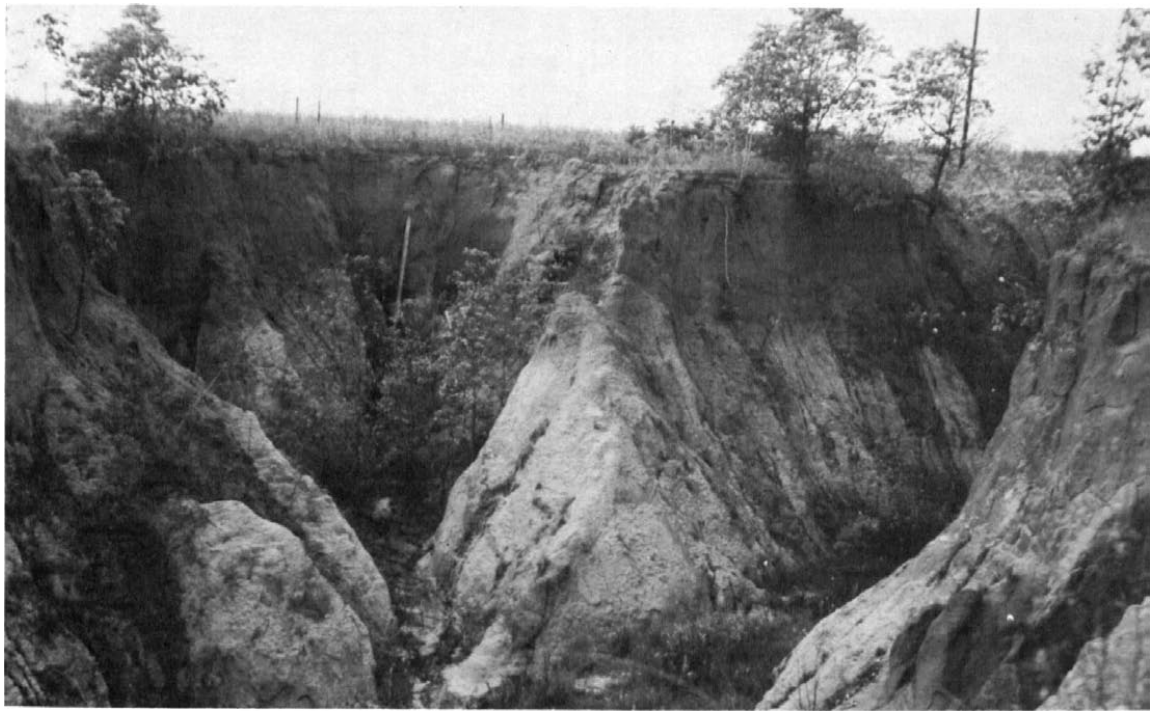

Figure 6.—Many of the soils in Coffee County are subject to gully erosion. This caving gully is in an area of Red Bay loamy sand, 5 to 8 percent slopes.

Figure 7.—This swampy area in an area of Grady loam is conducive to wetland wildlife.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION DATA

Month	Temperature*						Precipitation*				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days**	Average	Less than--	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----	67.2	38.7	50.0	79	13	169	4.30	2.38	5.87	7	.0
February---	63.9	40.3	52.1	81	17	159	5.13	3.36	6.72	8	.0
March------	71.1	46.5	58.8	86	26	295	5.50	2.56	7.89	7	.0
April------	79.2	53.8	66.5	90	36	495	4.44	2.01	6.42	6	.0
May--------	85.7	60.8	73.2	96	45	719	3.61	1.72	5.15	6	.0
June-------	90.7	66.7	78.7	101	55	861	4.74	2.59	6.49	7	.0
July-------	91.6	69.0	80.3	100	62	939	5.68	3.65	7.51	9	.0
August-----	91.8	68.6	80.2	99	59	936	4.60	2.55	6.26	7	.0
September--	88.1	64.8	76.5	98	50	795	4.47	2.08	6.41	6	.0
October----	80.0	53.9	67.0	92	35	527	1.70	.39	2.73	3	.0
November---	69.7	44.8	57.3	86	23	235	3.09	1.29	4.54	5	.0
December---	62.6	40.1	51.3	80	16	154	6.05	2.74	8.74	8	.0
Year-----	78.0	54.0	66.0	102	11	6,284	53.31	42.83	63.80	79	.0

*Recorded in the period 1951-74 at Ozark, Alabama.

**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

Probability	Temperature*		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 9	March 23	March 30
2 years in 10 later than--	February 27	March 14	March 24
5 years in 10 later than--	February 8	February 26	March 12
First freezing temperature in fall:			
1 year in 10 earlier than--	November 15	November 5	October 31
2 years in 10 earlier than--	November 25	November 12	November 4
5 years in 10 earlier than--	December 14	November 25	November 13

*Recorded in the period 1951-74 at Ozark, Alabama.

TABLE 3.--GROWING SEASON LENGTH

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	272	237	219
8 years in 10	283	249	228
5 years in 10	307	272	245
2 years in 10	338	295	263
1 year in 10	365	307	272

*Recorded in the period 1951-74 at Ozark, Alabama.

TABLE 4.--POTENTIALS AND LIMITATIONS OF MAP UNITS ON THE GENERAL SOIL MAP FOR SPECIFIED USES

Map unit	Extent of area	Cultivated farm crops	Woodland	Urban uses	Intensive recreation areas	Extensive recreation areas
	Pct					
1. Luverne-Lucy	31	Poor: clayey subsoil; steep, complex slopes.	Good	Poor: low strength; percs slowly.	Poor: steep, complex slopes.	Good.
2. Orangeburg-Dothan	23	Good	Good	Good	Good	Good.
3. Red Bay-Orangeburg	20	Good	Good	Good	Good	Good.
4. Troup-Lucy	12	Fair: low available water capacity.	Fair: equipment limitations; seedling mortality.	Good	Fair: sandy surface.	Good.
5. Eunola-Bladen	8	Fair: wetness; flooding.	Good	Poor: wetness; flooding.	Fair: wetness; flooding.	Good.
6. Shadygrove-Luverne	6	Poor: clayey subsoil; steep, complex slopes.	Good: shallow rooting depth.	Poor: low strength; shrink-swell.	Poor: claystone fragments on surface; steep, complex slopes.	Good.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
2	Bibb soils	20,500	4.7
3	Bigbee sand	2,200	0.5
4	Bladen fine sandy loam	11,200	2.6
5	Bonifay loamy sand, 1 to 5 percent slopes	2,300	0.5
6	Cowarts fine sandy loam, 5 to 10 percent slopes	1,950	0.5
7	Dothan fine sandy loam, 0 to 2 percent slopes	790	0.2
8	Dothan fine sandy loam, 2 to 5 percent slopes	14,900	3.4
9	Dothan fine sandy loam, 5 to 8 percent slopes	6,100	1.4
10	Dothan-Urban land complex, 0 to 8 percent slopes	740	0.2
11	Eunola loamy sand	15,100	3.5
12	Eunola-Urban land complex	750	0.2
13	Eunola-Chastain association	4,400	1.0
14	Fuquay loamy sand, 1 to 5 percent slopes	1,250	0.3
15	Grady loam	215	*
16	Kalmia fine sandy loam	7,300	1.7
17	Lucy loamy sand, 0 to 5 percent slopes	5,200	1.2
18	Lucy loamy sand, 5 to 8 percent slopes	11,800	2.7
19	Luverne-Lucy association, rolling	106,000	24.5
20	Orangeburg sandy loam, 0 to 2 percent slopes	2,650	0.6
21	Orangeburg sandy loam, 2 to 5 percent slopes	40,400	9.3
22	Orangeburg sandy loam, 5 to 8 percent slopes	38,500	8.9
23	Orangeburg-Urban land complex, 0 to 8 percent slopes	5,300	1.2
24	Orangeburg-Troup association, undulating	42,000	9.7
25	Pits	120	*
26	Red Bay loamy sand, 0 to 2 percent slopes	600	0.1
27	Red Bay loamy sand, 2 to 5 percent slopes	19,800	4.6
28	Red Bay loamy sand, 5 to 8 percent slopes	17,100	3.9
29	Shadygrove-Luverne association, rolling	19,500	4.5
30	Troup loamy sand, 1 to 5 percent slopes	6,500	1.5
31	Troup loamy sand, 5 to 8 percent slopes	11,200	2.6
32	Troup-Orangeburg loamy sands, 8 to 15 percent slopes	4,550	1.1
33	Troup-Urban land complex, 1 to 8 percent slopes	230	0.1
34	Troup-Lucy association, hilly	11,700	2.7
	Water	243	0.1
	Total	433,088	100.0

* Less than 0.1 percent.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE

[All yields were estimated for a high level of management in 1976. Absence of a yield figure indicates the crop is seldom grown or is not suited]

Soil name and map symbol	Corn	Cotton lint	Peanuts	Soybeans	Bahiagrass	Improved bermudagrass	Grass hay
	Bu	Lb	Lb	Bu	AUM*	AUM*	Ton
2**--- Bibb	---	---	---	---	7.5	---	3.0
3--- Bigbee	50	---	---	---	7.5	7.5	---
4--- Bladen	---	---	---	---	7.5	---	---
5--- Bonifay	50	---	1,600	20	5.5	5.5	---
6--- Cowarts	70	600	1,800	32	7.5	7.5	3.5
7--- Dothan	100	900	3,700	46	9.5	11.5	5.5
8--- Dothan	90	850	3,500	42	8.5	11.5	5.5
9--- Dothan	80	800	3,000	35	8.5	9.5	5.0
10**--- Dothan	---	---	---	---	---	---	---
11--- Eunola	85	---	---	30	8.0	---	5.0
12**--- Eunola	---	---	---	---	---	---	---
13**:							
Eunola---	90	---	---	30	---	---	5.0
Chastain---	---	---	---	---	---	---	---
14--- Fuquay	80	650	2,700	30	7.0	7.0	4.0
15--- Grady	---	---	---	---	---	---	---
16--- Kalmia	110	750	3,500	45	12.0	12.0	5.5
17--- Lucy	80	650	2,700	32	8.0	7.5	5.5
18--- Lucy	70	600	2,300	---	8.0	7.0	5.0
19**:							
Luverne---	---	---	---	---	7.0	8.0	4.5
Lucy---	---	---	---	---	7.5	---	4.0
20--- Orangeburg	100	900	3,700	46	9.0	11.0	7.0
21--- Orangeburg	100	850	3,500	42	9.0	11.0	7.0

See footnotes at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Cotton lint	Peanuts	Soybeans	Bahiagrass	Improved bermudagrass	Grass hay
	Bu	Lb	Lb	Bu	AUM*	AUM*	Ton
22---------- Orangeburg	90	800	3,000	35	8.5	10.0	6.0
23**---------- Orangeburg	---	---	---	---	---	---	---
24**:							
Orangeburg----------	100	850	3,500	45	8.5	10.5	---
Troup----------	60	500	2,200	25	7.2	7.5	4.0
25**. Pits							
26---------- Red Bay	90	750	3,200	35	11.0	11.0	7.0
27---------- Red Bay	90	750	3,000	32	10.0	10.0	7.0
28---------- Red Bay	85	700	2,600	28	9.5	9.5	6.0
29**:							
Shadygrove----------	---	---	---	---	---	---	---
Luverne----------	---	---	---	---	7.0	8.0	4.5
30---------- Troup	60	500	2,200	25	6.5	6.5	4.0
31---------- Troup	55	450	1,800	22	6.5	6.5	3.5
32**---------- Troup	---	---	---	---	6.0	7.0	3.5
33**---------- Troup	---	---	---	---	---	---	---
34**:							
Troup----------	---	---	---	---	5.0	6.0	---
Lucy----------	---	---	---	---	7.0	---	3.5

* 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 a period of 30 days.

** See map unit description for the composition and behavior of the map unit.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed in this table. Absence of an entry in a column means the information was not available. Site index was calculated at age 30 for eastern cottonwood, at age 35 for American sycamore, and at age 50 for all other species]

Soil name and map symbol	Woodland suitability group	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
2* Bibb	2w9	Slight	Severe**	Severe**	Moderate	Loblolly pine Slash pine Green ash Cottonwood Sweetgum Water oak	90 90 86 100 90 90	Eastern cottonwood***, loblolly pine***, slash pine***, sweetgum***, green ash***, Nuttall oak.
3 Bigbee	2s2	Slight	Moderate	Moderate	Slight	Loblolly pine	88	Loblolly pine.
4 Bladen	2w9	Slight	Severe**	Severe**	Moderate	Loblolly pine Slash pine Sweetgum	94 91 90	Loblolly pine***, slash pine***, American sycamore***, water oak, Nuttall oak.
5 Bonifay	3s2	Slight	Moderate	Moderate	Slight	Slash pine Longleaf pine Loblolly pine	80 65 80	Slash pine, loblolly pine, longleaf pine.
6 Cowarts	2o1	Slight	Slight	Slight	Slight	Loblolly pine Slash pine Longleaf pine	86 86 67	Loblolly pine, slash pine.
7, 8, 9 Dothan	2o1	Slight	Slight	Slight	Slight	Slash pine Longleaf pine	90 70	Slash pine, loblolly pine.
11 Eunola	2w8	Slight	Moderate	Slight	Severe	Loblolly pine Slash pine Sweetgum Water oak Yellow-poplar	90 90 90 --- ---	Loblolly pine, slash pine, sweetgum, American sycamore, yellow-poplar.
13*: Eunola	2w8	Slight	Moderate	Slight	Severe	Loblolly pine Slash pine Sweetgum Water oak Yellow-poplar	90 90 90 --- ---	Loblolly pine, slash pine, sweetgum, American sycamore, yellow-poplar.
Chastain	2w9	Slight	Severe	Severe	Moderate	Sweetgum Water oak Eastern cottonwood Green ash Loblolly pine Slash pine Water tupelo White oak Southern red oak Baldcypress	94 89 90 88 90 --- --- --- --- ---	Loblolly pine***, Slash pine***, American sycamore***, sweetgum***, cherrybark oak***.
14 Fuquay	3s2	Slight	Slight	Moderate	Slight	Loblolly pine Slash pine Longleaf pine	83 83 67	Slash pine, longleaf pine.
15 Grady	2w9	Slight	Severe**	Severe**	Severe	Loblolly pine Slash pine Sweetgum	90 88 90	Loblolly pine***, slash pine***, sweetgum***, water tupelo.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Woodland suitability group	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
16---------- Kalmia	2o7	Slight	Slight	Slight	Slight	Loblolly pine------- Slash pine---------- Sweetgum---------- Yellow-poplar------- Red oak---------- White oaks---------- Blackgum----------	88 88 85 96 --- --- ---	Loblolly pine, slash pine, yellow-poplar, cherrybark oak.
17, 18---------- Lucy	3s2	Slight	Moderate	Moderate	Slight	Slash pine---------- Longleaf pine------- Loblolly pine-------	80 70 80	Slash pine, longleaf pine, loblolly pine.
19*: Luverne----------	3c2	Slight	Moderate	Slight	Slight	Loblolly pine------- Slash pine---------- Longleaf pine-------	85 85 70	Loblolly pine.
Lucy----------	3s2	Slight	Moderate	Moderate	Slight	Slash pine---------- Longleaf pine------- Loblolly pine-------	80 70 80	Slash pine, longleaf pine, loblolly pine.
20, 21, 22--------- Orangeburg	2o1	Slight	Slight	Slight	Slight	Loblolly pine------- Slash pine---------- Longleaf pine-------	86 86 70	Slash pine, loblolly pine.
24*: Orangeburg--------	2o1	Slight	Slight	Slight	Slight	Loblolly pine------- Slash pine---------- Longleaf pine-------	86 86 70	Slash pine, loblolly pine.
Troup----------	3s2	Slight	Moderate	Moderate	Slight	Loblolly pine------- Longleaf pine------- Slash pine----------	80 70 80	Loblolly pine, slash pine, longleaf pine.
26, 27, 28--------- Red Bay	2o1	Slight	Slight	Slight	Slight	Loblolly pine------- Longleaf pine------- Slash pine----------	90 70 90	Loblolly pine, slash pine.
29*: Shadygrove--------	3c2	Slight	Moderate	Moderate	Slight	Loblolly pine------- Slash pine---------- Shortleaf pine------ Longleaf pine-------	80 80 70 65	Loblolly pine.
Luverne----------	3c2	Slight	Moderate	Slight	Slight	Loblolly pine------- Slash pine---------- Longleaf pine-------	85 85 70	Loblolly pine.
30, 31---------- Troup	3s2	Slight	Moderate	Moderate	Slight	Loblolly pine------- Longleaf pine------- Slash pine----------	80 70 80	Loblolly pine, slash pine, longleaf pine.
32*: Troup----------	3s2	Slight	Moderate	Moderate	Slight	Loblolly pine------- Longleaf pine------- Slash pine----------	80 70 80	Loblolly pine, slash pine, longleaf pine.
Orangeburg--------	2o1	Slight	Slight	Slight	Slight	Loblolly pine------- Slash pine---------- Longleaf pine-------	86 86 70	Slash pine, loblolly pine.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Woodland suitability group	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
34*:								
Troup	3s2	Slight	Moderate	Moderate	Slight	Loblolly pine	80	Loblolly pine,
						Longleaf pine	70	longleaf pine,
						Slash pine	80	slash pine.
Lucy	3s2	Slight	Moderate	Moderate	Slight	Slash pine	80	Slash pine,
						Longleaf pine	70	longleaf pine,
						Loblolly pine	80	loblolly pine.

* See map unit description for the composition and behavior of the map unit.

** Equipment limitations and seedling mortality are moderate in areas with adequate surface drainage.

*** Potential productivity attainable only in areas with adequate surface drainage.

TABLE 8.--BUILDING SITE DEVELOPMENT

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry means soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
2* Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
3 Bigbee	Severe: cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods.
4 Bladen	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
5 Bonifay	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
6 Cowarts	Slight	Slight	Slight	Moderate: slope.	Slight.
7, 8 Dothan	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight.
9 Dothan	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: slope.	Slight.
10*: Dothan	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: slope.	Slight.
Urban land.					
11 Eunola	Severe: wetness, floods.	Severe: floods.	Severe: wetness, floods.	Severe: floods.	Severe: floods.
12*: Eunola	Severe: wetness, floods.	Severe: floods.	Severe: wetness, floods.	Severe: floods.	Severe: floods.
Urban land.					
13*: Eunola	Severe: wetness, floods.	Severe: floods.	Severe: wetness, floods.	Severe: floods.	Severe: floods.
Chastain	Severe: floods, wetness, too clayey.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.
14 Fuquay	Slight	Slight	Slight	Slight	Slight.
15 Grady	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
16 Kalmia	Moderate: floods, cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: slope.
17 Lucy	Slight	Slight	Slight	Slight	Slight.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
18---------- Lucy	Slight----------	Slight----------	Slight----------	Moderate: slope.	Slight.
19*: Luverne----------	Severe: slope.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope, low strength.
Lucy----------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
20, 21---------- Orangeburg	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
22---------- Orangeburg	Slight----------	Slight----------	Slight----------	Moderate: slope.	Slight.
23*: Orangeburg-------	Slight----------	Slight----------	Slight----------	Moderate: slope.	Slight.
Urban land.					
24*: Orangeburg-------	Slight----------	Slight----------	Slight----------	Moderate: slope.	Slight.
Troup----------	Severe: cutbanks cave.	Slight----------	Slight----------	Moderate: slope.	Slight.
25*. Pits					
26, 27---------- Red Bay	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
28---------- Red Bay	Slight----------	Slight----------	Slight----------	Moderate: slope.	Slight.
29*: Shadygrove-------	Severe: wetness, too clayey.	Severe: low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.	Severe: low strength, slope, shrink-swell.	Severe: low strength, shrink-swell.
Luverne----------	Moderate: too clayey, slope.	Severe: low strength.	Severe: low strength.	Severe: slope, low strength.	Severe: low strength.
30---------- Troup	Severe: cutbanks cave.	Slight----------	Slight----------	Slight----------	Slight.
31---------- Troup	Severe: cutbanks cave.	Slight----------	Slight----------	Moderate: slope.	Slight.
32*: Troup----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
Orangeburg-------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
33*: Troup----------	Severe: cutbanks cave.	Slight----------	Slight----------	Moderate: slope.	Slight.
Urban land.					

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
34*:					
Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
Lucy	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.

* See map unit description for the composition and behavior of the map unit.

TABLE 9.--SANITARY FACILITIES

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms used to rate soils. Absence of an entry means soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
2* Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
3 Bigbee	Moderate: floods.	Severe: floods, seepage.	Severe: seepage, wetness.	Severe: seepage.	Fair: too sandy.
4 Bladen	Severe: wetness, floods.	Slight	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness, too clayey.
5 Bonifay	Slight	Moderate: seepage.	Slight	Slight	Poor: too sandy, seepage.
6 Cowarts	Severe: percs slowly.	Severe: slope.	Slight	Slight	Fair: thin layer.
7 Dothan	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Moderate: wetness.	Good.
8, 9 Dothan	Severe: wetness, percs slowly.	Moderate: slope, seepage.	Severe: wetness.	Moderate: wetness.	Good.
10*: Dothan	Severe: wetness, percs slowly.	Moderate: slope, seepage.	Severe: wetness.	Moderate: wetness.	Good.
Urban land.					
11 Eunola	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, seepage, floods.	Good.
12*: Eunola	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, seepage, floods.	Good.
Urban land.					
13*: Eunola	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, seepage, floods.	Good.
Chastain	Severe: floods, wetness, percs slowly.	Severe: floods.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey, wetness.
14 Fuquay	Moderate: percs slowly.	Moderate: slope.	Slight	Slight	Good.
15 Grady	Severe: floods, percs slowly, wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness, too clayey.

See footnote at end of table.

TABLE 9.--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
16---------- Kalmia	Moderate: floods.	Severe: floods.	Moderate: floods.	Moderate: floods.	Good.
17, 18---------- Lucy	Slight----------	Severe: seepage.	Slight----------	Slight----------	Fair: too sandy.
19*: Luverne----------	Severe: slope, percs slowly.	Severe: slope.	Severe: too clayey.	Severe: slope.	Poor: slope, thin layer.
Lucy----------	Moderate: slope.	Severe: seepage.	Slight----------	Moderate: slope.	Fair: too sandy, slope.
20---------- Orangeburg	Slight----------	Moderate: seepage.	Slight----------	Slight----------	Good.
21, 22---------- Orangeburg	Slight----------	Moderate: slope, seepage.	Slight----------	Slight----------	Good.
23*: Orangeburg--------- Urban land.	Slight----------	Moderate: slope, seepage.	Slight----------	Slight----------	Good.
24*: Orangeburg---------	Slight----------	Moderate: slope, seepage.	Slight----------	Slight----------	Good.
Troup----------	Slight----------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
25*. Pits					
26, 27, 28---------- Red Bay	Slight----------	Moderate: seepage.	Slight----------	Slight----------	Good.
29*: Shadygrove---------	Severe: wetness, percs slowly.	Severe: wetness, slope.	Severe: too clayey, wetness.	Severe: wetness.	Poor: too clayey, thin layer.
Luverne----------	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: thin layer.
30, 31---------- Troup	Slight----------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
32*: Troup----------	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
Orangeburg---------	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.	Fair: slope.
33*: Troup----------	Slight----------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
Urban land.					

See footnote at end of table.

TABLE 9.--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
34*:					
Troup	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
Lucy	Moderate: slope.	Severe: seepage.	Slight	Moderate: slope.	Fair: too sandy, slope.

* See map unit description for the composition and behavior of the map unit.

TABLE 10.--CONSTRUCTION MATERIALS

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," and "unsuited." Absence of an entry means soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
2* Bibb	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
3 Bigbee	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
4 Bladen	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
5 Bonifay	Good	Poor: excess fines.	Unsuited	Poor: too sandy.
6 Cowarts	Fair: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
7, 8, 9 Dothan	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: thin layer.
10*: Dothan	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Urban land.				
11 Eunola	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
12*: Eunola	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
Urban land.				
13*: Eunola	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
Chastain	Poor: wetness, low strength.	Unsuited	Unsuited	Poor: wetness, too clayey.
14 Fuquay	Good	Poor: excess fines.	Unsuited: excess fines.	Poor: too sandy.
15 Grady	Poor: wetness.	Unsuited	Unsuited	Poor: wetness.
16 Kalmia	Good	Poor: excess fines.	Unsuited: excess fines.	Fair: too sandy, thin layer.
17, 18 Lucy	Good	Poor: excess fines.	Poor: excess fines.	Poor: too sandy.
19*: Luverne	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, slope.
Lucy	Good	Poor: excess fines.	Poor: excess fines.	Poor too sandy.

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
20, 21, 22--Orangeburg	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
23*: Orangeburg	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Urban land.				
24*: Orangeburg	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Troup	Good	Fair: excess fines.	Poor: excess fines.	Poor: too sandy.
25*. Pits				
26, 27, 28--Red Bay	Good	Unsuited: excess fines.	Unsuited: excess fines.	Good.
29*: Shadygrove	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
Luverne	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
30, 31--Troup	Good	Fair: excess fines.	Poor: excess fines.	Poor: too sandy.
32*: Troup	Good	Fair: excess fines.	Poor: excess fines.	Poor: too sandy.
Orangeburg	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
33*: Troup	Good	Fair: excess fines.	Poor: excess fines.	Poor: too sandy.
Urban land.				
34*: Troup	Good	Fair: excess fines.	Poor: excess fines.	Poor: too sandy.
Lucy	Good	Poor: excess fines.	Poor: excess fines.	Poor: too sandy.

* See map unit description for the composition and behavior of the map unit.

TABLE 11.--WATER MANAGEMENT

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. Absence of an entry means soil was not evaluated]

Soil name and map symbol	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
2* Bibb	Seepage	Slow refill	Floods	Floods, wetness.	Not needed	Wetness.
3 Bigbee	Seepage	No water	Not needed	Floods, droughty, fast intake.	Not needed	Droughty.
4 Bladen	Favorable	Favorable	Floods, percs slowly.	Wetness, percs slowly.	Not needed	Wetness, percs slowly.
5 Bonifay	Seepage	No water	Not needed	Fast intake, slope, droughty.	Not needed	Droughty.
6 Cowarts	Favorable	No water	Not needed	Slope, percs slowly.	Percs slowly	Percs slowly.
7, 8, 9 Dothan	Favorable	Slow refill	Not needed	Fast intake, slope.	Too sandy	Slope.
10*: Dothan	Favorable	Slow refill	Not needed	Fast intake, slope.	Too sandy	Slope.
Urban land.						
11 Eunola	Seepage	No water	Not needed	Favorable	Favorable	Favorable.
12*: Eunola	Seepage	No water	Not needed	Favorable	Favorable	Favorable.
Urban land.						
13*: Eunola	Seepage	No water	Not needed	Slope	Favorable	Favorable.
Chastain	Favorable	Favorable	Floods, wetness, percs slowly.	Floods, wetness, percs slowly.	Not needed	Not needed.
14 Fuquay	Favorable	Deep to water	Not needed	Fast intake	Favorable	Favorable.
15 Grady	Seepage	Slow refill	Floods, wetness, poor outlets.	Wetness, percs slowly, floods.	Not needed	Not needed.
16 Kalmia	Seepage	Deep to water	Not needed	Favorable	Not needed	Favorable.
17, 18 Lucy	Seepage	Deep to water	Not needed	Erodes easily, fast intake, seepage.	Too sandy, erodes easily, slope.	Droughty, erodes easily, slope.
19*: Luverne	Seepage	No water	Not needed	Slow intake, slope, erodes easily.	Slope	Slope, erodes easily.
Lucy	Seepage	Deep to water	Not needed	Erodes easily, fast intake, seepage.	Too sandy, erodes easily, slope.	Droughty, erodes easily, slope.
20 Orangeburg	Seepage	No water	Not needed	Favorable	Not needed	Favorable.

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Aquifer-fed excavated ponds	Drainage	Irrigation	Terrace and diversions	Grassed waterways
21---------- Orangeburg	Seepage--------	No water-------	Not needed-----	Favorable------	Favorable------	Favorable.
22---------- Orangeburg	Seepage--------	No water-------	Not needed-----	Slope----------	Favorable------	Favorable.
23*: Orangeburg------- Urban land.	Seepage--------	No water-------	Not needed-----	Favorable------	Favorable------	Favorable.
24*: Orangeburg------- Troup----------	Seepage-------- Seepage--------	No water------- No water-------	Not needed----- Not needed-----	Favorable------ Droughty, fast intake, seepage.	Favorable------ Too sandy, erodes easily, piping.	Favorable. Droughty, erodes easily.
25*. Pits						
26, 27---------- Red Bay	Seepage--------	No water-------	Not needed-----	Favorable------	Favorable------	Favorable.
28---------- Red Bay	Seepage--------	No water-------	Not needed-----	Slope----------	Favorable------	Favorable.
29*: Shadygrove------- Luverne----------	Favorable------ Seepage--------	Slow refill---- No water-------	Percs slowly, complex slope. Not needed-----	Slow intake, complex slope. Slow intake, slope, erodes easily.	Percs slowly, complex slope. Slope----------	Percs slowly, slope, erodes easily. Slope, erodes easily.
30, 31---------- Troup	Seepage--------	No water-------	Not needed-----	Droughty, fast intake, seepage.	Too sandy, erodes easily, piping.	Droughty, erodes easily.
32*: Troup---------- Orangeburg-------	Seepage-------- Seepage--------	No water------- No water-------	Not needed----- Not needed-----	Droughty, fast intake, seepage. Slope----------	Too sandy, erodes easily, piping. Slope----------	Droughty, erodes easily. Slope.
33*: Troup---------- Urban land.	Seepage--------	No water-------	Not needed-----	Droughty, fast intake, seepage.	Too sandy, erodes easily, piping.	Droughty, erodes easily.
34*: Troup---------- Lucy----------	Seepage-------- Seepage--------	No water------- Deep to water	Not needed----- Not needed-----	Droughty, fast intake, seepage. Erodes easily, fast intake, seepage.	Too sandy, erodes easily, piping. Too sandy, erodes easily, slope.	Droughty, erodes easily. Droughty, erodes easily, slope.

* See map unit description for the composition and behavior of the map unit.

TABLE 12.--RECREATIONAL DEVELOPMENT

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry means soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
2* Bibb	Severe: floods, wetness.	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.
3 Bigbee	Severe: floods, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.
4 Bladen	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness.
5 Bonifay	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.
6 Cowarts	Slight	Slight	Severe: slope.	Slight.
7 Dothan	Slight	Slight	Slight	Slight.
8 Dothan	Slight	Slight	Moderate: slope.	Slight.
9 Dothan	Slight	Slight	Severe: slope.	Slight.
10*: Dothan	Slight	Slight	Moderate: slope.	Slight.
Urban land.				
11 Eunola	Severe	Slight	Moderate: wetness, floods.	Slight.
12*: Eunola	Severe	Slight	Moderate: wetness, floods.	Slight.
Urban land.				
13*: Eunola	Severe	Slight	Moderate: wetness, slope, floods.	Slight.
Chastain	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.
14 Fuquay	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy, slope.	Moderate: too sandy.
15 Grady	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
16--- Kalmia	Severe: floods.	Slight---	Slight---	Slight.
17, 18--- Lucy	Moderate: too sandy.	Moderate: too sandy.	Severe: too sandy.	Moderate: too sandy.
19*: Luverne---	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Lucy---	Moderate: too sandy.	Moderate: too sandy.	Severe: too sandy.	Moderate: too sandy.
20--- Orangeburg	Slight---	Slight---	Slight---	Slight.
21--- Orangeburg	Slight---	Slight---	Moderate: slope.	Slight.
22--- Orangeburg	Slight---	Slight---	Severe: slope.	Slight.
23*: Orangeburg---	Slight---	Slight---	Moderate: slope.	Slight.
Urban land.				
24*: Orangeburg---	Slight---	Slight---	Moderate: slope.	Slight.
Troup---	Moderate: too sandy.	Moderate: too sandy.	Severe: too sandy.	Moderate: too sandy.
25*. Pits				
26--- Red Bay	Slight---	Slight---	Slight---	Slight.
27--- Red Bay	Slight---	Slight---	Moderate: slope.	Slight.
28--- Red Bay	Slight---	Slight---	Severe: slope.	Slight.
29*: Shadygrove---	Severe: percs slowly.	Moderate: slope.	Severe: slope, percs slowly.	Slight.
Luverne---	Moderate: slope, percs slowly.	Moderate: slope.	Severe: slope.	Slight.
30, 31--- Troup	Moderate: too sandy.	Moderate: too sandy.	Severe: too sandy.	Moderate: too sandy.
32*: Troup---	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: too sandy.	Moderate: too sandy.
Orangeburg---	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
33*:				
Troup	Moderate: too sandy.	Moderate: too sandy.	Severe: too sandy.	Moderate: too sandy.
Urban land.				
34*:				
Troup	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: too sandy.	Moderate: too sandy.
Lucy	Moderate: too sandy.	Moderate: too sandy.	Severe: too sandy.	Moderate: too sandy.

* See map unit description for the composition and behavior of the map unit.

TABLE 13.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates the soil was not rated]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
2* Bibb	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
3 Bigbee	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
4 Bladen	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
5 Bonifay	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Fair	Very poor.
6 Cowarts	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
7, 8, 9 Dothan	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
10*: Dothan	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land.										
11 Eunola	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
12*: Eunola	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
Urban land.										
13*: Eunola	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
Chastain	Very poor.	Poor	Fair	Fair	Fair	Good	Good	Poor	Fair	Good.
14 Fuquay	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
15 Grady	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
16 Kalmia	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
17, 18 Lucy	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
19*: Luverne	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Lucy	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
20, 21 Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
22--Orangeburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
23*:										
Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land.										
24*:										
Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Troup	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
25*. Pits										
26--Red Bay	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
27--Red Bay	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
28--Red Bay	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
29*:										
Shadygrove	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Luverne	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
30, 31--Troup	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
32*:										
Troup	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Orangeburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
33*:										
Troup	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Urban land.										
34*:										
Troup	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Lucy	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

* See map unit description for the composition and behavior of the map unit.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[The symbol < means less than; > means greater than. Absence of an entry means data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2*---------- Bibb	0-12	Silt loam-------	SM, SM-SC, ML, CL-ML	A-2, A-4	0-5	95-100	90-100	60-90	30-60	<25	NP-7
	12-60	Sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0-10	60-100	50-100	40-100	30-90	<30	NP-7
3---------- Bigbee	0-44	Fine sand-------	SM, SP-SM	A-2-4, A-3	0	100	95-100	80-95	5-30	---	NP
	44-99	Sand, fine sand	SP-SM, SM	A-2-4, A-3	0	85-100	85-100	80-100	5-20	---	NP
4---------- Bladen	0-13	Fine sandy loam	SM	A-2, A-4	0	100	97-100	60-85	20-50	---	NP
	13-65	Clay, sandy clay	CL, CH	A-7	0	100	99-100	75-100	55-85	45-65	23-45
5---------- Bonifay	0-45	Loamy sand-------	SM	A-2-4	0	98-100	98-100	70-95	13-20	---	NP
	45-70	Sandy loam, sandy clay loam.	SM-SC, SC, SM	A-2-4, A-4	0	95-100	90-100	70-95	30-50	<30	NP-10
6---------- Cowarts	0-6	Fine sandy loam	SM, SM-SC	A-2, A-4	0	95-100	90-100	75-90	20-40	<20	NP-5
	6-25	Fine sandy loam, sandy loam, sandy clay loam.	SM-SC, SC, SM	A-2, A-4, A-6	0	95-100	90-100	60-90	23-45	20-40	NP-15
	25-62	Sandy loam, sandy clay loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	0	85-100	80-100	60-95	30-58	25-40	5-18
7, 8, 9---------- Dothan	0-8	Fine sandy loam	SM, SM-SC	A-2, A-4	0	95-100	92-100	75-90	20-40	<25	NP-5
	8-49	Sandy clay loam, sandy loam.	SM-SC, SC, SM	A-2, A-4, A-6	0	95-100	92-100	68-90	23-45	<40	NP-15
	49-80	Sandy clay loam, sandy clay.	SM-SC, SC	A-2, A-4, A-6, A7	0	95-100	92-100	70-95	30-50	25-45	4-18
10*: Dothan----------	0-8	Fine sandy loam	SM, SM-SC	A-2, A-4	0	95-100	92-100	75-90	20-40	<25	NP-5
	8-49	Sandy clay loam, sandy loam.	SM-SC, SC, SM	A-2, A-4, A-6	0	95-100	92-100	68-90	23-45	<40	NP-15
	49-80	Sandy clay loam, sandy clay.	SM-SC, SC	A-2, A-4, A-6, A7	0	95-100	92-100	70-95	30-50	25-45	4-18
Urban land.											
11---------- Eunola	0-12	Loamy sand-------	SM	A-2	0	100	98-100	50-80	15-35	---	NP
	12-44	Sandy clay loam, sandy clay.	SM, SC, ML, CL	A-4	0	100	98-100	80-95	36-60	15-30	2-10
	44-65	Sandy loam-------	SM	A-2, A-4	0	100	98-100	60-70	30-40	---	NP
12*: Eunola----------	0-12	Loamy sand-------	SM	A-2	0	100	98-100	50-80	15-35	---	NP
	12-44	Sandy clay loam, sandy clay.	SM, SC, ML, CL	A-4	0	100	98-100	80-95	36-60	15-30	2-10
	44-65	Sandy loam-------	SM	A-2, A-4	0	100	98-100	60-70	30-40	---	NP
Urban land.											

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
13*:											
Eunola	0-12	Loamy sand	SM	A-2	0	100	98-100	50-80	15-35	---	NP
	12-44	Sandy clay loam, sandy clay.	SM, SC, ML, CL	A-4	0	100	98-100	80-95	36-60	15-30	2-10
	44-65	Sandy loam	SM	A-2, A-4	0	100	98-100	60-70	30-40	---	NP
Chastain	0-8	Silt loam	ML, CL, CL-ML	A-4, A-6	0	100	100	90-100	70-95	23-45	3-18
	8-44	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0	100	100	95-100	85-98	35-75	12-40
	44-60	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0	100	100	90-100	70-90	30-78	11-42
14	0-26	Loamy sand	SP-SM, SM	A-2, A-3	0	95-100	90-100	50-83	5-35	---	NP
Fuquay	26-59	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	85-100	85-100	60-80	23-45	<25	NP-13
	59-90	Sandy clay loam	SC, CL	A-2, A-4, A-6	0	95-100	90-100	60-93	28-55	20-39	8-25
15	0-7	Loam	SM, ML, CL-ML, SM-SC	A-4, A-6	0	100	99-100	85-100	40-75	<30	NP-15
Grady	7-62	Clay, sandy clay	CL, ML, CH	A-6, A-7	0	100	100	90-100	55-90	30-50	12-25
16	0-5	Sandy loam	SM, SM-SC, SC	A-2, A-4	0	100	95-100	50-75	15-40	<25	NP-10
Kalmia	5-31	Sandy clay loam	SC, SM-SC	A-2, A-4, A-6	0	100	95-100	70-90	30-49	20-35	4-15
	31-65	Loamy sand, sand	SM, SP-SM, SP	A-2, A-3	0	100	95-100	50-70	4-25	---	NP
17, 18	0-33	Loamy sand	SM, SP-SM	A-2	0	100	95-100	50-80	10-30	---	NP
Lucy	33-75	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	100	95-100	55-85	15-50	<30	NP-15
19*:											
Luverne	0-5	Fine sandy loam	ML, SM	A-2, A-4	0-5	87-100	84-100	80-100	19-75	0-20	NP
	5-36	Clay loam, sandy clay, clay.	ML, MH, CH, CL	A-5, A-7	0-5	95-100	90-100	85-100	50-95	40-70	10-30
	36-65	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	0-5	95-100	85-100	85-100	36-76	32-56	2-14
Lucy	0-33	Loamy sand	SM, SP-SM	A-2	0	100	95-100	50-80	10-30	---	NP
	33-75	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	100	95-100	55-85	15-50	<30	NP-15
20	0-8	Sandy loam	SM	A-2	0	98-100	95-100	75-95	20-35	---	NP
Orangeburg	8-15	Sandy loam	SM	A-2	0	98-100	95-100	70-84	25-35	<30	NP-4
	15-82	Sandy clay loam	SC, CL	A-6, A-4	0	98-100	95-100	71-91	38-55	22-40	8-19
21	0-7	Sandy loam	SM	A-2	0	98-100	95-100	75-95	20-35	---	NP
Orangeburg	7-12	Sandy loam	SM	A-2	0	98-100	95-100	70-84	25-35	<30	NP-4
	12-54	Sandy clay loam	SC, CL	A-6, A-4	0	98-100	95-100	71-91	38-55	22-40	8-19
	54-64	Sandy clay loam, sandy clay.	SC, CL	A-6, A-4	0	98-100	95-100	70-97	40-65	25-40	8-21

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
22---------- Orangeburg	0-8 8-15 15-82	Sandy loam------ Sandy loam------ Sandy clay loam	SM SM SC, CL	A-2 A-2 A-6, A-4	0 0 0	98-100 98-100 98-100	95-100 95-100 95-100	75-95 70-84 71-91	20-35 25-35 38-55	--- <30 22-40	NP NP-4 8-19
23*: Orangeburg-------- Urban land.	0-8 8-15 15-82	Sandy loam------ Sandy loam------ Sandy clay loam	SM SM SC, CL	A-2 A-2 A-6, A-4	0 0 0	98-100 98-100 98-100	95-100 95-100 95-100	75-95 70-84 71-91	20-35 25-35 38-55	--- <30 22-40	NP NP-4 8-19
24*: Orangeburg-------- Troup---------- 25*. Pits	0-8 8-15 15-82 0-57 57-85	Sandy loam------ Sandy loam------ Sandy clay loam Loamy sand------ Sandy clay loam, sandy loam.	SM SM SC, CL SM, SP-SM SC, SM-SC, CL-ML, CL	A-2 A-2 A-6, A-4 A-2 A-4, A-2	0 0 0 0 0	98-100 98-100 98-100 100 95-100	95-100 95-100 95-100 100 95-100	75-95 70-84 71-91 50-75 70-90	20-35 25-35 38-55 10-30 24-55	--- <30 22-40 --- 19-30	NP NP-4 8-19 NP 4-10
26, 27, 28---------- Red Bay	0-6 6-13 13-85	Loamy sand------ Sandy loam, sandy clay loam. Sandy clay loam	SM SM, SC, SM-SC SM, SM-SC, SC	A-2 A-2, A-4 A-2, A-4, A-6	0 0 0	100 100 100	90-100 95-100 95-100	51-75 60-85 70-90	15-30 15-50 24-50	--- <35 25-40	NP NP-10 5-16
29*: Shadygrove-------- Luverne---------- 30, 31---------- Troup 32*: Troup---------- Orangeburg-------- 	0-6 6-23 23-65 0-5 5-36 36-65 0-57 57-85 0-57 57-85 0-8 8-15 15-82	Sandy loam------ Clay, clay loam, sandy clay. Flaggy clay, very flaggy clay, very flaggy, clay loam. Fine sandy loam Clay loam, sandy clay, clay. Clay loam, sandy clay loam. Loamy sand------ Sandy clay loam, sandy loam. Loamy sand------ Sandy clay loam, sandy loam. Loamy sand------ Sandy loam------ Sandy clay loam	SM, SM-SC CL, CH GC, SC, CL, CH ML, SM ML, MH, CH, CL ML, MH, SM SM, SP-SM SC, SM-SC, CL-ML, CL SM, SP-SM SC, SM-SC, CL-ML, CL SM SM SC, CL	A-2, A-4 A-7 A-7, A-2 A-2, A-4 A-5, A-7 A-4, A-5, A-7 A-2 A-4, A-2 A-2 A-4, A-2 A-2 A-2 A-6, A-4	1-15 1-15 20-80 0-5 0-5 0-5 0 0 0 0 0 0 0	85-100 85-100 40-80 87-100 95-100 95-100 100 95-100 100 95-100 98-100 98-100 98-100	85-100 85-100 40-70 84-100 90-100 85-100 100 95-100 100 95-100 95-100 95-100 95-100	55-85 90-100 36-65 80-100 85-100 85-100 50-75 70-90 50-75 70-90 60-75 70-84 71-91	15-40 85-95 20-60 19-75 50-95 36-76 10-30 24-55 10-30 24-55 14-27 25-35 38-55	1-15 44-65 44-65 0-20 40-70 32-56 --- 19-30 --- 19-30 --- <30 22-40	NP-7 22-40 22-40 NP 10-30 2-14 NP 4-10 NP 4-10 NP NP-4 8-19

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
33*:											
Troup	0-57	Loamy sand	SM, SP-SM	A-2	0	100	100	50-75	10-30	---	NP
	57-85	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	70-90	24-55	19-30	4-10
Urban land.											
34*:											
Troup	0-57	Loamy sand	SM, SP-SM	A-2	0	100	100	50-75	10-30	---	NP
	57-85	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	70-90	24-55	19-30	4-10
Lucy	0-33	Loamy sand	SM, SP-SM	A-2	0	100	95-100	50-80	10-30	---	NP
	33-75	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	100	95-100	55-85	15-50	<30	NP-15

* See map unit description for the composition and behavior of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means greater than. The erosion tolerance factor (T) is for the entire profile. Absence of an entry means data were not available or were not estimated]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
2* Bibb	0-12 12-60	0.6-2.0 0.6-2.0	0.12-0.18 0.12-0.20	4.5-5.5 4.5-5.5	Low Low	High High	Moderate Moderate	0.20 0.37	5
3 Bigbee	0-44 44-99	6.0-20 6.0-20	0.05-0.10 0.05-0.08	4.5-6.0 4.5-6.0	Low Low	Low Low	Moderate Moderate	0.17 0.17	5
4 Bladen	0-13 13-65	0.6-2.0 0.06-0.2	0.10-0.13 0.12-0.16	4.5-5.5 4.5-5.5	Low Moderate	High High	High High	0.10 ---	---
5 Bonifay	0-45 45-70	6.0-20 0.6-2.0	0.05-0.10 0.10-0.15	4.5-5.5 4.5-5.5	Low Low	Low Low	High High	0.17 0.24	5
6 Cowarts	0-6 6-25 25-62	2.0-6.0 0.6-2.0 0.06-0.6	0.08-0.13 0.10-0.14 0.08-0.12	4.5-5.5 4.5-5.5 4.5-5.5	Low Low Low	Moderate Moderate Moderate	Moderate Moderate Moderate	0.24 0.28 0.24	3
7, 8, 9 Dothan	0-8 8-49 49-80	2.0-6.0 0.6-2.0 0.2-0.6	0.08-0.13 0.10-0.14 0.08-0.12	4.5-5.5 4.5-5.5 4.5-5.5	Very low Low Low	Moderate Moderate Moderate	Moderate Moderate Moderate	0.24 0.28 0.28	4
10*: Dothan	0-8 8-49 49-80	2.0-6.0 0.6-2.0 0.2-0.6	0.08-0.13 0.10-0.14 0.08-0.12	4.5-5.5 4.5-5.5 4.5-5.5	Very low Low Low	Moderate Moderate Moderate	Moderate Moderate Moderate	0.24 0.28 0.28	4
Urban land.									
11 Eunola	0-12 12-44 44-65	2.0-6.0 0.6-2.0 2.0-6.0	0.06-0.11 0.12-0.16 0.10-0.14	4.5-5.5 4.5-5.5 4.5-5.5	Low Low Low	Low Low Low	High High High	0.28 0.32 0.24	4
12*: Eunola	0-12 12-44 44-65	2.0-6.0 0.6-2.0 2.0-6.0	0.06-0.11 0.12-0.16 0.10-0.14	4.5-5.5 4.5-5.5 4.5-5.5	Low Low Low	Low Low Low	High High High	0.28 0.32 0.24	4
Urban land.									
13*: Eunola	0-12 12-44 44-65	2.0-6.0 0.6-2.0 2.0-6.0	0.06-0.11 0.12-0.16 0.10-0.14	4.5-5.5 4.5-5.5 4.5-5.5	Low Low Low	Low Low Low	High High High	0.28 0.32 0.24	4
Chastain	0-8 8-44 44-60	0.2-0.6 0.06-0.2 0.06-0.2	0.12-0.18 0.12-0.16 0.12-0.16	4.5-5.5 4.5-5.5 4.5-5.5	Moderate Moderate Moderate	High High High	High High High	0.32 0.37 0.37	5
14 Fuquay	0-26 26-59 59-90	>6.0 0.6-2.0 0.06-0.2	0/04-0.09 0.12-0.15 0.10-0.13	5.5-5.5 4.5-5.5 4.5-5.5	Low Low Low	Low Low Low	High High High	0.20 0.20 0.20	5
15 Grady	0-7 7-62	0.6-2.0 0.06-0.2	0.10-0.18 0.12-0.16	3.6-5.5 3.6-5.5	Low Moderate	High High	High High	0.10 0.10	---
16 Kalmia	0-5 5-31 31-65	2.0-6.0 0.6-2.0 6.0-20	0.06-0.10 0.12-0.16 0.03-0.06	4.5-6.0 4.5-5.5 4.5-5.5	Low Low Low	Moderate Moderate Moderate	Moderate Moderate Moderate	0.20 0.24 0.10	4
17, 18 Lucy	0-33 33-75	>6.0 0.6-2.0	0.06-0.10 0.10-0.12	5.1-5.5 4.5-5.5	Low Low	Low Low	High High	0.20 ---	5

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
19*:									
Luverne	0-5	2.0-6.0	0.06-0.15	4.5-5.5	Low	High	High	0.37	3
	5-36	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	High	High	0.28	
	36-65	0.2-0.6	0.12-0.18	3.6-5.5	Low	High	High	0.28	
Lucy	0-33	>6.0	0.06-0.10	5.1-5.5	Low	Low	High	0.20	5
	33-75	0.6-2.0	0.10-0.12	4.5-5.5	Low	Low	High	---	
20	0-8	2.0-6.0	0.07-0.10	4.5-6.0	Low	Moderate	Moderate	0.24	5
Orangeburg	8-15	2.0-6.0	0.07-0.10	4.5-5.5	Low	Moderate	Moderate	0.24	
	15-82	0.6-2.0	0.10-0.13	4.5-5.5	Low	Moderate	Moderate	0.24	
21	0-7	2.0-6.0	0.07-0.10	4.5-6.0	Low	Moderate	Moderate	0.24	5
Orangeburg	7-12	2.0-6.0	0.07-0.10	4.5-5.5	Low	Moderate	Moderate	0.24	
	12-54	0.6-2.0	0.10-0.13	4.5-5.5	Low	Moderate	Moderate	0.24	
	54-64	0.6-2.0	0.10-0.13	4.5-5.5	Low	Moderate	Moderate	0.24	
22	0-8	2.0-6.0	0.07-0.10	4.5-6.0	Low	Moderate	Moderate	0.24	5
Orangeburg	8-15	2.0-6.0	0.07-0.10	4.5-5.5	Low	Moderate	Moderate	0.24	
	15-82	0.6-2.0	0.10-0.13	4.5-5.5	Low	Moderate	Moderate	0.24	
23*:									
Orangeburg	0-8	2.0-6.0	0.07-0.10	4.5-6.0	Low	Moderate	Moderate	0.24	5
	8-15	2.0-6.0	0.07-0.10	4.5-5.5	Low	Moderate	Moderate	0.24	
	15-82	0.6-2.0	0.10-0.13	4.5-5.5	Low	Moderate	Moderate	0.24	
Urban land.									
24*:									
Orangeburg	0-8	2.0-6.0	0.07-0.10	4.5-6.0	Low	Moderate	Moderate	0.24	5
	8-15	2.0-6.0	0.07-0.10	4.5-5.5	Low	Moderate	Moderate	0.24	
	15-82	0.6-2.0	0.10-0.13	4.5-5.5	Low	Moderate	Moderate	0.24	
Troup	0-57	6.0-20	0.03-0.10	4.5-5.5	Very low	Low	Moderate	0.20	---
	57-85	0.6-2.0	0.10-0.13	4.5-5.5	Low	Low	Moderate	0.20	
25*.									
Pits									
26, 27, 28	0-6	>6.0	0.06-0.11	4.5-6.0	Low	Moderate	Moderate	0.17	5
Red Bay	6-13	0.6-6.0	0.10-0.14	4.5-5.5	Low	Moderate	Moderate	0.24	
	13-85	0.6-2.0	0.10-0.17	4.5-5.5	Low	Moderate	Moderate	0.28	
29*:									
Shadygrove	0-6	2.0-6.0	0.06-0.15	4.5-5.5	Low	Low	High	0.24	3
	6-23	0.06-0.2	0.12-0.18	4.5-5.5	High	High	High	0.32	
	23-65	<0.06	0.02-0.09	4.5-5.5	High	High	High	0.24	
Luverne	0-5	2.0-6.0	0.06-0.15	4.5-5.5	Low	High	High	0.37	3
	5-36	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	High	High	0.28	
	36-65	0.2-0.6	0.12-0.18	3.6-5.5	Low	High	High	0.28	
30, 31	0-57	6.0-20	0.03-0.10	4.5-5.5	Very low	Low	Moderate	0.20	---
Troup	57-85	0.6-2.0	0.10-0.13	4.5-5.5	Low	Low	Moderate	0.20	
32*:									
Troup	0-57	6.0-20	0.03-0.10	4.5-5.5	Very low	Low	Moderate	0.20	---
	57-85	0.6-2.0	0.10-0.13	4.5-5.5	Low	Low	Moderate	0.20	
Orangeburg	0-8	2.0-6.0	0.06-0.08	4.5-6.0	Low	Moderate	Moderate	0.20	5
	8-15	2.0-6.0	0.07-0.10	4.5-5.5	Low	Moderate	Moderate	0.24	
	15-82	0.6-2.0	0.10-0.13	4.5-5.5	Low	Moderate	Moderate	0.24	
33*:									
Troup	0-57	6.0-20	0.03-0.10	4.5-5.5	Very low	Low	Moderate	0.20	---
	57-85	0.6-2.0	0.10-0.13	4.5-5.5	Low	Low	Moderate	0.20	
Urban land.									

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
34*:									
Troup	0-57	6.0-20	0.03-0.10	4.5-5.5	Very low	Low	Moderate	0.20	---
	57-85	0.6-2.0	0.10-0.13	4.5-5.5	Low	Low	Moderate	0.20	
Lucy	0-33	>6.0	0.06-0.10	5.1-5.5	Low	Low	High	0.20	5
	33-75	0.6-2.0	0.10-0.12	4.5-5.5	Low	Low	High	---	

* See map unit description for the composition and behavior of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

[Absence of an entry indicates the feature is not a concern. See text for descriptions of symbols and such terms as "rare," "brief," and "perched." The symbol > means greater than]

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
2*--- Bibb	C	Common---	Brief---	Dec-May	0.5-1.5	Apparent	Dec-Apr
3--- Bigbee	A	Rare to common	Brief---	Jan-Mar	3.5-6.0	Apparent	Jan-Mar
4--- Bladen	D	Common---	Long---	Jan-Apr	0-1.0	Apparent	Dec-May
5--- Bonifay	A	None---	---	---	>6.0	---	---
6--- Cowarts	C	None---	---	---	>6.0	---	---
7, 8, 9--- Dothan	B	None---	---	---	3.5-4.0	Perched	Jan-Apr
10*: Dothan---	B	None---	---	---	3.5-4.0	Perched	Jan-Apr
Urban land.							
11--- Eunola	C	None to occasional.	Very brief---	Dec-Apr	1.5-2.5	Apparent	Nov-Mar
12*: Eunola---	C	None to occasional.	Very brief---	Dec-Apr	1.5-2.5	Apparent	Nov-Mar
Urban land.							
13*: Eunola---	C	None to occasional.	Very brief---	Dec-Apr	1.5-2.5	Apparent	Nov-Mar
Chastain---	D	Common---	Very long---	Dec-Apr	0-1.0	Apparent	Nov-May
14--- Fuquay	B	None---	---	---	2.5-4.0	Perched	Jan-Mar
15--- Grady	D	Frequent---	Very long---	Dec-Jun	+2-1.0	Swamp	Dec-Jun
16--- Kalmia	B	None to rare	---	---	>6.0	---	---
17, 18--- Lucy	A	None---	---	---	>6.0	---	---
19*: Luverne---	C	None---	---	---	>6.0	---	---
Lucy---	A	None---	---	---	>6.0	---	---
20, 21, 22--- Orangeburg	B	None---	---	---	>6.0	---	---
23*: Orangeburg---	B	None---	---	---	>6.0	---	---
Urban land.							

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
24*:							
Orangeburg	B	None	---	---	>6.0	---	---
Troup	A	None	---	---	>6.0	---	---
25*.							
Pits							
26, 27, 28	B	None	---	---	>6.0	---	---
Red Bay							
29*:							
Shadygrove	C	None	---	---	2.0-4.0	Apparent	Dec-May
Luverne	C	None	---	---	>6.0	---	---
30, 31	A	None	---	---	>6.0	---	---
Troup							
32*:							
Troup	A	None	---	---	>6.0	---	---
Orangeburg	B	None	---	---	>6.0	---	---
33*:							
Troup	A	None	---	---	>6.0	---	---
Urban land.							
34*:							
Troup	A	None	---	---	>6.0	---	---
Lucy	A	None	---	---	>6.0	---	---

* See map unit description for the composition and behavior of the map unit.

TABLE 17.--PHYSICAL AND CHEMICAL ANALYSES OF SELECTED SOILS

Soil name and sample number	Depth	Horizon	Particle-size distribution			Extractable bases			Extractable acidity	Base saturation	Reaction	Cation exchange capacity
			Sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Ca	Mg	K				
	In		Pct	Pct	Pct	Meq/100 g				Pct	pH	
Bigbee*:												
S73AL-16-5-1	0-8	A	93.6	0.6	5.5	0.14	0.01	0.02	2.00	7.8	5.0	2.17
S73AL-16-5-2	8-38	C1	95.6	<0.1	4.4	0.15	0.02	0.01	0.80	18.4	5.2	0.98
S73AL-16-5-3	38-66	C2	98.0	0.9	1.1	0.07	0.00	0.01	0.32	20.0	5.4	0.40
S73AL-16-5-4	66-75	C3	98.7	1.3	<0.1	0.10	0.00	0.01	0.08	57.9	5.6	0.19
Bonifay:												
S73AL-16-3-1	0-8	Ap	80.6	12.9	6.5	0.45	0.04	0.04	2.80	15.9	5.1	3.33
S73AL-16-3-2	8-14	A21	81.1	11.1	7.8	0.14	0.00	0.03	2.16	7.3	4.9	2.33
S73AL-16-3-3	14-46	A22	82.0	10.0	8.0	0.10	0.00	0.03	1.52	7.9	4.5	1.65
S73AL-16-3-4	46-57	B21t	77.1	6.8	16.1	1.00	0.07	0.04	3.04	26.8	4.8	4.15
S73AL-16-3-5	57-65	B22t	78.1	4.2	17.7	0.64	0.10	0.03	2.88	21.1	4.8	3.65
Dothan:												
S73AL-16-14-1	0-4	Ap	75.0	11.7	13.3	3.08	0.87	0.42	1.12	79.6	6.6	5.50
S73AL-16-14-2	4-8	A2	74.5	10.5	15.0	2.34	0.65	0.09	1.52	67.1	6.3	4.61
S73AL-16-14-3	8-18	B21t	69.8	11.7	18.5	1.04	0.07	0.04	2.96	28.0	4.5	4.11
S73AL-16-14-4	18-27	B22t	64.9	11.2	23.9	1.14	0.05	0.03	2.72	31.1	5.0	3.94
S73AL-16-14-5	27-35	B23t	60.0	12.7	27.3	0.40	0.06	0.03	2.80	15.1	5.1	3.29
S73AL-16-14-6	35-49	B24t	53.8	13.5	32.7	0.20	0.05	0.02	3.60	7.2	4.5	3.88
S73AL-16-14-7	49-80	B25t	61.3	5.3	33.4	0.12	0.09	0.02	2.80	7.8	4.5	3.03
Eunola:												
S73AL-16-8-1	0-8	A	79.3	13.4	7.3	0.65	0.20	0.07	1.68	---	5.1	2.60
S73AL-16-8-2	8-12	B1	66.7	16.8	16.5	1.12	0.27	0.10	4.24	---	4.8	5.73
S73AL-16-8-3	12-24	B21	46.2	23.2	30.6	0.90	0.24	0.09	8.24	---	4.6	9.43
S73AL-16-8-4	24-32	B22t	44.5	21.1	34.4	0.34	0.15	0.08	10.00	---	4.5	10.57
S73AL-16-8-5	32-44	B23t	54.3	16.7	29.0	0.12	0.07	0.08	8.96	---	4.4	9.23
S73AL-16-8-6	44-52	B3	71.5	12.5	16.0	0.10	0.03	0.10	5.60	---	4.4	5.83
S73AL-16-8-7	52-58	C1	71.0	15.6	13.4	0.12	0.03	0.12	5.04	---	4.4	5.31
S73AL-16-8-8	58-65	C2	74.0	15.5	10.5	0.12	0.03	0.15	3.92	---	4.5	4.23
Fuquay:												
S73AL-16-4-1	0-9	Ap	82.9	11.6	5.5	0.39	0.03	0.06	2.08	18.8	4.9	2.56
S73AL-16-4-2	9-15	A21	82.5	11.1	6.4	0.15	0.01	0.05	1.20	14.9	4.9	1.41
S73AL-16-4-3	15-36	A22	83.3	7.3	9.4	0.15	0.01	0.04	1.52	11.6	4.7	1.72
S73AL-16-4-4	36-39	B1	83.2	7.1	9.7	0.17	0.01	0.04	2.24	8.9	4.5	2.46
S73AL-16-4-5	39-50	B21t	74.4	9.2	16.4	0.35	0.02	0.04	3.36	10.9	4.5	3.77
S73AL-16-4-6	50-65	B22t	71.1	7.9	21.0	0.64	0.11	0.06	2.88	21.9	4.9	3.69
Luverne**:												
S73AL-16-17-1	0-7	A1	83.9	14.9	1.2	0.12	0.03	0.05	1.28	13.9	4.8	1.48
S73AL-16-17-2	7-21	B21t	25.4	30.1	44.5	0.36	0.36	0.05	6.88	10.1	5.1	7.65
S73AL-16-17-3	21-31	B22t	20.1	34.9	45.0	0.14	0.30	0.08	7.52	6.5	4.2	8.04
S73AL-16-17-4	31-42	B&C	6.0	43.2	50.8	0.14	0.41	0.10	10.00	6.2	4.6	10.66
S73AL-16-17-5	42-53	C1	12.2	43.0	44.8	0.12	0.35	0.10	8.80	6.2	4.7	9.37
S73AL-16-17-6	53-68	C2	20.9	40.4	38.7	0.16	0.50	0.15	9.92	7.6	4.7	10.73
S73AL-16-17-7	68-86	C3	14.3	47.6	38.1	0.26	1.15	0.28	14.32	10.6	4.5	16.02

See footnotes at end of table.

TABLE 17.--PHYSICAL AND CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution			Extractable bases			Extractable acidity	Base saturation	Reaction	Cation exchange capacity
			Sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Ca	Mg	K				
	In		Pct	Pct	Pct	Meq/100 g				Pct	pH	
Orangeburg:												
S73AL-16-16-1	0-8	Ap	72.6	18.0	9.4	2.60	0.85	0.17	1.52	70.5	6.4	5.15
S73AL-16-16-2	8-15	B1	69.3	15.9	14.8	0.54	0.19	0.07	2.72	22.9	4.8	3.52
S73AL-16-16-3	15-24	B21t	65.4	14.7	19.9	1.10	0.09	0.08	2.88	30.8	4.9	4.16
S73AL-16-16-4	24-38	B22t	62.3	15.7	22.0	1.08	0.10	0.09	3.28	28.0	4.9	4.55
S73AL-16-16-5	38-70	B23t	66.8	11.2	22.0	0.92	0.13	0.10	2.64	30.5	4.9	3.79
S73AL-16-16-6	70-82	B23t	66.7	9.4	23.9	0.46	0.12	0.06	3.04	17.6	4.6	3.68
Red Bay***:												
S73AL-16-13-1	0-6	Ap	82.6	10.2	7.2	1.26	0.22	0.10	1.92	45.4	5.8	3.51
S73AL-16-13-2	6-13	B1	74.7	10.1	15.2	0.40	0.08	0.03	2.56	17.0	5.1	3.08
S73AL-16-13-3	13-42	B21t	67.7	8.7	23.6	0.74	0.12	0.04	2.48	26.8	5.1	3.38
S73AL-16-13-4	42-57	B21t	72.0	6.4	21.6	0.62	0.09	0.04	2.16	25.9	5.1	2.91
S73AL-16-13-5	57-70	B22t	75.5	7.6	16.9	0.40	0.07	0.02	1.84	21.3	5.0	2.33
S73AL-16-13-6	70-85	B22t	75.8	6.8	17.4	0.32	0.09	0.03	1.76	20.2	4.9	2.20
Troup:												
S73AL-16-12-1	0-7	Ap	88.5	7.3	4.2	0.92	0.09	0.05	1.92	35.9	5.6	2.99
S73AL-16-12-2	7-15	A21	87.4	7.2	5.4	0.28	0.03	0.03	1.12	23.9	5.2	1.47
S73AL-16-12-3	15-29	A22	88.4	7.1	4.5	0.14	0.03	0.03	0.88	19.2	5.0	1.08
S73AL-16-12-4	29-57	A23	89.0	9.2	1.8	0.20	0.05	0.04	0.64	31.7	5.1	0.93
S73AL-16-12-5	57-62	B21t	80.0	7.5	12.5	0.48	0.14	0.07	1.84	27.5	5.1	2.53
S73AL-16-12-6	62-80	B22t	78.0	3.3	18.7	0.60	0.11	0.08	2.24	26.4	5.1	3.04
S73AL-16-12-7	80-85	B22t	81.4	4.9	13.7	0.54	0.16	0.05	1.68	30.9	5.2	2.43

* Data show less than 5 percent silt plus clay, but since the data are within normal sampling or laboratory error, the soil is considered within the range defined for the Bigbee series.

** Silt content is slightly higher than allowed in the range for the Luverne series. This is, however, within the normal sampling and analysis error.

*** Data show a decrease in clay content at a depth of 57 inches. Normally, clay content decreases below a depth of 60 inches.

TABLE 18.--ENGINEERING TEST DATA

[Tests performed by the Alabama State Highway Department in accordance with standard procedures of the American Association of State Highway and Transportation Officials (AASHTO) (4). NP means nonplastic]

Soil name and location	Parent material	Laboratory number	Depth from surface	Moisture-density*		Percentage passing sieve--**					Liquid limit	Plasticity index	Classification	
				Maximum dry density	Optimum moisture	1-in	No. 4	No. 10	No. 40	No. 200			AASHTO	Unified
			In	Lbs/ft^3	Pct						Pct			
Bigbee sand:														
2,300 feet south and	Fluvial sand	FGR35-975	0-7	105	15	100	100	100	76	7	--	--	A-3	SP-SM
1,800 feet west of the	deposits.	FGR35-976	16-44	102	14	100	100	99	78	5	--	--	A-3	SP-SM
NE corner of sec. 5		FGR35-977	73-100	102	14	100	99	98	65	1	--	--	A-3	SP
T. 5 N., R. 20 E.														
Dothan sandy loam:														
1,600 feet south and	Unconsolidated	FGR35-971	0-8	122	10	100	97	96	86	30	--	NP	A-2-4	SM
1,700 feet west of the	marine	FGR35-972	8-35	109	16	100	95	94	87	38	24	8	A-4	SC
NE corner of sec. 31,	deposits.	FGR35-973	35-49	119	11	100	99	99	93	48	34	11	A-6	SC
T. 4 N., R. 22 E.		FGR35-974	49-80	108	16	100	100	100	97	41	35	9	A-4	SM
Fuquay loamy sand:														
500 feet south and	Unconsolidated	FGR35-961	0-8	118	9	100	99	99	79	19	--	NP	A-2-4	SM
2,400 feet west of the	marine	FGR35-962	12-35	122	9	100	99	99	80	20	--	NP	A-2-4	SM
NE corner of sec. 8,	deposits.	FGR35-963	35-69	117	12	100	95	94	75	28	27	7	A-2-4	SM
T. 3 N., R. 19 E.		FGR35-964	69-90	109	16	100	99	99	83	39	40	13	A-6	SM
Luverne fine sandy loam:														
NW1/4SE1/4NE1/4 sec. 32,	Unconsolidated	FGR35-981	0-7	113	11	100	97	96	84	19	--	NP	A-2-4	SM
T. 6 N., R. 21 E.	marine	FGR35-982	7-21	98	24	100	99	99	94	75	56	26	A-7-5	MH
	deposits.	FGR35-983	42-53	92	25	100	100	100	99	97	67	30	A-7-5	MH
		FGR35-984	68-86	88	26	100	100	100	100	93	58	23	A-7-5	MH
Orangeburg sandy loam:														
2,100 feet south and	Unconsolidated	FGR35-978	0-8	121	12	100	99	99	81	29	NP	NP	A-2-4	SM
600 feet east of the	marine	FGR35-979	24-38	118	13	100	99	99	86	43	30	14	A-6	SC
NW corner of sec. 22,	deposits.	FGR35-980	38-82	120	11	100	100	99	84	38	31	14	A-6	SC
T. 4 N., R. 19 E.														
Red Bay loamy sand:														
850 feet north and	Unconsolidated	FGR35-968	0-6	116	12	100	100	100	82	18	--	NP	A-2-4	SM
2,150 feet east of the	marine	FGR35-969	13-57	121	12	100	100	100	88	33	26	8	A-2-4	SC
SW corner of sec. 10,	deposits.	FGR35-970	57-85	122	11	100	100	100	87	24	25	7	A-2-4	SM-SC
T. 3 N., R. 22 E.														
Troup loamy sand:														
1,100 feet south and	Unconsolidated	FGR35-965	0-7	111	11	100	100	99	90	15	--	NP	A-2-4	SM
450 feet west of the	marine	FGR35-966	15-57	111	12	100	99	99	89	14	--	NP	A-2-4	SM
NE corner of sec. 26,	deposits.	FGR35-967	62-85	118	11	100	99	99	89	22	24	4	A-2-4	SM-SC
T. 3 N., R. 22 E.														

* Based on AASHTO Designation T 99-57, Method A (4).

** Mechnical analysis according to AASHTO Designation T 88-57 (4). Results by this procedure may differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHTO procedure, the fine material is analyzed by the hydrometer method and the various grain-sized fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and material coarser than 2 millimeters is excluded from calculations of grain-sized fractions. The mechanical analysis data used in this table are not suitable for naming textural classes for soils.

TABLE 19.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Bigbee	Thermic, coated Typic Quartzipsamments
Bladen	Clayey, mixed, thermic Typic Albaquults
Bonifay	Loamy, siliceous, thermic Grossarenic Plinthic Paleudults
Chastain	Fine, kaolinitic, acid, thermic Typic Fluvaquents
Cowarts	Fine-loamy, siliceous, thermic Typic Hapludults
Dothan	Fine-loamy, siliceous, thermic Plinthic Paleudults
Eunola	Fine-loamy, siliceous, thermic Aquic Hapludults
Fuquay	Loamy, siliceous, thermic Arenic Plinthic Paleudults
Grady	Clayey, kaolinitic, thermic Typic Paleaquults
Kalmia	Fine-loamy over sandy or sandy-skeletal, siliceous, thermic Typic Hapludults
Lucy	Loamy, siliceous, thermic Arenic Paleudults
Luverne	Clayey, mixed, thermic Typic Hapludults
Orangeburg	Fine-loamy, siliceous, thermic Typic Paleudults
Red Bay	Fine-loamy, siliceous, thermic Rhodic Paleudults
Shadygrove	Fine, montmorillonitic, thermic Typic Hapludalfs
Troup	Loamy, siliceous, thermic Grossarenic Paleudults

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