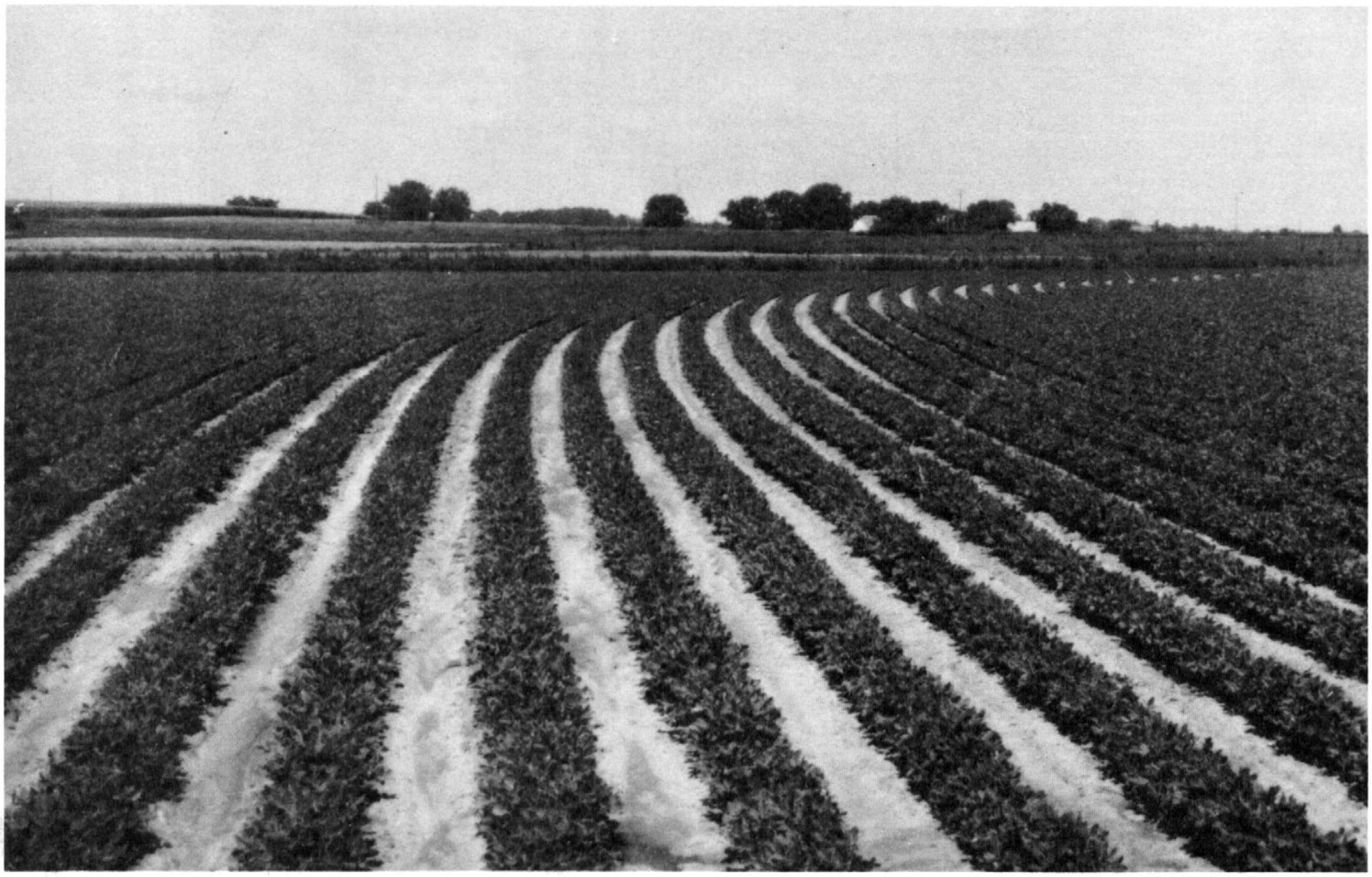
SOIL SURVEY OF

# Lee and Terrell Counties, Georgia



United States Department of Agriculture
Soil Conservation Service
In cooperation with
University of Georgia, College of Agriculture
Agricultural Experiment Stations

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 1968-1973. Soil names and descriptions were approved in 1974. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1974. This survey was made cooperatively by the Soil Conservation Service and the University of Georgia, College of Agriculture, Agricultural Experiment Stations. It is part of the technical assistance furnished to the Lower Chattahoochee River Soil and Water Conservation District.

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

# HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms, woodlands, and wildlife areas; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, wildlife habitat, and recreation.

## Locating Soils

All the soils of Lee and Terrell Counties are shown on the detailed map at the back of this publication. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

## Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the counties in alphabetic order by map symbol and gives the capability classification of each. It also shows the page where each soil is described and the page for the woodland group in which the soil has been placed.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those that have a moderate limitation can be colored yellow, and those that have a severe limitation can be colored red.

*Farmers and those who work with farmers* can learn about use and management of the soils from the soil descriptions and from the discussions of the general management for crops and pasture and use of the soils for woodland.

*Foresters and others* can refer to the section "Woodland" where the soils of the counties are grouped according to their suitability for trees.

*Wildlife managers and others* can find information about soils and wildlife in the section "Wildlife."

*Community planners and others* can read about soil properties that affect the choice of sites for nonindustrial buildings and for recreation areas in the sections "Engineering" and "Recreation."

*Engineers and builders* can find, under "Engineering," tables that contain test data, estimates of soil properties, and information about soil features that affect engineering practices.

*Scientists and others* can read about the soils in the section "Formation and Classification of the Soils."

*Newcomers* in the area may be interested in the section "General Soil Map," where broad patterns of soils are described, and in the section "Additional Facts about the Counties."

*Cover:* This field of Tifton sandy loam, 2 to 5 percent slopes, eroded, is well suited to peanuts. This soil is in capability unit IIe-2.

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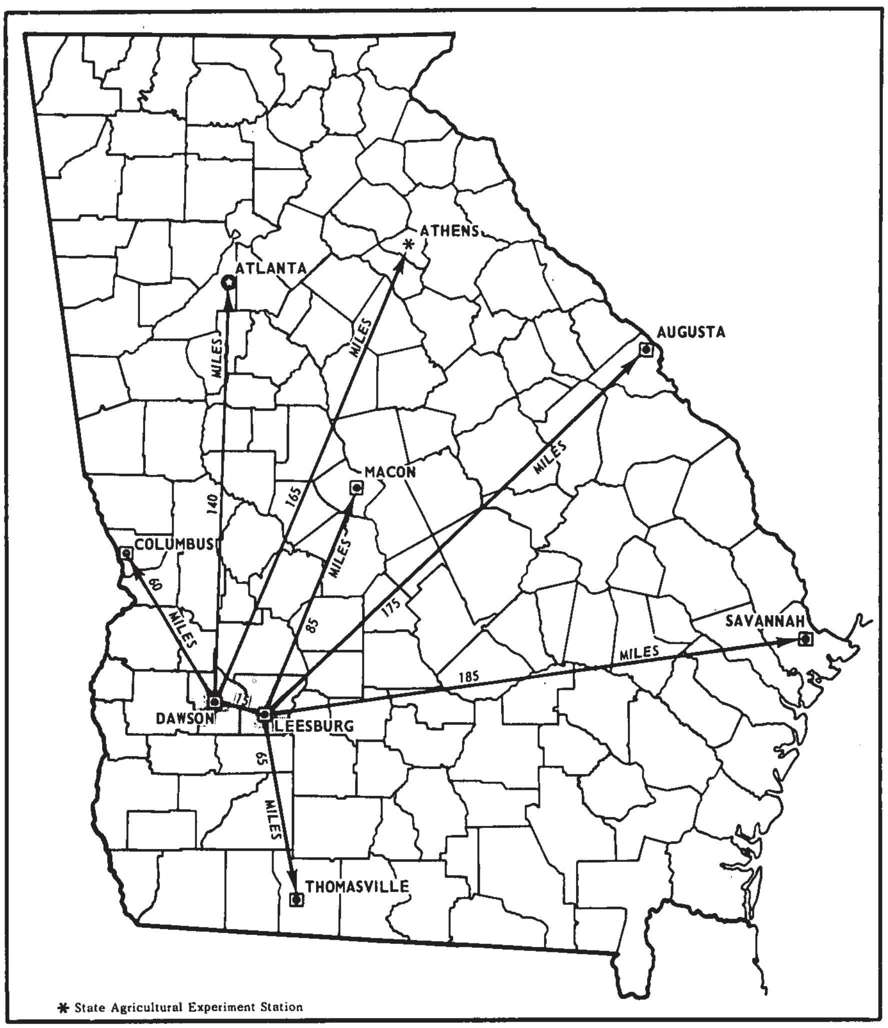
## Summary of Tables




Location of Lee and Terrell Counties, Georgia.

# SOIL SURVEY OF LEE AND TERRELL COUNTIES, GEORGIA

**By Jerry A. Pilkinton**

**Fieldwork by Jerry A. Pilkinton and Ernest H. Smith, Soil Conservation Service**

**United States Department of Agriculture, Soil Conservation Service, in cooperation with the University of Georgia, College of Agriculture, Agricultural Experiment Stations**

LEE AND TERRELL COUNTIES are in the southwestern part of Georgia. They cover an area of 684 square miles or 437,440 acres. Lee County has a total of 226,880 acres and Terrell County has a total of 210,560 acres.

All of the survey area is in the Southern Coastal Plain Major Land Resource Area. Most of the soils in these two counties are on broad, level to gently sloping uplands. The flood plains along the streams are level or nearly level and relatively narrow.

Most of the soils on the uplands are well drained and only slightly eroded, but in a few places the soils are moderately eroded. These soils have a surface layer that is mainly brownish or grayish sandy loam or loamy sand and a subsoil that ranges from yellowish brown to dark red and is loamy or clayey. Some of the soils on the uplands have thick sandy layers over a loamy subsoil. Most of the soils on the flood plains and others on depressional or low landscapes are wet or seasonally wet. They are mainly loamy or sandy to a depth of 40 inches.

Most of the soils in the two counties are well suited to many kinds of crops. The climate is favorable for farming. Summers generally are warm, and winters are moderately cold. Precipitation generally is ample and well distributed throughout the year. Excellent sources of water are available for farm, industry, and home use.

## *How This Survey Was Made*

Soil scientists made this survey to learn what kinds of soil are in Lee and Terrell Counties, where they are located, and how they can be used. The soil scientists went into the counties knowing they likely would find many soils they had already seen and perhaps some they had not. They observed the steepness, length, and shape of slopes, the size and speed of streams, the kinds of native plants or crops, the kinds of rock, and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* are the categories of soil classification most used in a local survey.

Soils that have a profile almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or geographic feature near the place where a soil of that series was first observed and mapped. Americus and Tifton, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

Soils of one series can differ in texture of the surface layer and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Tifton loamy sand, 0 to 2 percent slopes is one of three phases within the Tifton series.

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

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different series or of different phases within one series. One such mapping unit, an undifferentiated group, is shown on the soil map of Lee and Terrell Counties.

An undifferentiated group is made up of two or more soils that could be delineated individually but are shown as one unit because, for the purpose of the soil survey, there is little value in separating them. The pattern and proportion of soils are not uniform. An area shown on the map may be made up of only one of the dominant soils or of two or more. The name of an undifferentiated group consists of the names of the dominant soils, joined by "and." Kinston and Bibb soils is an example.

In most areas surveyed there are places where the soil material is so rocky, so shallow, or so severely eroded that it cannot be classified by soil series. These places are shown on the soil map, are described in the survey, and are given descriptive names, such as "Borrow pits."

While a soil survey is in progress, samples of soils are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soil in other places are assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil. Yields under defined management are estimated for all the soils.

But only part of a soil survey is done when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in such a way as to be readily available to different groups of users, among them farmers, managers of woodland, and engineers.

On the basis of yield and practice tables and other data, the soil scientists set up trial groups. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others; then they adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

## General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in the survey area. A soil association is a landscape that has a distinctive pattern of soils in defined proportions. It typically consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in an association can occur in other associations but in different patterns.

A map showing soil associations is useful to people who want to have a general idea of the soils in a survey area, who want to compare different parts of that area, or who want to find suitable sites for a certain kind of land use. Such a map is a useful general guide for broad planning of a watershed, a wooded tract, or a wildlife area or for broad planning of recreation facilities, community developments, and engineering works. It is not a suitable map for detailed planning for management of a farm or field or for selecting a site for a road or building or other structure, because the soils within an association ordinarily vary in slope, depth, stoniness, drainage, and other characteristics that affect their management.

The soil associations in this survey area are described on the pages that follow.

### 1. *Kinston-Bibb association*

*Poorly drained, level, acid, loamy soils that are mainly gray below the surface layer; on flood plains*

This association is on narrow to broad flood plains of streams that dissect the two counties and flood frequently. Slope ranges from 0 to 2 percent. This association is mainly along the northwestern edge of Lee County and along the southwestern edge and in the northern half of Terrell County. It makes up about 5 percent of the two counties.

Kinston soils make up about 35 percent of the association; Bibb soils, 31 percent; and minor soils, 34 percent.

In a representative profile of Kinston soils, the surface layer is 5 inches thick. It is gray loam that has sandy strata. The layer below that, to a depth of 16 inches, is light gray sandy loam that has sandy strata. The next layer, to a depth of 52 inches, is light gray and gray sandy clay loam that also has sandy strata. Below that, stratified dark gray loamy sand and light gray sand extend to a depth of 60 inches.

In a representative profile of Bibb soils, the surface layer in the upper 5 inches is brown loam. Below that, to a depth of 16 inches, it is light gray loamy sand. The next layer, to a depth of 50 inches, is light gray sandy loam that has sandy strata. The layer below that, extending to a depth of 60 inches, is stratified light gray and dark grayish brown sand.

The minor soils include the somewhat poorly drained Ocilla soils, the poorly drained Rains and Pelham soils, and the very poorly drained Johnston soils. Johnston soils occur mainly in northwest Terrell County along Turkey, Pine Head, Chenubee, and Wolf Creeks and on the upper reaches of Bear and Reedy Creeks.

Because of wetness and the risk of flooding, the soils of this association are not suited to cultivated crops. They are suited to use as woodland, habitat for wildlife, and pasture. Most of the acreage is in bottom land hardwoods; a few acres are in pasture.

Use of the soils in this association for community development, including housing and industrial sites, and recreation facilities, such as campsites and play areas, is severely limited.

### 2. *Herod-Muckalee association*

*Poorly drained, level, nonacid, loamy soils that are mainly gray below the surface layer; on flood plains*

This association is mainly on narrow to broad flood plains of streams that traverse the two counties and flood frequently (fig. 1). Drainage is poor because of the low position on the landscape. Slope ranges from 0 to 2 percent. The association occurs throughout Lee County, except along the northwestern edge, and along the Chickasawhatchee and Kiokee Creeks in the southern half of Terrell County. It differs from the Kinston-Bibb association in that the soils formed in sediment overlying Ocala limestone and are less acid than the

*Figure 1.*—**Flooding in an area of the Herod-Muckalee association.**

Kinston-Bibb association. The Herod-Muckalee association makes up about 6 percent of the two counties.

Herod soils make up about 50 percent of the association; Muckalee soils, 25 percent; and minor soils, 25 percent.

In a representative profile of the Herod soils, the surface layer in the upper 4 inches is brown loam that has thin sandy strata. Below that, it is 8 inches of gray loam that has thin, sandy strata. Next, in sequence from the top, layers are 26 inches of gray clay loam mottled with strong brown that has thin sandy and clayey strata, 12 inches of dark gray clay loam mottled with strong brown that has thin sandy and loamy strata, and 12 inches or more of dark gray and very dark gray sandy loam that has thin sandy and clayey strata and pockets of light gray and pale brown.

In a representative profile of Muckalee soils, the surface layer is 6 inches thick. It is dark gray loam that has thin strata of sand and clay loam. Below that, in sequence from the top, the layers are 22 inches of gray loamy sand that has thin strata of sand and sandy clay loam; 15 inches of dark gray sandy loam that has thin sand and loamy sand strata; 10 inches of thinly stratified dark gray, very dark gray, and light gray loamy sand, sand, and sandy clay loam; and 11 inches of gray sandy loam stratified with light gray sand and yellowish brown clay.

Minor soils in the association include the very poorly drained Grady and Johnston soils and the poorly drained Kinston and Bibb soils. These soils are mainly in the upper reaches of the smaller streams.

Because of wetness and the risk of flooding, the soils of this association are not suited to cultivated crops. They are suited to woodland, habitat for wildlife, and pasture. Most of the acreage is in bottom land hardwoods; a few acres are in pasture.

Use of the soils of this association for community development, including housing and industrial sites, and recreation facilities, such as campsites and play areas, is severely limited.

### 3. *Tifton-Grady association*

*Well drained, level to gently sloping soils that have a loamy or sandy surface layer and a brownish, loamy subsoil; on uplands; and very poorly drained, level soils that have a loamy surface layer and a gray, clayey subsoil; in wet depressions*

This association is on broad divides that are dissected by a few small streams and many small, intermittent drainageways. A large part of the association drains into wet depressions that have no natural outlets. Slopes are mostly less than 5 percent but range to 8 percent, particularly along streams and drainageways (fig. 2). This association occurs throughout Lee and Terrell Counties and makes up about 36 percent of the counties. The largest areas of the association are in the eastern half of each county.

Tifton soils make up about 55 percent of the association; Grady soils, 15 percent; and minor soils, 30 percent.

The Tifton soils are on the higher part of the landscape. In a representative profile, the surface layer is brown sandy loam 5 inches thick. The subsoil is yellow-

*Figure 2.*—**Typical landscape in the Tifton-Grady association.**

ish brown and strong brown sandy clay loam to a depth of 42 inches and has a few red mottles starting at a depth of 32 inches. The next layer, to a depth of 65 inches, is mottled red, yellowish brown, light gray, and strong brown sandy clay loam with pockets of sandy clay. Ironstone nodules are scattered throughout the upper part of the profile. Plinthite is in the lower part of the subsoil. The Tifton soils are well drained.

The Grady soils are in wet depressions. In a representative profile, the surface layer is very dark gray loam about 6 inches thick. The layer below that, to a depth of 12 inches, is gray sandy clay loam. And the next layer, to a depth of 77 inches, is gray clay mottled with shades of brown and red. The Grady soils are very poorly drained.

Minor soils in this association include the well drained Norfolk and Sunsweet soils on the higher parts of the landscape and the moderately well drained Goldsboro and Irvington soils on the lower parts.

The well drained soils in the association are well suited to cultivated crops, pasture, and pine trees. Crops and pastures respond well to fertilizer and good management. The main crops are corn, peanuts, cotton, soybeans, small grains, and a few acres of truck crops. The Grady soils are not suited to cultivated crops because they are wet and subject to flooding. If adequately drained, they can be used for pasture, but suitable pasture plants such as bahiagrass and white clover can be expected to show only fair response to management.

The well drained soils in the association are used mainly for cultivated crops and pasture, but some are in planted pines or natural stands of pines and a few hardwoods. The Grady soils are mainly in natural vegetation, which consists of blackgum, sweetgum, water oaks, a few pine and cypress trees, and other water-tolerant plants.

General farming is most common, but some farms specialize in livestock — beef cattle, hogs, and a few dairy cattle.

Use of most soils in this association for community development, including housing and industrial sites, roads, and recreation facilities, such as campsites and play areas, is somewhat limited. Wetness severely limits the Grady soils for such uses.

### 4. *Greenville-Faceville-Tifton association*

*Well drained, level to sloping soils that have a loamy or sandy surface layer and a reddish, clayey or brownish, loamy subsoil; on uplands*

This association is on broad divides that are dissected by a few small streams and by small intermittent drainageways. There are a few wet depressions. Slopes are mostly less than 5 percent but range to 12 percent along streams and drainageways. The association is mainly in southwest Lee County and throughout Terrell County. It makes up about 26 percent of the two counties.

Greenville soils make up about 53 percent of the association; Faceville soils, 9 percent; Tifton soils, 9 percent; and minor soils, 29 percent.

In a representative profile of Greenville soils, the surface layer is dark reddish brown sandy loam about 5 inches thick. The subsoil is friable, dark red clay and sandy clay to a depth of 55 inches. Below that, to a depth of about 75 inches, it is firm dark red clay mottled with veins and streaks of brownish yellow and very pale brown.

In a representative profile of Faceville soils, the surface layer is brown sandy loam 5 inches thick. The subsoil, to a depth of 38 inches, is friable, yellowish red sandy clay mottled with shades of brown in the lower part. Next, to a depth of 65 inches, it is yellowish red, firm sandy clay mottled with shades of red and brown.

In a representative profile of Tifton soils, the surface layer is brown sandy loam 5 inches thick. The subsoil is yellowish brown and strong brown sandy clay loam to a depth of 42 inches; a few red mottles begin to show at a depth of 32 inches. Next, to a depth of 65 inches, it is mottled red, yellowish brown, light gray, and strong brown sandy clay loam with pockets of sandy clay. Ironstone nodules are scattered throughout the upper part of the profile. Plinthite is in the lower part of the subsoil.

Minor soils in the association are mainly the well drained Henderson, Orangeburg, Sunsweet, and Red Bay soils on the higher parts of the landscape; and the very poorly drained Grady soils in wet depressions.

The soils in this association are mainly well suited to cultivated crops, pasture, and pine trees. Crops and pastures respond well to fertilizer and good management. The main crops are corn, cotton, peanuts, soybeans, and small grains.

Approximately two-thirds of this association is about equally used for cultivated crops and pasture. The rest is in planted or natural stands of pines and a few hardwoods.

Farming is mostly general on these soils, however, some farms specialize in livestock—mainly beef cattle and hogs.

Use of the soils in this association for community development, including housing and industrial sites, roads, and recreation facilities, such as campsites and play areas, is somewhat limited.

### 5. *Orangeburg-Red Bay association*

*Well drained, level to gently sloping soils that have a sandy or loamy surface layer and a reddish, loamy subsoil; on uplands*

This association is on broad divides that are dissected by a few small streams and intermittent drainageways. Low, wet depressions a few to 100 acres in size are part of this association in southwestern Terrell County. Slopes are mostly less than 5 percent but range to 8 percent. This association occurs in most parts of Lee County but is mainly in western Terrell County along the main streams. It makes up about 12 percent of the two counties.

Orangeburg soils make up about 40 percent of the association; Red Bay soils, 32 percent; and minor soils, 28 percent.

In a representative profile of the Orangeburg soils, the surface layer is brown loamy sand 7 inches thick. The layer below that, to a depth of 14 inches, is friable, yellowish red sandy loam. The next layer, extending to a depth of 76 inches, is friable, red sandy clay loam.

In a representative profile of Red Bay soils, the surface layer is dark reddish brown sandy loam 7 inches thick. The subsoil is friable, dark red sandy loam to a depth of 18 inches. The next layer, to a depth of 65 inches, is dark red, friable sandy clay loam.

The minor soils are mainly the well drained, sandy Lucy and Fuquay soils and the somewhat excessively drained, sandy Americus soils on the higher parts of the landscape. The very poorly drained Grady soils are in wet depressions.

The soils in this association are mainly well suited to cultivated crops, pasture, and pine trees. Crops and pastures respond well to fertilizer and good management. The main crops are corn, cotton, peanuts, soybeans, and small grains.

Most of this association is used for cultivated crops and pasture. The rest is in planted pines or natural stands of pines and a few hardwoods.

Farming on these soils is mainly general, but some farms specialize in livestock—mostly beef cattle and hogs.

The use of the soils in this association for community development, including housing and industrial sites, roads, and recreation facilities, such as campsites and play areas, is slightly limited. Their use for sewage lagoons is moderately limited.

### 6. *Troup-Lucy association*

*Well drained, level to sloping soils that have a thick, sandy layer over a brownish or reddish, loamy subsoil; on uplands*

This association is on fairly broad landscapes that are dissected by a few small streams and intermittent drainageways. Slopes are mostly less than 5 percent but range to 12 percent along streams and drainageways. This association occurs along major streams throughout Lee County and at the northern tip and along the northwestern edge of Terrell County. It makes up about 12 percent of the two counties.

Troup soils make up about 46 percent of the association; Lucy soils, 23 percent; and minor soils, 31 percent.

In a representative profile of the Troup soils, the surface layer is dark grayish brown sand about 6 inches thick. The subsurface layer is sand and extends to a depth of 68 inches. It is yellowish brown in the upper part, light yellowish brown in the middle part, and yellowish brown in the lower part. The subsoil is friable yellowish brown sandy loam; it extends to a depth of 77 inches.

In a representative profile of the Lucy soils, the surface layer is dark grayish brown loamy sand 8 inches thick. The subsurface layer, which extends to a depth of 29 inches, is loamy sand. It is yellowish brown in the upper part and strong brown in the lower part. The subsoil is sandy loam and sandy clay loam to a depth of 65 inches. It is yellowish red in the upper part and red in the lower part.

The minor soils are mainly the well drained Fuquay and Norfolk soils and the somewhat excessively drained Americus soils.

Most of this association is suited to the crops, pasture, and pine trees commonly grown in Lee and Terrell Counties. The major soils, however, are sandy and droughty. Response of crops and pasture to fertilizer and good management is fair if moisture is adequate. The principal crops are peanuts, corn, and small grains.

The association is mostly planted to pine or is in natural vegetation, which consists of scrub oaks and pines. The rest is used for cultivated crops and pasture.

Most farming on these soils is general, but some farms have livestock—mainly beef cattle and hogs.

The use of most of the soils of this association for community development, such as housing and industrial sites, is limited. For sewage lagoons, limitations are severe, and for sanitary landfills, slight to severe. For recreation uses, such as campsites and play areas, limitations of the soils are moderate to severe.

### 7. *Fuquay-Troup-Goldsboro association*

*Well drained to moderately well drained, level to gently sloping soils that have a sandy surface layer and a brownish, loamy subsoil; on uplands*

This association is on broad divides and low flats on uplands. Perennial streams are few, and the excess surface water from part of the acreage drains into wet depressions. Slopes are mostly less than 5 percent but range from 2 to 8 percent. This association makes up 3 percent of the two counties and is in scattered areas along the Flint River and throughout northwestern Lee County.

Fuquay soils make up about 35 percent of the association; Troup soils, 20 percent; Goldsboro soils, 14 percent; and minor soils, 31 percent.

The Fuquay soils occur on the higher parts of the landscape and are well drained. In a representative profile the surface layer is dark grayish brown loamy sand 9 inches thick. The subsurface layer is loamy sand; it extends to a depth of about 32 inches. It is light olive brown in the upper 6 inches and light yellowish brown in the lower part. The subsoil extends to a depth of 64 inches or more. It is brownish yellow sandy loam mottled with shades of brown in the upper 6 inches. Below that, it is yellowish brown sandy clay loam that is mottled with shades of brown in the upper part and with shades of red, brown, and gray in the lower part.

The Troup soils are near the streams in the steeper areas of the association. They are also well drained. In a representative profile the surface layer is dark grayish-brown sand about 6 inches thick. The subsurface layer is sand and extends to a depth of 68 inches. It is yellowish brown in the upper part, light yellowish brown in the middle part, and yellowish brown in the lower part. The subsoil is friable yellowish brown sandy loam to a depth of 77 inches.

The Goldsboro soils are in the lower areas and are moderately well drained. In a representative profile the surface layer is dark gray loamy sand 9 inches thick. The subsoil extends to a depth of at least 65 inches. In the upper 6 inches, it is light olive brown sandy loam that has faint brownish mottles; in the middle part, which is 21 inches thick, it is light yellowish brown sandy clay loam that has brownish and reddish mottles and gray mottles that start at a depth of about 24 inches; in the lower part it is gray sandy clay loam mottled with shades of brown.

The minor soils are mainly the well drained Lucy soils on the higher parts of the landscape; the somewhat poorly drained Ocilla soils; the poorly drained Pelham and Rains soils; and the very poorly drained Grady soils in the low areas.

The major soils of this association are suited to most crops, pasture, and pine trees commonly grown in Lee and Terrell Counties. Fuquay and Troup soils, however, are sandy and droughty. Response of crops and pastures on the Fuquay and Troup soils to fertilizer and good management is fair if moisture is adequate. Drainage of the Goldsboro soils makes them more suitable for some crops. Corn, peanuts, and small grains are the main crops.

The well drained soils are mainly in planted pines or natural vegetation, which includes pines, scrub oaks, and hawthorn bushes; however, some acreage is used for cultivated crops and pasture. The wetter soils are mainly in natural vegetation of water-tolerant trees, shrubs, and grasses.

Most farming on these soils is general, but some farms specialize in raising beef cattle and hogs.

Use of the soils in this association for community development, including housing and industrial sites, roads, and recreation facilities, such as campsites and play areas, is slightly to moderately limited.

## *Descriptions of the Soils*

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

An important part of the description of each soil series is the soil profile, that is, the sequence of layers from the surface down to rock or other underlying material. The profile of each series is described twice. The first description is brief and in terms familiar to a layman. The second is more detailed and is for those who need to make thorough and precise studies of soils.

The profile described is typical of mapping units in a series. If the profile of a given mapping unit is different from the one described for the series, the differences are apparent in the name of the mapping unit, or they are stated in describing the mapping unit. Color terms are for moist soil unless otherwise stated.

As mentioned in the section "How This Survey Was Made," not all mapping units are members of a soil series. Borrow pits, for example, does not belong to a soil series. Nevertheless, it is listed in alphabetic order along with the soil series.

Preceding the name of each mapping unit is a symbol that identifies the mapping unit on the detailed soil map. Listed at the end of each description of a mapping unit is the capability unit and woodland suitability group in which the mapping unit has been placed. The page where each soil is described and the range site and woodland group in which it has been placed are listed in the "Guide to Mapping Units" at the back of this survey.

The acreage and proportionate extent of each mapping unit are shown in table 1. Many of the terms used in describing soils can be found in the Glossary, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (*7*)[1].

## Americus Series

The Americus series consists of somewhat excessively drained, level to gently sloping, sandy soils on smooth, broad to narrow uplands. These soils formed in unconsolidated sandy sediments, mostly in Terrell County. Native vegetation was mainly mixed red oaks, scrub oaks, and pines. Slope ranges from 0 to 8 percent.

In a representative profile the surface layer is dark reddish brown sand 8 inches thick. The subsoil extends to a depth of at least 80 inches. It is dark reddish brown loamy sand in the upper 8 inches and dark red loamy sand below that.

These soils are low in natural fertility and low in organic-matter content. They are strongly acid to very

[1] Italic numbers in parentheses refer to Literature Cited, p. 60.

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

| Soil | Lee County | Terrell County | Total | |
|---|---|---|---|---|
| | *Acres* | *Acres* | *Acres* | *Percent* |
| Americus sand, 0 to 5 percent slopes | 1,460 | 5,825 | 7,285 | 1.7 |
| Americus sand, 5 to 8 percent slopes | 0 | 2,655 | 2,655 | .6 |
| Borrow pits | 265 | 350 | 615 | .1 |
| Faceville sandy loam, 0 to 2 percent slopes | 1,780 | 2,455 | 4,235 | 1.0 |
| Faceville sandy loam, 2 to 5 percent slopes, eroded | 2,925 | 3,740 | 6,665 | 1.5 |
| Faceville sandy loam, 5 to 8 percent slopes, eroded | 415 | 430 | 845 | .2 |
| Fuquay loamy sand, 1 to 5 percent slopes | 13,480 | 345 | 13,825 | 3.2 |
| Goldsboro loamy sand, 0 to 2 percent slopes | 9,720 | 2,640 | 12,360 | 2.8 |
| Grady soils | 19,850 | 14,100 | 33,950 | 7.8 |
| Greenville sandy loam, 0 to 2 percent slopes | 2,245 | 9,655 | 11,900 | 2.7 |
| Greenville sandy loam, 2 to 5 percent slopes | 13,760 | 24,730 | 38,490 | 8.8 |
| Greenville sandy loam, 5 to 8 percent slopes | 1,995 | 4,440 | 6,435 | 1.5 |
| Greenville sandy clay loam, 5 to 12 percent slopes, eroded | 1,845 | 4,005 | 5,850 | 1.3 |
| Henderson cherty sandy loam, 2 to 8 percent slopes | 100 | 1,590 | 1,690 | .4 |
| Herod and Muckalee soils | 15,605 | 8,045 | 23,650 | 5.4 |
| Irvington loamy sand, 0 to 2 percent slopes | 7,600 | 2,455 | 10,055 | 2.3 |
| Johnston soils | 0 | 3,750 | 3,750 | .9 |
| Kinston and Bibb soils | 3,830 | 11,590 | 15,420 | 3.5 |
| Lucy loamy sand, 0 to 5 percent slopes | 9,760 | 3,960 | 13,720 | 3.1 |
| Lucy loamy sand, 5 to 8 percent slopes | 1,680 | 900 | 2,580 | .6 |
| Norfolk loamy sand, 0 to 2 percent slopes | 8,630 | 3,870 | 12,500 | 2.9 |
| Norfolk loamy sand, 2 to 5 percent slopes | 3,770 | 1,515 | 5,285 | 1.2 |
| Ocilla loamy sand | 2,980 | 115 | 3,095 | .7 |
| Orangeburg loamy sand, 0 to 2 percent slopes | 6,600 | 3,585 | 10,185 | 2.3 |
| Orangeburg loamy sand, 2 to 5 percent slopes | 9,265 | 6,280 | 15,545 | 3.6 |
| Orangeburg sandy loam, 5 to 8 percent slopes, eroded | 1,550 | 1,400 | 2,950 | .7 |
| Pelham loamy sand | 1,470 | 0 | 1,470 | .3 |
| Rains sandy loam | 4,950 | 535 | 5,485 | 1.3 |
| Red Bay loamy sand, 0 to 2 percent slopes | 4,585 | 2,755 | 7,340 | 1.7 |
| Red Bay sandy loam, 2 to 5 percent slopes | 5,060 | 6,000 | 11,060 | 2.5 |
| Red Bay sandy loam, 5 to 8 percent slopes, eroded | 765 | 1,515 | 2,280 | .5 |
| Riverview soils | 525 | 1,530 | 2,055 | .5 |
| Sunsweet sandy loam, 2 to 8 percent slopes, eroded | 1,880 | 9,940 | 11,820 | 2.7 |
| Sunsweet sandy loam, 8 to 12 percent slopes, eroded | 695 | 1,100 | 1,795 | .4 |
| Tifton loamy sand, 0 to 2 percent slopes | 22,660 | 17,250 | 39,910 | 9.1 |
| Tifton sandy loam, 2 to 5 percent slopes, eroded | 25,000 | 32,685 | 57,685 | 13.2 |
| Tifton sandy loam, 5 to 8 percent slopes, eroded | 1,320 | 2,350 | 3,670 | .8 |
| Troup soils, 0 to 8 percent slopes | 16,600 | 9,230 | 25,830 | 5.9 |
| Troup soils, 8 to 12 percent slopes | 260 | 1,245 | 1,505 | .3 |
| Total | 226,880 | 210,560 | 437,440 | 100.0 |

strongly acid throughout. Permeability is moderately rapid, and the available water capacity is low. The root zone is deep, and tilth is good.

Americus soils are suited to most crops and pastures grown locally, but plant growth is only fair because the soils are sandy and droughty. They are better suited to pines. Some areas are cultivated or used as pasture, but most of the acreage is in natural vegetation or is planted in pines.

Representative profile of Americus sand, 0 to 5 percent slopes, 3/10 mile east of Ichawaynochaway Creek on Georgia Highway 50, 50 yards north of the highway along a roadcut at the edge of a cultivated field along the west-central edge of Terrell County:

Ap—0 to 8 inches; dark reddish brown (5YR 3/4) sand; weak fine granular structure; very friable; common fine roots; very strongly acid; clear smooth boundary.

B1—8 to 16 inches; dark reddish brown (2.5YR 3/4) loamy sand; weak fine granular structure; very friable; many fine roots; few vertical streaks of Ap horizon; very strongly acid; clear smooth boundary.

B21t—16 to 55 inches; dark red (2.5YR 3/6) loamy sand; weak medium granular structure; very friable; few fine roots; most sand grains coated and bridged with clay; very strongly acid; clear smooth boundary.

B22t—55 to 80 inches; dark red (2.5YR 3/6) loamy sand; weak medium subangular blocky structure; friable; few fine roots; most sand grains coated and bridged with clay; very strongly acid.

The A1 or Ap horizon is dark brown to dark reddish brown. It is 8 to 12 inches thick. The B1 horizon is dark reddish brown to dark red and is 4 to 10 inches thick. Depth to the B22t horizon ranges from 40 to 72 inches, but commonly the range is 40 to 60 inches. The B22t horizon ranges from loamy sand to sandy loam. From the top of the B1 horizon to a depth of 60 inches, the clay content gradually increases from 3 to 35 percent.

Americus soils commonly occur among the Red Bay, Lucy, and Troup soils. They are sandy to a greater depth than Red Bay soils. Americus soils are similar to Lucy soils in texture, but they are much redder throughout the sandy part of the profile. They are redder than Troup soils.

**ArB—Americus sand, 0 to 5 percent slopes.** This is a somewhat excessively drained, droughty, level to very gently sloping, reddish, sandy soil on uplands. It has the profile described as representative of the series. In a few places, however, the surface layer is loamy sand. Small areas of Lucy, Troup, or Red Bay soils are included in mapping in some places.

This soil is suited to pine trees. It is fairly well suited to cultivated crops and pasture if fertilizer is applied, good management is used, and moisture is adequate.

Erosion is not a serious hazard. The principal management concern is the frequent return of large amounts of plant residue to the soil to improve its available water capacity and fertility. A suitable cropping system is 1 or 2 years of row crops followed by 2 to 4 years of perennial grass. All plant residue should be left on the surface between seasons of crop production. Grassed waterways are needed to keep runoff from collecting in natural depressions.

Row crops and pasture plants need supplemental applications of water during prolonged dry spells. Deep wells have an adequate water supply for sprinkler irrigation. Capability unit IIIs-1; woodland group 3s2.

**ArC—Americus sand, 5 to 8 percent slopes.** This is a somewhat excessively drained, gently sloping, droughty, reddish, sandy soil on uplands. It has a profile similar to the one described as representative of the series, but the surface layer is 1 or 2 inches thinner. In places the surface layer is loamy sand.

Included with this soil in mapping are small areas of Lucy, Troup, or Red Bay soils. Also included is a small acreage of narrow areas along streams and drainageways where slopes range to 12 percent.

This soil is suited to pine trees. It is fairly well suited to crops and pasture if fertilizer is applied, management is good, and moisture is adequate.

Although erosion is not a serious hazard, there are scattered gullies in unprotected cultivated fields. All plant residue should be left on the surface between seasons of crop production, and all farming should be done on the contour. Grassed waterways are needed to keep runoff from collecting in natural depressions.

Lack of moisture in summer frequently damages crops and sometimes results in crop loss. Because of slope, however, the soil is not well suited to irrigation. Because the organic-matter content is depleted at a rapid rate, large amounts of crop residue should be returned to the soil if cultivated crops are grown. A cropping sequence that includes perennial grasses is most beneficial. A suitable cropping system is 4 years of grass followed by 2 years of a row crop such as peanuts. Capability unit IVs-1; woodland group 3s2.

## Bibb Series

The Bibb series consists of poorly drained soils on flood plains. These soils formed in alluvium of varying color and texture that washed from uplands of the Coastal Plain. Native vegetation was mainly water oak, yellow-poplar, bay, sycamore, sweetgum, and blackgum trees and an understory of ferns, briers, and other water-tolerant plants. Slope is 0 to 2 percent.

In a representative profile the surface layer is about 5 inches of brown loam over 11 inches of light gray loamy sand. The next layer, which extends to a depth of 50 inches, is light gray sandy loam that has sandy strata. Below that, to a depth of 60 inches or more, is stratified light gray and dark grayish brown sand and loamy sand.

These soils are low to moderate in natural fertility and have a low to medium content of organic matter. Permeability is moderate, and the available water capacity is medium. Reaction is very strongly acid to strongly acid throughout the profile. Because there is a high water table, the root zone is generally shallow and tilth is poor.

Because they are subject to flooding and have a high water table, Bibb soils are generally not suitable for cultivation. Drainage is poor because the soils are on the flood plain where stream channels are clogged. A few areas have been cleared and used for pasture, but most of the acreage is in natural vegetation.

In Lee and Terrell Counties, Bibb soils are mapped only with Kinston soils.

Representative profile of Bibb loam, in an area mapped as Kinston and Bibb soils, on the Kinchafoonee Creek flood plain, 500 yards east of the creek on Georgia Highway 118, 150 yards south of the highway in Lee County:

A11—0 to 5 inches; brown (10YR 4/3) loam; common fine distinct strong brown mottles; weak medium granular structure; friable; many fine and common medium roots; many leaves and twigs on the surface; many bits of partly decayed forest litter; strongly acid; abrupt wavy boundary.

A12g—5 to 16 inches; light gray (2.5YR 7/2) loamy sand and thin strata of sand and sandy loam; common medium distinct light yellowish brown (2.5Y 6/4) mottles and few fine prominent strong brown mottles; weak fine granular structure; very friable; few fine roots; strongly acid; gradual smooth boundary.

C1g—16 to 28 inches; light gray (10YR 6/1) sandy loam and thin strata of sand; many medium distinct yellowish brown (10YR 5/6) mottles and few fine distinct strong brown mottles; massive; friable; few fine roots; strongly acid; clear smooth boundary.

C2g—28 to 50 inches; light gray (10YR 6/1) sandy loam and thin strata of sand; common medium distinct light yellowish brown (2.5Y 6/4) mottles; massive; friable; few fine roots; few bits of partly decayed forest litter; strongly acid; gradual smooth boundary.

C3g—50 to 60 inches; thin stratified layers and pockets of light gray (10YR 6/1), dark grayish brown (10YR 4/2), and light yellowish brown (2.5Y 6/4) sand and a few thin strata of loamy sand; single grained; very friable; strongly acid.

The A horizon is 7 to 18 inches thick. The A11 horizon ranges from dark grayish brown to grayish brown and brown. The A12 horizon ranges from dark gray to light gray. Texture is sandy loam, loamy sand, or loam. The C horizon is very dark gray to light gray and has few to many mottles in shades of brown and yellow. Texture is commonly stratified sand, loamy sand, and sandy loam, but in most places it is sandy loam between depths of 10 and 40 inches.

Bibb soils occur among the Kinston soils on the flood plains of the larger streams. They are similar to Kinston soils, but contain less clay. Bibb soils differ from Herod soils by being strongly acid to very strongly acid throughout the profile.

## Borrow Pits

**Bp—Borrow pits.** These are areas where the soil has been removed by excavation for use in the construction of roads and dams and for other purposes. The depth of excavation is generally about 6 to 12 feet but ranges from 2 to 25 feet. The soil material in the deeper pits is variable and ranges from sand to clay. In the shallower pits, it is similar to the adjoining mapped soil.

Borrow pits are hard to revegetate; they require special management, including fertilization. Pines have been planted in some areas and grow fairly well. Coastal bermudagrass, common bermudagrass, and bahiagrass grow in some areas. Periodic fertilization is needed to maintain an adequate plant cover. Liming, mulching, and heavy fertilization are needed to establish good stands. Capability unit and woodland group not assigned.

## Faceville Series

The Faceville series consists of well drained, level to gently sloping soils on smooth, broad uplands. These soils formed in clayey sediment that has a high content of sand. They are scattered throughout both counties. Native vegetation was mainly pines and red oaks and a few hickory trees. Slope ranges from 0 to 8 percent.

In a representative profile the surface layer is brown sandy loam 5 inches thick. The subsoil extends to a depth of at least 65 inches. The upper 33 inches is friable, yellowish red sandy clay that is mottled with shades of brown below a depth of 28 inches. The lower part is yellowish red firm sandy clay mottled with shades of red and brown.

These soils have moderate to low natural fertility and low organic-matter content. They are strongly acid or very strongly acid throughout. They have a deep root zone. Permeability is moderate, and the available water capacity is medium. Tilth is generally good, but it is poor in eroded areas where the subsoil is exposed. Response is good to fertilizer and other management practices.

The less sloping Faceville soils are some of the better soils of the area for farming. Most of the acreage is used for cultivated crops and pasture. The soils are well suited to the locally grown crops, pasture plants, and pine trees.

Representative profile of Faceville sandy loam, 2 to 5 percent slopes, eroded, 1.75 miles south on Georgia Highway 55 from the National Guard Armory in Dawson and 3/4 mile east along a small pecan orchard; in the central part of Terrell County:

Ap—0 to 5 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; common fine roots; few, small ironstone nodules; strongly acid; clear smooth boundary.

B21t—5 to 28 inches; yellowish red (5YR 4/6) sandy clay; moderate medium subangular blocky structure; friable; patchy clay films on faces of most peds; few fine roots; few fine pores; few small ironstone nodules; strongly acid; clear smooth boundary.

B22t—28 to 38 inches; yellowish red (5YR 4/6) sandy clay; common fine and medium distinct yellowish brown (10YR 5/6) mottles and few fine distinct very pale brown mottles; moderate medium subangular blocky structure; friable; patchy clay films on faces of most peds; few fine roots; few fine pores; few small ironstone nodules; very strongly acid; gradual smooth boundary.

B23t—38 to 65 inches; yellowish red (5YR 4/6) sandy clay; many medium distinct yellowish brown (10YR 5/6) mottles, few medium distinct red (2.5YR 4/6) mottles and few fine distinct very pale brown mottles; moderate, medium, subangular blocky structure; firm; patchy clay films on faces of a few peds; few fine roots; few small ironstone nodules; strongly acid.

The Ap horizon is 4 to 10 inches thick; it is dominantly brown or grayish brown to dark yellowish brown. In some areas, plowing has mixed the original surface layer with the upper part of the subsoil causing the color of the Ap horizon to vary from reddish brown to strong brown. The B1 horizon, where present, is red, yellowish red, or strong brown sandy clay loam 4 to 8 inches thick. The matrix color of the B2t horizon is red or yellowish red, and texture is sandy clay or clay. The B23t horizon is mostly mottled in shades of red, yellow, and brown, but in places the matrix is red. The ironstone-nodule content ranges from none to about 4 percent in all horizons.

The Faceville soils commonly occur on the landscape with Orangeburg, Greenville, and Tifton soils. They resemble Orangeburg soils in color but contain more clay in the B horizon. Faceville soils are less red in the B horizon and generally less brown in the A horizon than Greenville soils. They have fewer ironstone nodules and more clay in the B horizon than Tifton soils.

**FeA—Faceville sandy loam, 0 to 2 percent slopes.** This is a well drained, level soil on uplands. The surface layer is 6 to 10 inches thick. The rest of the profile is similar to the one described as representative of the Faceville series. In a few places, plowing has mixed the surface layer with the upper part of the subsoil, and in a few places, the surface layer is loamy sand.

Included in the mapping is a small acreage of a similar soil that has a strong brown to yellowish brown sandy clay subsoil.

This is one of the better soils in the area for farming. It is cultivated extensively and is well suited to most crops grown locally. Tilth is good, and crops respond well to fertilizer and good management. This soil is also well suited to pasture and pine trees.

This soil can be tilled intensively, because erosion is not a serious hazard. Any suitable crop can be grown year after year if enough plant residue is returned to the soil to maintain good tilth. A planned sequence of crops helps control weeds, insects, and plant disease and increases the effectiveness of fertilizer. Organic matter is depleted at a moderately rapid rate even if management is good. Turning under all crop residue and including cover crops in the rotation are two ways to maintain the organic-matter content.

This soil is well suited to sprinkler irrigation. Row crops and pasture plants need supplemental applications of water during prolonged dry periods. Deep wells are a potential source of water. Capability unit I-2; woodland group 3o1.

**FeB2—Faceville sandy loam, 2 to 5 percent slopes, eroded.** This is a well drained, very gently sloping soil on uplands. It has the profile described as representative of the series. In many places, however, the plow layer extends into the upper part of the subsoil, and there are patches where the clayey subsoil is exposed by erosion. A few shallow gullies and rills have formed in some areas.

Included in the mapping are small areas of a soil that is similar but only slightly eroded and small areas where the subsoil is strong brown or yellowish brown. In some areas a few light gray mottles are in the lower part of the subsoil.

This soil is used mostly for cultivated crops and pasture. It is well suited to the crops, pastures, and pine trees common in the area. Because of slope, erosion is a moderate hazard in unprotected cultivated fields.

This soil should be managed to hold soil losses from erosion within allowable limits. This can generally be done by cultivating on the contour, with or without terraces, or by stripcropping, depending on the crops grown and the extent of the limitations. The type of erosion control used or the steepness and length of slopes determine the type of cropping system needed. A suitable cropping system for contour-cultivated fields, where slopes are 3 percent and no more than 300 feet long, is a mulch-planted row crop, such as corn, grown year after year. The crop residue should be mowed and left undisturbed for winter cover.

Organic matter is depleted at a moderately rapid rate even if management is good. Turning under crop residue and including cover crops in the rotation are ways to maintain the organic-matter content.

This soil is suited to sprinkler irrigation. Row crops and pasture grasses need supplemental applications of water during prolonged dry periods. Deep wells are a potential source of water. Capability unit IIe-2; woodland group 3o1.

**FeC2—Faceville sandy loam, 5 to 8 percent slopes, eroded.** This is a well drained, gently sloping soil on uplands. It has a profile similar to the one described as representative of the series, but the surface layer is brown and 4 to 6 inches thick. The plow layer extends into the upper part of the subsoil in many places, and there are patches where the clayey subsoil is exposed by erosion. A few shallow gullies and rills and an occasional deep gully have formed in some places.

Included with this soil in mapping is a small acreage of a similar soil except that slopes range to 12 percent. Also included are areas of a soil that is similar but has light gray mottles in the lower part of the subsoil.

This soil is suited to most locally grown crops, and some of it is cultivated. Erosion is a severe hazard in unprotected cultivated fields, however, and conservation practices are more difficult to apply and maintain than on less sloping soils. This soil is well suited to pasture and pine trees, and much of the acreage is in these uses.

The soil should be managed to hold soil losses from erosion within allowable limits. This can be done by cultivating on the contour, with or without terraces, or by stripcropping, depending on the crops and the extent of the soil limitations. The steepness and length of slopes or the erosion-control practice used determine the minimum cropping system needed. An example of a suitable cropping system for slopes that are 6 percent and 150 feet long is 6 years of a grass, such as bahiagrass, followed by 3 years of cotton planted in contoured rows. All plant residue should be left on the surface between seasons of crop production.

Organic matter is depleted at a moderately rapid rate even if management is good. Turning under crop residue and including cover crops in the rotation are ways to maintain the organic-matter content. Because of the slope, this soil generally is not suited to irrigation. Capability unit IIIe-2; woodland group 3o1.

## Fuquay Series

The Fuquay series consists of well drained, level to very gently sloping soils on smooth, broad to narrow uplands. These soils formed in sandy and loamy sediments. They are widely scattered and are mostly in Lee County. Native vegetation was mixed hardwoods and pines and a few hawthorn bushes. Slope ranges from 1 to 5 percent.

In a representative profile the surface layer is dark grayish brown loamy sand about 9 inches thick. The subsurface layer is loamy sand that extends to a depth of about 32 inches. It is light olive brown in the upper 6 inches and light yellowish brown below that. The subsoil extends to a depth of at least 64 inches. To a depth of 38 inches it is brownish yellow sandy loam mottled with shades of brown. Below that it is yellowish brown sandy clay loam mottled with shades of brown in the upper 10 inches and mottled with shades of red, brown, and gray in the lower part.

These soils are low in natural fertility and organic-matter content. Permeability is rapid in the thick, sandy, upper part of the profile and moderate in the loamy lower part. The available water capacity is low. Tilth is good and the root zone is deep. Reaction is strongly acid to very strongly acid throughout.

These soils are suited to most crops and pastures commonly grown in this area. Plant response is generally only fair because the soils are slightly droughty. Most of the acreage is cultivated or in pasture. Some is planted in pines or is in natural vegetation.

Representative profile of Fuquay loamy sand, 1 to 5 percent slopes, 1.75 miles south of Georgia Highway 32 along an electric power line right-of-way about ½ mile west of the Flint River, 50 yards east of the power line in a cultivated field; along the southeast edge of Lee County:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; few fine roots; few ironstone nodules; very strongly acid; clear smooth boundary.

A21—9 to 15 inches; light olive brown (2.5Y 5/4) loamy sand; weak fine granular structure; very friable; few fine roots; few ironstone nodules; very strongly acid; clear smooth boundary.

A22—15 to 32 inches; light yellowish brown (2.5Y 6/4) loamy sand; weak medium granular structure; very friable; few fine roots; few ironstone nodules; few streaks of very pale brown (10YR 7/3) clean sand grains; very strongly acid; gradual smooth boundary.

B1—32 to 38 inches; brownish yellow (10YR 6/6) sandy loam; few medium distinct strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; friable; clay coating and bridging on most sand grains; few fine roots; few ironstone nodules; few streaks of very pale brown (10YR 7/3) clean sand grains; very strongly acid; gradual smooth boundary.

B21t—38 to 48 inches; yellowish brown (10YR 5/6) sandy clay loam; few medium distinct very pale brown (10YR 7/3) and few medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; clay coating and bridging on most sand grains; few fine roots; common plinthite nodules; common ironstone nodules; very strongly acid; gradual wavy boundary.

B22t—48 to 64 inches; yellowish brown (10YR 5/6) sandy clay loam; few medium distinct yellowish red (5YR 5/6) and strong brown (7.5YR 5/6) mottles; and common medium distinct light gray (2.5Y 7/2) mottles; moderate medium subangular blocky structure; firm; about 5 percent plinthite; patchy clay films on faces of peds; few fine roots; very strongly acid.

Ironstone nodules range from few to common.

The A horizon is 22 to 38 inches thick. The A1 or Ap horizon ranges from very dark grayish brown to dark gray and olive brown and is 6 to 10 inches thick. The A2 horizon ranges from brownish yellow, light yellowish brown, or light olive brown to brown and dark grayish brown.

The B1 horizon is dominantly brownish yellow to light yellowish brown mottled with shades of yellow and brown, but there are no mottles in many places. The B2t horizon is yellowish brown to strong brown mottled with shades of red, yellow, brown, and gray. If gray mottles occur, they are at depths of 40 to 60 inches. Plinthite ranges from 10 to 20 percent in the B21t horizon and from 5 to 10 percent in the B22t horizon.

Fuquay soils occur mainly among the Lucy, Troup, Norfolk, and Tifton soils. They are similar to Lucy soils but have a browner B horizon. They contain less sand than the Troup soils and have finer textured material within 40 inches of the surface. Fuquay soils resemble Norfolk soils in color and texture but have thicker sandy overlying layers and contain small amounts of plinthite in the lower B2t horizon. They differ from the Tifton soils in that they have thicker sandy overlying layers, lack numerous small ironstone nodules, and generally contain less plinthite.

**FsB—Fuquay loamy sand, 1 to 5 percent slopes.** This is a well drained, level to very gently sloping soil on uplands.

Included in the mapping are small areas of Norfolk, Troup, and Lucy soils. Also included along streams and drainageways are a few small narrow areas of soils that are similar to this Fuquay soil but have slopes ranging to 8 percent.

Most crops and pastures grown in the area can be grown on this soil, although the soil is slightly droughty. Plant response to fertilizer and good management is fair if moisture is adequate. Tilth is good. Most of the acreage is cultivated or in pasture. This soil is suited to pine trees.

This soil can be tilled intensively because there is no appreciable erosion hazard. Lack of moisture in summer frequently damages crops. Because organic matter is depleted at a moderately rapid rate, large amounts of crop residue should be returned to the soil if cultivated crops are grown. Annual crops that produce a large amount of residue are satisfactory. A cropping sequence that includes perennial grasses is most beneficial. A suitable cropping system is 1 year of peanuts followed by 1 year of small grain and then 1 year of corn. All plant residue should be left on the surface between seasons of crop production. Grassed waterways are needed to prevent the concentration of runoff in natural depressions.

This soil is well suited to sprinkler irrigation. Row crops and pasture plants need supplemental applications of water during prolonged dry periods. Deep wells are a potential source of water. Capability unit IIs-1; woodland group 3s2.

## Goldsboro Series

The Goldsboro series consists of moderately well drained, level soils on low parts of uplands. These soils formed in unconsolidated, stratified loamy sediments. They are in small areas adjacent to, but slightly higher than, poorly drained soils. Most of the acreage is in Lee County, but areas are widely scattered throughout both counties. Native vegetation was mostly pines, but included a few hardwood trees such as sweetgum, yellow-poplar and red oak. Slope ranges from 0 to 2 percent.

In a representative profile the surface layer is dark gray loamy sand 9 inches thick. The subsoil extends to a depth of at least 65 inches. In the upper 6 inches it is light olive brown sandy loam that has faint brownish mottles; in the middle part, which is 21 inches thick, it is light yellowish brown sandy clay loam that has brownish and reddish mottles and gray mottles that start at a depth of about 24 inches; in the lower part it is gray sandy clay loam mottled with shades of brown.

These soils are moderate to low in natural fertility, low in content of organic matter, and very strongly acid to strongly acid throughout. Tilth is good, and the root zone is deep. Permeability is moderate, and the available water capacity is medium.

The Goldsboro soils are suited to the cultivated crops, pasture, and pine trees commonly grown in the area. During wet periods, however, drainage is needed to prevent loss of some crops. The acreage is about the same for crops, pasture, and natural vegetation.

Representative profile of Goldsboro loamy sand, 0 to 2 percent slopes, 1/4 mile east on Georgia Highway 195 from the junction of U.S. Highway 19 in Leesburg, 2.7 miles north on a paved county road, 100 feet east of the road, in woodland in the central part of Lee County:

Ap—0 to 9 inches; dark gray (10YR 4/1) loamy sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

B1—9 to 15 inches; light olive brown (2.5Y 5/4) sandy loam; common fine faint light yellowish brown mottles; weak fine subangular blocky structure; friable; sand grains coated and bridged with clay; common fine roots; common root and worm holes filled with soil from the Ap horizon; strongly acid; clear smooth boundary.

B21t—15 to 24 inches; light yellowish brown (2.5Y 6/4) sandy clay loam; common fine distinct yellowish brown and yellowish red mottles and few very pale brown mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; few fine roots; few root holes filled with soil from the Ap horizon; very strongly acid; gradual smooth boundary.

B22t—24 to 36 inches; light yellowish brown (2.5Y 6/4) sandy clay loam; few fine and medium distinct yellowish brown (10YR 5/6) mottles, many medium and fine distinct gray (5Y 6/1) mottles, and few fine prominent red (2.5YR 4/6) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; few fine roots; 1 to 2 percent plinthite; very strongly acid; gradual smooth boundary.

B23tg—36 to 65 inches; gray (5Y 6/1) sandy clay loam; few fine distinct light yellowish brown mottles, few medium prominent red (2.5YR 4/6) mottles, and many medium prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; sand grains coated and bridged with clay; few fine roots; 1 to 2 percent plinthite; few streaks of sandy clay; very strongly acid.

The solum is 60 to 70 inches or more thick. The A horizon is 6 to 12 inches thick. The Ap or A1 horizon is dark grayish brown to dark gray and 6 to 10 inches thick. The B1 horizon is yellowish brown, light yellowish brown, or light olive brown and is 4 to 6 inches thick. It has no mottles in many places. The B21t and B22t horizons are light yellowish brown or yellowish brown mottled in shades of brown, gray, and red. The gray mottles start at a depth of about 18 to 28 inches and continue downward. The B23tg horizon has a gray matrix or is mottled with shades of gray, brown, and red. Plinthite content ranges from 1 to 4 percent.

The Goldsboro soils generally occur among the Norfolk, Tifton, Rains, and Grady soils. They are less well drained than the Norfolk and Tifton soils. The Goldsboro soils also contain few ironstone nodules and less plinthite than Tifton soils. They are better drained than the Grady and Rains soils, which have a gray B horizon.

**GoA—Goldsboro loamy sand, 0 to 2 percent slopes.** This is a moderately well drained soil in small, low areas on uplands. The water table is more than 60 inches below the surface most of the time, but it is within 30 inches of the surface for periods of 2 to 4 months annually. In some places water remains ponded for 2 to 7 days during wet weather. Included in mapping are small areas of Norfolk soils.

This soil is suited to most crops grown locally. It is also suited to the pasture and pine trees commonly grown in the area. Crops respond well to fertilizer and good management practices.

This soil can be tilled year after year because there is no appreciable erosion hazard. Excess water is the main hazard. If this soil is used for row crops, it should be adequately drained and enough plant residue should be returned to the soil to help maintain good tilth. A planned sequence of crops helps control weeds, insects, and disease and increases the effectiveness of fertilizer. All plant residue should be left on the surface between seasons of crop production.

During dry periods in summer, the supply of moisture may not be adequate for cultivated crops or pasture plants. Crops need supplemental applications of water at this time. This soil is suited to sprinkler irrigation, and deep wells are a potential source of water. Capability unit IIw-2; woodland group 2w8.

## Grady Series

The Grady series consists of very poorly drained, level soils that are mainly in ponded depressions. These soils formed in clayey sediment. Individual areas ranging from 3 to 100 acres are widely scattered throughout both counties. Native vegetation was mainly blackgum, sweetgum, water oaks, a few pines, a few cypress, and other water-tolerant plants. Slope ranges from 0 to 2 percent.

In a representative profile, the surface layer is very dark gray loam about 6 inches thick. The subsoil extends to a depth of 77 inches or more. It is gray sandy clay loam in the upper 6 inches and is gray clay mottled with shades of brown and red in the lower part.

These soils are moderately low in natural fertility and low to medium in organic-matter content. Permeability is slow, and the available water capacity is medium. Reaction is strongly acid to very strongly acid throughout. Because of wetness, the root zone is generally shallow and tilth is poor.

In their natural state, these soils are too wet for cultivated crops or pasture. Most of the acreage is in natural vegetation.

Representative profile of Grady loam in an area mapped as Grady soils, 2 miles east on Georgia Highway 118 from Muckalee Creek; 0.7 mile southeast on unpaved county road; 1/4 mile north of the road in a wooded, wet depression in the northwest part of Lee County:

A1—0 to 6 inches; very dark gray (10YR 3/1) loam containing small amounts of dark gray (10YR 4/1) sandy loam in lower half of horizon; weak fine granular structure; very friable; many fine roots; medium organic-matter content; strongly acid; clear smooth boundary.

B1g—6 to 12 inches; gray (10YR 5/1) sandy clay loam; few fine yellowish brown mottles; weak fine subangular blocky structure; friable; clay coating and bridging on most sand grains; common fine roots; common fine pores; mixing of soil from A1 horizon in root holes; strongly acid; clear smooth boundary.

B21tg—12 to 28 inches; gray (5Y 6/1) clay; common fine and medium distinct yellowish brown (10YR 5/6) and red (2.5YR 4/6) mottles; weak medium subangular blocky structure; very firm; patchy clay films on ped faces; few fine roots; few fine pores; strongly acid; clear wavy boundary.

B22tg—28 to 54 inches; gray (5Y 6/1) clay; common medium and coarse distinct yellowish brown (10YR 5/6) mottles and few fine prominent red (2.5YR 4/6) mottles; weak medium subangular blocky structure; very firm; patchy clay films on ped faces; few fine pores; strongly acid; clear wavy boundary.

B23tg—54 to 77 inches; coarsely mottled gray (5Y 6/1), light gray (5Y 7/1), yellowish brown (10YR 5/6), and red (2.5YR 4/6) clay; weak coarse subangular blocky structure; very firm; patchy clay films on most ped faces; strongly acid.

The A1 horizon ranges from very dark gray to very dark grayish brown or black and is 4 to 6 inches thick. The texture ranges from sandy loam to loam and clay loam. The B1tg horizon is sandy clay loam or clay loam about 5 to 10 inches thick. It does not occur in all profiles. The B21tg and B22tg horizons are gray or light gray clay or sandy clay mottled with shades of red, yellow, and brown.

The Grady soils commonly occur with the Greenville, Faceville, Tifton, Irvington, and Rains soils. They are wetter and have a grayer B horizon than the Greenville, Faceville, Tifton, and Irvington soils. Grady soils contain more clay in the B horizon than the Rains, Irvington, and Tifton soils.

**Gr—Grady soils.** These are level, very poorly drained soils that are mainly in depressions on uplands. Slope ranges from 0 to 2 percent. The water table is near the surface for 6 to 8 months annually, and water ponds for 1 to 6 months during wet weather. Many areas do not have natural drainage outlets and drain only through underground channels or by evaporation.

These soils have a surface layer that ranges from sandy loam to clay loam. The coarser textures occur around the edge of the depressions and the finer textures near the center.

Included with Grady soils in mapping are small areas of similar soils that are underlain by sandy clay loam beginning at a depth of about 40 inches or that have limestone fragments on the surface and in the profile. In other places small areas of Rains soils are included.

Because of the wetness and the hazard of flooding, these soils are poorly suited to cultivated crops. Most of the areas are in natural vegetation. If adequately drained, these soils are suited to pasture, but suitable plants, such as bahiagrass and white clover, can be expected to show only fair response to fertilizer and good management. Capability unit Vw-1; woodland group 2w9.

## Greenville Series

The Greenville series consists of well drained soils mainly on broad, smooth uplands. These soils formed in clayey sediments that have a high sand content. A common local term for these soils is "heavy redland." Native vegetation was mostly pines and red oaks and a few hickory trees. Slope ranges from 0 to 12 percent.

In a representative profile the surface layer is dark reddish brown sandy loam 5 inches thick. The subsoil is dark red sandy clay or clay that extends to a depth of 75 inches. Below a depth of 55 inches it is mottled with shades of yellow and brown in veins and streaks (fig. 3).

These soils have a low organic-matter content and moderate to low natural fertility. They are strongly acid to very strongly acid and have a thick root zone. Permeability is moderate, and the available water capacity is medium. Tilth is generally good, but when the soil is wet or extremely dry or the subsoil is exposed, tilth is poor.

The less sloping Greenville soils are well suited to the locally grown crops, pasture, and pine trees. Most

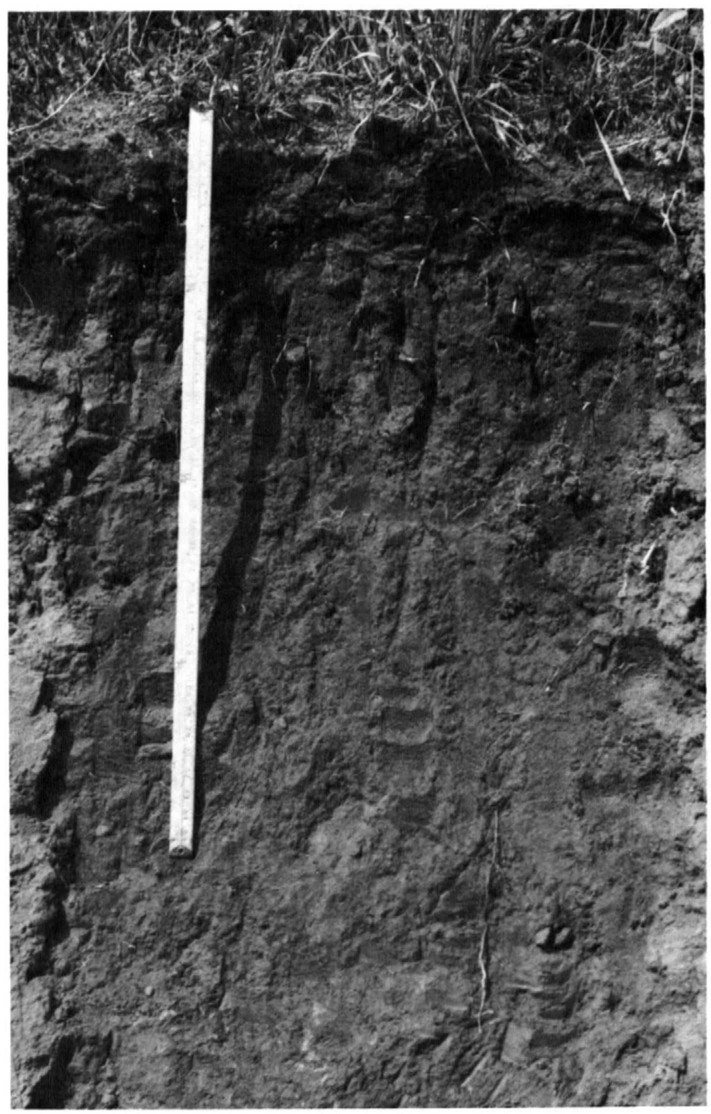


*Figure 3.*—**A representative profile of Greenville sandy loam, 2 to 5 percent slopes.**

of the acreage is used for cultivated crops and pasture. Crops respond well to good management.

Representative profile of Greenville sandy loam, 2 to 5 percent slopes, 1.4 miles north on Georgia Highway 45 from the junction of Georgia Highway 49; 0.1 mile east overland; in a deep road cut in northeast Terrell County:

Ap—0 to 5 inches; dark reddish brown (5YR 3/4) sandy loam; weak fine granular structure; very friable; common fine roots; few small ironstone and manganese nodules; strongly acid; clear smooth boundary.

B1—5 to 11 inches; dark red (2.5YR 3/6) sandy clay; weak fine subangular blocky structure; friable; common fine roots; few fine pores; few small ironstone and manganese nodules; strongly acid; clear smooth boundary.

B21t—11 to 55 inches; dark red (2.5YR 3/6) clay; moderate medium subangular blocky structure; friable; patchy clay films on faces of most peds; few fine roots; few small ironstone and manganese nodules; strongly acid.

B22t—55 to 75 inches; dark red (2.5YR 3/6) clay; common medium prominent brownish yellow (10YR 6/8) mottles and few medium prominent very pale brown (10YR 7/3) mottles occurring chiefly as veins and streaks; moderate medium subangular blocky structure; firm; patchy clay films on faces of most peds; few fine roots; few small ironstone and manganese nodules; strongly acid.

The solum is 65 to 80 inches or more thick. If it has small ironstone and manganese nodules they make up as much as 3 percent of the content. The Ap horizon ranges from dark brown to dark reddish brown sandy loam or sandy clay loam. It is 3 to 9 inches thick. The B1t horizon is dark reddish brown to dark red sandy clay loam to sandy clay, 3 to 8 inches thick. It is not in all profiles. The B2t horizon is sandy clay or clay.

The Greenville soils occur mainly with Red Bay, Faceville, Orangeburg, and Tifton soils. They resemble Red Bay soils, but have more clay in the B horizon. Greenville soils are similar to Faceville soils in texture, but they have a darker brown or redder A horizon. They have a darker colored A horizon and a more clayey B horizon than Orangeburg soils. Greenville soils have a profile that is redder than that of Tifton soils and contains less than 5 percent plinthite.

**GsA—Greenville sandy loam, 0 to 2 percent slopes.** This is a well drained soil on uplands. It has a profile similar to the one described as representative of the Greenville series, but the surface layer is sandy loam 5 to 9 inches thick. In some fields, the plow layer extends into the upper part of the subsoil. Included in mapping in a few areas is a similar soil that has a loam surface layer.

This soil is well suited to most of the crops grown locally. Crops respond well to fertilizer and other management practices. This soil is also well suited to pasture and pine trees. Most of the acreage is used for cultivated crops or pasture.

This soil can be tilled intensively, because there is no significant erosion hazard. Any suitable crop can be grown if enough plant residue is returned to the soil to help maintain good tilth. All plant residue should be left on the surface between seasons of crop production. A planned sequence of crops helps control weeds, insects, and disease and increases the effectiveness of fertilizer.

Organic matter is depleted at a moderately rapid rate, even if management is good. The organic-matter content can be maintained by turning under all crop residue each year and including a cover crop in the cropping system.

This soil is well suited to sprinkler irrigation. Row crops and pasture plants need supplemental applications of water during prolonged dry periods. Deep wells are a potential source of water. Capability unit I-2; woodland group 3o1.

**GsB—Greenville sandy loam, 2 to 5 percent slopes.** This is a well drained, very gently sloping soil on uplands. It has the profile described as representative of the series. The plow layer extends into the upper part of the subsoil in some places, and in a few small areas the subsoil has been exposed by erosion. A few shallow gullies and rills have formed in some fields. In a few areas the surface layer is loam.

This soil is well suited to most of the locally grown crops. Because of the slope, however, there is a moderate erosion hazard in unprotected cultivated fields. Crops respond well to fertilizer and good management. Most of the acreage is cultivated. The soil is also well suited to pasture and pine trees.

The soil should be managed to hold soil losses from erosion within allowable limits. This can be done by cultivating on the contour, with or without terraces, or by stripcropping, depending on the crops grown and the extent of the soil limitations. The steepness and length of slope or the erosion-control method used determines the minimum cropping system needed to help control erosion. A suitable cropping system for 3 percent slopes that are terraced and farmed on the contour is 1 year of cotton followed by 1 year of corn "slit" using minimum tillage and then 1 year of peanuts followed by small grain for cover. All plant residue should be left on the surface between seasons of crop production.

To maintain the organic-matter content, crop residue should be plowed under and cover crops included in the rotation.

This soil is suited to sprinkler irrigation. Row crops and pasture grasses need supplemental applications of water during prolonged dry periods. Deep wells are a potential source of water. Capability unit IIe-2; woodland group 3o1.

**GsC—Greenville sandy loam, 5 to 8 percent slopes.** This is a well drained, gently sloping soil. It has a profile similar to the one described as representative of the Greenville series, but its surface layer is sandy loam 4 to 5 inches thick. In many areas of cultivated soil, the plow layer extends into the upper part of the subsoil. Also, erosion has exposed a few small patches of the subsoil. A few shallow gullies and rills have formed in some areas, and in a few areas there are deep gullies.

Included in the mapping are a few, small, narrow areas of similar soils along some of the small streams and drainageways that have slopes of up to 12 percent.

This soil is suited to most locally grown crops, to pasture, and to pine trees. Some of the acreage is cultivated, but most of it is in pasture or trees. The erosion hazard in unprotected cultivated fields is severe.

Use of conservation practices is more difficult on this soil than on less sloping soils.

When this soil is cultivated three erosion-control methods may be used, depending on the crops. These are cultivation on the contour without terraces, or with terraces, or with stripcropping.

Proper management of this soil should keep soil losses from erosion within allowable limits. The steepness and length of slopes or the erosion-control method used determine the minimum cropping system needed to control erosion. Where slopes are 7 percent and less than 200 feet long and cultivation is on the contour, a suitable cropping system is 2 years of cotton, peanuts, or a similar row crop followed by 3 years of bahiagrass or a similar close-grown crop. All plant residue should be left on the surface between crops.

To maintain essential organic-matter content, crop residue should be plowed under and cover crops included in the rotation. Because of slope, this soil is generally not suited to irrigation. Capability unit IIIe-2; woodland group 3o1.

**GtD2—Greenville sandy clay loam, 5 to 12 percent slopes, eroded.** This soil has a profile similar to the one described as representative of the Greenville series, but its surface layer is dark reddish brown sandy clay loam 3 to 5 inches thick. Erosion has thinned the surface layer of this soil and also has exposed the subsoil in the many areas where the plow layer extends into the upper part of the subsoil. In most areas few to many shallow gullies and rills have formed, and in some places there are deep gullies.

Included with this soil in mapping are a few areas of similar soils that have slopes of up to 17 percent. Also included are a few small areas of a dissimilar soil that has a mottled subsoil.

Because this soil is eroded and steep, the erosion hazard is very severe in unprotected cultivated fields. This soil is better suited to pasture or to pine trees than to cultivated crops, and most of the acreage is used for pasture or woodland. Tilth generally is fair, but in areas where the soil is wet, extremely dry, or the subsoil is exposed, it is poor.

This soil requires intensive management if used for row crops. A complete water disposal system is essential. Terraces are difficult to establish and maintain, especially on the steeper slopes. Generally, a heavy duty cropping system that uses stripcropping is best. A suitable cropping system for a terraced field that is cultivated on the contour is 2 years of Coastal bermudagrass and 1 year of corn. Capability unit IVe-2; woodland group 3o1.

## Henderson Series

The Henderson series consists of well drained, very gently sloping and gently sloping clayey soils on uplands. These soils formed in thin beds of clay over weathered limestone. Native vegetation was mainly pines, red oaks, and hickory trees. Slope ranges from 2 to 8 percent.

In a representative profile, the surface layer is about 5 inches of brown, cherty sandy loam. To a depth of 15 inches the subsoil is yellowish red cherty sandy clay. From a depth of 15 to 25 inches it is strong brown, firm clay with a few yellowish red mottles. From a depth of 25 to 42 inches it is strong brown, firm, cherty clay mottled with yellowish red. To a depth of 65 inches the subsoil is firm, coarsely mottled yellowish brown, yellowish red, very pale brown and light gray clay and a few partially weathered limestone fragments.

These soils are moderate to low in natural fertility and low in organic-matter content. They are strongly acid to very strongly acid throughout. Because the firm clayey subsoil restricts the root zone it is only moderately deep. Permeability is slow and the available water capacity is medium. Tilth is poor.

Because of the firm clayey subsoil and numerous chert fragments these soils are difficult to till. Most of the acreage is in natural vegetation or used for pasture.

Representative profile of Henderson cherty sandy loam, 2 to 8 percent slopes, 2.5 miles north of Brownwood, Georgia; and 2 miles west of the Kinchafoonee Creek and Georgia Highway 118 crossing; in a roadcut along a Terrell County paved road:

Ap—0 to 5 inches; brown (10YR 4/3) cherty sandy loam with streaks of dark yellowish brown (10YR 4/4); weak fine granular structure; very friable; many fine roots; 30 percent chert fragments 1 to 6 inches in diameter; strongly acid; clear smooth boundary.

B21t—5 to 15 inches; yellowish red (5YR 5/6) cherty sandy clay; weak medium subangular blocky structure; friable; patchy clay films on some ped faces; few fine roots; few fine pores; 15 percent chert fragments 1 to 6 inches in diameter; strongly acid; clear, smooth boundary.

B22t—15 to 25 inches; strong brown (7.5YR 5/8) clay; few medium distinct yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; firm; clay films on most ped faces; few fine roots; common fine pores; 10 percent chert fragments 1 to 6 inches in diameter; strongly acid; gradual wavy boundary.

B23t—25 to 42 inches; strong brown (7.5YR 5/6) cherty clay; few fine and medium distinct yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; firm; clay films on most ped faces; few fine roots; few fine pores; 25 percent chert fragments 1 to 6 inches in diameter; strongly acid; gradual wavy boundary.

B24t—42 to 65 inches; mottled yellowish brown (10YR 5/6), yellowish red (5YR 4/6), very pale brown (10YR 7/3) and light gray (10YR 7/1) clay; moderate medium and coarse subangular blocky structure; firm, clay films on most ped faces; 3 percent partly weathered limestone fragments 1 to 6 inches in diameter; strongly acid.

The Ap horizon is 5 to 8 inches thick and it ranges from brown to dark grayish brown and yellowish brown. Some profiles have a B1t horizon that is yellowish brown to strong brown sandy clay loam 6 to 8 inches thick. The B2t horizon is yellowish brown, strong brown, and yellowish red sandy clay or clay. A few mottles in shades of red, brown, and yellow begin at a depth of about 15 to 20 inches and gradually increase in number with depth. Gray or light gray mottles generally occur in the B24t horizon at depths of more than 30 inches. The content of chert fragments 1 to 6 inches in diameter ranges from about 5 to 35 percent in short horizontal distances. The solum is 60 to 72 inches or more thick.

The Henderson soils most commonly occur with Tifton, Sunsweet, and Greenville soils. They lack the soft plinthite in the Tifton soils and contain a higher percentage of clay in the B horizon. Henderson soils have a less red B horizon than Greenville soils. They contain chert fragments which the Greenville, Tifton, and Sunsweet soils do not contain.

**HdC—Henderson cherty sandy loam, 2 to 8 percent slopes.** This soil is well drained, very gently and gently sloping and contains numerous chert fragments throughout the profile. Small rills and gullies caused by erosion are in a few areas. In places there are small scattered patches of soil where the clayey subsoil has been exposed by erosion.

Included in mapping and making up about 25 percent of this unit are soils that occur in an intricate pattern with this soil. These soils have a loamy or clayey subsoil, and some do not have chert fragments.

The clayey subsoil and numerous chert fragments make tillage difficult and restrict roots. The hazard of erosion is severe in unprotected cultivated fields. Because of these characteristics this soil is poorly suited to row crops. Crops on this soil respond fairly well if fertilizer is applied and other management practices used. This soil is suited to pine trees and pasture.

If this soil is cultivated, erosion can be controlled by cultivating on the contour, with or without terraces, or by stripcropping. The method depends on the crops grown.

The minimum cropping systems needed to control erosion depend on the steepness and length of slopes and the erosion control method used. A suitable cropping system for a 6 percent slope that is 100 feet long and farmed on the contour, is 2 years of corn followed by 4 years of bahiagrass. All plant residue should be left on the surface between crops. Organic matter is depleted at a moderately rapid rate even if management is good. To maintain the organic-matter content, crop residue should be turned under and cover crops should be included in crop rotation.

This soil is not well suited to sprinkler irrigation because of the fine textured subsoil and slow permeability. Capability unit IVe-4; woodland group 3o1.

## Herod Series

The Herod series consists of poorly drained soils on flood plains. These soils formed in alluvium of varying color and texture that washed from uplands of the Coastal Plain. Native vegetation was mainly water oak, blackgum, sweetgum, yellow-poplar, bay, and sycamore trees and an understory of ferns, briers, lilies, and other water-tolerant plants. Slope ranges from 0 to 2 percent.

In a representative profile, the upper part of the surface layer is about 4 inches of brown loam mixed with thin sandy strata. The lower part is 8 inches of gray loam with thin sandy strata. The next layer, which extends to a depth of 38 inches, is gray clay loam mottled with strong brown and has thin sandy and clayey strata. Below this, to a depth of 50 inches, is dark gray clay loam mottled with strong brown thin sandy and loamy strata. The next layer, which extends to a depth of 62 inches or more, is dark gray and very dark gray sandy loam with thin sandy and clayey strata and pockets of light gray and pale brown.

These soils are low to moderate in natural fertility and have a low to medium content of organic matter. Because of wetness the root zone is generally shallow and tilth is poor. Permeability is moderate, and the available water capacity is medium. Reaction is medium acid, but the lower layers commonly are neutral.

Because they are subject to flooding and have a high water table, Herod soils are generally not suitable for cultivation. Drainage is poor because the soils are on the flood plain and there is no stream channel. A few areas have been cleared and are used for pasture, but most of the acreage is in natural vegetation.

In Lee and Terrell Counties, Herod soils are mapped only with Muckalee soils.

Representative profile of Herod loam in an area mapped as Herod and Muckalee soils, on the Chickasawhatchee Creek flood plain; 6 miles southeast from the center of Dawson, Georgia to a paved county road 75 yards west of the creek and 75 yards south of the paved county road; in Terrell County:

A11—0 to 4 inches; brown (10YR 4/3) loam; common fine distinct strong brown mottles; moderate medium granular structure; friable; thin sandy strata; many fine and medium roots; many partly decayed bits of forest litter; strongly acid; clear wavy boundary.

A12—4 to 12 inches; gray (10YR 5/1) loam; many fine and medium distinct strong brown mottles; weak medium granular structure; friable; thin strata of sand; common fine and medium roots; few bits of partly decomposed forest litter; few worm holes; medium acid; clear wavy boundary.

C1g—12 to 38 inches; gray (5Y 5/1) clay loam; common medium and fine prominent strong brown (7.5YR 5/6) mottles; massive; friable; thin strata of loamy sand and clay; few fine and medium roots; few bits of partly decayed forest litter; few worm holes; medium acid; clear smooth boundary.

C2g—38 to 50 inches; dark gray (5Y 4/1) clay loam; few medium prominent strong brown (7.5YR 5/6) mottles; massive; firm; thin loamy sand and sandy clay loam strata; few fine roots; slightly acid; clear smooth boundary.

C3g—50 to 62 inches; mottled dark gray (5Y 4/1) and very dark gray (10YR 3/1) sandy loam; massive; friable; thin strata and pockets of light gray (10YR 7/1) and pale brown (10YR 6/3) sand and clay; few fine roots; slightly acid.

The A horizon is 3 to 12 inches thick. It is very dark grayish brown, dark brown, or brown. Texture ranges from loam to sandy loam. The C horizon is gray or dark gray and has mottles in shades of brown and gray. The C horizon is commonly stratified with various textures including loamy sand, sandy loam, sandy clay loam, and clay loam but averages 18 to 35 percent clay to a depth of 40 inches. Below 40 inches the material is sandy, loamy, or clayey.

Herod soils occur among the Muckalee soils on the flood plains of the larger streams. They are similar to the Muckalee soils but contain more clay.

**Hm—Herod and Muckalee soils.** These are poorly drained soils on flood plains or bottom lands. The areas range in width from about 100 yards to one mile. Slope ranges from 0 to 2 percent. No attempt was made to map the Herod and Muckalee soils separately because they are similar in use and behavior and have similar dense, lush vegetation and boggy soil characteristics. Both soils do not always occur within each mapped area, but many mapped areas are 50 percent Herod soils and 25 percent Muckalee soils.

The profile of these soils is the one described as representative of their series, though the surface layer ranges from loamy sand to loam.

Included in mapping are small areas of similar soils that are poorly drained and dissimilar soils that are moderately well drained.

Most of the acreage is in natural vegetation. A few acres are cleared and used for pasture.

Flooding is frequent and lasts for a few days to two months, mainly during the wet seasons in winter and the first part of spring. Some areas are flooded all year because of water impounded by beaver dams. The water table is near the surface for about 4 months of the year. Drainage is poor because the soils are on the flood plain and lack stream channels. Because of the wetness, the soils are not generally suited to cultivated crops. They are fairly well suited to such pasture plants as bahiagrass and white clover. These soils are suited to bottom land hardwood trees and wildlife habitat. Capability unit Vw-2; woodland group 1w9.

## Irvington Series

The Irvington series consists of moderately well drained, level soils on low uplands. These soils formed in loamy deposits. They have a fragipan or cemented layer in the subsoil. They occur mostly between the wet and the well drained soils in small, widely scattered areas in Lee and Terrell Counties. The native vegetation was mostly pines, oaks, and sweetgum trees. Slope ranges from 0 to 2 percent.

In a representative profile the surface layer is dark grayish brown loamy sand about 7 inches thick. The upper part of the subsoil is light olive brown sandy loam and sandy clay loam to a depth of 20 inches. A fragipan begins at a depth of 20 inches and extends down to 57 inches. It consists of firm, compact, and brittle sandy clay loam that is mottled in shades of yellow, brown, red, and gray. The lower part of the subsoil, to a depth of 67 inches, is highly mottled, firm sandy clay loam with streaks and pockets of clay.

These soils are moderate to low in natural fertility, low in content of organic matter, and strongly acid to very strongly acid throughout. Permeability is moderate in the upper part of the profile and slow in the lower part. The available water capacity is medium. The root zone is moderately deep, and tilth is good.

These soils are suited to many cultivated crops. During wet periods, however, drainage is needed to prevent the loss of some crops. These soils are also suited to pasture and pine trees. Most of the acreage is used for cultivated crops or pasture.

Representative profile of Irvington loamy sand, 0 to 2 percent slopes, 1.2 miles west of the junction of Georgia Highway 118 and the Sumter-Lee County line, 0.2 mile south in a cultivated field, in the north-central part of Lee County:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; common fine roots; 3 percent small hard ironstone nodules; few small lumps of the B1 horizon mixed in by plowing; strongly acid; clear smooth boundary.

B1—7 to 11 inches; light olive brown (2.5Y 5/4) sandy loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; common fine roots; many fine pores; 2 percent small hard ironstone nodules; many old root and worm holes filled with material from the Ap horizon; strongly acid; clear smooth boundary.

B2—11 to 20 inches; light olive brown (2.5Y 5/6) sandy clay loam; few medium distinct yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; many fine and medium pores; few fine roots; 2 percent plinthite; 3 percent hard small ironstone nodules increasing to 10 percent in the lower 2 inches; very strongly acid; clear wavy boundary.

Bx1&A'2—20 to 26 inches; light brownish gray (2.5Y 6/2) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles, and common large distinct, yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm, slightly brittle; strong brown mottles with reddish centers (plinthite) are firm; few fine roots; many fine and medium pores; 10 to 15 percent plinthite; 8 percent small ironstone nodules in upper part and 3 percent small ironstone nodules in lower part; very strongly acid; gradual wavy boundary.

Bx1—26 to 42 inches; mottled yellowish brown (10YR 5/6), light gray (10YR 6/1), strong brown (7.5YR 5/6), and light yellowish brown (2.5Y 6/4) sandy clay loam; moderate coarse and medium angular blocky structure; firm, compact; 40 percent of cross section is brittle; few fine roots; many fine and few medium voids and pores; 3 percent small, hard ironstone nodules; 15 percent strong brown plinthite; very strongly acid; gradual wavy boundary.

Bx2—42 to 57 inches; mottled yellowish brown (10YR 5/6), light gray (10YR 7/1), and red (2.5YR 4/6) sandy clay loam; moderate medium angular blocky structure; firm, compact and brittle; common fine voids and pores; firm and brittle in 70 percent of cross section; 1 percent small, hard ironstone nodules; 15 to 35 percent plinthite; very strongly acid; gradual wavy boundary.

B3—57 to 67 inches; mottled yellowish brown (10YR 5/6), light gray (10YR 7/1), red (2.5YR 4/6), and dark red (2.5YR 3/6) sandy clay loam with small streaks and pockets of clay; weak medium subangular blocky structure; firm; 15 percent plinthite occurring as dark red (2.5YR 3/6) mottles; very strongly acid.

The Ap horizon is dark grayish brown or very dark grayish brown. The B1 horizon is light yellowish brown, yellowish brown, or light olive brown sandy loam or sandy clay loam 4 to 10 inches thick. The B2 horizon is light olive brown, light yellowish brown, or yellowish brown and it is commonly mottled with shades of red, yellow, and brown. Depth to the fragipan or Bx horizon ranges from 18 to 32 inches. The ironstone nodules range to 10 percent in the surface layer and to 20 percent in the B2 horizon and fragipan. Plinthite in the B2 horizon ranges from 2 to 4 percent, in the Bx horizon from 10 to 30 percent, and in the B3 horizon from 5 to 25 percent.

The Irvington soils occur mainly among the Tifton and Grady soils. They have a fragipan; Tifton and Grady soils do not. They are less well drained than Tifton soils and have mottles at a shallower depth. Irvington soils are better drained than Grady soils, which are gray directly beneath the A horizon.

**IgA—Irvington loamy sand, 0 to 2 percent slopes.** This soil occurs in small areas that are adjacent to but slightly higher than wetter soils. It is in a slightly lower position than some well drained soils. The water table is at a depth of 18 to 30 inches for 1 to 2 months during the wet season in winter and spring. Water ponds on the surface for very brief periods in some areas during wet weather (fig. 4).

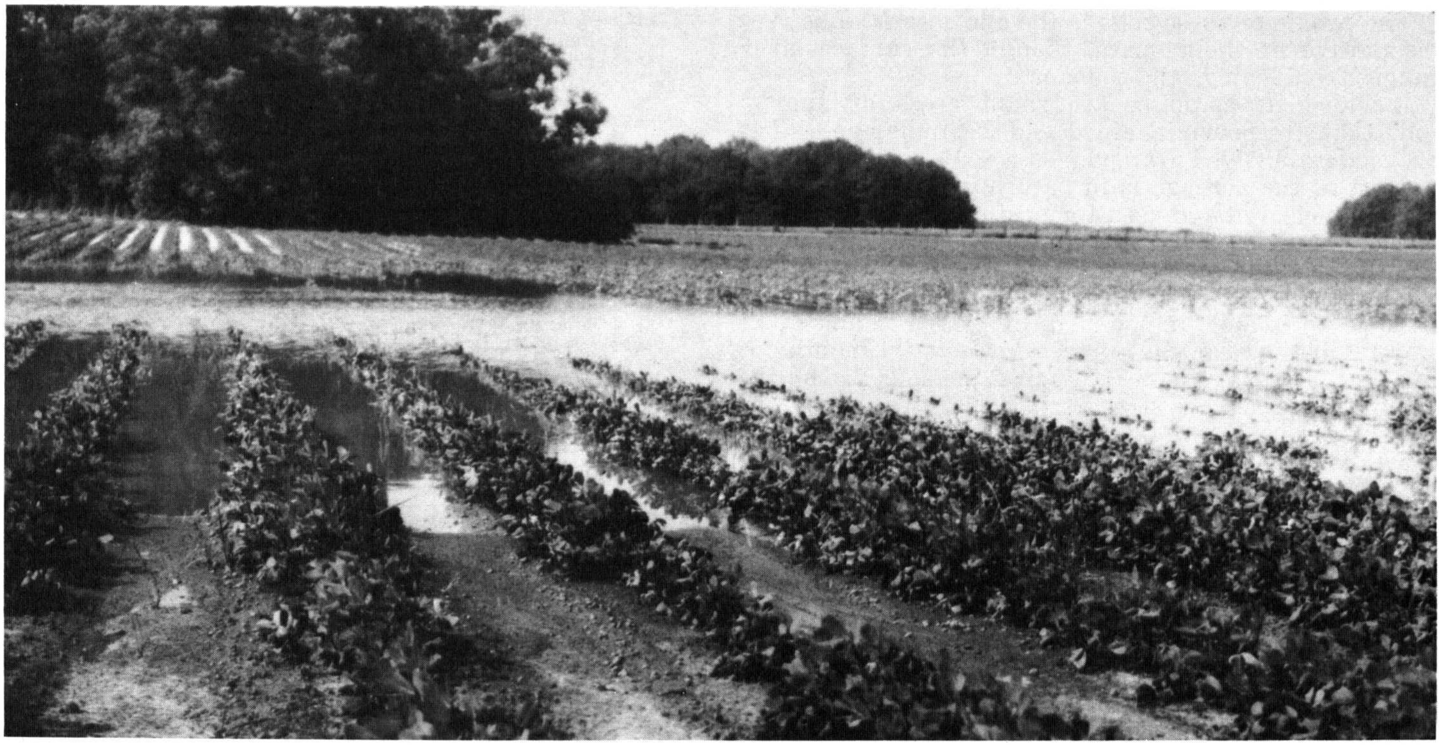


*Figure 4.*—**Flooding is common after a heavy rainfall on this field of Irvington loamy sand, 0 to 2 percent slopes. Drainage is needed if this soil is farmed intensively.**

Included with this soil in mapping is a small acreage of soils that are similar in drainage and color but lack a fragipan and range to sandy clay in the subsoil. Also included in a few areas are similar soils that are grayer closer to the surface.

This soil is suited to most cultivated crops grown locally, but it generally needs drainage if cultivated. It is suited to pasture and pine trees. Most of the acreage is cultivated or used for pasture.

This soil can be tilled year after year because there is no serious erosion hazard. Excess water is the main hazard. Any suitable crop can be grown if this soil is adequately drained and if enough plant residue is returned to the soil to maintain good tilth. A planned sequence of crops helps control weeds, insects, and disease and increases the effectiveness of fertilizer. All plant residue should be left on the surface between seasons of crop growth. Capability unit IIw-2; woodland group 2o7.

## Johnston Series

The Johnston series consists of very poorly drained soils on flood plains. These soils formed in loamy alluvium that is medium to high in organic-matter content. Native vegetation was mostly sweetgum, blackgum, water oaks, yellow-poplar, and bay trees and an understory of mostly ferns, briers, lilies, willow bushes, and other water-tolerant plants. Slope ranges from 0 to 2 percent.

In a representative profile, the upper part of the surface layer is black mucky loam 5 inches thick. Beneath this, to a depth of 46 inches, is black sandy loam. The next layer, which extends to 60 inches or more, is very dark gray loamy sand.

These soils are low to moderate in natural fertility and medium to high in content of organic matter. Permeability is moderately rapid, and the available water capacity is high in the upper part of the profile and low in the lower part. The reaction is very strongly to strongly acid throughout. Because of wetness the root zone is generally shallow and tilth is poor.

Because of flooding and the high water table, these soils are not suited to cultivated crops or pasture. Drainage is poor because the soils are on the flood plain and lack stream channels. These soils are in natural vegetation.

Representative profile of Johnston mucky loam, in an area mapped as Johnston soils, about 150 yards east of Georgia Highway 45 and 150 yards north of Bear Creek flood plain in the northern tip of Terrell County:

A11—0 to 5 inches; black (10YR 2/1) mucky loam; massive; friable; many fine and medium roots; few clean sand grains; common bits of partly decomposed forest litter; many leaves and twigs scattered on the surface; very strongly acid; clear smooth boundary.

A12—5 to 46 inches; black (N 2/0) sandy loam; massive; friable; many lenses and pockets of clean sand grains; fine and medium roots common; few bits of partly decomposed forest litter; very strongly acid; clear smooth boundary.

Cg—46 to 60 inches; very dark gray (10YR 3/1) loamy sand; massive; friable; many lenses and pockets of clean sand grains; few fine and medium roots; few bits of partly decomposed forest litter; very strongly acid.

The A11 horizon ranges to very dark gray and very dark grayish brown. The texture is variable and ranges to loam, sandy loam, and mucky sandy loam that is 3 to 12 inches thick. The A12 horizon is black to very dark gray. It is mucky loam, loam, mucky sandy loam, and sandy loam 36 to 45 inches thick. The Cg horizon ranges from very dark gray to dark grayish brown and gray. The organic-matter content ranges from 10 to 35 percent in the A11 horizon and from 5 to 20 percent in the rest of the profile.

Johnston soils occur as a minor soil among the Kinston and Bibb soils on some of the flood plains of larger streams. They are coarser textured than Kinston soils. Johnston soils contain more organic matter than either Kinston or Bibb soils.

**Jo—Johnston soils.** These are very poorly drained soils on the flood plains of the larger streams. Slope ranges from 0 to 2 percent. Texture of the surface layer is variable. It is commonly mucky loam but ranges to loam, sandy loam, and mucky sandy loam. Included in mapping are small areas of Kinston and Bibb soils.

These soils are in natural vegetation consisting of various water-tolerant plants. Flooding is frequent and lasts for a few days to 2 months, mainly during the wet seasons in winter and spring. Beaver have impounded water in some areas. The water table is near the surface for long periods. Drainage is poor because the soils are on the flood plain and lack stream channels. Because of wetness, these soils are not suited to cultivated crops or pasture. They are suited to bottom land hardwood trees, such as bays, gums, and water oaks. These soils are suited to use for wildlife habitat. Capability unit VIw-1; woodland group 1w9.

## Kinston Series

The Kinston series consists of poorly drained soils on flood plains along creeks and stream branches. These soils formed in loamy sediment that washed from uplands on the Coastal Plain. Native vegetation was mainly water oak, gum, yellow-poplar, bay, and sycamore trees and an understory of ferns, briers, lilies, and other water-tolerant plants. Slope ranges from 0 to 2 percent.

In a representative profile, the surface layer is gray loam that has sandy strata and is about 5 inches thick. Beneath the surface layer, to a depth of 16 inches, is light gray sandy loam with sandy strata. From 16 to 52 inches it is light gray and gray sandy clay loam with sandy strata. The next layer, which extends to 60 inches or more, is stratified dark gray loamy sand and light gray sand.

These soils are low to moderate in natural fertility and low to medium in content of organic matter. Permeability is moderate, and the available water capacity is medium. The reaction is very strongly acid to strongly acid throughout. Because of wetness the root zone is generally shallow and tilth is poor.

Because of the flooding and high water table, these soils are not generally suited to cultivation. Drainage is poor because the soils are on the flood plain and lack stream channels. A few areas have been cleared and are used for pasture, but most of the acreage is in natural vegetation.

In Lee and Terrell Counties the Kinston soils are mapped only with Bibb soils.

Representative profile of Kinston loam in an area mapped as Kinston and Bibb soils, in the Kinchafoonee Creek flood plain; 300 yards east of Kinchafoonee Creek on Georgia Highway 118, 100 yards south of the highway, in Lee County:

A1—0 to 5 inches; gray (10YR 5/1) loam with thin strata of sand; common fine distinct strong brown mottles; weak medium granular structure; friable; many fine and medium roots; many leaves and twigs on the surface; many bits of partly decayed forest litter; strongly acid; clear wavy boundary.

C1g—5 to 16 inches; light gray (10YR 6/1) sandy loam with thin strata of sand; common medium distinct brownish yellow (10YR 6/6) mottles and few fine distinct strong brown mottles; massive; friable; few fine roots; few bits of partly decayed forest litter; strongly acid; gradual smooth boundary.

C2g—16 to 28 inches; light gray (10YR 6/1) sandy clay loam with thin strata of sand; common medium distinct strong brown (7.5YR 5/6) and brownish yellow (10YR 6/6) mottles; massive; friable; few fine roots; few bits of partly decayed forest litter; strongly acid; gradual smooth boundary.

C3g—28 to 52 inches; gray (5Y 5/1) sandy clay loam, with thin clayey and sandy strata; common medium prominent yellowish brown (10YR 5/6) mottles and few fine prominent strong brown (7.5YR 5/6) mottles; massive; friable; few fine roots; few bits of partly decayed forest litter; strongly acid; clear smooth boundary.

C4g—52 to 60 inches; strata and pockets of dark gray (10YR 4/1) loamy sand and light gray (10YR 6/1) sand with a few dark brown (7.5YR 3/2) loamy sand streaks; massive; very friable; strongly acid.

The A1 horizon is gray, dark gray, or dark grayish brown to brown. It is variable in texture, ranging from sandy loam to clay loam, and it is 3 to 10 inches thick. The C1g and C2g horizons are dark gray and gray to light brownish gray and most profiles have mottles in shades of brown and yellow. In some profiles, the C3g and C4g horizons are black mucky sandy loam and loamy sand stratified with loamy or clayey materials, but in other profiles the organic-matter content in these two horizons is much less than in the representative profile. This generally occurs below a depth of 40 inches.

Kinston soils occur among the Bibb soils on flood plains of the larger streams. They are similar to Bibb soils but contain more clay in the C horizon. Kinston soils differ from the Herod soils by being strongly to very strongly acid rather than medium acid to neutral.

**Kb—Kinston and Bibb soils.** These are poorly drained soils on bottom lands on the flood plains along some creeks and stream branches. Areas range mostly from 100 yards to one mile wide. Slope ranges from 0 to 2 percent. These soils are mapped as an undifferentiated group because they occur without a regular pattern but are similar in use and behavior. The major soils do not always occur within each mapped area, but many areas consist of 40 percent Kinston soils and 36 percent Bibb soils.

Profiles of Kinston and Bibb soils are the ones described as representative of their respective series, although the surface layer ranges from loamy sand to clay loam.

Included in mapping are small areas of poorly drained soils. Also included is a small acreage of Johnston soils.

Most of the acreage is in natural vegetation but a few acres are cleared and used for pasture.

Flooding is frequent and lasts for a few days to 2 months, mainly during the wet seasons in winter and early in spring. Beaver dams cause flooding in some areas all year. The water table is near the surface during 6 to 8 months annually. Drainage is poor because the soils are on the flood plain and lack a definite stream channel. Because of wetness, the soils are not suited to cultivated crops. They are fairly well suited to such pasture plants as bahiagrass and white clover. These soils are suited to bottom land hardwood trees and wildlife habitat. Capability unit Vw-2; woodland group 1w9.

## Lucy Series

The Lucy series consists of well drained, level to gently sloping soils that are scattered throughout both counties on broad, smooth uplands. These soils formed in loamy sediment; they have a thick sandy layer over a loamy subsoil. The native vegetation was mixed stands of red oaks and pine trees and an understory of scrub oak trees and hawthorn bushes. Slope ranges from 0 to 8 percent.

In a representative profile, the surface layer is dark grayish brown loamy sand 8 inches thick. The subsurface layer is loamy sand; it extends to a depth of 29 inches. It is yellowish brown in the upper part and strong brown in the lower part. The subsoil is very friable yellowish red sandy loam to a depth of 38 inches. Below that, to a depth of 65 inches, it is friable, red, sandy clay loam.

These soils are low in natural fertility and in content of organic matter, and they are strongly acid to very strongly acid throughout. Permeability is rapid through the sandy upper part of the profile and moderate through the loamy lower part. The available water capacity is low. Tilth is good, and the root zone is deep.

The soils are suited to most crops and pasture plants commonly grown in the area, but yields are only fair because these soils are slightly droughty. Most of the acreage is either cultivated or used for pasture; some is in natural vegetation or planted to pine trees.

Representative profile of Lucy loamy sand, 0 to 5 percent slopes, 1.5 miles north of the Lee and Dougherty County Line and 1.5 miles east of U.S. Highway 19, at the edge of a cultivated field and a pecan orchard, in Lee County:

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

A21—8 to 21 inches; yellowish brown (10YR 5/4) loamy sand; weak fine granular structure; very friable; few fine roots; very strongly acid; clear smooth boundary.

A22—21 to 29 inches; strong brown (7.5YR 5/6) loamy sand; weak medium granular structure; very friable; few fine roots; very strongly acid; clear smooth boundary.

B1—29 to 38 inches; yellowish red (5YR 4/6) sandy loam; weak fine subangular blocky structure; very friable; sand grains coated and bridged with clay; few fine roots; very strongly acid; clear smooth boundary.

B2t—38 to 65 inches; red (2.5YR 4/8) sandy loam; weak medium subangular blocky structure; friable; patchy clay films on some ped faces; few fine roots; very strongly acid.

The A1 or Ap horizon ranges from dark brown and very dark grayish brown to dark yellowish brown and is 6 to 10 inches thick. The A2 horizon is 14 to 25 inches thick and is strong brown, yellowish brown, or dark yellowish brown. Some pedons have an A3 horizon that is strong brown to yellowish red loamy sand 3 to 5 inches thick. The B1 horizon is yellowish red to red sandy loam but it is not in profiles that have a sandy loam B2t horizon. The B2t horizon is yellowish red or red sandy clay loam, ranging to sandy loam.

Lucy soils commonly occur with Troup, Americus, Orangeburg, and Fuquay soils. They contain less sand and have finer textured material within 40 inches of the surface than the Troup soils. Lucy soils are less red in the upper part of the profile than Americus soils. They resemble Orangeburg soils in color but have a thicker A horizon. Lucy soils have a redder B horizon than Fuquay soils and do not have the 5 percent plinthite that is characteristic of the lower part of the B horizon in Fuquay soils.

**LmB—Lucy loamy sand, 0 to 5 percent slopes.** This is a well drained, level and very gently sloping soil that has the profile described as representative of the Lucy series. Small areas of Troup or Americus soils are included in mapping.

This soil is suited to most crops and pasture plants grown in the area, but plant response is fair because the soil is slightly droughty. It is also suited to pine trees. Crops and pasture plants respond fairly well to fertilizer and good management if moisture is adequate. Most of the acreage is cultivated or used for pasture.

This soil can be tilled intensively without an appreciable loss of soil from erosion. Lack of moisture during the hot summer months frequently damages crops. Organic matter is depleted at a moderately rapid rate and if cultivated crops are grown, large amounts of crop residue should be returned to the soil. A cropping sequence that includes perennial grasses is most effective. A suitable cropping system is a 3-year rotation of 1 year of peanuts followed by rye, then 2 years of corn. All plant residue should be left on the surface between seasons of crop production. Grassed waterways are needed to keep runoff from collecting in natural depressions.

This soil is well suited to sprinkler irrigation. Deep wells are a potential source of water. Capability unit IIs-1; woodland group 3s2.

**LmC—Lucy loamy sand, 5 to 8 percent slopes.** This is a well drained, gently sloping soil. It has a profile similar to the one described as representative of the Lucy series, but the sandy surface layer is 2 to 4 inches thinner.

Included with this soil in mapping are a few small, narrow areas of a similar soil that has slopes that range to 12 percent. Also included in a few places, is a similar soil that has a yellowish brown or strong brown subsoil.

This soil is suited to most crops and pastures commonly grown in the area but plant response is generally fair because the soil is slightly droughty. Crops and pastures respond fairly well to fertilizer and good management if moisture is adequate. This soil is suited to pine trees. Most of the acreage is in natural vegetation or planted in pine trees, but some is used for cultivated crops and pasture.

If this sandy soil is cultivated, erosion is not a serious hazard. Some scattered gullying will occur, however, in unprotected cultivated fields. All plant residue should be left on the surface between seasons of crop production, and all farming should be done on the contour. Grassed waterways are needed to keep runoff from collecting in natural depressions.

Lack of moisture during the hot summer months frequently damages crops and sometimes results in crop loss. Organic matter is depleted at a rapid rate and if cultivated crops are grown, large amounts of crop residue should be returned to the soil. A cropping sequence that includes perennial grasses is most effective. A suitable cropping system is 4 years of perennial grass followed by 2 years of a row crop such as peanuts.

Because of the slope, this soil is not generally suited to irrigation. Capability unit IIIs-1; woodland group 3s2.

## Muckalee Series

The Muckalee series consists of poorly drained soils on flood plains. These soils formed in sandy and loamy alluvium that washed from uplands of the Coastal Plain. They occur only along certain streams in Lee and Terrell Counties. Native vegetation was mainly water oak, sweetgum, blackgum, yellow-poplar, bay, and sycamore trees, and an understory of ferns, briers, lilies, and other water-tolerant plants. Slope ranges from 0 to 2 percent.

In a representative profile, the surface layer is about 6 inches of dark gray loam that has thin strata of sand and clay loam. The layer below that, extending to a depth of 28 inches, is gray loamy sand that has thin strata of sand and sandy clay loam. Below that, to a depth of 43 inches, the soil material is dark gray sandy loam that has thin strata of sand and loamy sand. The next layer, to a depth of 53 inches, is thinly stratified with dark gray, very dark gray, and light gray loamy sand, sand, and sandy clay loam. The last layer, which extends to a depth of 64 inches or more, is gray sandy loam stratified with light gray sand and yellowish brown clay.

These soils are low to moderate in natural fertility and have low to medium content of organic matter. Permeability is moderate, and the available water capacity is medium. Reaction is strongly acid to neutral. Because of wetness the root zone is generally shallow and tilth is poor.

Because they are subject to flooding and have a high water table, these soils are generally not suitable for cultivation. Drainage is poor because the soils are on the flood plain and lack stream channels. Most of the acreage is in natural vegetation.

In Lee and Terrell Counties, Muckalee soils are mapped only with Herod soils.

Representative profile of Muckalee loam, in an area of Herod and Muckalee soils, about 4 miles southeast along Muckaloochee Creek from Georgia Highway 118 to a county road crossing the creek, 30 yards east of the creek, and 25 yards south of the county road; in the Muckaloochee Creek flood plain in northwest Lee County:

A1—0 to 6 inches; dark gray (10YR 4/1) loam; weak medium granular structure; friable; common thin strata of light gray (10YR 7/1) sand and yellowish red (5YR 4/8) clay loam; many fine and medium roots; strongly acid; clear wavy boundary.

C1g—6 to 28 inches; gray (5Y 5/1) loamy sand; single grained, friable; common thin strata of light gray (5Y 7/1) sand and yellowish brown (10YR 5/6) sandy clay loam; common fine roots; medium acid; clear smooth boundary.

C2g—28 to 43 inches; dark gray (5Y 4/1) sandy loam; massive, friable; common thin strata of grayish brown (10YR 5/2) and pale brown (10YR 6/3) loamy sand and light gray (10YR 7/1) sand; few fine roots; slightly acid; clear smooth boundary.

C3g—43 to 53 inches; thinly stratified dark gray (10YR 4/1), very dark gray (10YR 3/1), and light gray (10YR 7/1) loamy sand, sand, and sandy clay loam; massive, very friable; few fine roots; slightly acid; clear smooth boundary.

C4g—53 to 64 inches; gray (10YR 5/1) sandy loam; massive, friable; common thick strata of light gray (2.5Y 7/2) sand and few strata of yellowish brown (10YR 5/6) clay; few fine roots; slightly acid.

The A1 horizon is 3 to 12 inches thick. It is mostly dark gray, dark grayish brown, or very dark grayish brown. It ranges from loamy sand or sandy loam to loam. The C horizon is dark gray to light gray, and in many places it has mottles in shades of brown and gray. It is commonly stratified but is 12 to 18 percent clay in the 10- to 40-inch control section.

Muckalee soils occur among the Herod soils in the flood plains of the larger streams. They are similar to Herod soils but contain less clay.

## Norfolk Series

The Norfolk series consists of well drained, level and very gently sloping soils on smooth, broad uplands. These soils formed in thick, loamy sediment. Native vegetation was mainly pines and a few red oaks. Slope ranges from 0 to 5 percent.

In a representative profile, the surface layer is dark grayish brown loamy sand 10 inches thick. The subsoil extends to a depth of at least 72 inches. To a depth of about 17 inches it is friable, light yellowish brown sandy loam. To a depth of about 56 inches it is yellowish brown and brownish yellow, friable, sandy clay loam with strong brown mottles in the lower part. To a depth of 72 inches it is brownish yellow sandy clay loam mottled with shades of brown and gray.

Natural fertility is moderate to low, and the content of organic matter is low. These soils are strongly acid to very strongly acid throughout. The root zone is deep, and tilth is good. Permeability is moderate, and the available water capacity is medium.

Norfolk soils are among the best for farming in Lee and Terrell Counties. Most of the acreage is cultivated or used for pasture. These soils are well suited to the locally grown crops and pasture plants and to pine trees.

Representative profile of Norfolk loamy sand, 0 to 2 percent slopes, 1.25 miles east on Georgia Highway 118 from the Muckalee Creek crossing; 100 yards north of the highway in a cultivated field; in the northern part of Lee County:

Ap—0 to 10 inches; dark grayish brown (2.5Y 4/2) loamy sand; weak fine granular structure; very friable; few fine roots; strongly acid; abrupt smooth boundary.

B1—10 to 17 inches; yellowish brown (10YR 5/4) sandy loam; weak fine subangular blocky structure; very friable; sand grains coated and bridged with clay; few fine root holes; mixing of Ap horizon in some of the root holes; strongly acid; clear smooth boundary.

B21t—17 to 43 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few patchy clay films on ped faces; sand grains coated and bridged with clay; few fine roots; mixing of Ap horizon in some of the root holes in the upper 12 inches of the horizon; few small ironstone nodules; strongly acid; gradual smooth boundary.

B22t—43 to 56 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; few patchy clay films on ped faces; sand grains coated and bridged with clay; few fine roots; few small ironstone nodules; strongly acid; gradual wavy boundary.

B23t—56 to 72 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium, faint yellowish brown (10YR 5/8) and common medium distinct, light gray (10YR 7/1) mottles; weak subangular blocky structure; friable; slightly sticky; few patchy clay films on ped faces; sand grains coated and bridged with clay; few fine roots; few small ironstone nodules; strongly acid.

The solum is 60 to 72 inches or more in thickness.

The A horizon ranges from 10 to 19 inches thick. The Ap or A1 horizon is grayish brown to dark grayish brown loamy sand, 8 to 12 inches thick. The A2 horizon that is in some profiles is yellowish brown to light yellowish brown loamy sand 4 to 7 inches thick. The B1 horizon is yellowish brown to light brown sandy loam 3 to 5 inches thick. The B2t horizons are strong brown and brownish yellow to light yellowish brown sandy clay loam ranging to sandy loam in the upper part of some profiles.

In some profiles gray mottles begin at a depth of 40 to 65 inches. The content of plinthite ranges from none to 4 percent.

Norfolk soils commonly occur with Tifton, Orangeburg, and Grady soils. They have fewer ironstone nodules than Tifton soils and contain less than 5 percent plinthite. Norfolk soils are yellower in the B horizon than Orangeburg soils and better drained than Grady soils.

**NhA—Norfolk loamy sand, 0 to 2 percent slopes.** This is a well drained, level soil on uplands. It has the profile described as representative of the series. Included in mapping is a similar soil that has a sandy loam surface layer.

This soil is well suited to most of the locally grown crops. Most of the acreage is farmed. Crops respond well to fertilizer and management. This soil is also well suited to pasture and pine trees.

Because erosion is not a serious hazard, this soil can be tilled intensively. Any suitable crop can be grown year after year if enough plant residue is returned to the soil to maintain good tilth. A planned sequence of crops helps control weeds, insects, and disease, and increases the effectiveness of fertilizer. All plant residue should be left on the surface between seasons of crop production.

Organic matter is depleted at a moderately rapid rate, even if management is good. To maintain the content of organic matter all crop residue should be turned under each year and a cover crop included in the cropping system.

This soil is well suited to sprinkler irrigation. Row crops and pasture plants need supplemental applications of water during prolonged dry periods. Deep wells are a potential source of water. Capability unit I-1; woodland group 2o1.

**NhB—Norfolk loamy sand, 2 to 5 percent slopes.** This is a well drained, very gently sloping soil on uplands. It has a profile similar to the one described as representative of the series except that it has a loamy sand surface layer 6 to 12 inches thick.

Included in mapping are a few small areas of a soil that is moderately eroded. In a few places, the surface layer is sandy loam. Also included is a small acreage of a moderately eroded soil that ranges to 8 percent slopes.

This soil is well suited to most locally grown crops. Because of slope, however, there is a moderate erosion hazard in unprotected cultivated fields. Crops respond well to fertilizer and management. Tilth is good, and most of the acreage is cultivated. This soil is also well suited to pasture and pine trees.

This soil should be managed to hold soil losses from erosion within allowable limits. This can be done by cultivating on the contour, with or without terraces, or by stripcropping. The method depends on the crops grown and the extent of the soil limitations. The steepness and length of slope or the erosion control method used determines the minimum cropping system needed. A suitable cropping system on 3 percent slopes that are terraced and cultivated on the contour is 1 year of peanuts, followed by 1 year of small grain and grain sorghum, followed by 1 year of corn. All plant residue should be left on the surface between seasons of crop production.

Organic matter is depleted at a moderately rapid rate, even if management is good. To maintain the organic-matter content and to increase the available water capacity all crop residue should be turned under each year and a cover crop included in the cropping system.

This soil is well suited to sprinkler irrigation. Row crops and pasture grasses need supplemental applications of water during prolonged dry periods. Deep wells are a potential source of water. Capability unit IIe-1; woodland group 2o1.

## Ocilla Series

The Ocilla series consists of somewhat poorly drained, level soils that have thick sandy layers over a loamy subsoil. These soils formed in thick beds of sandy and loamy sediment. They are widely scattered throughout the counties but are mostly in slight depressions and low flats in Lee County. The native vegetation was pines, sweetgum, and water oak. Slope ranges from 0 to 2 percent.

In a representative profile the surface layer is 9 inches of loamy sand that is very dark gray. The subsurface layer is 19 inches of loamy sand. It is pale brown in the upper part and pale olive in the lower part. The upper part of the subsoil, to a depth of 48 inches, is yellowish brown, friable sandy loam mottled with shades of gray and brown. The lower part of the subsoil, to a depth of 65 inches, is friable, mottled yellowish brown and gray sandy loam.

Ocilla soils are low in natural fertility and strongly acid to very strongly acid throughout. They are low in organic-matter content. The available water capacity is low. Permeability is rapid in the sandy part of the profile but moderate in the subsoil. The root zone is deep, and tilth is good.

These soils are sandy and seasonally wet. Drainage is needed if they are used for pasture and cultivated crops. Most of the acreage is in natural vegetation. These soils are suited to woodland.

Representative profile of Ocilla loamy sand, 3/4 mile west along the abandoned Albany and Northern Railroad from the Flint River, 700 yards northwest on a field road to an idle area, along the east central edge of Lee County near Philema:

Ap—0 to 9 inches; very dark gray (10YR 3/1) loamy sand; weak medium granular structure; very friable; many fine roots; very strongly acid; clear smooth boundary.

A21—9 to 23 inches; pale brown (10YR 6/3) loamy sand; weak medium granular structure; very friable; common fine roots; very strongly acid; gradual smooth boundary.

A22—23 to 28 inches; pale olive (5Y 6/3) loamy sand; few medium distinct light yellowish brown (2.5Y 6/4) mottles; weak medium granular structure; very friable; few fine roots; common small hard ironstone nodules; few small quartz grains about 2 to 5 millimeters in size; very strongly acid; clear smooth boundary.

B21t—28 to 48 inches; yellowish brown (10YR 5/6) sandy loam; many medium and coarse distinct light gray (5Y 6/1) and few fine and medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; most sand grains coated and bridged with clay; few fine roots; few small pockets of clean sand grains; very strongly acid; gradual smooth boundary.

B22t—48 to 65 inches; mottled yellowish brown (10YR 5/6) and gray (5Y 6/1) sandy loam; weak medium subangular blocky structure; friable; most sand grains are coated and yellowish brown areas are bridged with clay; very strongly acid.

The solum is 65 to 75 inches or more thick. The A horizon is 26 to 36 inches thick. The A1 or Ap horizon ranges from very dark gray to very dark grayish brown and is 5 to 10 inches thick. The A2 horizons range in color from grayish brown, pale brown, and olive brown to pale yellow. The B21t horizon is yellowish brown, brownish yellow, or light yellowish brown sandy loam or sandy clay loam mottled with various shades of gray, brown, and yellow. The B22t horizon is mottled in shades of brown, gray, and yellow in most areas and in some areas the matrix color is yellowish brown with many gray mottles. The content of plinthite ranges from 0 to 4 percent.

The Ocilla soils commonly occur with the Pelham, Fuquay, Lucy, and Rains soils. They are not so poorly drained as the Pelham soils. Ocilla soils are not so well drained as the Fuquay and Lucy soils. They have a thicker A horizon than the Rains soils and are better drained.

**Oc—Ocilla loamy sand.** This is a somewhat poorly drained, sandy soil. It occurs in low areas that are flat to slightly depressed. Slope ranges from 0 to 2 percent.

Included in mapping are some areas of Rains and Pelham soils that are too small to be mapped separately.

Because of the thick sandy surface layer and the high water table that occurs during wet seasons, only a small acreage of this soil is cultivated. If this soil is adequately drained, it is well suited to cultivated crops, pasture, and pine trees. Crops respond fairly well to fertilizer and management. Most of the acreage is in natural vegetation.

This soil can be tilled intensively, because there is no serious erosion hazard. Excess water is the main hazard, and if the soil is used for row crops, it should be adequately drained. If the soil is drained, any suitable crop can be grown year after year, but enough plant residue should be returned to the soil to help maintain good tilth. A planned sequence of crops helps control weeds, insects, and disease and increases the effectiveness of fertilizer. All plant residue should be left on the surface between seasons of crop production.

Organic matter is depleted at a moderately rapid rate, even if management is good. To maintain organic-matter content and increase the available water capacity, all crop residue should be turned under each year and cover crops included in the cropping systems. Capability unit IIIw-1; woodland group 3w2.

## Orangeburg Series

The Orangeburg series consists of friable, well drained, level to gently sloping soils on broad, smooth uplands. These soils formed in stratified clayey and loamy sediment in areas scattered throughout both counties. Native vegetation was mainly pines and red oaks and a few hickory trees. Slope ranges from 0 to 8 percent.

In a representative profile the surface layer is brown loamy sand 7 inches thick. The subsoil extends to a depth of 76 inches or more. It is friable, yellowish red sandy loam to a depth of about 14 inches. Below that it is friable, red sandy clay loam.

These soils have moderate to low natural fertility and low organic-matter content. They are strongly acid to very strongly acid throughout and have a deep root zone. Permeability is moderate, and the available water capacity is medium. Tilth is good.

The less sloping Orangeburg soils are well suited to farming, especially to locally grown crops. These soils also are well suited to pasture plants and pine trees, and most of the acreage is cultivated or in pasture.

Representative profile of Orangeburg loamy sand, 2 to 5 percent slopes, 1/4 mile north of Georgia Highway 195 from Muckalee Creek; 1 mile east on paved county road; 100 yards north of the road in a cultivated field in central Lee County:

Ap—0 to 7 inches; brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; common fine roots; plowing has mixed in a few small lumps of the upper subsoil; strongly acid; clear smooth boundary.

B1—7 to 14 inches; yellowish red (5YR 4/6) sandy loam; weak fine granular structure; friable; sand grains coated and bridged with clay; few fine roots; few streaks of Ap horizon; strongly acid; clear smooth boundary.

B21t—14 to 68 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; sand grains coated and bridged with clay; few fine roots; strongly acid; gradual smooth boundary.

B22t—68 to 76 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; patchy clay films on some ped faces; strongly acid.

The solum is 60 to 72 inches or more thick. The Ap or A1 horizon ranges from dark grayish brown or grayish brown to yellowish brown loamy sand and sandy loam that is 5 to 10 inches thick. In some profiles there is a loamy sand A3 horizon that is strong brown to dark brown and about 4 to 8 inches thick. The B1t horizon is strong brown, reddish yellow or yellowish red sandy loam or sandy clay loam 3 to 10 inches thick. The B2t horizon ranges from yellowish red to red and from sandy loam to sandy clay loam. In some profiles, brown, red, and yellow mottles occur at depths below 40 inches.

Orangeburg soils commonly occur with Norfolk, Red Bay, Tifton, and Grady soils. They have a redder B horizon than Norfolk soils. The A horizon of the Orangeburg soils is not as red as that of the Red Bay soils. Orangeburg soils do not have the many ironstone nodules and high plinthite content of the Tifton soils. Orangeburg soils are well drained, whereas the Grady soils are very poorly drained.

**OeA—Orangeburg loamy sand, 0 to 2 percent slopes.** This is a well drained, level soil. It has a profile similar to the one described as representative of the Orangeburg series, but its surface layer is loamy sand about 9 or 10 inches thick. Included in mapping are small areas of Faceville, Red Bay, and Lucy soils.

This soil is among those in the area suited to farming, and it is well suited to most locally grown crops. Crops respond well to fertilizer and management. Most of the acreage is cultivated, but this soil is also well suited to pasture and pine trees.

This soil can be tilled intensively, because there is no significant erosion hazard. Any suitable crop can be grown year after year if enough plant residue is returned to the soil to maintain good tilth. All plant residue should remain on the surface between crops. A planned sequence of crops helps control weeds, insects, and disease and increases the effectiveness of fertilizer.

Even with good management organic matter is depleted at a moderately rapid rate. To maintain the organic-matter content and to increase the available water capacity, crop residue should be plowed under each year and a cover crop included in the cropping system.

This soil is well suited to sprinkler irrigation. Row crops and pasture plants respond to supplemental applications of water in prolonged dry periods. Deep wells are a potential source of water. Capability unit I-1; woodland group 2o1.

**OeB—Orangeburg loamy sand, 2 to 5 percent slopes.** This is a well drained, very gently sloping soil. It has the profile described as representative of the Orangeburg series. In a few places, the plow layer is a mixture of the upper part of the subsoil and the original surface layer and in some places, the subsoil has been exposed by erosion. In a few areas the surface layer is sandy loam.

Included with this soil in mapping are a few small areas of Faceville, Red Bay, and Lucy soils.

This soil is among those in the area suited to farming. It is well suited to most locally grown crops. Crops planted on this soil respond well to fertilizer and management. Because of slope, erosion is a moderate hazard in unprotected cultivated fields. This soil is well suited to pasture and pine trees. Most of the acreage is cultivated.

Erosion can be controlled on cultivated soils by cultivating on the contour with or without terraces or by stripcropping. The method used depends on the crops and the limitations of the soil.

Proper management of this soil should keep soil losses from erosion within allowable limits. The steepness and length of slopes or the erosion-control method used determines the minimum cropping system needed. A suitable cropping system on a 3 percent slope that is terraced and cultivated on the contour is 1 year of peanuts followed by rye for grazing and cover, followed by 2 years of corn. All plant residue should remain on the soil surface between seasons of crop production.

Even with good management organic matter is depleted at a moderately rapid rate. To maintain the organic-matter content and to increase the available water capacity, crop residue should be plowed under each year and a cover crop included in the cropping system.

This soil is suited to sprinkler irrigation. Row crops and pastures respond to supplemental applications of water in prolonged dry periods. Deep wells are a potential source of water. Capability unit IIe-1; woodland group 2o1.

**OeC2—Orangeburg sandy loam, 5 to 8 percent slopes, eroded.** This is a well drained, gently sloping soil. It has a profile similar to the one described as representative of the series, but its surface layer is dark grayish brown to yellowish brown sandy loam that has been eroded to a thickness of only 5 to 7 inches in most places. The plow layer extends into the subsoil in many places, and in many small areas the upper part of the subsoil has been exposed. A few shallow gullies and rills have formed in some areas, and in a few places there are deep gullies. In a few areas the surface layer is loamy sand.

Included with this soil in mapping are a few small areas of Faceville soils. Also included, along streams and drainageways, are a few narrow areas of a soil that is similar to this Orangeburg soil but that has slopes of up to 12 percent. There are also a few areas of a similar soil that is only slightly eroded.

This soil is suited to most locally grown crops, and some of the acreage is cultivated. The soil is also well suited to pasture and pine trees and is mostly used for this purpose. Because the hazard of erosion is severe in cultivated areas, erosion needs to be controlled. Conservation is more difficult on this soil than on less sloping soils. Tilth is generally good, but in places where the subsoil is exposed, it is poor.

This soil should be managed to hold losses from erosion within allowable limits. The method used depends on the crops and the limitations of the soils. Erosion can be controlled by cultivating on the contour, with or without terraces, or by stripcropping.

The steepness and length of slope or the erosion control method used determines the minimum cropping system needed. A suitable cropping system for a 6 percent slope that is cultivated on the contour is 4 years of perennial grass followed by 2 years of a row crop such as peanuts. All plant residue should remain on the surface between seasons of crop production.

Even with good management organic matter is depleted at a moderately rapid rate. To maintain the organic-matter content and to increase the available water capacity, crop residue should be plowed under and cover crops included in the rotation. Because of slope this soil is not suited to irrigation. Capability unit IIIe-1; woodland group 2o1.

## Pelham Series

The Pelham series consists of level, poorly drained soils that have thick sandy layers over a loamy subsoil. These soils formed in unconsolidated beds of loamy sediments. They are along small drainageways and in slight depressions. Areas are small and scattered throughout the counties. Native vegetation was mainly water oaks, sweetgum, and a few pine trees and an understory of gallberry and other water-tolerant plants. Slope ranges from 0 to 2 percent.

In a representative profile, the surface layer is very dark gray loamy sand about 8 inches thick. The subsurface layer extends to a depth of 34 inches; it is grayish brown loamy sand in the upper part and light gray sand in the lower part. The subsoil extends to a depth of 65 inches or more and to a depth of 42 inches it is friable, light gray sandy loam mottled with shades of yellow. The lower part is friable, mottled light gray and yellowish brown sandy clay loam.

These soils are low in natural fertility and low in organic-matter content. They are strongly acid to very strongly acid throughout and have a deep root zone. Permeability is rapid in the sandy upper part of the profile and moderate in the lower part. The available water capacity is low to medium. Tilth is good.

Because of the thick sandy layers, wetness, and frequent flooding, these soils are not suited to cultivated crops. Some drainage is needed for pasture and pine trees. Most of the acreage is in natural vegetation.

Representative profile of Pelham loamy sand, 1.75 miles almost due north of Philema, Georgia along a county dirt road, about 700 yards west across an open field in a small idle area adjacent to and south of a paved county road; in the east central part of Lee County:

Ap1—0 to 5 inches; very dark gray (10YR 3/1) loamy sand; weak fine granular structure; very friable; many fine roots; few streaks of black organic matter; very strongly acid; clear smooth boundary.

Ap2—5 to 8 inches; very dark gray (10YR 3/1) loamy sand; many light gray (10YR 6/1) and a few strong brown (7.5YR 5/6) mottles; weak medium granular structure; very friable; common fine roots; very strongly acid; clear smooth boundary.

A21g—8 to 18 inches; grayish brown (10YR 5/2) loamy sand; few fine distinct yellowish brown and light yellowish brown mottles; weak medium granular structure; very friable; few fine roots; few streaks of light gray uncoated sand grains; very strongly acid; clear smooth boundary.

A22g—18 to 34 inches; light gray (10YR 7/1) sand; few fine distinct light yellowish brown mottles; single grained; very friable; few fine roots; very strongly acid; clear smooth boundary.

B1g—34 to 42 inches; light gray (2.5Y 7/2) sandy loam; common medium distinct pale yellow (5Y 7/3) mottles; weak medium subangular blocky structure; friable; most sand grains coated and bridged with clay; few streaks of light gray uncoated sand grains; very strongly acid; gradual smooth boundary.

B2tg—42 to 65 inches; mottled light gray (2.5Y 7/2) and yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; most sand grains coated and bridged with clay; few streaks of light gray uncoated sand grains; very strongly acid.

The A horizon ranges from 23 to 38 inches in thickness. The A1 or Ap horizon ranges from very dark gray to dark gray and is 4 to 9 inches thick. The A2 horizon is grayish brown, light gray, gray or light brownish gray sand or loamy sand. Some profiles lack the Btg horizon. The B2tg horizon is gray to light gray sandy clay loam or sandy loam that has common mottles of yellowish brown, very pale brown, or light yellowish brown.

The Pelham soils occur among the Troup, Fuquay, Rains, and Ocilla soils. They are wetter than the well drained Troup and Fuquay soils. Pelham soils have a thick sandy A horizon which Rains soils lack. The Pelham soils are wetter than the Ocilla soils.

**Pe—Pelham loamy sand.** This is a poorly drained, sandy soil that occurs in low areas. Slope ranges from 0 to 2 percent.

Included in mapping are a few areas of a soil that has a sand surface layer and a few areas where the surface layer is 40 to 60 inches thick.

Because of the thick sandy upper layers and the high water table during wet seasons, only a small acreage of this soil is cultivated. If this soil is drained, it is fairly well suited to corn, pasture, and truck crops. Crops respond fairly well to fertilizer and management. If drained, this soil is also suited to pine trees. Most of the acreage is in natural vegetation.

If this soil is drained and cultivated, all crop residue should be returned to the soil to maintain the organic-matter content and provide good tilth. Erosion is not a hazard. A suitable crop, such as corn, can be grown if drainage has been provided and all residue is left undisturbed during the winter. Capability unit Vw-2; woodland group 2w3.

## Rains Series

The Rains series consists of poorly drained, level soils in depressions or in poorly defined drainageways. These soils formed in loamy sediment. They occur mainly in Lee County. The native vegetation was mainly blackgum, water oaks, sweetgum, and scattered pine trees and an understory of gallberry and other water-tolerant plants. Slope ranges from 0 to 2 percent.

In a representative profile, the surface layer is dark gray sandy loam 6 inches thick. The upper part of the subsoil, to a depth of about 14 inches, is gray sandy loam. Below that, to a depth of 65 inches, the subsoil is dominantly light gray and gray sandy clay loam mottled with shades of brown and olive.

These soils are low in natural fertility and low in content of organic matter. They are strongly acid or very strongly acid throughout. Permeability is moderate, and the available water capacity is medium. The root zone is moderately deep, and tilth is fair to poor.

Because of wetness and the hazard of flooding, these soils are not suited to cultivated crops. Most of the acreage is in natural vegetation. A few areas have been drained and are in pasture. Pine trees have been planted in some of the drained areas.

Representative profile of Rains sandy loam, 2.3 miles north of Leesburg on U.S. Route 19, 2.9 miles west on paved county road, 100 feet north of the road; in the west-central part of Lee County:

Ap—0 to 6 inches; dark gray (10YR 4/1) sandy loam; weak fine granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.

B1g—6 to 14 inches; gray (5Y 6/1) sandy loam; common medium distinct light yellowish brown (2.5Y 6/4) mottles; weak fine subangular blocky structure; friable; clay coating and bridging on most sand grains; common fine roots; few fine pores; mixing of Ap horizon in some root holes; strongly acid; clear smooth boundary.

B21tg—14 to 44 inches; gray (5Y 6/1) sandy clay loam; few medium distinct light yellowish brown (2.5Y 6/4) and pale olive (5Y 6/3) mottles; weak medium subangular blocky structure; friable; patchy clay films on some ped faces; few fine roots; few fine pores; strongly acid; gradual smooth boundary.

B22tg—44 to 55 inches; light gray (5Y 7/1) sandy clay loam; common medium prominent mottles of dark yellowish brown (10YR 4/4); weak medium subangular blocky structure; friable; patchy clay films on some ped faces; few fine pores; strongly acid; gradual smooth boundary.

B23tg—55 to 65 inches; light gray (5Y 7/1) sandy clay loam; few medium distinct dark yellowish brown (10YR 4/4) mottles and common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; patchy clay films on some ped faces; strongly acid.

The solum is 60 to 72 inches or more thick. The A1 or Ap horizon is dark gray and dark grayish brown to black sandy loam 6 to 10 inches thick. In many places there is a light brownish gray to gray sandy loam A2 horizon 4 to 8 inches thick. The B1g horizon is light brownish gray or gray sandy loam 7 to 12 inches thick. The B2tg horizon is gray to dark gray sandy clay loam and has variable amounts of mottles in shades of yellow, brown, and red.

The Rains soils commonly occur among the Norfolk, Tifton, Goldsboro, and Grady soils. Rains soils are poorly drained and have a grayer B horizon than Norfolk and Tifton soils. Unlike Tifton soils, Rains soils do not have numerous ironstone nodules and plinthite. They are more poorly drained than Goldsboro soils and are grayer in the upper part of the B horizon. Rains soils have a less clayey B horizon than Grady soils.

**Ra—Rains sandy loam.** This is a poorly drained, level soil in depressions or in poorly defined drainageways. Slope ranges from 0 to 2 percent.

Included with this soil in mapping are small areas of Grady soils, some areas of soils that are similar to this Rains soil except that the surface layer is loamy sand, and areas of other similar soils that have sandy clay in the lower part of the subsoil.

Excess water is the main limitation of this soil if it is to be cultivated or used for pasture. The water table is near the surface during wet seasons; some areas are ponded for brief periods. Drainage is needed for maximum production. The method of water management selected depends on the crop to be grown. Either open ditches or covered tile drains can be used. If drained, this soil is suited to many crops commonly grown in the area and to pasture and pine trees. Any suitable crop can be grown year after year if enough plant residue is returned to the soil to maintain good tilth. Plants respond well to fertilizer and to other management practices. A planned sequence of crops helps control weeds, insects, and plant disease and increases the effectiveness of fertilizer. Although most of the acreage is in woodland, mainly water-tolerant hardwoods, pines can also be grown. Capability unit Vw-3; woodland group 2w3.

## Red Bay Series

The Red Bay series consists of well drained, friable, level to gently sloping soils on smooth, broad uplands. These soils formed in loamy sediment. They are scattered throughout both counties. The native vegetation was mainly pines and red oaks and a few hickory trees. Slope ranges from 0 to 8 percent.

In a representative profile, the surface layer is dark reddish brown sandy loam 7 inches thick. The subsoil extends to a depth of 65 inches. It is friable, dark red sandy loam to a depth of 18 inches. Below that, to a depth of 47 inches, it is dark red, friable sandy clay loam.

These soils are moderate to low in natural fertility and low in organic-matter content. Tilth is good. These soils are strongly acid to very strongly acid throughout and have a deep root zone. Permeability is moderate, and the available water capacity is medium.

These soils are well suited to the locally grown crops and pasture plants and to pine trees. Most of the acreage is cultivated or used for pasture.

Representative profile of Red Bay sandy loam, 2 to 5 percent slopes, 2 miles east of the confluence of Chenube and Turkey Creeks, 1/4 mile north in a cultivated field; in the northwest part of Terrell County:

Ap—0 to 7 inches; dark reddish brown (5YR 3/4) sandy loam; weak fine granular structure; very friable; common fine roots; plowing has mixed some of the B1 horizon with the Ap horizon; strongly acid; clear smooth boundary.

B1—7 to 18 inches; dark red (2.5YR 3/6) sandy loam; weak fine subangular blocky structure; friable; sand grains coated and bridged with clay; few fine roots; few fine pores; mixing of Ap horizon in root holes; strongly acid; gradual smooth boundary.

B21t—18 to 48 inches; dark red (2.5YR 3/6) sandy clay loam; weak medium subangular blocky; friable; clay coating and bridging on sand grains; few patchy clay films on some ped faces; few fine roots; few fine pores; strongly acid; gradual smooth boundary.

B22t—48 to 65 inches; dark red (10R 3/6) sandy clay loam; moderate medium subangular blocky structure; friable; patchy clay films on some ped faces; few fine roots; strongly acid.

The solum is 65 to 80 inches or more thick.

The Ap horizon is dark reddish brown to dark brown sandy loam 4 to 8 inches thick. The B1 horizon is dark reddish brown to dark red sandy loam or sandy clay loam; some profiles do not have a B1 horizon. The B2t horizon is generally sandy clay loam but ranges to sandy loam. The clay content in the B2t horizon ranges from 18 to 35 percent.

The Red Bay soils commonly occur with Orangeburg, Faceville, Greenville, and Tifton soils. They are similar to Orangeburg soils but have a darker, reddish A horizon. Red Bay soils are less clayey in the B horizon than Faceville soils and have a darker, reddish A horizon. They resemble Greenville soils in color but are less clayey in the B horizon. Red Bay soils lack the numerous small, ironstone nodules, the plinthite, and the light colored A horizon that is characteristic of Tifton soils.

**RbA—Red Bay loamy sand, 0 to 2 percent slopes.** This soil has a profile that is similar to the one described as representative of the Red Bay series except that the surface layer is 8 to 12 inches thick. In a few places, the plow layer extends into the upper part of the subsoil. In some places, the surface layer is sandy loam. Included in mapping are small areas of Greenville and Americus soils.

This soil is well suited to most of the locally grown crops, to pasture, and to pine trees. Most of the acreage is cultivated. Crops respond well to fertilizer and other management practices.

This soil can be tilled intensively with a minimum risk of erosion. Any suitable crop can be grown year after year if enough plant residue is returned to the soil to maintain good tilth. A planned sequence of crops helps control weeds, insects, and plant disease and increases the effectiveness of fertilizer. All plant residue should be left on the surface between seasons of crop production.

Organic matter is depleted at a moderately rapid rate, even if management is good. To maintain the organic-matter content and to increase the available water capacity, all crop residue should be turned under each year and a cover crop included in the cropping system.

This soil is well suited to sprinkler irrigation. Row crops and pasture plants need supplemental applications of water during prolonged dry periods. Deep wells are a potential source of water. Capability unit I-1; woodland group 2o1.

**ReB—Red Bay sandy loam, 2 to 5 percent slopes.** This is a well drained, very gently sloping soil. It has the profile described as representative of the Red Bay series. In places the surface layer is loamy sand.

Included in mapping are small areas of Greenville soils.

This soil is well suited to most of the locally grown crops, to pasture, and to pine trees. Crops on this soil respond well to fertilizer and good management. Because of the slope, however, there is a moderate erosion hazard in unprotected cultivated fields. Most of the acreage is cultivated.

If this soil is cultivated, erosion can be controlled by cultivating on the contour, with or without terraces, or stripcropping. The method depends on the crops grown and on the limitations of the soil.

The steepness and length of slopes or the method of erosion control determines the minimum cropping system needed to control erosion. A suitable cropping system for 3 percent slopes that are 200 feet long is 2 years of a close-growing crop, such as bahiagrass, followed by 2 years of peanuts. All plant residue should be left on the surface between seasons of crop production.

Organic matter is depleted at a moderately rapid rate, even if management is good. To maintain the organic-matter content and to increase the available water capacity, all crop residue should be turned under each year and a cover crop included in the cropping system.

This soil is suited to sprinkler irrigation. Row crops and pasture plants need supplemental applications of water during prolonged dry periods. Deep wells are a potential source of water. Capability unit IIe-1; woodland group 2o1.

**ReC2—Red Bay sandy loam, 5 to 8 percent slopes, eroded.** This is a well drained, gently sloping soil. It has a profile similar to the one described as representative of the Red Bay series except that the sandy loam surface layer, which is 4 to 6 inches thick in most places, is as much as 8 inches thick in some places. The plow layer extends into the upper part of the subsoil in many places, and in a few places the subsoil has been exposed by erosion. A few shallow gullies and rills have formed in many areas. Deep gullies occur in a few areas. The surface layer is loamy sand in a few places.

Included in mapping are a few small areas of Greenville soils and small areas of soils that are similar to Red Bay soils except that the slope ranges to 12 percent.

This soil is suited to most of the crops grown locally and to pasture and pine trees. Crops respond well to fertilizer and good management, but there is a severe erosion hazard in unprotected cultivated fields. Some of the acreage is cultivated, but most of it is in pasture or trees.

Erosion is more difficult to control than on less sloping soils. It can be controlled by cultivating on the contour, with or without terraces, or by stripcropping. The method depends on the crops grown and the extent of the soil limitations.

The soil should be well managed to hold soil losses from erosion within allowable limits. A suitable cropping system for a terraced field that has slopes of 6 percent is 2 years of corn that is strip-tilled or planted using minimum tillage followed by 1 year of cotton, planted solid, and rye. All plant residue should be left on the surface between seasons of crop production.

Organic matter is depleted at a moderately rapid rate even if management is good. To maintain the organic-matter content and to increase the available water capacity, all crop residue should be turned under and cover crops included in the rotation. Because of slope, this soil is not generally suited to irrigation. Capability unit IIIe-1; woodland group 2o1.

## Riverview Series

The Riverview series consists of well drained, level soils along small drainageways and in slight depressions. These soils formed in loamy local alluvium that washed from nearby slopes. They are scattered throughout the two counties. Native vegetation was red oaks, some pine, yellow-poplar, and sweetgum. Slope ranges from 0 to 2 percent.

In a representative profile, the surface layer consists of dark brown loam 10 inches thick. The subsoil extends to a depth of 65 inches or more. It is dark reddish brown clay loam to a depth of 24 inches. To a depth of 52 inches it is light yellowish brown, brownish yellow, and yellowish brown sandy clay loam mottled with shades of brown and gray. To a depth of 65 inches it is sandy loam, mottled in shades of red, brown, and gray.

The soils are low to medium in natural fertility and low to medium in content of organic matter. They are strongly acid or very strongly acid throughout and have a deep root zone. Permeability is moderate, and the available water capacity is medium. Tilth is good.

These soils are well suited to most of the locally grown crops and grasses and to pine trees and are generally in the same use as the surrounding soils. Because they are low on the landscape, some areas of these soils flood for brief periods during wet seasons.

Representative profile of Riverview loam, in an area of Riverview soils, along a small drainageway 2 miles west on U.S. Highway 82 from Chickasawhatchee Creek, 100 yards north of the highway in central Terrell County:

Ap—0 to 10 inches; dark brown (7.5YR 3/2) loam; weak medium granular structure; very friable; many fine roots; few streaks of sandy loam; strongly acid; clear smooth boundary.

B21—10 to 24 inches; dark reddish brown (5YR 3/2) clay loam; weak medium subangular blocky structure; friable; fine roots common; few streaks of sandy loam; few bits of charcoal; strongly acid; clear smooth boundary.

B22—24 to 34 inches; light yellowish brown (2.5Y 6/4) sandy clay loam; common streaks of dark gray (10YR 4/1) sandy loam and few medium faint yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few bits of charcoal; very strongly acid; clear smooth boundary.

B23—34 to 40 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium faint yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few streaks of sandy loam; few small ironstone nodules—less than 2 percent; very strongly acid; gradual smooth boundary.

B31—40 to 52 inches; yellowish brown (10YR 5/8) sandy clay loam; many medium distinct light gray (10YR 7/1) mottles, and common medium distinct very pale brown (10YR 7/3) mottles; weak medium subangular blocky structure; friable; few fine roots; few small ironstone nodules; very strongly acid; clear smooth boundary.

IIB32—52 to 65 inches; mottled red (2.5YR 4/6), yellowish brown (10YR 5/6), and light brown (10YR 7/1) sandy loam; massive; firm; compact; streaks of sandy clay loam; very strongly acid.

The A horizon is dark brown to very dark grayish brown loam, sandy loam, or loamy sand and is 4 to 10 inches thick. The B21 and B22 horizons are dark reddish brown, light yellowish brown, dark yellowish brown, yellowish brown, or yellowish red. The B21 and B22 horizons have few to common mottles and streaks in shades of brown, yellow, and red. The B21 horizon is loam, sandy clay loam, clay loam, or sandy loam. The B3 horizon ranges from loamy sand or sandy loam to sandy clay loam.

The Riverview soils occur with the Irvington, Rains, Grady, and Kinston soils. They are better drained than the associated soils. Riverview soils lack the fragipan layer of the Irvington soils. They are reddish in the B horizon, and the Rains and Grady soils are gray. The Kinston soils lack a B horizon.

Riverview soils are taxadjuncts to the Riverview series because the colors are slightly outside the defined range for that series. The colors have resulted from deposition from surrounding areas. About one-third of the soils are also sandier in the upper 40 inches of their profile than is defined as the range for the Riverview series. These variations do not significantly affect the use and management of the soils.

**Ro—Riverview soils.** These are well drained loamy soils along small streams, small drainageways, and draws and in depressions. They occur in areas ranging from 3 to 8 acres in size. Slope ranges from 0 to 2 percent. The texture of the surface layer is commonly loam but ranges to sandy loam and loamy sand.

Included in mapping of this soil were small areas of similar soils that are moderately well drained and other soils that have 8 to 18 percent clay in the upper part of the subsoil.

Riverview soils are well suited to all crops and pasture plants grown locally and to trees. Because they are in small areas, they are generally used the same as surrounding soils, which are used mostly for cultivated crops and pasture. Some areas are in mixed forests of hardwoods and pines.

These soils can be tilled year after year with little risk of erosion. Because of their position on the landscape, they are subject to flooding during heavy rainfall in some places. Shallow ditches are needed to drain the areas where water stands on the surface for a few days after a heavy rainfall. The water table is within 40 inches of the surface for a few days after prolonged wet weather. Any suitable crop can be grown year after year if fertilizer is applied and if enough plant residue is returned to maintain good tilth. A planned sequence of crops helps control weeds, insects, and plant disease and increases the effectiveness of fertilizer. All plant residue should be left on the surface between seasons of crop production. The response to fertilizer is good.

During prolonged dry periods, the supply of moisture may not be adequate for cultivated crops and pasture plants. Crops generally need supplemental applications of water at this time. These soils are suited to sprinkler irrigation; deep wells are a potential source of water. Capability unit IIw-1; woodland group 1o7.

## Sunsweet Series

The Sunsweet series consists of well drained, gently undulating, pebbly soils on narrow uplands. These soils formed in clayey sediment. They are scattered throughout both counties, but mostly occur in Terrell County. Native vegetation was mainly loblolly and shortleaf pines mixed with red oak and hickory trees. Slope ranges from 2 to 12 percent.

In a representative profile, the surface layer is dark brown sandy loam 4 inches thick. The subsoil extends to a depth of 65 inches or more. It is friable, red sandy clay in the upper 16 inches; red, firm sandy clay mottled with shades of brown and red in the middle part;

and firm sandy clay mottled in shades of brown, red, and gray in the lower part. The subsoil contains 15 percent plinthite in the middle part and 35 percent plinthite in the lower part. Small ironstone nodules are on the surface and throughout the profile.

Natural fertility is low and organic-matter content is low. Reaction is strongly acid to very strongly acid throughout. Permeability is moderately slow. The available water capacity is medium. Tilth is generally fair, but it is poor in the areas where erosion has exposed the subsoil. Because the firm, intensively mottled lower part of the subsoil impedes root growth, the root zone is only moderately deep.

Some of the Sunsweet soils are in crops and pasture, but most of the acreage is idle or in woodland. Much of the woodland is planted to pine. Idle areas become vegetated with broomsage, briers, and sassafras before reverting back to woodland.

Representative profile of Sunsweet sandy loam, 2 to 8 percent slopes, eroded, 4 miles north on Georgia Highway 55 from Dawson, 1⅛ miles west of Yoemans, ¼ mile north on a county road; in the north-central part of Terrell County:

Apcn—0 to 4 inches; dark brown (7.5YR 4/4) sandy loam; weak fine granular structure; very friable; many fine roots; 20 percent small ironstone nodules; very strongly acid; clear smooth boundary.

B21tcn—4 to 20 inches; red (2.5YR 5/6) sandy clay; moderate medium subangular blocky structure; friable; patchy clay films around ironstone nodules and on some pore walls; common fine roots; common fine pores; 15 percent small ironstone nodules; 5 percent plinthite in lower 5 inches; very strongly acid; clear wavy boundary.

B22tcn—20 to 35 inches; red (2.5YR 5/6) sandy clay; many medium distinct yellowish brown (10YR 5/6) mottles and common medium distinct red (2.5YR 4/6) and dark red (2.5YR 3/6) mottles; moderate medium subangular blocky structure; firm; patchy clay films around ironstone nodules and on some pore walls; few fine roots; common fine pores; 12 percent small iron concretions; 15 percent plinthite; very strongly acid; gradual wavy boundary.

B23t—35 to 65 inches; coarsely mottled yellowish brown (10YR 5/6), light gray (10YR 7/1), very pale brown (10YR 7/3), yellowish red (5YR 5/6), red (2.5YR 4/6), and dark red (2.5YR 3/6) sandy clay with small pockets of clay; moderate medium and coarse angular blocky structure; firm; compact in place; patchy clay films along cracks and around the few ironstone nodules and coarse sand grains; few fine pores; few small ironstone nodules; common coarse sand grains; 35 percent plinthite; very strongly acid.

The Ap horizon is brown to dark brown and is 3 to 5 inches thick. The B21tcn horizon is commonly red to yellowish red, but ranges to yellowish brown. It has a few yellowish brown or strong brown mottles in the lower part in some profiles. The B22tcn horizon, which contains 10 to 25 percent plinthite, begins at a depth of 10 to 22 inches. The mottled B23t horizon contains about 15 to 35 percent plinthite and begins at a depth of about 18 to 36 inches. The small ironstone nodules are ⅛ to 1 inch in diameter. They make up about 5 to 25 percent of all horizons, except for the B23t horizon which generally contains less than 5 percent ironstone nodules. The light gray mottles in the B23t horizon do not appear to indicate wetness but relate to parent material.

Sunsweet soils commonly occur among the Tifton, Faceville, and Greenville soils. They are similar to Tifton soils except that the firm plinthic horizon (fig. 5) occurs at a depth of less than 22 inches. Sunsweet soils are similar to Faceville soils in color, but contain more than 5 percent plinthite and ironstone modules. They are less red throughout the profile than Greenville soils, which lack plinthite.

**SuC2—Sunsweet sandy loam, 2 to 8 percent slopes, eroded.** This is a well drained pebbly soil. It has the profile described as representative of the Sunsweet series. In many places the subsoil has been exposed by erosion and a few shallow gullies and rills have formed.

Included with this soil in mapping are small areas of Tifton soils and small areas of a similar soil in which the firm, intensively mottled part of the subsoil is within 8 inches of the surface. Also included is a small acreage of soils that are similar to Sunsweet soils but have a dark reddish brown surface layer and a dark red, intensively mottled, firm, sandy clay or clay subsoil.

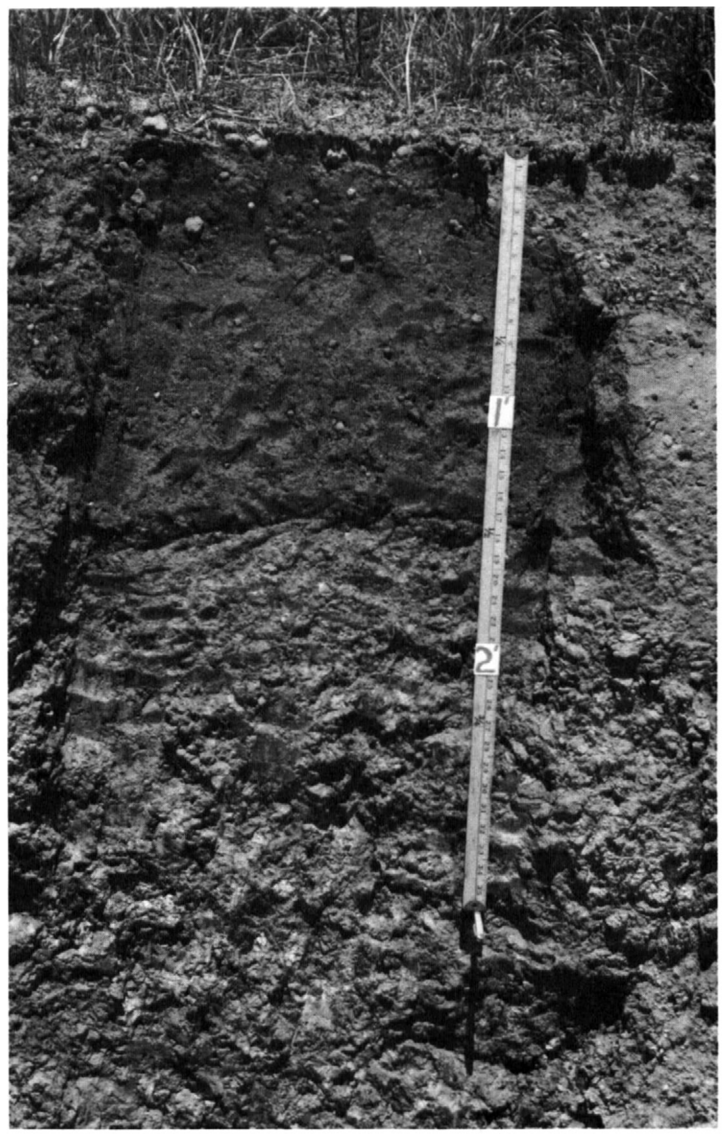



*Figure 5.*—**Profile of Sunsweet sandy loam, 2 to 8 percent slopes, eroded, shows plinthic horizon at a depth of about 15 inches.**

This soil is poorly suited to row crops because the erosion hazard in unprotected cultivated fields is severe and the root zone is only moderately deep. It is better suited to permanent vegetation. Most of the acreage is idle or in woodland.

If the soil is cultivated, intensive erosion control is needed. This can be done by cultivating on the contour, with or without terraces, or by stripcropping. The best method depends on the crops grown and the extent of the soil limitations.

The steepness and length of slopes or the erosion-control practices used determine the minimum cropping system needed. A suitable cropping system for a 5 percent slope that is 100 feet long and is cultivated on the contour is corn for 2 years followed by bahiagrass for 4 years. All plant residue should be left on the surface between seasons of crop production.

Turning under crop residue and including cover crops in the rotation are ways to maintain organic-matter content and to increase the available water capacity. Because of its slope and clayey subsoil this soil is not suited to irrigation. Capability unit IVe-4; woodland group 3c2.

**SuD2—Sunsweet sandy loam, 8 to 12 percent slopes, eroded.** This is a well drained, pebbly soil on hillsides near drainageways and streams. Most mapped areas have many places where the subsoil is exposed by erosion. A few shallow and deep gullies have formed in many areas.

Included with this soil in mapping are small areas of similar soils in which the firm, intensively mottled part of the subsoil is within 8 inches of the surface. Also included is a small acreage of a similar soil that has a dark reddish brown surface layer and a dark red, firm, intensively mottled, sandy clay or clay subsoil; slopes range up to 17 percent.

This soil is generally not suited to row crops because it is steep and has a clayey subsoil. Erosion is a very severe hazard in unprotected cultivated fields. The soil is suited to woodland and, if properly managed, to pasture. Most of the acreage is in woodland or is idle. Capability unit VIe-2; woodland group 3c2.

## Tifton Series

The Tifton series consists of well drained, pebbly, level to gently sloping soils on smooth, broad uplands. These soils formed in loamy sediment and occur throughout Lee and Terrell counties. Native vegetation was mainly pines, red oaks, and hickory trees. Slope ranges from 0 to 8 percent.

In a representative profile the surface layer is brown sandy loam 5 inches thick. The subsoil is sandy loam or sandy clay loam to a depth of 42 inches. To a depth of 65 inches it is sandy clay loam and sandy clay that is mottled in shades of brown, red, and gray. The subsoil is brown in the upper part, strong brown in the middle part, and yellowish brown in the lower part. Ironstone pebbles are scattered throughout the upper part of the profile, and plinthite is in the lower part.

Natural fertility is moderate to low, and the content of organic matter is low. These soils are strongly acid to very strongly acid throughout. The root zone is thick. Permeability is moderate, and the available water capacity is medium. Tilth is generally good; it is fair where the subsoil is exposed.

The less sloping Tifton soils are some of the better soils in the area for farming. They are well suited to the locally grown crops, pasture plants, and pine trees. Most of the acreage is in crops or pasture.

Representative profile of Tifton sandy loam, 2 to 5 percent slopes, eroded, 1.1 miles east on Georgia Highway 32 from Chickasawhatchee Creek, 1.2 miles northeast on a paved county road, along the north side of the road cut at the edge of a cultivated field in the central part of Terrell County:

Apcn—0 to 5 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; common fine roots; 12 percent small hard ironstone nodules; mixture of a few small bits of B1 horizon; strongly acid; clear smooth boundary.

B1cn—5 to 9 inches; brown (7.5YR 4/4) sandy loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; common fine roots; common medium and fine pores; 8 percent small ironstone nodules; strongly acid; clear smooth boundary.

B21tcn—9 to 32 inches; strong brown (7.5YR 5/6) sandy loam; moderate medium subangular blocky structure; friable; patchy clay films in some root holes, around the ironstone nodules, and on faces of peds; few fine roots; many fine pores; 8 percent small ironstone nodules; strongly acid; gradual wavy boundary.

B22tcn—32 to 42 inches; yellowish brown (10YR 5/6) sandy clay loam; few medium prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; patchy clay films on some ped faces, in root holes, and around small ironstone nodules; few fine roots, few fine pores; 5 percent small ironstone nodules; 5 to 8 percent plinthite by volume; strongly acid; gradual wavy boundary.

B23t—42 to 65 inches; mottled yellowish brown (10YR 5/6), red (2.5YR 4/6), light gray (10YR 7/1), and strong brown (7.5YR 5/6) sandy clay loam with streaks of clay; strong medium and coarse angular blocky structure; firm; patchy clay films on most ped faces, in root holes, in pores, and around the ironstone nodules; few fine roots in gray areas; few fine pores; 2 percent small ironstone nodules; 25 to 35 percent soft plinthite; strongly acid.

The solum is 65 to 75 inches or more thick. The Apcn horizon is brown, dark grayish brown, or grayish brown sandy loam or loamy sand. In some of the eroded areas, plowing has mixed the original A horizon with the upper part of the B horizon and the color ranges to strong brown. The Btcn horizon is brown, strong brown, brownish yellow, or yellowish brown sandy loam or sandy clay loam 3 to 5 inches thick; some profiles do not have a Btcn horizon. The B21tcn and the B22tcn horizons are strong brown or yellowish brown. The B2t horizons are commonly mottled with shades of brown and red beginning at a depth of about 24 to 30 inches. The depth to the B23t horizon, which is 5 to 35 percent plinthite, is commonly 40 inches but ranges from 30 to 50 inches. The B23t horizon ranges in texture from sandy clay loam to sandy clay with streaks of sandy loam. The small ironstone nodules are ⅛ to ¾ inch in diameter and make up about 5 to 25 percent, by volume, of all horizons except the B23t horizon, which generally contains a smaller amount.

Tifton soils commonly occur with Greenville, Faceville, Irvington, and Sunsweet soils. They have a lighter colored, less reddish A horizon and a less red B horizon than Greenville soils. Tifton soils contain more than 5 percent ironstone nodules and plinthite, but Greenville and Faceville soils either contain less than 5 percent or none at all. Tifton soils are well drained, and Irvington soils are moderately well drained. They have plinthite-free horizons to a greater depth than Sunsweet soils, which contain more than 5 percent plinthite at a depth of 18 inches or less and have a clayey B horizon.

**TfA—Tifton loamy sand, 0 to 2 percent slopes.** This is a well drained, pebbly soil. It has a profile similar to the one described as representative of the Tifton series, but the surface layer is generally 7 to 10 inches thick and is loamy sand. In a few places, the plow layer extends into the upper part of the subsoil.

Included with this soil in mapping are small areas of Norfolk and Faceville soils. Also included are soils similar to Tifton loamy sand except that they have a sandy loam surface layer.

This is one of the better soils in the area for farming. It is cultivated extensively and is well suited to most of the locally grown crops. Crops respond well to fertilizer and good management. This soil is also well suited to pasture and pine trees.

This soil can be tilled intensively, because there is no significant erosion hazard. Any suitable crop can be grown year after year if enough plant residue is returned to the soil to maintain good tilth. A planned sequence of crops helps control weeds, insects, and plant disease and increases the effectiveness of fertilizer. Turning under all crop residue and including cover crops in the rotation help maintain the organic-matter content and increase the available water capacity.

This soil is well suited to sprinkler irrigation. Row crops and pasture plants need supplemental applications of water during prolonged dry periods. Deep wells are a potential source of water. Capability unit I-2; woodland group 2o1.

**TsB2—Tifton sandy loam, 2 to 5 percent slopes, eroded.** This soil is the one described as representative of the Tifton series. Moderate erosion has thinned the original surface layer; the surface layer generally is 4 to 8 inches thick. The plow layer extends into the upper part of the subsoil in many places, and patches where the subsoil is exposed by erosion are common. A few shallow gullies and rills have formed in some areas. In a few places the surface layer is loamy sand.

Included with this soil in mapping are small areas of a similar soil that is only slightly eroded. Also included are small areas of Faceville and Orangeburg soils.

This soil is extensively cultivated because it is well suited to most of the locally grown crops. It is also well suited to pasture plants and pine trees. Because there is a moderate erosion hazard in unprotected cultivated fields, erosion-control practices are needed if the soil is cultivated.

The soil should be managed to hold soil losses from erosion within allowable limits. The methods of doing this depend on the crops grown and the extent of the soil limitations. Cultivating straight rows; cultivating on the contour, with or without terraces; and stripcropping help to control erosion. The steepness and length of slopes or the erosion-control method used determine the minimum cropping system needed. A suitable cropping system for 3 percent slopes that are terraced and farmed on the contour is a 3-year rotation of 1 year of cotton followed by 1 year of corn ("slit" planted) and then 1 year of peanuts followed by small grain for cover. All plant residue should be left on the surface between crops.

Organic matter is depleted at a moderately rapid rate even if management is good. Turning under crop residue and including cover crops in the rotation help to maintain the organic-matter content and to increase the available water capacity.

This soil is suited to sprinkler irrigation. Row crops and pasture grasses need supplemental applications of water during prolonged dry periods. Deep wells are a potential source of water. Capability unit IIe-2; woodland group 2o1.

**TsC2—Tifton sandy loam, 5 to 8 percent slopes, eroded.** This is a well drained, pebbly, gently sloping soil. It has a profile similar to the one described as representative of the Tifton series, but erosion has thinned the original surface layer. The surface layer is 4 to 6 inches thick in most places. The plow layer extends into the upper part of the subsoil in many places and patches where the subsoil is exposed are common. A few shallow gullies and rills have formed in many areas, and deep gullies have formed in a few areas.

Included in mapping are small areas of Faceville and Sunsweet soils. Slope ranges to 12 percent in a few places along some of the small drainageways and streams.

This soil is suited to most of the locally grown crops, and some of it is cultivated. Erosion is a severe hazard in unprotected cultivated fields, however, and conservation practices are more difficult to apply and maintain on this soil than on less sloping soils. Much of the acreage is in pasture and pine trees; this soil is well suited to these uses.

The soil should be managed to hold soil losses from erosion within allowable limits. This can be done by cultivating on the contour, with or without terraces, or by stripcropping. The method used to control erosion depends on the crops grown and the extent of the soil limitations. The steepness and length of slope or the erosion control method determine the minimum cropping system needed. For slopes of 6 percent that are 150 feet long, a suitable cropping system is 6 years of grass, such as bahiagrass, followed by 3 years of cotton planted in contoured rows. All plant residue should be left on the surface between cropping seasons.

Turning under crop residue and including cover crops in the rotation help to maintain organic-matter content and increase the available water capacity. Because of slope, this soil is not generally suited to irrigation. Capability unit IIIe-2; woodland group 2o1.

## Troup Series

The Troup series consists of well drained, sandy soils on smooth, broad divides on uplands. These soils occur adjacent to some of the larger streams in Lee and Terrell Counties. They formed in sandy and loamy sediment, and are scattered throughout the two counties. Native vegetation was mainly hawthorn bushes, scrub oaks, and pine trees. Slope ranges from 0 to 12 percent.

In a representative profile the surface layer is dark grayish brown sand, 6 inches thick. The subsurface layer is sand and extends to a depth of 68 inches; it is yellowish brown in the upper part, light yellowish brown in the middle part, and yellowish brown in the lower part. The subsoil to a depth of 77 inches is friable, yellowish brown sandy loam.

These soils are low in natural fertility, low in content of organic matter, and are strongly acid to very strongly acid throughout. Permeability is moderate, and the available water capacity is low. Tilth is good, and the root zone is deep.

These soils are poorly suited to cultivated crops and to pasture plants because they are droughty and plant nutrients leach readily. Most of the acreage is planted to pine trees or is in natural vegetation; some is cultivated or pastured.

Representative profile of Troup sand, in an area of Troup soils, 0 to 8 percent slopes, ½ mile west of Lake Blackshear and ¼ mile south of the Lee-Sumter County line; in northeast Lee County:

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) sand; single grained; loose; few fine roots; very strongly acid; clear smooth boundary.

A21—6 to 24 inches; yellowish brown (10YR 5/4) sand; single grained; loose; few fine roots; most sand grains coated with fines; very strongly acid; gradual smooth boundary.

A22—24 to 38 inches; light yellowish brown (10YR 6/4) sand; single grained; loose; few fine roots; most sand grains coated with fines; few coarse sand grains; very strongly acid; gradual smooth boundary.

A23—38 to 68 inches; yellowish brown (10YR 5/8) sand; single grained; loose; few fine roots; most sand grains coated with fines; many coarse sand grains uncoated; very strongly acid; gradual smooth boundary.

B2t—68 to 77 inches; yellowish brown (10YR 5/8) sandy loam; weak medium subangular blocky structure; friable; clay coating and bridging on most sand grains; very strongly acid.

The Ap or A1 horizon ranges from brown to very dark grayish brown and yellowish brown sand, 4 to 10 inches thick. The A2 horizon is reddish yellow, brownish yellow, yellowish brown, and light yellowish brown to yellowish red sand. Most of the sand grains are coated, and the silt and clay content ranges from 5 to 10 percent. The A2 horizon is commonly about 65 inches thick but ranges from 42 to 72 inches. The B2t horizon ranges from red to yellowish brown sandy loam or sandy clay loam.

Troup soils occur among the Lucy, Fuquay, and Americus soils. They are sandy to greater depths than those soils.

**TwC—Troup soils, 0 to 8 percent slopes.** This mapping unit consists of Troup soils and a similar sandy soil. These soils do not occur in every mapped area in a repeating pattern, but one or both are in each area. Troup soils make up about 60 percent of each area. Mapping the Troup soils and similar soils separately would serve no purpose, because all areas have similar limitations for use. Areas are commonly large and range to about 100 acres.

The Troup soils have the profile described as representative of the series. The similar sandy soil is sandy to a slightly greater depth than Troup soils. The minor soils that are included in mapping consist of small areas of Americus and Lucy soils.

Most locally grown crops and pasture plants can be grown on these soils, but plant response is only fair because the soils are sandy and droughty. Response is fair to fertilizer and good management if moisture is adequate. These soils are also suited to pines. Most of the acreage is in woodland; but some is cultivated and pastured.

Erosion is not a significant hazard on these soils. Lack of moisture in summer frequently causes crop damage and sometimes crop loss. Organic matter is depleted at a rapid rate; therefore, if cultivated crops are grown, large amounts of crop residue should be returned to the soil. A cropping sequence that includes perennial grasses is most beneficial. Mulch-planted corn that is grown year after year is also suitable. All plant residue should be left on the surface between seasons of crop production. Split applications of fertilizer increase its effectiveness.

The less sloping areas of these soils can be sprinkler irrigated. Row crops and pasture plants need supplemental applications of water during prolonged dry periods. Capability unit IVs-1; woodland group 3s2.

**TwD—Troup soils, 8 to 12 percent slopes.** This mapping unit is on narrow side slopes adjacent to streams and drainageways. It is an undifferentiated unit consisting of well drained Troup soils and a similar sandy soil. These soils do not occur in every mapped area in a repeating pattern, but one or both are in each area. The proportion of soils is generally about 55 percent Troup soils and 35 percent similar soils. The rest is minor soils. Mapping the soils separately would serve no purpose because their use and management are similar.

The Troup soils have a profile similar to the one described as representative of the series, but the slope is greater. The other soil is similar to Troup soils but is sandy to a slightly greater depth.

Included in the mapping were a few small, narrow areas of similar soils that have slopes of up to 30 percent.

These soils are generally not suited to cultivated crops because they are sandy, droughty, and strongly sloping. The slope causes a severe gullying hazard in unprotected cultivated fields. The soils are suited to properly managed pasture and woodland. Plants suitable for pasture are bahiagrass and bermudagrass. Most of the acreage is in woodland. Capability unit VIs-1; woodland group 3s2.

## *Use and Management of the Soils*

This section describes the use and management of soils in Lee and Terrell Counties. It discusses the management of soils used for crops and pasture, for woodland, for wildlife, for recreation, and in engineering. It also explains the system of capability classification used by the Soil Conservation Service. The capability classification of each soil mapped in the counties is listed in the "Guide to Mapping Units." Information about management is given in the section "Descriptions of the Soils."

New technology, improved techniques, and economic changes must be considered in applying these interpretations because they affect the alternative use and management of the soils. Changes in the behavior of soils under new and different management techniques are not unusual and should be anticipated.

## Management for Crops

This section discusses general management practices and describes the system of capability classification. Suitability for plants and suitable cropping systems are indicated for each mapping unit.

Management of the soils in Lee and Terrell Counties is needed mainly to control erosion and excess water and to maintain good tilth and soil productivity.

Many of the soils in the two counties, such as Greenville and Tifton soils, are susceptible to erosion. The degree of susceptibility depends on the type of soil, the frequency and intensity of rainfall, and the steepness and length of slopes. These factors determine whether straight rows, contour cultivation with or without terraces, or stripcropping should be used. The more gently sloping soils may need contour cultivation and a cropping system that provides medium to large amounts of crop residue. Steep or sloping soils may need a combination of straight row farming, contour farming without terraces, or stripcropping and a cropping system that includes annual close growing crops, crops that produce a large amount of residue, or perennial crops. A grassed waterway or outlet is needed no matter which method is used.

The main requirements of some of the soils, especially sandy ones, are the return of large amounts of crop residue to the soil and proper management of this residue. Cropping sequences that include perennial grasses or legumes are beneficial. Stripcropping and contour cultivation are important on sandy soils.

Excess water is the main limitation to the use of several soils, such as the Goldsboro and Ocilla soils. The drainage needed depends on the amount of water in the soil and the kinds of crops grown. After the water is controlled, management practices that maintain productivity and good tilth are needed.

Several practices help maintain soil productivity and good tilth and control soil loss. These include the regular application of lime and fertilizer according to plant needs as indicated by soil tests; the return of crop residue, usually by shredding and leaving the residue on the surface between seasons of crop production; and a suitable cropping system.

There are several complementary practices. Grassed waterways or outlets are essential for diverting runoff from fields cultivated in straight rows, contour farmed, terraced, or stripcropped. A field border of perennial grass controls erosion along the edge of fields and reduces weed growth. It is also attractive and makes the operation of farm equipment easier. Farm roads and fences should be on the crest of slopes, where the watershed divides, or on the contour. Fences should be in or adjacent to natural waterways. The location of farm roads and fences should permit a field and row arrangement that makes farming easier.

## Capability Grouping

Some readers, particularly those who farm on a large scale, may find it practical to use and manage alike some of the different kinds of soil on their farm. These readers can make good use of the capability classification system, a grouping that shows, in a general way, the suitability of soils for most kinds of farming.

The grouping is based on permanent limitations of soils when used for field crops, the risk of damage when they are farmed, and the way the soils 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.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations for woodland or for engineering.

In the capability system, all kinds of soil are grouped at three levels: the class, the subclass, and the unit. The broadest grouping, the capability class, is designated by Roman numerals I to VIII. In class I are the soils that have the fewest limitations, the widest range of use, and the least risk of damage when they are used. The soils in the other classes have progressively greater natural limitations. In class VIII are soils and land forms so rough, shallow, or otherwise limited that they do not produce worthwhile yields of crops, forage, or wood products. The subclass indicates major kinds of limitations within the classes. Within most of the classes there can be up to 4 subclasses. The subclasses are indicated 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" means 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" indicates 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 or no limitations. Class V can contain, at the most, only subclasses w, s, and c, because the soils are subject to little or no erosion but have other limitations that confine their use largely to pasture or wildlife.

Subclasses are further divided into groups called capability units. These are groups of soils that are so much alike that they are suited to the same crops and pasture plants; they require about the same management and have generally similar productivity and other response to management. Capability units are generally identified by numbers assigned locally, for example, IIe-1 and IIe-2.

The eight classes in the capability system and the subclasses and units in the survey area are described in the list that follows.

Class I soils have few limitations that restrict their use.
- Unit I-1. Nearly level, well drained soils that have a sandy surface layer and a loamy subsoil.
- Unit I-2. Level, well drained soils that have a sandy or loamy surface layer and a loamy or clayey subsoil.

Class II soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.
- Subclass IIe. Soils subject to moderate erosion if not protected.
  - Unit IIe-1. Very gently sloping, well drained soils that have a sandy or loamy surface layer and a loamy subsoil.
  - Unit IIe-2. Very gently sloping, well drained soils that have a loamy surface layer and a loamy or clayey subsoil.
- Subclass IIw. Soils that have moderate limitations because of excess water.
  - Unit IIw-1. Level, well drained, loamy soils along small drainageways and in slight depressions.
  - Unit IIw-2. Level, moderately well drained soils that have a sandy surface layer and a loamy subsoil.
- Subclass IIs. Sandy soils that have moderate limitations because of low available water capacity.
  - Unit IIs-1. Level to very gently sloping, well drained soils that have thick sandy material over a loamy subsoil.

Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.
- Subclass IIIe. Soils subject to severe erosion if they are cultivated and not protected.
  - Unit IIIe-1. Gently sloping, well drained, eroded soils that have a loamy surface layer and subsoil.
  - Unit IIIe-2. Gently sloping, well drained, slightly eroded and eroded soils that have a loamy surface layer and a loamy or clayey subsoil.
- Subclass IIIw. Soils that have severe limitations because of excess wetness.
  - Unit IIIw-1. Level, somewhat poorly drained soils that have thick sandy material over a loamy subsoil.
- Subclass IIIs. Sandy soils that have severe limitations because of low available water capacity.
  - Unit IIIs-1. Level to gently sloping, well drained and somewhat excessively drained soils that have sandy material over a loamy subsoil.

Class IV soils have very severe limitations that reduce the choice of plants and require careful management.
- Subclass IVe. Soils subject to very severe erosion if they are cultivated and not protected.
  - Unit IVe-2. Gently sloping to sloping, well drained, eroded soils that have a loamy surface layer and a clayey subsoil.
  - Unit IVe-4. Very gently sloping to gently sloping, slightly eroded and eroded soils that have a loamy surface layer and a firm clayey subsoil.
- Subclass IVs. Sandy soils that have very severe limitations because of low available water capacity.
  - Unit IVs-1. Level to gently sloping, somewhat excessively drained and well drained sandy soils.

Class V soils are not likely to erode, but they have other characteristics that limit their use largely to pasture, woodland, or wildlife food and cover.
- Subclass Vw. Soils too wet for cultivation; drainage or protection is not feasible.
  - Unit Vw-1. Level, very poorly drained soils that have a loamy surface layer and a clayey subsoil.
  - Unit Vw-2. Level, poorly drained soils that have a loamy or sandy surface layer and a sandy or loamy subsoil or underlying layers.
  - Unit Vw-3. Level, poorly drained soils that have a loamy surface layer and subsoil.

Class VI soils have very severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture, woodland, or wildlife food and cover.
- Subclass VIe. Soils subject to very severe erosion if they are not protected by perennial cover.
  - Unit VIe-2. Sloping, well drained, eroded soils that have a loamy surface layer and a firm, clayey subsoil.
- Subclass VIw. Soils that are severely limited, mainly because of wetness.
  - Unit VIw-1. Level, very poorly drained soils that have a loamy surface layer and underlying layers that are medium to high in organic-matter content; on flood plains.
- Subclass VIs. Sandy soils that have very severe limitations because of low available water capacity and slope.
  - Unit VIs-1. Sloping, well drained soils that are sandy to a depth of about 42 to 72 inches.

Class VII soils have very severe limitations that make them unsuited to cultivation and restrict their use largely to limited grazing, woodland, or wildlife. (There are no Class VII soils in Lee and Terrell Counties.)

Class VIII soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, water supply, or esthetic purposes. (There are no Class VIII soils in Lee and Terrell Counties.)

## Estimated Yields

Table 2 shows for each soil in the survey area the estimated average yields of the principal crops and pasture grasses. The yields listed are those that can be expected under improved management that does not include irrigation. They are based mainly on observations made during the survey, on information from farmers and others familiar with the soils and crops of the counties, and on records of crop yields.

The management needed to get the yields listed in table 2 consists of the following:

1. Carefully choosing the crop and the cropping system for a particular soil.
2. Preparing a good seedbed.
3. Using proper methods of planting and seeding.
4. Inoculating legumes.
5. Planting high-yielding varieties of crops and hybrids.
6. Seeding at recommended rates and at proper times.
7. Controlling weeds, insects, and plant diseases.
8. Removing excess water by drainage.
9. Providing grassed waterways.
10. Tilling on the contour or building terraces where needed.
11. Using liberal amounts of lime and fertilizer where needed.

The following paragraphs give the rates of fertilization and seeding and list other practices required to obtain the yields given in table 2. All amounts of seed and fertilizer are on a per acre basis.

*Corn* receives 100 to 160 pounds of nitrogen, 50 to 70 pounds of phosphoric acid, and 75 to 105 pounds of potash. The crop is seeded at a rate that produces 16,000 to 18,000 plants per acre. All crop residue is returned to the soil, and winter cover crops are turned under.

TABLE 2.—*Estimated average yields per acre of principal crops*

[Yields are those expected under improved management that does not include irrigation. Dashes indicate that the crop is not suited to the soil or is not commonly grown on it]

| Soil | Corn | Peanuts (runner) | Cotton (lint) | Soybeans | Coastal bermudagrass | | Bahiagrass pasture |
|---|---|---|---|---|---|---|---|
| | | | | | Hay | Pasture | |
| | *Bu* | *Lb* | *Lb* | *Bu* | *Tons* | *AUM*[1] | *AUM*[1] |
| Americus sand, 0 to 5 percent slopes | 55 | 2,000 | 450 | 22 | 4.0 | 7.5 | 5.5 |
| Americus sand, 5 to 8 percent slopes | 45 | 1,800 | 400 | 18 | 4.0 | 7.5 | 5.0 |
| Borrow pits | | | | | | | |
| Faceville sandy loam, 0 to 2 percent slopes | 100 | 3,200 | 850 | 45 | 6.0 | 10.5 | 7.5 |
| Faceville sandy loam, 2 to 5 percent slopes, eroded | 95 | 3,200 | 850 | 45 | 6.0 | 10.5 | 7.5 |
| Faceville sandy loam, 5 to 8 percent slopes, eroded | 85 | 2,800 | 700 | 32 | 6.0 | 9.5 | 6.0 |
| Fuquay loamy sand, 1 to 5 percent slopes | 75 | 2,800 | 650 | 27 | 5.0 | 8.5 | 7.5 |
| Goldsboro loamy sand, 0 to 2 percent slopes | 115 | 3,600 | 700 | 43 | 6.5 | 10.5 | 9.5 |
| Grady soils | | | | | | | 5.5 |
| Greenville sandy loam, 0 to 2 percent slopes | 100 | 3,600 | 825 | 45 | 6.5 | 10.5 | 8.5 |
| Greenville sandy loam, 2 to 5 percent slopes | 95 | 3,600 | 800 | 40 | 6.5 | 10.5 | 8.5 |
| Greenville sandy loam, 5 to 8 percent slopes | 80 | 2,600 | 700 | 32 | 6.0 | 9.5 | 8.0 |
| Greenville sandy clay loam, 5 to 12 percent slopes, eroded | | | | | 4.5 | 8.0 | 7.5 |
| Henderson cherty sandy loam, 2 to 8 percent slopes | | | | 28 | 3.6 | 6.0 | 7.0 |
| Herod and Muckalee soils | | | | | | | 7.0 |
| Irvington loamy sand, 0 to 2 percent slopes | 100 | 3,000 | 700 | 40 | 6.5 | 10.5 | 9.5 |
| Johnston soils | | | | | | | |
| Kinston and Bibb soils | | | | | | | 7.0 |
| Lucy loamy sand, 0 to 5 percent slopes | 75 | 2,500 | 650 | 25 | 5.0 | 8.5 | 7.5 |
| Lucy loamy sand, 5 to 8 percent slopes | 70 | 2,200 | 600 | 20 | 5.0 | 8.0 | 7.5 |
| Norfolk loamy sand, 0 to 2 percent slopes | 105 | 3,500 | 750 | 45 | 6.5 | 10.5 | 8.5 |
| Norfolk loamy sand, 2 to 5 percent slopes | 105 | 3,500 | 750 | 45 | 6.5 | 10.5 | 8.5 |
| Ocilla loamy sand | 70 | 2,000 | | 32 | 5.0 | 8.0 | 7.5 |
| Orangeburg loamy sand, 0 to 2 percent slopes | 100 | 3,600 | 800 | 45 | 6.5 | 10.5 | 8.5 |
| Orangeburg loamy sand, 2 to 5 percent slopes | 95 | 3,600 | 800 | 45 | 6.5 | 10.5 | 8.5 |
| Orangeburg sandy loam, 5 to 8 percent slopes, eroded | 85 | 2,800 | 700 | 35 | 6.0 | 10.0 | 8.0 |
| Pelham loamy sand | | | | | | | 6.0 |
| Rains sandy loam | | | | | | | 8.0 |
| Red Bay loamy sand, 0 to 2 percent slopes | 90 | 3,500 | 750 | 45 | 6.5 | 10.5 | 8.5 |
| Red Bay sandy loam, 2 to 5 percent slopes | 90 | 3,200 | 750 | 45 | 6.5 | 10.5 | 8.5 |
| Red Bay sandy loam, 5 to 8 percent slopes, eroded | 85 | 2,800 | 700 | 35 | 6.0 | 10.0 | 8.0 |
| Riverview soils | 85 | | | 35 | 5.5 | 9.0 | 7.5 |
| Sunsweet sandy loam, 2 to 8 percent slopes, eroded | 65 | | 500 | 25 | 4.5 | 8.0 | 8.0 |
| Sunsweet sandy loam, 8 to 12 percent slopes, eroded | | | | | 3.0 | 4.5 | 4.5 |
| Tifton loamy sand, 0 to 2 percent slopes | 100 | 3,600 | 850 | 45 | 6.5 | 10.5 | 9.5 |
| Tifton sandy loam, 2 to 5 percent slopes, eroded | 95 | 3,600 | 950 | 45 | 6.5 | 10.5 | 8.5 |
| Tifton sandy loam, 5 to 8 percent slopes, eroded | 85 | 2,800 | 700 | 35 | 6.0 | 10.0 | 8.0 |
| Troup soils, 0 to 8 percent slopes | 57 | 2,200 | | 20 | 4.0 | 7.0 | 6.0 |
| Troup soils, 8 to 12 percent slopes | | | | | 3.0 | 6.0 | 5.5 |

[1] AUM stands for animal-unit-month, a term used to express the carrying capacity of pasture. It is the number of months during the year (or grazing season, depending on climate) that 1 acre will provide grazing for 1 animal unit (1,000 pounds live weight, or 1 cow, horse, or mule, 5 hogs, or 7 sheep) without damage to the pasture.

*Peanuts* receive 12 to 20 pounds of nitrogen, 40 to 50 pounds of phosphoric acid, and 60 to 75 pounds of potash. A side dressing of 400 to 500 pounds of gypsum also is applied. The planting rate is 80 to 100 pounds of treated, shelled seed per acre.

*Cotton* receives 60 to 120 pounds of nitrogen, 50 to 80 pounds of phosphoric acid, and 75 to 120 pounds of potash at planting time. Planting is at a rate that provides 40,000 to 60,000 plants per acre. Disease and insects are effectively controlled.

*Soybeans* receive 0 to 20 pounds of nitrogen, 20 to 50 pounds of phosphoric acid, and 60 to 100 pounds of potash. The planting rate is 1 bushel per acre.

*Coastal bermudagrass* grown for hay or pasture receives 25 to 50 pounds of nitrogen, 50 to 70 pounds of phosphoric acid, and 100 to 200 pounds of potash early in spring. An additional 75 to 150 pounds of nitrogen is applied early in summer. Every 3 to 5 years, 1 ton of lime is added, or lime is applied according to needs indicated by soil tests. The planting rate is 14,000 sprigs per acre. Fertilizer applications are adjusted to the stocking rate.

*Bahiagrass* grown for hay or pasture receives 25 to 50 pounds of nitrogen, 50 to 70 pounds of phosphoric acid, and 60 to 90 pounds of potash towards the end of winter. An additional 50 to 90 pounds of nitrogen is applied early in summer. Every 3 to 5 years, 1 ton of lime is added per acre, or lime is applied according to the needs indicated by soil tests. The planting rate is 15 pounds of broadcast seed per acre.

*Figure 6.*—**A thinned stand of 14-year-old pines on Faceville sandy loam, 0 to 2 percent slopes.**

## Woodland[2]

The soils of Lee and Terrell Counties have been placed in woodland suitability groups to assist those who plan to use these soils for wood crops (fig. 6). Each group is made up of soils that are suited to the same kinds of trees, that need about the same management in areas of similar vegetation, and that have the same potential production.

Each woodland group is identified by a three-part symbol, for example, 1o7, 2o1, or 3s2. Potential productivity is indicated by the first number in the symbol: 1, very high; 2, high; 3, moderately high. These ratings are based on field determination of average site class. The site class of a given soil is the average height in feet of dominant trees in a stand at specified ages—age 30 for cottonwood, 35 for sycamore, 25 for planted pines, and 50 for all other species or types.

The second part of the symbol is a small letter. This survey uses *w, c, s,* and *o*. Except for the *o*, the small letter indicates a soil property that creates a hazard or limits management of the soils for trees. The letter *o* indicates that the soils have few limitations. The letter *w* indicates excessive wetness, either seasonal or year round; these soils have restricted drainage, have a high water table, or are subject to flooding. The letter *c* means that a clayey characteristic limits the use of the soils for woodland. The letter *s* indicates that sandy soils have little or no difference in texture between surface layer and subsoil. These soils have slight to moderate limitations for woodland use, a low available water capacity, and a low content of available plant nutrients.

The last part of the symbol, another number, differentiates woodland suitability groups that have the same first and second parts in their identifying symbol. Management requirements of soils in woodland group 2w3, for example, are different from those of soils in group 2w9.

Table 3 gives the potential productivity of each woodland suitability group in the counties and lists suitable trees to plant in each group. The groups are also rated for various management hazards or limitations. These ratings are slight, moderate, or severe, and they are described in the following paragraphs.

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

Equipment limitations are soil characteristics that restrict or inhibit the use of harvesting equipment, either seasonally or continually. *Slight* means that neither the kind of equipment nor the time of year it is used is restricted. *Moderate* means that use of

[2] W. P. THOMPSON, forester, Soil Conservation Service, helped prepare this section.

TABLE 3.—*Woodland management and productivity*

[Borrow pits was not assigned to a woodland suitability group]

| Woodland suitability group and soils | Potential productivity | | Management concerns | | | Trees to plant |
|---|---|---|---|---|---|---|
| | Species | Site class | Erosion hazard | Equipment limitation | Seedling mortality | |
| 1o7. Well drained soil that has a loamy surface layer and a loamy subsoil; along drainageways or in slight depressions; suitable for broadleaf trees and southern pines.<br>Riverview: Ro | Loblolly pine<br>Slash pine<br>Sweetgum<br>Water oak<br>Yellow-poplar<br>Sycamore | 90<br>90<br>100<br>90<br>110<br>90 | Slight | Slight | Slight | Slash pine, loblolly pine, yellow-poplar, sycamore, cottonwood, black walnut, cherrybark oak, and sweetgum. |
| 1w9[1]. Poorly drained and very poorly drained soils that have a sandy or loamy surface layer and underlying layer; on flood plains; suitable for broadleaf trees and southern pines.<br>Herod and Muckalee: Hm<br>Johnston: Jo<br>Kinston and Bibb: Kb | Slash pine<br>Loblolly pine<br>Water oaks<br>Sweetgum | 100<br>100<br>90<br>100 | Slight | Severe[2] | Severe[2] | Loblolly pine, slash pine, sweetgum, sycamore, and yellow-poplar. |
| 2o1. Well drained soils that have a sandy or loamy surface layer and a loamy subsoil; on uplands; best suited to southern pines.<br>Norfolk: NhA, NhB<br>Orangeburg: OeA, OeB, OeC2<br>Red Bay: RbA, ReB, ReC2<br>Tifton: TfA, TsB2, TsC2 | Loblolly pine<br>Slash pine | 90<br>90 | Slight | Slight | Slight | Slash pine and loblolly pine. |
| 2o7. Moderately well drained, pebbly soil that has a sandy surface layer and a loamy subsoil containing a fragipan or cemented layer; on low uplands; suitable for broadleaf trees and southern pines.<br>Irvington: IgA | Loblolly pine<br>Slash pine<br>Yellow-poplar | 90<br>90<br>110 | Slight | Slight | Slight | Slash pine, loblolly pine, yellow-poplar, sycamore, and black walnut. |
| 2w3. Poorly drained soils that have a loamy or sandy surface layer and a loamy subsoil; in depressions and along drainageways; best suited to southern pines.<br>Pelham: Pe<br>Rains: Ra | Loblolly pine<br>Slash pine | 90<br>90 | Slight | Severe[2] | Severe[2] | Slash pine and loblolly pine. |
| 2w8. Moderately well drained soil that has a sandy surface layer and a loamy subsoil; on low uplands; suitable for broadleaf trees and southern pines.<br>Goldsboro: GoA | Loblolly pine<br>Slash pine<br>Sweetgum<br>Yellow-poplar | 90<br>90<br>90<br>100 | Slight | Moderate | Slight to moderate. | Loblolly pine, slash pine, yellow-poplar, sycamore, sweetgum, black walnut, and cherrybark oak. |
| 2w9[1]. Very poorly drained soil that has a loamy surface layer and a clayey subsoil; in wet depressions; suitable for broadleaf trees, southern pines, and cypress trees.<br>Grady: Gr | Loblolly pine<br>Slash pine<br>Sweetgum | 90<br>90<br>90 | Slight | Severe[2] | Severe[2] | Loblolly pine, slash pine, sweetgum, sycamore, and water oak. |
| 3o1. Well drained soils that have a loamy surface layer and a clayey subsoil; on uplands; best suited to southern pines.<br>Faceville: FeA, FeB2, FeC2<br>Greenville: GsA, GsB, GsC, GtD2<br>Henderson: HdC | Loblolly pine<br>Slash pine | 80<br>80 | Slight | Slight | Slight | Loblolly pine and slash pine. |

See footnote at end of table.

TABLE 3.—*Woodland management and productivity*—Continued

| Woodland suitability group and soils | Potential productivity | | Management concerns | | | Trees to plant |
|---|---|---|---|---|---|---|
| | Species | Site class | Erosion hazard | Equipment limitation | Seedling mortality | |
| 3c2. Well drained soils that have a loamy surface layer and a clayey subsoil; on uplands; best suited to southern pines.<br>Sunsweet: SuC2, SuD2 | Loblolly pine<br>Slash pine | 80<br>80 | Slight | Moderate | Moderate | Slash pine and loblolly pine. |
| 3s2. Well drained to excessively drained soils that have a thick sandy surface layer and a loamy subsoil; on uplands; best suited to southern pines.<br>Americus: ArB, ArC<br>Fuquay: FsB<br>Lucy: LmB, LmC<br>Troup: TwC, TwD | Slash pine<br>Loblolly pine | 80<br>80 | Slight | Moderate | Moderate | Slash pine and loblolly pine. |
| 3w2. Somewhat poorly drained soil that has a thick sandy surface layer and a loamy subsoil; in slight depressions; best suited to southern pines.<br>Ocilla: Oc | Loblolly pine<br>Slash pine | 80<br>80 | Slight | Moderate | Moderate | Slash pine and loblolly pine. |

[1]Tree planting is feasible and potential productivity figures apply only in areas that have adequate surface drainage.
[2]Equipment limitation and seedling mortality are moderate in areas that have adequate drainage.

equipment is restricted for 3 months of the year or less. *Severe* means that special equipment is needed and its use is severely restricted for more than 3 months of the year.

Seedling mortality ratings indicate the degree that the soil affects expected mortality of planted tree seedlings when plant competition is not a limiting factor. 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.

## Wildlife[3]

Food, cover, and water must be available in a suitable combination to support wildlife. This combination varies with the wildlife species. The lack of any one of these elements can severely limit the numbers of wildlife or even exclude certain species from a given area. Generally, because wildlife depend on plants and plants depend on soil fertility, the more productive the soil is for plants, the more favorable it is for wildlife.

Because plant requirements vary, certain soils are more favorable than others for the growth of different plant species. For this reason, soils information helps determine the suitability of land for wildlife management.

Table 4 gives the suitability of all the soils in the survey area for elements of wildlife habitat and kinds of wildlife. Elevation, aspect, and other features of the landscape that influence habitat were not considered in the ratings because they must be appraised onsite.

Table 4 rates the suitability of the soils for wildlife as *good, fair,* or *poor. Good* means that low intensity management is needed to create or improve the habitat. *Fair* means that moderately intense management is needed. If the rating is *poor* it means that it is difficult to create or improve the habitat, and intensive effort is needed to maintain it. *Very poor* means that managing the habitat is impractical, if not impossible.

Special attention is needed in rating the soils for coniferous woody plants. Evidence shows that if growth is slow and canopy closure is delayed, the numbers and kinds of wildlife in coniferous habitat are greater than if growth is rapid. Soil properties, therefore, that promote rapid growth and canopy closure are limitations to the use of the soils for wildlife. Generally those properties that favor the rapid establishment and growth of conifers also favor the establishment of hardwoods, and this causes serious competition between the two species.

The wildlife habitat elements in table 4 are defined in the following paragraphs.

*Grain and seed crops* are agricultural grain or seed producing annuals planted to produce food for wildlife. Examples are corn, sorghum, wheat, oats, millet, soybeans, and proso.

[3] JESSE MERCER, JR., biologist, Soil Conservation Service, helped prepare this section.

TABLE 4.—*Suitability of the soils for elements of wildlife habitat and kinds of wildlife*

| Soil series and map symbol | Elements of wildlife habitat | | | | | | | Kinds of wildlife | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Grain and seed crops | Grasses and legumes | Wild herbaceous plants | Hardwoods | Conifers | Wetland food and cover plants | Shallow water areas | Openland | Woodland | Wetland |
| Americus: ArB, ArC | Fair | Fair | Fair | Fair | Fair | Very poor | Very poor | Fair | Fair | Very poor. |
| Borrow pits: Bp. Not rated; properties too variable. | | | | | | | | | | |
| Faceville: | | | | | | | | | | |
| FeA, FeB2 | Good | Good | Good | Good | Good | Very poor | Very poor | Good | Good | Very poor. |
| FeC2 | Fair | Good | Good | Good | Good | Very poor | Very poor | Good | Good | Very poor. |
| Fuquay: FsB | Fair | Good | Good | Fair | Fair | Poor | Very poor | Good | Fair | Very poor. |
| Goldsboro: GoA | Good | Good | Good | Good | Good | Poor | Poor | Good | Good | Poor. |
| Grady: Gr | Poor | Fair | Fair | Fair | Fair | Good | Good | Fair | Fair | Good. |
| Greenville: | | | | | | | | | | |
| GsA, GsB | Good | Good | Good | Good | Good | Poor | Very poor | Good | Good | Very poor. |
| GsC, GtD2 | Fair | Good | Good | Good | Good | Very poor | Very poor | Good | Good | Very poor. |
| Henderson: HdC | Fair | Good | Good | Good | Fair | Very poor | Very poor | Fair | Good | Very poor. |
| Herod and Muckalee: Hm | Poor | Poor | Fair | Fair | Fair | Good | Fair | Poor | Fair | Fair. |
| Irvington: IgA | Good | Good | Good | Good | Fair | Poor | Poor | Good | Good | Poor. |
| Johnston: Jo | Very poor | Poor | Poor | Poor | Poor | Good | Good | Poor | Poor | Good. |
| Kinston and Bibb: Kb | Very poor | Poor | Poor | Poor | Poor | Good | Fair | Poor | Poor | Fair. |
| Lucy: LmB, LmC | Fair | Good | Good | Fair | Fair | Very poor | Very poor | Good | Fair | Very poor. |
| Norfolk: NhA, NhB | Good | Good | Good | Good | Good | Poor | Very poor | Good | Good | Very poor. |
| Ocilla: Oc | Fair | Fair | Good | Fair | Good | Fair | Fair | Fair | Good | Fair. |
| Orangeburg: | | | | | | | | | | |
| OeA, OeB | Good | Good | Good | Good | Good | Very poor | Very poor | Good | Good | Very poor. |
| OeC2 | Fair | Good | Good | Good | Good | Very poor | Very poor | Good | Good | Very poor. |
| Pelham: Pe | Poor | Poor | Fair | Fair | Fair | Fair | Fair | Poor | Fair | Fair. |
| Rains: Ra | Very poor | Poor | Fair | Fair | Fair | Good | Good | Poor | Fair | Good. |
| Red Bay: | | | | | | | | | | |
| RbA, ReB | Good | Good | Good | Good | Good | Poor | Very poor | Good | Good | Very poor. |
| ReC2 | Fair | Good | Good | Good | Good | Very poor | Very poor | Good | Good | Very poor. |
| Riverview: Ro | Good | Good | Good | Good | Good | Fair | Poor | Good | Good | Fair. |
| Sunsweet: | | | | | | | | | | |
| SuC2 | Fair | Good | Good | Fair | Fair | Very poor | Very poor | Good | Fair | Very poor. |
| SuD2 | Poor | Fair | Good | Fair | Fair | Very poor | Very poor | Fair | Fair | Very poor. |
| Tifton: | | | | | | | | | | |
| TfA, TsB2 | Good | Good | Good | Good | Good | Very poor | Very poor | Good | Good | Very poor. |
| TsC2 | Fair | Good | Good | Good | Good | Very poor | Very poor | Good | Good | Very poor. |
| Troup: TwC, TwD | Poor | Fair | Fair | Fair | Fair | Very poor | Very poor | Fair | Fair | Very poor. |

*Grasses and legumes* are domestic perennial grasses and herbaceous legumes that are established by planting and that furnish food and cover for wildlife. Examples are lovegrass, orchardgrass, reed canarygrass, panicgrass, bahia, white clover, trefoil, annual lespedeza, perennial lespedeza, shrub lespedeza, and sericea lespedeza (fig. 7).

*Wild herbaceous plants* are native or introduced perennial grasses and forbs (weeds) that provide food and cover mostly for upland forms of wildlife. Most are established naturally. Examples are bluestem, wild ryegrass, oatgrass, pokeweed, strawberries, lespedeza, beggarweed, wild beans, nightshade, goldenrod, dandelions, cheatgrass, poorjoe, and ragweed.

*Hardwoods* are nonconiferous trees, shrubs, and woody vines that produce fruits, nuts, buds, catkins, twigs (browse), or foliage used extensively as food by wildlife, and that usually are established naturally but also may be planted. Examples are oak, beech, cherry, hawthorn, dogwood, viburnum, maple, birch, yellow-poplar, grapes, honeysuckle, blueberry, blackberry, greenbriers, autumn-olive, and multiflora rose.

*Conifers* are cone-bearing trees and shrubs that are important to wildlife mainly as cover but that also furnish food in the form of browse, seeds, or fruitlike cones. Plants usually are established naturally but also may be planted. Examples are pine and redcedar.

*Wetland food and cover plants* are annual and perennial, wild herbaceous plants in moist to wet sites, exclusive of submerged or floating aquatics, that produce food or cover extensively and that are used dominantly by wetland forms of wildlife. Examples are smartweed, wild millet, bulrush, spike-sedge, rushes, sedges, burreeds, wild rice, rice cutgrass, mannagrass, and cattails.

*Figure 7.*—**Sericea lespedeza on Faceville sandy loam, 2 to 5 percent slopes, eroded, provides food and cover for wildlife.**

*Shallow water areas* are impoundments or excavations for control of water, generally not more than 6 feet deep. Examples are low dikes and levees, shallow dugouts, level ditches, and devices for water level control in marshy drainageways or channels.

Table 4 rates the soils for three classes of wildlife. *Openland wildlife* includes quail, doves, meadowlarks, field sparrows, cottontail rabbit, fox, and other birds and mammals that normally live in cropland, pasture, meadow, lawns, and in other openland areas where grasses, herbs, and shrubby plants grow. *Woodland wildlife* consists of woodcocks, thrushes, vireos, wild turkey, squirrel, deer, raccoon, and other birds and mammals that normally live in wooded areas where hardwood trees and shrubs and coniferous trees grow. *Wetland wildlife* includes ducks, geese, rails, herons, shore birds, mink, and other birds and mammals that normally live in marshes, swamps, and other wet areas.

Assistance in planning and establishing habitat for wildlife or fish can be obtained from the local office of the Soil Conservation Service.

## Engineering[4]

This section is useful to planning commissions, town and city managers, land developers, engineers, contractors, farmers, and others who need information about soils used as structural material or as foundation on which structures are built.

Among properties of soils important in engineering are permeability, strength, compaction characteristics, drainage, shrink-swell potential, grain size, plasticity, and reaction. Also important are depth to the water table, depth to bedrock, and slope. These properties, in various degrees and combinations, affect construction and maintenance of roads, airports, pipelines, foundations for small buildings, irrigation systems, ponds and small dams, and systems for disposal of sewage and refuse.

Information in this section of the soil survey can be helpful to those who —

1. Select potential residential, industrial, commercial, and recreational areas.
2. Evaluate alternate routes for roads, highways, pipelines, and underground cables.
3. Seek sources of gravel, sand, or clay.
4. Plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for controlling water and conserving soil.
5. Correlate performance of structures already built with properties of the soils on which they are built, to help predict performance of structures on the same or similar kinds of soil in other locations.
6. Predict the trafficability of soils for cross-country movement of vehicles and construction equipment.

[4] PERRY F. DOMINY, civil engineer, Soil Conservation Service, helped prepare this section.

7. Develop preliminary estimates pertinent to construction in a particular area.

Most of the information in this section is presented in tables. Table 5 shows estimated soil properties significant in engineering. Table 6 gives interpretations for various engineering uses. Table 7 shows the results of engineering laboratory tests on soil samples.

This information, along with the soil map and data in other parts of this publication, can be used to make interpretations in addition to those given in tables 5 and 6, and it also can be used to make useful maps.

This information, however, does not eliminate the need for further investigation at sites selected for engineering works, especially works that involve heavy loads or that require excavations to depths greater than those shown in the tables, generally depths of more than 6 feet. Also, inspection of sites, especially the small ones, is needed because many mapped areas of a given soil can include small areas of other kinds of soil that have strongly contrasting properties and different suitability or limitations for soil engineering.

Some of the terms used in this soil survey have a special meaning in soil science. The Glossary defines many of these terms.

### *Engineering soil classification systems*

The two systems most commonly used in classifying samples of soils for engineering are the Unified system (*3*) used by SCS engineers, the Department of Defense, and others, and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO) (*2*).

In the Unified system, soils are classified according to particle-size distribution, plasticity, liquid limit, and organic matter. Soils are grouped in 15 classes. There are 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 are designated by symbols for both classes, for example, CL-ML.

The AASHTO system is used to classify soils according to properties that affect their use in highway construction and maintenance. In this system, a soil is placed 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. In group A-1 are gravelly soils of high bearing strength, or the best soils for subgrade (foundation). At the other extreme, in group A-7, are clay soils that have low strength when wet and that are the poorest soils for subgrade. Where laboratory data are available to justify a further breakdown, the A-1, A-2, and A-7 groups are divided 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 additional refinement, the engineering value of a soil material can be indicated by a group index number. Group indexes range from 0 for the best material to 20 or more for the poorest. The AASHTO classification for tested soils, with group index numbers in parentheses, is shown in table 7; the estimated classification, without group index numbers, is given in table 5 for all soils mapped in the survey area.

### *Soil properties significant in engineering*

Several estimated soil properties significant in engineering are given in table 5. These estimates are made for typical soil profiles, by layers sufficiently different to have different significance in soil engineering. The estimates are based on field observations made in the course of mapping, on test data for these and similar soils, and on experience with the same kind of soil in other counties. Following are explanations of some of the column headings in table 5.

Depth to bedrock is distance from the surface of the soil to the rock layer. In all soils of Lee and Terrell Counties depth to bedrock exceeds 10 feet.

Depth to seasonal high water table is distance from the surface of the soil to the highest level that ground water reaches in the soil in most years.

Soil texture is described in the standard terms used by the Department of Agriculture. These terms take into account relative percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loamy sand." "Sand," "silt," "clay," and some of the other terms used are defined in the Glossary.

Liquid limit and plasticity index indicate the effect of water on the strength and consistence of soil material. As the moisture content of a clayey soil is increased from a dry state, the material changes from semi-solid to plastic. If the moisture content is further increased, the material changes from plastic to liquid. The plastic limit is the moisture content at which the soil material changes from semisolid to plastic; and the liquid limit, from plastic to liquid. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic. Liquid limit and plasticity index are estimated in table 5, but in table 7 the data on liquid limit and plasticity are based on tests of soil samples.

Permeability is that quality of a soil that enables it to transmit water or air. It is estimated on the basis of those soil characteristics observed in the field, particularly structure and texture. The estimates do not take into account lateral seepage or such transient soil features as plowpans and surface crusts.

Available water capacity is the ability of soils to hold water for use by most plants. It is commonly defined as the difference between the amount of water in the soil at field capacity and the amount at the wilting point of most crop plants.

Reaction is the degree of acidity or alkalinity of a soil, expressed in pH values. The pH value and terms used to describe soil reaction are explained in the Glossary.

Shrink-swell potential is the relative change in volume of soil material to be expected with changes in

TABLE 5.—*Estimated soil properties*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. series as indicated in the first column. The symbol >

| Soil series and map symbol | Depth to seasonal high water table | Depth from surface | Dominant USDA texture | Classification | |
|---|---|---|---|---|---|
| | | | | Unified | AASHTO |
| | *Inches* | *Inches* | | | |
| Americus: ArB, ArC | >120 | 0–55 | Loamy sand, sand | SM | A–2 |
| | | 55–80 | Loamy sand, sandy loam | SM | A–2 |
| Bibb. Mapped only with Kinston soils. | [2]0–15 | 0–5 | Loam | SM, ML | A–4 |
| | | 5–50 | Sandy loam, loamy sand | SM, SC, SM–SC | A–2, A–4 |
| | | 50–60 | Sand, loamy sand | SM | A–2 |
| Borrow pits: Bp. Not rated, too variable. | | | | | |
| Faceville: FeA, FeB2, FeC2 | >120 | 0–5 | Sandy loam | SM, SM–SC | A–2, A–4 |
| | | 5–65 | Sandy clay | CL | A–6, A–7 |
| Fuquay: FsB | [3] >120 | 0–32 | Loamy sand | SM | A–2 |
| | | 32–48 | Sandy loam, sandy clay loam | SM, SC, SM–SC | A–2, A–4 |
| | | 48–64 | Sandy clay loam | SC | A–4, A–6 |
| Goldsboro: GoA | [4]0–30 | 0–9 | Loamy sand | SM | A–2 |
| | | 9–15 | Sandy loam | SM, SC, SM–SC | A–2, A–4 |
| | | 15–65 | Sandy clay loam | SC, CL | A–4, A–6 |
| Grady: Gr | [5]0–15 | 0–12 | Loam, sandy clay loam | ML, SM, CL, SC, SM–SC, CL–ML | A–6, A–4 |
| | | 12–77 | Clay | CL | A–6, A–7 |
| Greenville: GsA, GsB, GsC, GtD2 | >120 | 0–5 | Sandy loam | SM, SC, SM–SC[6] | A–2, A–4[6] |
| | | 5–75 | Sandy clay, clay | CL, ML | A–6, A–7 |
| Henderson: HdC[7] | >120 | 0–5 | Cherty sandy loam | SM, SM–SC | A–2 |
| | | 5–65 | Cherty clay, cherty sandy clay, clay. | CL, MH | A–6, A–7 |
| *Herod: Hm. For the Muckalee part of this unit see the Muckalee series. | [2]0–15 | 0–12 | Loam | SM, ML, SC, CL, SM–SC, CL–ML | A–4 |
| | | 12–50 | Clay loam | CL | A–6 |
| | | 50–62 | Sandy loam | SM, SC | A–4 |
| Irvington: IgA | [4]18–30 | 0–7 | Loamy sand | SM | A–2 |
| | | 7–20 | Sandy loam or sandy clay loam | SM, SC, SM–SC | A–2, A–4 |
| | | 20–57 | Sandy clay loam | SM, SC, SM–SC | A–2, A–4, A–6 |
| | | 57–67 | Sandy clay loam | SC | A–2, A–4, A–6 |
| Johnston: Jo | [2]0–15 | 0–5 | Mucky loam | OL | |
| | | 5–46 | Sandy loam | SM, SM–SC | A–2, A–4 |
| | | 46–60 | Loamy sand | SM | A–2 |
| *Kinston: Kb. For the Bibb part of this unit see the Bibb series. | [2]0–15 | 0–16 | Loam, sandy loam | SM, ML | A–4 |
| | | 16–52 | Sandy clay loam | CL | A–4, A–6 |
| | | 52–60 | Loamy sand, sand | SM | A–2 |
| Lucy: LmB, LmC | >120 | 0–29 | Loamy sand | SM | A–2 |
| | | 29–65 | Sandy clay loam, sandy loam | SM, SC, SM–SC | A–2, A–4, A–6 |
| Muckalee. Mapped only with Herod soils. | [2]0–15 | 0–6 | Loam | SM, ML, SC, CL, CL–ML, SM–SC | A–4 |
| | | 6–64 | Sandy loam, loamy sand | SM, SM–SC | A–2, A–4 |
| Norfolk: NhA, NhB | >120 | 0–10 | Loamy sand | SM | A–2 |
| | | 10–17 | Sandy loam | SM | A–2, A–4 |
| | | 17–72 | Sandy clay loam | SC, SM–SC | A–4, A–6 |
| Ocilla: Oc | [8]15–30 | 0–28 | Loamy sand | SM | A–2 |
| | | 28–65 | Sandy loam | SM, SC, SM–SC | A–2, A–4, A–6 |

See footnotes at end of table.

*significant in engineering*

The soils in such mapping units may have different properties and limitations, and for this reason it is necessary to refer to other means more than; the symbol < means less than]

| Percentage passing sieve | | | | Liquid limit | Plasticity index | Permeability | Available water capacity | Reaction | Shrink-swell potential |
|---|---|---|---|---|---|---|---|---|---|
| No. 4 (4.7 mm) | No. 10 (2.0 mm) | No. 40 (0.42 mm) | No. 200 (0.074 mm) | | | | | | |
| | | | | | | *Inches per hour* | *Inches per inch of soil* | *pH* | |
| 100 | 100 | 75–85 | 13–20 | | [1]NP | 6.0–10.0 | 0.05–0.08 | 4.5–5.5 | Low. |
| 95–100 | 95–100 | 80–90 | 15–30 | | NP | 2.0–6.0 | 0.08–0.10 | 4.5–5.5 | Low. |
| 100 | 95–100 | 70–90 | 45–60 | <40 | NP–10 | 0.6–2.0 | 0.12–0.15 | 4.5–5.5 | Low. |
| 100 | 90–100 | 65–85 | 30–40 | <25 | NP–10 | 0.6–2.0 | 0.10–0.12 | 4.5–5.5 | Low. |
| 100 | 95–100 | 75–90 | 15–30 | | NP | 6.0–10.0 | 0.05–0.08 | 4.5–5.5 | Low. |
| 89–100 | 85–100 | 72–90 | 25–38 | <25 | NP–6 | 2.0–6.0 | 0.07–0.09 | 4.5–5.5 | Low. |
| 98–100 | 96–100 | 85–95 | 51–72 | 23–43 | 11–23 | 0.6–2.0 | 0.13–0.15 | 4.5–5.5 | Low. |
| 95–100 | 95–100 | 50–70 | 12–30 | | NP | 6.0–10.0 | 0.06–0.08 | 4.5–5.5 | Low. |
| 95–100 | 90–100 | 65–90 | 30–45 | <25 | NP–10 | 0.6–2.0 | 0.13–0.15 | 4.5–5.5 | Low. |
| 90–100 | 85–95 | 60–90 | 36–45 | 20–30 | 8–15 | 0.06–0.2 | 0.10–0.13 | 4.5–5.5 | Low. |
| 100 | 100 | 60–85 | 15–30 | | NP | 2.0–6.0 | 0.08–0.10 | 4.5–5.5 | Low. |
| 100 | 100 | 75–90 | 25–40 | <25 | NP–10 | 0.6–2.0 | 0.08–0.12 | 4.5–5.5 | Low. |
| 100 | 100 | 80–95 | 36–55 | 20–30 | 10–14 | 0.6–2.0 | 0.12–0.14 | 4.5–5.5 | Low. |
| 100 | 100 | 90–98 | 40–55 | <35 | NP–15 | 0.6–2.0 | 0.10–0.13 | 4.5–5.5 | Low. |
| 100 | 100 | 95–100 | 60–80 | 30–50 | 15–25 | 0.06–0.2 | 0.13–0.15 | 4.5–5.5 | Moderate. |
| 96–100 | 90–100 | 75–80 | 28–40 | <30 | NP–10 | 2.0–6.0 | 0.11–0.14 | 4.5–5.5 | Low. |
| 96–100 | 95–100 | 85–90 | 53–75 | 35–43 | 12–16 | 0.6–2.0 | 0.14–0.16 | 4.5–5.5 | Low. |
| 70–90 | 65–90 | 45–70 | 20–35 | <10 | NP–6 | 2.0–6.0 | 0.10–0.12 | 4.5–5.5 | Low. |
| 75–90 | 70–85 | 55–75 | 50–70 | 30–55 | 18–25 | 0.06–0.2 | 0.13–0.15 | 4.5–5.5 | Moderate. |
| 100 | 95–100 | 65–90 | 36–75 | <30 | NP–10 | 0.6–2.0 | 0.12–0.15 | 5.6–6.5 | Low. |
| 100 | 95–100 | 80–95 | 55–85 | 20–40 | 11–20 | 0.6–2.0 | 0.14–0.16 | 6.1–7.3 | Low. |
| 100 | 95–100 | 70–90 | 36–45 | <30 | NP–10 | 0.6–2.0 | 0.12–0.15 | 6.1–7.3 | Low. |
| 90–100 | 85–98 | 70–85 | 20–35 | | NP | 0.6–2.0 | 0.06–0.09 | 4.5–5.5 | Low. |
| 90–100 | 85–100 | 70–85 | 25–45 | <20 | NP–10 | 0.6–2.0 | 0.10–0.14 | 4.5–5.5 | Low. |
| 80–95 | 85–90 | 60–80 | 30–40 | <30 | NP–12 | 0.06–0.2 | 0.10–0.12 | 4.5–5.5 | Low. |
| 80–100 | 70–95 | 70–90 | 30–50 | 25–30 | 9–15 | 0.2–0.6 | 0.10–0.14 | 4.5–5.5 | Low. |
| 100 | 100 | 90–100 | 80–90 | | NP | 2.0–6.0 | 0.20–0.22 | 4.5–5.5 | Low. |
| 100 | 100 | 70–85 | 30–40 | <25 | NP–7 | 2.0–6.0 | 0.10–0.18 | 4.5–5.5 | Low. |
| 100 | 100 | 50–75 | 15–35 | | NP | 6.0–10.0 | 0.06–0.10 | 4.5–5.5 | Low. |
| 100 | 100 | 75–90 | 45–75 | <35 | NP–10 | 0.6–2.0 | 0.12–0.15 | 4.5–5.5 | Low. |
| 100 | 100 | 80–95 | 60–70 | 20–40 | 7–17 | 0.6–2.0 | 0.14–0.18 | 4.5–5.5 | Low. |
| 95–100 | 95–100 | 70–85 | 15–35 | | NP | 6.0–10.0 | 0.05–0.08 | 4.5–5.5 | Low. |
| 100 | 100 | 50–75 | 15–30 | | NP | 6.0–10.0 | 0.07–0.09 | 4.5–5.5 | Low. |
| 100 | 95–100 | 70–90 | 34–45 | <30 | NP–12 | 0.6–2.0 | 0.12–0.14 | 4.5–5.5 | Low. |
| 95–100 | 90–100 | 50–95 | 36–75 | <30 | NP–10 | 0.6–2.0 | 0.10–0.15 | 5.1–6.5 | Low. |
| 95–100 | 95–100 | 60–90 | 30–40 | <20 | NP–7 | 0.6–2.0 | 0.08–0.10 | 5.6–7.3 | Low. |
| 98–100 | 95–100 | 55–80 | 15–30 | | NP | 2.0–6.0 | 0.07–0.09 | 4.5–5.5 | Low. |
| 98–100 | 95–100 | 70–80 | 20–35 | <35 | 4–10 | 2.0–6.0 | 0.10–0.12 | 4.5–5.5 | Low. |
| 98–100 | 95–100 | 70–90 | 36–50 | 20–35 | 6–13 | 0.6–2.0 | 0.12–0.14 | 4.5–5.5 | Low. |
| 100 | 95–100 | 75–90 | 15–30 | | NP | 6.0–10.0 | 0.06–0.08 | 4.5–5.5 | Low. |
| 100 | 95–100 | 80–90 | 30–40 | <35 | NP–18 | 0.6–2.0 | 0.09–0.11 | 4.5–5.5 | Low. |

TABLE 5.—*Estimated soil properties*

| Soil series and map symbol | Depth to seasonal high water table | Depth from surface | Dominant USDA texture | Classification | |
|---|---|---|---|---|---|
| | | | | Unified | AASHTO |
| | *Inches* | *Inches* | | | |
| Orangeburg: OeA, OeB, OeC2 | >120 | 0–7 | Loamy sand | SM | A–2 |
| | | 7–14 | Sandy loam | SM, SC, SM–SC | A–2 |
| | | 14–76 | Sandy clay loam | SC, CL | A–4, A–6 |
| Pelham: Pe | [4]0–15 | 0–34 | Loamy sand, sand | SM | A–2 |
| | | 34–65 | Sandy loam, sandy clay loam | SM, SC, SM–SC | A–2, A–4, A–6 |
| Rains: Ra | [2]0–15 | 0–14 | Sandy loam | SM | A–2 |
| | | 14–65 | Sandy clay loam | SC, SM, CL, ML, SM–SC, CL–ML | A–4, A–6 |
| Red Bay: RbA, ReB, ReC2 | >120 | 0–18 | Sandy loam | SM | A–2 |
| | | 18–65 | Sandy clay loam | SC, SM, SM–SC | A–2, A–4, A–6 |
| Riverview: Ro | [4]40 | 0–10 | Loam | CL, CL–ML | A–4 |
| | | 10–52 | Clay loam, sandy clay loam | SC, CL–ML, CL, SM–SC | A–4 |
| | | 52–65 | Sandy loam | SM, SC, SM–SC | A–2, A–4 |
| Sunsweet: SuC2, SuD2 | [3]>120 | 0–4 | Sandy loam | SM | A–2 |
| | | 4–20 | Sandy clay | SC, CL | A–6, A–7 |
| | | 20–65 | Sandy clay | SC, CL | A–6, A–7 |
| Tifton: TfA, TsB2, TsC2 | [3]>120 | 0–9 | Sandy loam | SM, SM–SC | A–2 |
| | | 9–42 | Sandy clay loam | SC, CL, SM, ML | A–4, A–6 |
| | | 42–65 | Sandy clay loam | SC, CL | A–6, A–7 |
| Troup: TwC, TwD | >120 | 0–68 | Sand | SM | A–2 |
| | | 68–77 | Sandy loam | SM, SC, SM–SC | A–4 |

[1]NP = nonplastic.
[2]Flooded more than once every year for 7 days to 2 months. Water table is high for 2 to 4 months each year in Rains soils, 3 to 4 months in Herod soils, 6 to 8 months in all others.
[3]A water table is perched above the plinthic layer for about 2 to 4 days following prolonged rainy periods.
[4]Flooded more than once every year for 2 to 7 days. Water table is high for a few days each year in Riverview soils, 1 to 2 months in Irvington soils, 2 to 4 months in Goldsboro soils, 3 to 4 months in Pelham soils.

TABLE 6.—*Interpretations of*

[An asterisk in the first column indicates that at least one mapping unit in the series is made up of two or more kinds of soil first

| Soil series and map symbols | Degree and kind of limitations for— | | | | | | |
|---|---|---|---|---|---|---|---|
| | Septic tank absorption fields | Sewage lagoons | Shallow excavations | Dwellings without basements | Sanitary landfills | Roads and streets | Light industry |
| Americus: | | | | | | | |
| ArB | Slight[1] | Severe: moderately rapid permeability. | Severe: sandy texture; cutbanks cave. | Slight | Severe: seepage; moderately rapid permeability. | Slight | Slight |
| ArC | Slight[1] | Severe: moderately rapid permeability. | Severe: sandy texture; cutbanks cave. | Slight | Severe:[1] seepage; moderately rapid permeability. | Slight | Moderate: slope. |
| Bibb: Kb. Mapped only with Kinston soils. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. |
| Borrow Pits: Bp. Material too variable to be rated. | | | | | | | |

See footnotes at end of table.

*significant in engineering* — Continued

| Percentage passing sieve | | | | Liquid limit | Plasticity index | Permeability | Available water capacity | Reaction | Shrink-swell potential |
|---|---|---|---|---|---|---|---|---|---|
| No. 4 (4.7 mm) | No. 10 (2.0 mm) | No. 40 (0.42 mm) | No. 200 (0.074 mm) | | | | | | |
| | | | | | | *Inches per hour* | *Inches per inch of soil* | *pH* | |
| 98–100 | 95–100 | 65–85 | 15–30 | ........ | NP | 2.0–6.0 | 0.06–0.08 | 4.5–5.5 | Low. |
| 98–100 | 95–100 | 70–85 | 25–35 | <25 | NP–10 | 2.0–6.0 | 0.08–0.10 | 4.5–5.5 | Low. |
| 98–100 | 95–100 | 70–90 | 40–55 | 25–40 | 8–15 | 0.6–2.0 | 0.11–0.13 | 4.5–5.5 | Low. |
| 100 | 100 | 75–90 | 15–30 | ........ | NP | 6.0–10.0 | 0.05–0.08 | 4.5–5.5 | Low. |
| 100 | 100 | 65–90 | 25–45 | <25 | NP–12 | 0.6–2.0 | 0.10–0.13 | 4.5–5.5 | Low. |
| 100 | 98–100 | 70–85 | 20–35 | <30 | NP–6 | 2.0–6.0 | 0.07–0.09 | 4.5–5.5 | Low. |
| 100 | 98–100 | 80–95 | 36–60 | 20–45 | 5–15 | 0.6–2.0 | 0.10–0.14 | 4.5–5.5 | Low. |
| 100 | 98–100 | 65–80 | 30–35 | ........ | NP | 2.0–6.0 | 0.07–0.09 | 4.5–5.5 | Low. |
| 100 | 98–100 | 80–90 | 33–50 | <37 | NP–14 | 0.6–2.0 | 0.10–0.12 | 4.5–5.5 | Low. |
| 100 | 100 | 90–100 | 60–75 | 15–30 | 5–10 | 0.6–2.0 | 0.12–0.15 | 4.5-5.5 | Low. |
| 100 | 100 | 80–95 | 48–65 | 20–35 | 6–10 | 0.6–2.0 | 0.10–0.14 | 4.5–5.5 | Low. |
| 100 | 95–100 | 65–85 | 25–40 | <25 | NP–9 | 2.0–6.0 | 0.07–0.09 | 4.5–5.5 | Low. |
| 90–95 | 80–92 | 55–85 | 25–30 | ........ | NP | 2.0–6.0 | 0.10–0.12 | 4.5–5.5 | Low. |
| 98–100 | 90–100 | 85–95 | 40–65 | 30–42 | 12–18 | 0.6–2.0 | 0.07–0.10 | 4.5–5.5 | Moderate. |
| 95–100 | 75–95 | 85–90 | 40–68 | 36–47 | 12–20 | 0.2–0.6 | 0.07–0.10 | 4.5–5.5 | Moderate. |
| 75–90 | 65–89 | 55–75 | 20–27 | <25 | NP–5 | 2.0–6.0 | 0.10–0.12 | 4.5–5.5 | Low. |
| 85–95 | 70–89 | 60–80 | 36–53 | 25–40 | 10–14 | 0.6–2.0 | 0.13–0.15 | 4.5–5.5 | Low. |
| 87–100 | 80–90 | 70–90 | 36–55 | 30–45 | 11–17 | 0.2–0.6 | 0.10–0.13 | 4.5–5.5 | Low. |
| 100 | 100 | 70–80 | 15–20 | ........ | NP | 6.0–10.0 | 0.05–0.08 | 4.5–5.5 | Low. |
| 100 | 100 | 80–90 | 36–45 | <30 | NP–10 | 0.6–2.0 | 0.10–0.13 | 4.5–5.5 | Low. |

[5]Flooded more than once every year for 1 to 6 months. Water table is high for 6 to 8 months each year.
[6]The more eroded Greenville soils also include CL, ML; A-6 and A-7 in the surface layer.
[7]The Henderson soils contain 5 to 10 percent fragments coarser than 3 inches in diameter in the upper 42 inches of the profile and about 1 percent in the lower part.
[8]Water table is high for 2 to 5 months each year.

*engineering properties of the soils*

which may have different properties and limitations. For this reason, it is necessary to refer to other series indicated in the column]

| Suitability as source of— | | Soil features affecting— | | | | |
|---|---|---|---|---|---|---|
| Roadfill | Topsoil | Reservoirs | Embankments and dikes | Drainage | Irrigation | Terraces and diversions |
| Good | Poor: too sandy | Moderately rapid permeability. | Subject to piping | Not needed; somewhat excessively drained. | Low available water capacity. | Features generally favorable. |
| Good | Poor: too sandy | Moderately rapid permeability. | Subject to piping | Not needed; somewhat excessively drained. | Low available water capacity; slopes. | Features generally favorable. |
| Poor: wet | Poor: wet | Moderate permeability. | Subject to piping | Soil is on a flood plain; limited outlets. | Not generally used for crops; poorly drained. | Not needed; level. |

TABLE 6.—*Interpretations of*

| Soil series and map symbols | Degree and kind of limitations for— | | | | | | |
|---|---|---|---|---|---|---|---|
| | Septic tank absorption fields | Sewage lagoons | Shallow excavations | Dwellings without basements | Sanitary landfills | Roads and streets | Light industry |
| Faceville: | | | | | | | |
| FeA, FeB2 | Slight | Moderate: moderate permeability. | Moderate: too clayey. | Slight | Moderate: too clayey. | Moderate: low strength. | Slight. |
| FeC2 | Slight | Moderate: slopes; moderate permeability. | Moderate: too clayey. | Slight | Moderate: too clayey. | Moderate: low strength. | Moderate: slope. |
| Fuquay: FsB | Moderate: perched water table above the plinthic layer in wet weather. | Moderate: slope. | Slight | Slight | Slight | Slight | Slight. |
| Goldsboro: GoA | Severe: seasonal high water table. | Severe: seasonal high water table. | Moderate: seasonal high water table. | Moderate: seasonal high water table. | Severe: seasonal high water table. | Moderate: seasonal high water table. | Moderate: seasonal high water table. |
| Grady: Gr | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. |
| Greenville: | | | | | | | |
| GsA, GsB | Slight | Moderate: moderate permeability. | Moderate: too clayey. | Slight | Moderate: too clayey. | Moderate: low strength. | Slight. |
| GsC | Slight | Moderate: slopes; moderate permeability. | Moderate: too clayey. | Slight | Moderate: too clayey. | Moderate: low strength. | Moderate: slope. |
| GtD2 | Moderate: slope. | Severe: slope | Moderate: too clayey; slope. | Moderate: slope. | Moderate: too clayey. | Moderate: low strength. | Severe: slope. |
| Henderson: HdC | Severe: slow permeability. | Moderate: slope; coarse fragments. | Severe: too clayey; coarse fragments. | Moderate: moderate shrink-swell potential. | Severe: too clayey. | Moderate: moderate shrink-swell potential; coarse fragments. | Moderate: moderate shrink-swell potential; slope. |
| *Herod: Hm<br>For the Muckalee part of this unit, see the Muckalee series. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. |
| Irvington: IgA | Severe: seasonal high water table. | Severe: seasonal high water table. | Moderate: seasonal high water table. | Moderate: seasonal high water table. | Severe: seasonal high water table. | Moderate: seasonal high water table. | Moderate: seasonal high water table. |
| Johnston: Jo | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. |
| *Kinston: Kb<br>For the Bibb part of this unit, see the Bibb series. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. |

*engineering properties of the soils*—Continued

| Suitability as source of— | | Soil features affecting— | | | | |
|---|---|---|---|---|---|---|
| Roadfill | Topsoil | Reservoirs | Embankments and dikes | Drainage | Irrigation | Terraces and diversions |
| Fair: low strength. | Fair: too clayey | Moderate permeability. | Features generally favorable. | Not needed; well drained. | Features generally favorable. | Features generally favorable. |
| Fair: low strength. | Fair: too clayey | Moderate permeability. | Features generally favorable. | Not needed; well drained. | Slope | Features generally favorable. |
| Good | Poor: too sandy | Rapid permeability in the upper part of the profile. | Subject to piping | Not needed; well drained. | Low available water capacity in the upper part of the profile. | Features generally favorable. |
| Good | Fair: good, if surface layer is mixed with upper part of the subsoil. | Moderate permeability. | Features generally favorable. | Moderately well drained; seasonal high water table. | Features generally favorable. | Not needed; level. |
| Poor: too clayey. | Poor: too clayey | Features generally favorable. | Moderate compressibility. | Very slow permeability; few outlets. | Not generally used for crops; very poorly drained. | Not needed; level. |
| Fair: low strength. | Fair: too clayey | Moderate permeability. | Moderate compressibility. | Not needed; well drained. | Features generally favorable. | Features generally favorable. |
| Fair: low strength. | Fair: too clayey | Moderate permeability. | Moderate compressibility. | Not needed; well drained. | Slope | Features generally favorable. |
| Fair: low strength. | Poor: slope | Moderate permeability. | Moderate compressibility. | Not needed; well drained. | Slope | Slope. |
| Poor: too clayey; coarse fragments. | Poor: coarse fragments. | Features generally favorable. | Moderate compressibility; coarse fragments. | Not needed; well drained. | Slow permeability; slope. | Coarse fragments. |
| Poor: wet | Poor: wet | Moderate permeability. | Subject to piping | Soil is on a flood plain; no outlets; poorly drained. | Not generally used for crops; poorly drained. | Not needed; level. |
| Fair: wet | Poor: good, if the surface layer is mixed with the upper subsoil. | Features generally favorable. | Features generally favorable. | Seasonal high water table; fragipan at a depth of about 20 inches. | Features generally favorable. | Not needed; level |
| Poor: wet | Poor: wet | Moderately rapid permeability. | Moderate compressibility; subject to piping. | Soil is on a flood plain; no outlets; very poorly drained. | Not generally used for crops; very poorly drained. | Not needed; level. |
| Poor: wet | Poor: wet | Moderate permeability in the upper part; rapid permeability in the lower part. | Subject to piping | Soil is on a flood plain; no outlets; poorly drained. | Not generally used for crops; poorly drained. | Not needed; level. |

TABLE 6.—*Interpretations of*

| Soil series and map symbols | Degree and kind of limitations for— | | | | | | |
|---|---|---|---|---|---|---|---|
| | Septic tank absorption fields | Sewage lagoons | Shallow excavations | Dwellings without basements | Sanitary landfills | Roads and streets | Light industry |
| Lucy: LmB | Slight | Severe: slope; moderate permeability. | Slight | Slight | Slight | Slight | Slight |
| LmC | Slight | Severe: slope; moderate permeability. | Slight | Slight | Slight | Slight | Moderate: slope. |
| Muckalee. Mapped only with Herod soils. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. | Severe: flooding; seasonal high water table. |
| Norfolk: NhA, NhB | Slight | Moderate: moderate permeability. | Slight | Slight | Slight | Slight | Slight |
| Ocilla: Oc | Severe: seasonal high water table. | Severe: seasonal high water table. | Severe: seasonal high water table. | Moderate: seasonal high water table. | Severe: seasonal high water table. | Severe: seasonal high water table. | Severe: seasonal high water table. |
| Orangeburg: OeA, OeB | Slight | Moderate: moderate permeability. | Slight | Slight | Slight | Slight | Slight |
| OeC2 | Slight | Moderate: moderate permeability; slope. | Slight | Slight | Slight | Slight | Moderate: slope. |
| Pelham: Pe | Severe: seasonal high water table; flooding. | Severe: seasonal high water table; flooding. | Severe: seasonal high water table; flooding. | Severe: seasonal high water table; flooding. | Severe: seasonal high water table; flooding. | Severe: seasonal high water table; flooding. | Severe: seasonal high water table; flooding. |
| Rains: Ra | Severe: seasonal high water table; flooding. | Severe: seasonal high water table; flooding. | Severe: seasonal high water table; flooding. | Severe: seasonal high water table; flooding. | Severe: seasonal high water table; flooding. | Severe: seasonal high water table; flooding. | Severe: seasonal high water table; flooding. |
| Red Bay: RbA, ReB | Slight | Moderate: moderate permeability. | Slight | Slight | Slight | Slight | Slight |
| ReC2 | Slight | Moderate: moderate permeability; slope. | Slight | Slight | Slight | Slight | Moderate: slope. |
| Riverview: Ro | Severe: flooding. | Severe: flooding. | Severe: flooding. | Severe: flooding. | Severe: flooding. | Severe: flooding. | Severe: flooding. |

*engineering properties of the soils*—Continued

| Suitability as source of— | | Soil features affecting— | | | | |
|---|---|---|---|---|---|---|
| Roadfill | Topsoil | Reservoirs | Embankments and dikes | Drainage | Irrigation | Terraces and diversions |
| Good | Poor: too sandy | Rapid permeability in the upper part of the profile; moderate in the lower part. | Subject to piping; erodes easily. | Not needed; well drained. | Low available water capacity. | Erodes easily. |
| Good | Poor: too sandy | Rapid permeability in the upper part of the profile, moderate in the lower part. | Subject to piping; erodes easily. | Not needed; well drained. | Low available water capacity; slope. | Slope; erodes easily. |
| Poor: wet | Poor: wet | Moderate permeability. | Subject to piping | Soil is on a flood plain; no outlets; poorly drained. | Not generally used for crops; poorly drained. | Not needed; level. |
| Good | Poor: good, if sandy surface layer is mixed with the upper part of the subsoil. | Moderate permeability. | Features generally favorable. | Not needed; well drained. | Features generally favorable. | Features generally favorable. |
| Fair: wet | Poor: too sandy | Permeability is rapid in the upper part of the profile; moderate in the lower part. | Subject to piping | Seasonal high water table. | Low available water capacity. | Not needed; level. |
| Good | Fair: good, if the surface layer is mixed with the upper part of the subsoil. | Moderate permeability. | Features generally favorable. | Not needed; well drained. | Features generally favorable. | Features generally favorable. |
| Good | Fair: depth of source. | Moderate permeability. | Features generally favorable. | Not needed; well drained. | Slope | Features generally favorable. |
| Poor: wet | Poor: wet | Moderate permeability. | Subject to piping | Seasonal high water table; poorly drained. | Low available water capacity; wet. | Not needed; level. |
| Poor: wet | Poor: wet | Moderate permeability. | Features generally favorable. | Seasonal high water table; poorly drained. | Wet; flooding | Not needed; level. |
| Good | Fair: good, if the surface layer is mixed with the upper part of the subsoil. | Moderate permeability. | Features generally favorable. | Not needed; well drained. | Features generally favorable. | Features generally favorable. |
| Good | Good | Moderate permeability. | Features generally favorable. | Not needed; well drained. | Slope | Features generally favorable. |
| Good | Good | Moderate permeability. | Features generally favorable. | Flooding, well drained. | Features generally favorable. | Not needed; level. |

TABLE 6.—*Interpretations of*

| Soil series and map symbols | Degree and kind of limitations for— | | | | | | |
|---|---|---|---|---|---|---|---|
| | Septic tank absorption fields | Sewage lagoons | Shallow excavations | Dwellings without basements | Sanitary landfills | Roads and streets | Light industry |
| Sunsweet: | | | | | | | |
| SuC2 | Severe: moderately slow permeability. | Moderate: slope. | Moderate: too clayey. | Moderate: moderate shrink-swell potential. | Moderate: too clayey. | Moderate: moderate shrink-swell potential. | Moderate: slope; moderate shrink-swell potential. |
| SuD2 | Severe: moderately slow permeability. | Severe: slope | Moderate: too clayey. | Moderate: slope. | Moderate: too clayey. | Moderate: moderate shrink-swell potential. | Severe: slope |
| Tifton: | | | | | | | |
| TfA, TsB2 | Moderate: perched water table above the plinthic layer in wet weather. | Moderate: moderate permeability. | Slight | Slight | Slight | Slight | Slight |
| TsC2 | Moderate: perched water table above the plinthic layer in wet weather. | Moderate: moderate permeability; slope. | Slight | Slight | Slight | Slight | Moderate: slope. |
| Troup: | | | | | | | |
| TwC | Slight[1] | Severe: rapid permeability in the upper part of the profile. | Severe: unstable banks cut by earthmoving equipment tend to cave in. | Slight | Severe: seepage; rapid permeability in the upper part of the profile. | Slight | Moderate: slope. |
| TwD | Moderate:[1] slope. | Severe: slope; rapid permeability in the upper part of the profile. | Severe: unstable banks cut by earthmoving equipment tend to cave in. | Moderate: slope. | Severe: seepage; rapid permeability in the upper part of the profile. | Moderate: slope. | Severe: slope |

[1]Possible contamination of underground water supply by leaching.

moisture content, that is, the extent to which the soil shrinks as it dries out or swells when it gets wet. Extent of shrinking and swelling is influenced by the amount and kind of clay in the soil. Shrinking and swelling of soils cause much damage to building foundations, roads, and other structures. A *high* shrink-swell potential indicates a hazard to the maintenance of structures built in, on, or with material having this rating.

### *Engineering interpretations of soils*

The estimated interpretations in table 6 are based on the engineering properties of soils shown in table 5, on test data for soils in this survey area and others nearby or adjoining, and on the experience of engineers and soil scientists with the soils of Lee and Terrell Counties. In table 6, summarized limitations or ratings of suitability of the soils are given for all listed purposes other than for drainage of cropland and pasture, irrigation, ponds and reservoirs, embankments, and terraces and diversions. For these particular uses, table 6 lists those soil features not to be overlooked in planning, installation, and maintenance.

Soil limitations are expressed as slight, moderate, and severe. *Slight* means soil properties generally are favorable for the given use or, in other words, the limitations are minor and easily overcome. *Moderate* means that some soil properties are unfavorable but can be overcome or modified by special planning and design. *Severe* means soil properties are so unfavorable and so difficult to correct or overcome that major soil reclamation and special designs are needed.

Soil suitability is rated by the terms *good, fair,* and *poor,* which have meanings approximately parallel to the terms slight, moderate, and severe.

The following paragraphs are explanations of some

*engineering properties of the soils*—Continued

| Suitability as source of— | | Soil features affecting— | | | | |
|---|---|---|---|---|---|---|
| Roadfill | Topsoil | Reservoirs | Embankments and dikes | Drainage | Irrigation | Terraces and diversions |
| Fair: low strength. | Poor: too clayey | Features generally favorable. | Material difficult to pack. | Not needed; well drained. | Slope | Features generally favorable. |
| Fair: low strength. | Poor: too clayey | Features generally favorable. | Material difficult to pack. | Not needed; well drained. | Slope | Slope. |
| Good | Fair: good, if the surface layer is mixed with the upper part of the subsoil. | Moderate permeability. | Features generally favorable. | Not needed; well drained. | Features generally favorable. | Features generally favorable. |
| Good | Fair: moderately thin source. | Moderate permeability. | Features generally favorable. | Not needed; well drained. | Slope | Features generally favorable. |
| Good | Poor: too sandy | Rapid permeability in the upper part of the profile. | Subject to piping | Not needed; well drained. | Low available water capacity. | Too sandy; erodes easily. |
| Good | Poor: too sandy | Rapid permeability in the upper part of the profile. | Subject to piping | Not needed; well drained. | Low available water capacity; slope. | Too sandy; erodes easily; slope. |

of the column headings in table 6.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into natural soil. The soil material from a depth of 18 inches to 6 feet is evaluated. The soil properties considered are those that affect both absorption of effluent and construction and operation of the system. Properties that affect absorption are permeability, depth to water table or rock, and susceptibility to flooding. Slope affects layout and construction and also the risk of soil erosion, lateral seepage, and downslope flow of effluent. Large rocks or boulders increase construction costs.

Sewage lagoons are shallow ponds constructed to hold sewage, within a depth of 2 to 5 feet, long enough for bacteria to decompose the solids. A lagoon has a nearly level floor; its sides, or embankments, are of soil material compacted to medium density, and the pond is protected from flooding. Properties that affect the pond floor are permeability, depth to bedrock, organic matter and slope. The soil properties that affect the embankment are the engineering properties of the embankment material as interpreted from the Unified Soil Classification and the amount of stones, if any, that influence the ease of excavation and compaction of the embankment material.

Shallow excavations are those that require digging or trenching to a depth of less than 6 feet, for example, excavations for pipelines, sewer lines, phone and power transmission lines, basements, open ditches, and cemeteries. Desirable soil properties are good workability, moderate resistance to sloughing, gentle slopes, absence of rock outcrops or big stones, and freedom from flooding or absence of a high water table.

Dwellings are not more than three stories high and are supported by foundation footings placed in undis-

TABLE 7.—*Engineering*

[Tests were made by the State Highway Department of Georgia in accordance with standard

| Soil name and location | Parent material | SCS report No. | Depth from surface | Moisture-density[1] | | Volume change[2] | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Maximum dry density | Optimum moisture | Shrink-age | Swell | Total |
| | | *S70-Ga-135-* | *Inches* | *Lb per cu ft* | *Percent* | *Percent* | *Percent* | *Percent* |
| Americus sand, 0 to 5 percent slopes. Terrell Co.: 3/10 of a mile east of bridge crossing Ichawaynochaway Creek on Georgia Highway 50, 50 yards north of Georgia Highway 50, in old road cut. | Coastal Plain sediments. | 8-1 | 0-8 | 108 | 14 | 0.4 | 2.6 | 3.0 |
| | | 8-3 | 16-55 | 112 | 12 | 1.6 | 4.6 | 6.2 |
| | | 8-4 | 55-80 | 112 | 13 | 1.1 | 0.1 | 1.2 |
| Faceville sandy loam, 2 to 5 percent slopes, eroded. Terrell Co.: 7/10 of a mile north of Parrott, Georgia on Georgia Highway 55; one mile north on county road, 75 yards east of road. | Coastal Plain sediments. | 6-1 | 0-5 | 112 | 14 | 1.5 | 8.8 | 10.3 |
| | | 6-2 | 5-37 | 109 | 17 | 2.6 | 2.6 | 5.2 |
| | | 6-5 | 67-96 | 95 | 24 | 6.3 | 3.3 | 9.6 |
| Greenville sandy loam, 2 to 5 percent slopes. Terrell Co.: 2½ miles south of Parrott, Georgia and 2½ miles west of Georgia Highway 55, in deep road cut. | Coastal Plain sediments. | 2-3 | 10-70 | 104 | 19 | 4.4 | 0.6 | 5.0 |
| | | 2-4 | 70-88 | 106 | 18 | 1.4 | 1.7 | 3.1 |
| | | *S72-GA-88-* | | | | | | |
| Grady soils. Lee Co.: 2 miles east on Georgia Highway 118 from Muckalee Creek, 7/10 of a mile south-east on county road, 1/4 of a mile north. | Coastal Plain marine sediments. | 1-1 | 0-6 | 92 | 21 | 2.4 | 10.4 | 12.8 |
| | | 1-4 | 28-54 | 98 | 23 | 8.9 | 6.9 | 15.9 |
| | | 1-5 | 54-77 | 94 | 26 | 13.8 | 5.3 | 19.1 |

[1]Based on AASHTO Designation T 99 (*2*).
[2]Density and volume change not corrected for total sample. Volume change based on a system of soil classification by W. F. Abercrombie (*1*).
[3]Mechanical analyses according to the AASHTO Designation T 88. Results by this procedure frequently may differ somewhat from results that would have been obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHTO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis

turbed soil. The features that affect the rating of a soil for dwellings are those that relate to capacity to support load and resist settlement under load, and those that relate to ease of excavation. Soil properties that affect capacity to support load are wetness, susceptibility to flooding, density, plasticity, texture, and shrink-swell potential. Those that affect excavation are wetness, slope, depth to bedrock, and content of stones and rocks.

Sanitary landfill is a method of disposing of refuse in dug trenches. The waste is spread in thin layers, compacted, and covered with soil. Landfill areas are subject to heavy vehicular traffic. Some soil properties that affect suitabiilty for landfill are ease of excavation, hazard of polluting ground water, and trafficability. The best soils have moderately slow permeability, withstand heavy traffic, and are friable and easy to excavate. Unless otherwise stated, the limitations apply only to the soil material to a depth of about 6 feet; therefore, a limitation of *slight* or *moderate* may not be valid if trenches are to be made much deeper than that. For some soils, reliable predictions can be made to a depth of 10 or 15 feet; nevertheless, every site should be investigated before it is selected.

Roads and streets have an all-weather surface expected to carry automobile traffic all year. They have a subgrade of underlying soil material; a base of gravel, crushed rock, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. These roads are graded to shed water and have ordinary provisions for drainage. They are built mainly from soil at hand, and most cuts and fills are less than 6 feet deep.

Ratings for light industry are for the undisturbed soils that are used to support building foundations. Emphasis is on foundations, ease of excavation for underground utilities, and corrosion potential of uncoated steel pipe. The undisturbed soil is rated for spread footing foundations for buildings less than three stories high or foundation loads that are not in excess of that weight. Properties affecting load-supporting capacity and settlement under load are wetness, flooding, texture, plasticity, density, and shrink-swell behavior.

Soil properties that most affect design and construction of roads and streets are load-supporting capacity, stability of the subgrade, and the workability and quantity of cut and fill material available. The AASHTO and Unified classifications of the soil material and the shrink-swell potential indicate traffic-

*test data*

procedures of the American Association of State Highway and Transportation Officials (AASHTO)]

| Mechanical analysis[3] | | | | | | | | | | | Liquid limit | Plasticity index | Classification | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percentage passing sieve | | | | | | | Percentage smaller than | | | | | | AASHTO[4] | Unified[5] |
| 1-in. | ¾-in. | ⅜-in. | No. 4 (4.7 mm) | No. 10 (2.0 mm) | No. 40 (0.42 mm) | No. 200 (0.074 mm) | 0.05 mm | 0.02 mm | 0.005 mm | 0.002 mm | | | | |
| ...... | ...... | ...... | ...... | 100 | 85 | 13 | 12 | 11 | 6 | 5 | [6]SIC | [7]NP | A-2-4(0) | SM |
| ...... | ...... | ...... | ...... | 100 | 88 | 15 | 15 | 15 | 12 | 10 | SIC | NP | A-2-4(0) | SM |
| 100 | 99 | 98 | 96 | 96 | 83 | 15 | 14 | 14 | 12 | 12 | SIC | NP | A-2-4(0) | SM |
| ...... | 100 | 98 | 93 | 88 | 72 | 38 | 34 | 30 | 21 | 18 | 20 | 6 | A-4(0) | SC-SM |
| ...... | ...... | 100 | 99 | 97 | 90 | 51 | 49 | 47 | 41 | 35 | 30 | 11 | A-6(2) | CL |
| ...... | ...... | 100 | 99 | 96 | 91 | 64 | 62 | 59 | 54 | 46 | 42 | 12 | A-7-5(7) | ML |
| ...... | ...... | ...... | ...... | 100 | 90 | 57 | 56 | 55 | 53 | 50 | 38 | 13 | A-6(5) | CL |
| ...... | ...... | ...... | ...... | 100 | 88 | 53 | 50 | 49 | 47 | 44 | SIC | NP | A-4(0) | ML |
| ...... | ...... | ...... | ...... | 100 | 94 | 55 | 51 | 45 | 28 | 20 | SIC | NP | A-4(0) | ML |
| ...... | ...... | ...... | ...... | 100 | 97 | 72 | 70 | 66 | 61 | 56 | 43 | 16 | A-7-6(11) | ML |
| ...... | ...... | ...... | ...... | 100 | 98 | 71 | 69 | 66 | 61 | 57 | 50 | 25 | A-7-6(17) | CH |

of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from calculations of grain size fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soil.

[4]Based on AASHTO Designation M 145-49 (*2*).

[5]Based on the Unified Soil Classification System (*3*).

[6]SIC means "slid in cup."

[7]NP means "nonplastic."

supporting capacity. Wetness and flooding affect stability of the material. Slope, depth to hard rock, content of stones and rocks, and wetness affect ease of excavation and amount of cut and fill needed to reach an even grade.

Road fill is soil material used in embankments for roads. The suitability ratings reflect (1) the predicted performance of soil after it has been placed in an embankment that has been properly compacted and provided with adequate drainage and (2) the relative ease of excavating the material at borrow areas.

Topsoil is used for topdressing an area where vegetation is to be established and maintained. Suitability is affected mainly by ease of working and spreading the soil material, as in preparing a seedbed; natural fertility of the material or plant response when fertilizer is added to the soil; and absence of substances toxic to plants. Texture of the soil material and its content of stone fragments affect suitability. Also considered in the ratings is damage that can result at the area from which topsoil is taken.

Pond reservoir areas hold water behind a dam or embankment. Soils suitable for pond reservoir areas have low seepage, which is related to their permeability and depth to fractured or permeable bedrock or other permeable material.

Embankments, dikes, and levees require soil material that is resistant to seepage and piping and that is of favorable stability, shrink-swell potential, shear strength, and compactibility. Stones or organic material in a soil are among factors that are unfavorable.

Drainage of cropland and pasture is affected by such soil properties as permeability, texture, and structure; depth to claypan, rock, or other layers that influence rate of water movement; depth to the water table; slope; stability in ditchbanks; susceptibility to stream overflow; salinity or alkalinity; and availability of outlets for drainage.

Irrigation of a soil is affected by such features as slope; susceptibility to stream overflow, water erosion, or soil blowing; soil texture; content of stones; accumulation of salts and alkali; depth of root zone; rate of water intake at the surface; permeability below the surface layer and in fragipans or other layers that restrict movement of water; amount of water held available to plants; and need for drainage, or depth to water table.

Terraces and diversions are embankments, or ridges, constructed across the slope to intercept runoff so that it soaks into the soil or flows slowly to a prepared outlet. Features that affect suitability of a soil for terraces are uniformity and steepness of slope; depth to unfavorable material; presence of stones; permeability; and resistance to water erosion, soil slipping, and soil blowing. A soil suitable for these structures provides outlets for runoff, and establishing a plant cover on such a soil is not difficult.

***Soil test data***

Table 7 contains engineering test data for some of the major soil series in Lee and Terrell Counties. The tests were made to help evaluate the soils for engineering purposes. The engineering classifications are based on data obtained by mechanical analyses and by tests to determine liquid limit and plastic limit. The mechanical analyses were made by combined sieve and hydrometer methods.

Moisture-density data are important in earthwork. If a soil material is compacted at a successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material increases until the *optimum moisture content* is reached. After that, density decreases with increase in moisture content. The highest dry density obtained in the compactive test is termed *maximum dry density*. As a rule, maximum strength of earthwork is obtained if the soil is compacted to the maximum dry density.

Tests to determine liquid limit and plastic limit measure the effect of water on the consistence of soil material, as has been explained for table 5.

Shrinkage limit is the percentage of moisture at which shrinkage of the soil material stops.

Shrinkage ratio is the relation of change in volume of the soil material to the water content of the soil material when at the shrinkage limit. The change in volume is expressed as a percentage of the air-dry volume of the soil material, and the water content is expressed as a percentage of the weight of the soil material when oven-dried.

Linear shrinkage is the decrease in one dimension, expressed as a percentage of the original dimension, of the soil mass when the moisture content is reduced from the given value to the shrinkage limit.

### Recreation

Knowledge of soils is necessary in planning, developing, and maintaining areas used for recreation. In table 8 the soils of Lee and Terrell Counties are rated according to limitations that affect their suitability for camp areas, playgrounds, picnic areas, and paths and trails.

In table 8 the soils are rated as having slight, moderate, or severe limitations for the specific uses. For all of these ratings, it is assumed that a good cover of vegetation can be established and maintained. A limitation of *slight* means that soil properties are generally favorable and limitations are so minor that they easily can be overcome. A *moderate* limitation can be overcome or modified by planning, by design, or by special maintenance. A *severe* limitation means that costly soil reclamation, special design, intense maintenance, or a combination of these is required.

Camp areas are used intensively for tents and small camp trailers and the accompanying activities of outdoor living. Little preparation of the site is required, other than shaping and leveling for tent and parking areas. Camp areas are subject to heavy foot traffic and limited vehicular traffic. The best soils have mild slopes, good drainage, a surface free of rocks and coarse fragments, and are not subject to flooding during periods of heavy use; their surface is firm after rain but not dusty when dry.

Playgrounds are areas used intensively for baseball, football, badminton, and similar organized games. Soils suitable for this use need to withstand intensive foot traffic. The best soils have a nearly level surface free of coarse fragments and rock outcrops. They have good drainage and are not subject to flooding during periods of heavy use. Their surface is firm after rain but not dusty when dry.

Picnic areas are attractive natural or landscaped tracts that carry heavy foot traffic. Most of the vehicular traffic, however, is confined to access roads. The best soils are firm when wet but not dusty when dry, are not subject to flooding during the season of use, and do not have slopes or stones that can greatly increase the cost of leveling or of building access roads.

Paths and trails are used for local and cross-country travel by foot or horseback. Design and layout should require little or no cutting and filling. The best soils are at least moderately well drained, are firm when wet but not dusty when dry, are flooded not more than once during the season of use, have slopes of less than 15 percent, and have few or no rocks or stones on the surface.

## *Formation and Classification of the Soils*

This section consists of two main parts. The first part tells how the factors of soil formation have affected the development of the soils in Lee and Terrell Counties. The second part explains the system of soil classification currently used and places each soil series in the classes of that system.

### Formation of Soils

The principal factors of soil formation are: (1) parent material, (2) climate, (3) plant and animal life, (4) relief and drainage, and (5) time. All of these factors affect the formation of every soil.

The relative importance of each factor differs from place to place, and each modifies the effect of the other four. In some areas one factor may dominate in the formation of a particular soil.

A common example is where the parent material consists of pure quartz sand. Quartz sand is highly resistant to weathering, and soils formed in it generally have faint horizons. Even in quartz sand, however, a distinct profile can be formed under certain types of vegetation if the relief is low and flat and if the water table is high. The five factors of soil formation are discussed in the paragraphs that follow.

TABLE 8.—*Limitations of the soils for recreational development*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in such mapping units may have different properties and limitations, and for this reason it is necessary to refer to other series as indicated in the first column]

| Soil series and map symbol | Camp areas | Playgrounds | Picnic areas | Paths and trails |
|---|---|---|---|---|
| Americus: | | | | |
| ArB | Moderate: thick sandy surface layer. | Moderate: slope; thick sandy surface layer. | Moderate: thick sandy surface layer. | Moderate: thick sandy surface layer. |
| ArC | Moderate: thick sandy surface layer. | Severe: slope; thick sandy surface layer. | Moderate: thick sandy surface layer. | Moderate: thick sandy surface layer. |
| Bibb. Mapped only with Kinston soils. | Severe: poorly drained; flooding. | Severe: poorly drained; flooding. | Severe: poorly drained; flooding. | Severe: poorly drained; flooding. |
| Borrow pits: Bp. Material too variable to be rated. | | | | |
| Faceville: | | | | |
| FeA | Slight | Slight | Slight | Slight. |
| FeB2 | Slight | Moderate: slope | Slight | Slight. |
| FeC2 | Slight | Severe: slope | Slight | Slight. |
| Fuquay: FsB | Moderate: thick sandy surface layer. | Moderate: slope; thick sandy surface layer. | Moderate: thick sandy surface layer. | Moderate: thick sandy surface layer. |
| Goldsboro: GoA | Slight | Slight | Slight | Slight. |
| Grady: Gr | Severe: very poorly drained; flooding. | Severe: very poorly drained; flooding. | Severe: very poorly drained; flooding. | Severe: very poorly drained; flooding. |
| Greenville: | | | | |
| GsA | Slight | Slight | Slight | Slight. |
| GsB | Slight | Moderate: slope | Slight | Slight. |
| GsC | Slight | Severe: slope | Slight | Slight. |
| GtD2 | Moderate: slope; sandy clay loam surface layer. | Severe: slope | Moderate: slope; sandy clay loam surface layer. | Moderate: sandy clay loam surface layer. |
| Henderson: HdC | Moderate: coarse fragments. | Severe: coarse fragments. | Moderate: coarse fragments. | Moderate: coarse fragments. |
| *Herod: Hm. For the Muckalee part of this unit see the Muckalee series. | Severe: poorly drained; flooding. | Severe: poorly drained; flooding. | Severe: poorly drained; flooding. | Severe: poorly drained; flooding. |
| Irvington: IgA | Slight | Slight | Slight | Slight. |
| Johnston: Jo | Severe: very poorly drained; flooding. | Severe: very poorly drained; flooding. | Severe: very poorly drained; flooding. | Severe: very poorly drained; flooding. |
| *Kinston: Kb. For the Bibb part of this unit see the Bibb series. | Severe: poorly drained; flooding. | Severe: poorly drained; flooding. | Severe: poorly drained; flooding. | Severe: poorly drained; flooding. |
| Lucy: | | | | |
| LmB | Moderate: thick sandy surface layer. | Moderate: thick sandy surface layer; slope. | Moderate: thick sandy surface layer. | Moderate: thick sandy surface layer. |
| LmC | Moderate: thick sandy surface layer. | Severe: slope | Moderate: thick sandy surface layer. | Moderate: thick sandy surface layer. |
| Muckalee. Mapped only with Herod soils. | Severe: poorly drained; flooding. | Severe: poorly drained; flooding. | Severe: poorly drained; flooding. | Severe: poorly drained; flooding. |
| Norfolk: | | | | |
| NhA | Slight | Slight | Slight | Slight. |
| NhB | Slight | Moderate: slope | Slight | Slight. |
| Ocilla: Oc | Moderate: seasonal high water table. | Moderate: seasonal high water table. | Moderate: seasonal high water table. | Moderate: seasonal high water table. |
| Orangeburg: | | | | |
| OeA | Slight | Slight | Slight | Slight. |
| OeB | Slight | Moderate: slope | Slight | Slight. |
| OeC2 | Slight | Severe: slope | Slight | Slight. |

TABLE 8.—*Limitations of the soils for recreational development*—Continued

| Soil series and map symbol | Camp areas | Playgrounds | Picnic areas | Paths and trails |
|---|---|---|---|---|
| Pelham: Pe | Severe: poorly drained | Severe: poorly drained | Severe: poorly drained | Severe: poorly drained. |
| Rains: Ra | Severe: poorly drained | Severe: poorly drained | Severe: poorly drained | Severe: poorly drained. |
| Red Bay: | | | | |
| RbA | Slight | Slight | Slight | Slight. |
| ReB | Slight | Moderate: slope | Slight | Slight. |
| ReC2 | Slight | Severe: slope | Slight | Slight. |
| Riverview: Ro | Moderate: flooding | Moderate: flooding | Moderate: flooding | Moderate: flooding. |
| Sunsweet: | | | | |
| SuC2 | Slight | Severe: slope | Slight | Slight. |
| SuD2 | Moderate: slope | Severe: slope | Moderate: slope | Slight. |
| Tifton: | | | | |
| TfA | Slight | Slight: slope | Slight | Slight. |
| TsB2 | Slight | Moderate: slope | Slight | Slight. |
| TsC2 | Slight | Severe: slope | Slight | Slight. |
| Troup: | | | | |
| TwC | Moderate: deep, loose sands. | Severe: deep, loose sands; slope. | Moderate: deep, loose sands. | Moderate: deep, loose sands. |
| TwD | Severe: deep, loose sands. | Severe: deep, loose sands; slope. | Severe: deep, loose sands. | Severe: deep, loose sands. |

### *Parent material*

Parent material is the unconsolidated mass from which soil forms. It determines the chemical and mineralogical composition of a soil. In Lee and Terrell Counties, the parent material of all the soils is sedimentary because it was deposited by water.

In both counties, differences in the parent material result mainly from the way the ocean and streams sorted and deposited the sands, silts, and clays many thousands of years ago. Different kinds of soils developed because of these differences in sorting and deposition. In most soils, profile development is strong because the parent material has been above water and exposed to the soil-forming forces for a long time.

According to the geologic map of Georgia (*4*), the parent material of the soils in the two counties weathered from five geologic sources. They are the Ocala Limestone, the Flint River, and the McBean and Wilcox Formations, all of which were deposited in the Tertiary geological age, and the more recent and continuing alluvium deposits.

The Ocala Limestone Formation dominates and occurs mainly in the southern half of the two-County area; large areas of the formation also occur in the northern half of Lee County. The Flint River Formation dominates and occurs mainly in the northern half of the two-county area; small areas of the formation also occur in the southern half of the area. The McBean Formation occurs mainly in the western part of Terrell County; small areas also occur near the Kichafoonee, Muckaloochee, and Muckalee Creeks near Smithville, Georgia. The Wilcox Formation occurs in the northwestern part of Terrell County. The alluvium deposits occur along the flood plains of the larger streams in the two counties.

The most extensive of the soils that formed in the Ocala Limestone and Flint River Formations are the Tifton, Greenville, Orangeburg, Red Bay, Grady, Faceville, and Norfolk soils. The Troup, Lucy, and Americus soils formed in the Wilcox and McBean Formations. The Bibb, Kinston, Herod, Muckalee, and Johnston soils formed in the alluvium deposits.

### *Climate*

Climate, particularly temperature and rainfall, largely determines the rate and nature of the physical, chemical, and biological processes that affect the weathering of soil material. Rainfall, freezing and thawing, wind, and sunlight directly affect the breakdown of rocks and minerals, the release of chemicals, and other processes that affect the development of soils. The amount of water that percolates through the soil depends on the rainfall, relative humidity, length of the frost-free period, soil permeability, and physiographic position. Temperature influences the kinds and growth of organisms and the speed of physical and chemical reactions in the soils.

The warm, humid climate of Lee and Terrell Counties is characterized by long, hot summers and short, mild winters. Rainfall averages 50 inches a year. Because much of the water from rainfall percolates through the soil and moves dissolved or suspended materials downward, the soils generally are low in bases. The rainfall is generally well enough distributed to keep the soils moist most of the year. Because the surface soil is frozen for only short periods, freezing and thawing have little effect on the development of the soils. The climate throughout the survey area is uniform and has had about an equal effect on soil development. As is normal in this climate, most of the soils on uplands in Lee and Terrell Counties are highly weathered, highly leached, and strongly acid. They are low in natural fertility and have a low content of organic matter.

### *Relief*

Relief modifies the effect of climate and vegetation on soil formation through its effect on drainage, erosion, plant cover, and temperature.

Soils on low flats and in depressions have a seasonal high water table and are flooded each year. The soils in these areas are moderately well drained to very poorly drained and have a gray or mottled subsoil. Grady and Rains soils are examples of soils that developed in the low areas.

On broad ridges, the water table is several feet below the surface and flooding does not occur. The soils commonly are well drained and are dominantly red to yellow in color. Orangeburg, Tifton, Red Bay, and Greenville soils are examples of soils that developed in the higher areas.

A level or nearly level surface allows more time for water to penetrate the soil, therefore more water percolates through the soil profile. This influences the solution and translocation of soluble materials. The moisture available in the soil also determines the amount and kinds of plants that grow. Thus, steep soils that have a slowly permeable surface layer are generally drier than level or nearly level soils, and less vegetation grows on them.

The soils in Lee and Terrell Counties are mostly level to gently sloping, but slopes are slightly steeper in a few places. The effect of relief on soil temperature is less pronounced than in more hilly and mountainous areas. In Lee and Terrell Counties, soil temperature is affected more by differences in drainage than by relief.

### *Plants and animals*

Plants, animals, bacteria, and other organisms act in the soil-forming processes. Each kind of living organism brings about particular changes in the soil material. The kinds of plants and animals that live on and in the soil are affected by the climate, the parent material, relief, and age of the soil.

Most of the soils in Lee and Terrell Counties formed under forests of various kinds of hardwoods and pines. These plants supply most of the organic matter available in the soils. The hardwoods provide more than the softwoods, but the content of organic matter in most of the soils is generally low.

Plants provide cover that helps reduce erosion and stabilize the surface layer so that the soil-forming processes can continue. Leaves, twigs, roots, and entire plants accumulate on the surface of soils that are under forest and then decompose as percolating water and micro-organisms, earthworms, and other forms of life move through the soil. The uprooting of trees by wind significantly influences the formation of soils by mixing the soil and layers and loosening the underlying material.

Small animals, earthworms, insects, and micro-organisms also influence the formation of soils by mixing organic matter into the soil and by helping to break down the remains of plants. Small animals burrow into the soil and mix the layers. Earthworms and other small invertebrates feed on the organic matter in the upper few inches. They slowly but continually mix the soil material and can alter it chemically. Bacteria, fungi, and other micro-organisms hasten the weathering of rocks and the decomposition of organic matter.

### *Time*

Generally, a long time is required for a soil to form (*8*), but the length of time required for the formation of a mature soil depends upon the other soil-forming factors. A mature soil profile is one that has easily recognized zones of eluviation (A horizon) and of illuviation (B horizon). Less time is required for a soil to develop in a humid, warm area where the vegetation is rank than in a dry or cold area where the vegetation is sparse. Generally, less time is required if the parent material is coarse textured than if it is fine textured.

Older soils show a greater degree of horizon differentiation than younger ones. For example, the processes of soil formation have been active on the smoother uplands in the two counties for a long time; therefore these soils have well-defined horizons. Orangeburg, Norfolk, and Tifton soils are examples of these older soils. Along the streams the soil material has not been in place long enough for well-differentiated horizons to develop. Kinston, Bibb, and Riverview soils are examples of the younger soils.

## Classification of the Soils

Classification is an orderly grouping of soils according to a system designed to make it easier to remember soil characteristics and interrelationships. Classification is useful in organizing and applying the results of experience and research. Soils are placed in narrow classes for discussion in detailed soil surveys and for application of knowledge within farms and fields. The many thousands of narrow classes are then grouped into progressively fewer and broader classes in successively higher categories, so that information can be applied to large geographic areas.

Two systems of classifying soils have been used in the United States in recent years. The older system was adopted in 1938 (*6*) and revised later. The system currently used by the National Cooperative Soil Survey was developed in the early sixties (*5*) and was adopted in 1965 (*9*). It is under continual study.

The current system of classification has six categories. Beginning with the broadest, these categories are order, suborder, great group, subgroup, family, and series. In this system the bases for classification are 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 9 the soils of the survey area are classified by family, subgroup, and order, according to the current system. Classes of the system are briefly discussed in the following paragraphs.

TABLE 9.—*Soil series classification*

| Series | Family | Subgroup | Order |
|---|---|---|---|
| Americus | Sandy, siliceous, thermic | Rhodic Paleudults | Ultisols. |
| Bibb | Coarse-loamy, siliceous, acid, thermic | Typic Fluvaquents | Entisols. |
| Faceville | Clayey, kaolinitic, thermic | Typic Paleudults | Ultisols. |
| Fuquay | Loamy, siliceous, thermic | Arenic Plinthic Paleudults | Ultisols. |
| Goldsboro | Fine-loamy, siliceous, thermic | Aquic Paleudults | Ultisols. |
| Grady | Clayey, kaolinitic, thermic | Typic Paleaquults | Ultisols. |
| Greenville | Clayey, kaolinitic, thermic | Rhodic Paleudults | Ultisols. |
| Henderson | Clayey, kaolinitic, thermic | Typic Paleudults | Ultisols. |
| Herod | Fine-loamy, siliceous, nonacid, thermic | Typic Fluvaquents | Entisols. |
| Irvington | Fine-loamy, siliceous, thermic | Plinthic Fragiudults | Ultisols. |
| Johnston | Coarse-loamy, siliceous, acid, thermic | Cumulic Humaquepts | Inceptisols. |
| Kinston | Fine-loamy, siliceous, acid, thermic | Typic Fluvaquents | Entisols. |
| Lucy | Loamy, siliceous, thermic | Arenic Paleudults | Ultisols. |
| Muckalee | Coarse-loamy, siliceous, nonacid, thermic | Typic Fluvaquents | Entisols. |
| Norfolk | Fine-loamy, siliceous, thermic | Typic Paleudults | Ultisols. |
| Ocilla | Loamy, siliceous, thermic | Aquic Arenic Paleudults | Ultisols. |
| Orangeburg | Fine-loamy, siliceous, thermic | Typic Paleudults | Ultisols. |
| Pelham | Loamy, siliceous, thermic | Arenic Paleaquults | Ultisols. |
| Rains | Fine-loamy, siliceous, thermic | Typic Paleaquults | Ultisols. |
| Red Bay | Fine-loamy, siliceous, thermic | Rhodic Paleudults | Ultisols. |
| Riverview[1] | Fine-loamy, mixed, thermic | Fluventic Dystrochrepts | Inceptisols. |
| Sunsweet | Clayey, kaolinitic, thermic | Plinthic Paleudults | Ultisols. |
| Tifton | Fine-loamy, siliceous, thermic | Plinthic Paleudults | Ultisols. |
| Troup | Loamy, siliceous, thermic | Grossarenic Paleudults | Ultisols. |

[1]These soils are taxadjuncts to the series. The colors in the upper part of the pedon are outside the defined range of the series.

ORDER.—Ten soil orders are recognized. 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 that are important to plant growth or that were 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 Aquults (*Aqu,* meaning water, 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. The name of a great group ends with the name of a suborder. A prefix added to the name suggests something about the properties of the soil. An example is Paleaquults (*Pale,* meaning old soil, *aqu* for wetness or water, and *ult* from Ultisols).

SUBGROUP.—Each great group is 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 that have some properties that are representative of the great groups but do not indicate transitions to any other known kind of soil. The names of subgroups are derived by placing one or more adjectives before the name of the great group. The adjective *Typic* is used for the subgroup that is thought to typify the great group. An example is Typic Paleaquults.

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

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

## *Additional Facts About the Counties*

This section discusses the organization, settlement, and population, physiography, relief, and drainage of Lee and Terrell Counties. It includes information about the farming, water supply, and climate, and the industries, utilities, and transportation in the area.

### Organization, Settlement, and Population

Lee County was formed from Creek cessions by an act of the State legislature in 1826. Terrell County was formed by an act of the State legislature in 1856 from land taken from Lee and Randolph Counties.

Major settlement of the area began in the early 1800's. Most of the first settlers came from the Carolinas and from other sections of Georgia.

The population of Lee County increased from 6,674 in 1950 to 7,044 in 1970. The population of Terrell County was 14,314 in 1950 and decreased to 11,416 in 1970.

In 1970, Leesburg, the seat of Lee County, had a population of about 1,000 and Dawson, the seat of Terrell County, had about 5,000. Each town is located at about the center of its county.

## Physiography, Relief, and Drainage

Lee and Terrell Counties are in the Southern Coastal Plain Major Land Resource Area. The elevation above sea level ranges from 225 feet in southeastern Lee County, along the Muckalee Creek flood plain, to 445 feet in northern Terrell County near Parrott, Georgia.

The relief of the area is mainly level to gently sloping. Prominent depressions or "sinks" and low flats are scattered over the landscape; they range mainly from 1 to 100 acres. Most of the depressions lack natural outlets and are drained through underground channels. After heavy rains, they are filled with water for 1 to 6 months or longer.

The Flint River, a major river in Georgia, forms the eastern boundary of the two counties. This river and its tributaries drain all of Lee and Terrell Counties and much of western Georgia. They empty into the Gulf of Mexico via the Apalachicola River, which flows through the Florida Panhandle. The gulf is about 125 miles south of the two counties.

The major creeks or tributaries of the Flint River that flow through the two counties are the Muckalee, Kinchafoonee, Chicasawhatchee, and Ichawaynochaway Creeks. Only the Chicasawhatchee originates in the two-county area. Many small creeks, branches, and drainageways flow into the main tributaries throughout the area.

Generally, the velocity of these streams is slow. A few small rapids occur in some places, particularly in areas associated with the Ocala Limestone geological formation. All of the streams overflow in periods of heavy rainfall.

## Farming

Lee and Terrell Counties have been mainly agricultural since their settlement. Most of the farm income comes from cultivated crops, mainly peanuts, corn, cotton and soybeans. A small acreage is planted to truck crops and small grain. Some of the farm income comes from livestock, mainly hogs and beef cattle. A small part comes from forest products, mainly pulpwood and sawlogs.

During the last 30 years, there has been a drastic decrease in the number of farms. The size of farms, however, has increased considerably; and the average farm in the two counties is 500 to 600 acres. Improved farming methods have increased yields per acre. For this reason, the acreage of many of the crops commonly grown is smaller, but overall production is greater. Improved methods include crop rotation, better crop varieties, more effective use of crop residue, and increased use of fertilizers. Also, greater efforts are being made to control plant disease and insects; to increase irrigation; and to use the less productive soils formerly used for row crops for improved pasture or to grow pines.

## Water Supply

Lee and Terrell Counties have abundant ground water resources. Water for municipal, industrial, and farm needs is supplied by wells that extend into sand and limestone aquifers. Ground water occurs where there is a high water table or artesian wells.

Shallow, dug wells about 25 to 60 feet deep provide water for domestic use, but they frequently go dry late in summer and in autumn. Most of the domestic wells in the counties are drilled with a diameter of 3 to 6 inches and are between 75 to 250 feet deep. These deep wells supply water even during the dry periods. In recent years many large wells 8 to 12 inches in diameter and 200 to 500 feet deep have been drilled to supply water for irrigation.

In addition to ground water resources, water can be obtained from many branches and creeks that flow through the area and from a few farm ponds. The Flint River forms the eastern boundary of Lee County. Part of Lake Blackshear, which was formed by a dam across the Flint River, is along the northeast corner of Lee County.

## Industries, Utilities, and Transportation

Lee and Terrell Counties are mainly agricultural. Local markets are available for most farm products. Industry is limited mainly to the manufacture of agricultural products, such as farm implements.

Electric power is available throughout the two counties, and telephone service is provided to most of the area. Natural gas is supplied to the major towns and cities. There are railroads, trucklines, and buses for shipping and transportation. There is a commercial airport in Albany, the principal city in southwestern Georgia. Several State highways and many county roads cross Lee and Terrell Counties. U. S. Route 19 lies north and south across Lee County, and U. S. Route 82 crosses Terrell County from east to west.

## Climate[5]

Lee and Terrell Counties have short, mild winters and humid summers. Spring is usually windy and stormy. In autumn there is less rainfall and the days are mild and the nights are cool.

Table 10 gives data on temperature and precipitation, and table 11 shows the probable dates for the last freezing temperature in spring and the first freezing temperature in fall.

[5] Prepared by the National Climatic Center, Asheville, N.C.

TABLE 10.—*Temperature and precipitation*

[Data from Albany, Dougherty County, Georgia for the period 1941-70]

| Month | Temperature | | | | Precipitation | | |
|---|---|---|---|---|---|---|---|
| | Average daily maximum[1] | Average daily minimum[1] | Two years in 10 will have at least 4 days with— Maximum temperature equal to or higher than— | Two years in 10 will have at least 4 days with— Minimum temperature equal to or lower than— | Average[1] | One year in 10 will have— Less than— | One year in 10 will have— More than— |
| | °F | °F | °F | °F | Inches | Inches | Inches |
| January | 60.9 | 39.0 | 77 | 23 | 4.12 | 1.19 | 6.34 |
| February | 63.6 | 41.0 | 79 | 26 | 4.22 | 1.28 | 6.75 |
| March | 69.9 | 46.4 | 84 | 32 | 5.45 | 2.74 | 8.97 |
| April | 79.0 | 54.6 | 88 | 41 | 4.21 | 1.14 | 7.58 |
| May | 86.3 | 62.0 | 96 | 52 | 3.66 | 1.86 | 6.67 |
| June | 90.8 | 68.7 | 98 | 62 | 4.65 | 2.54 | 7.01 |
| July | 91.6 | 70.9 | 98 | 68 | 5.54 | 3.18 | 8.44 |
| August | 91.9 | 70.3 | 98 | 65 | 4.15 | 1.52 | 5.98 |
| September | 87.5 | 66.2 | 96 | 57 | 3.89 | 1.10 | 6.43 |
| October | 79.4 | 55.3 | 90 | 40 | 2.13 | 0.25 | 4.94 |
| November | 69.5 | 44.5 | 82 | 30 | 2.52 | 0.46 | 5.74 |
| December | 61.8 | 39.0 | 77 | 24 | 4.42 | 1.87 | 7.51 |
| Year | 77.7 | 54.8 | 101 | 19 | 48.96 | 39.83 | 61.29 |

[1]Monthly values are based on data from Albany and Americus, Georgia.

TABLE 11.—*Probabilities of freezing temperatures*

[Data from Albany, Dougherty County, Georgia]

| Probability | Dates for given probability and temperature | | | | |
|---|---|---|---|---|---|
| | 16° F or lower | 20° F or lower | 24° F or lower | 28° F or lower | 32° F or lower |
| Spring: | | | | | |
| 1 year in 10 later than | January 28 | February 16 | March 12 | March 28 | April 3 |
| 2 years in 10 later than | January 11 | February 4 | February 16 | March 15 | March 24 |
| 5 years in 10 later than | ([1]) | January 5 | January 29 | February 17 | March 4 |
| Fall: | | | | | |
| 1 year in 10 earlier than | December 22 | December 1 | November 12 | November 7 | October 26 |
| 2 years in 10 earlier than | January 12 | December 12 | November 23 | November 16 | November 4 |
| 5 years in 10 earlier than | ([1]) | January 9 | December 16 | December 4 | November 22 |

[1]Chances are less than the indicated probability that the temperature will be 16° F or lower.

The temperature is 90° F or higher on nearly 4 out of 5 days in June, July, and August, and for about 2 weeks in both May and September. A level of 100° or higher is not uncommon in summer. Freezing temperatures occur more than 20 times in an average winter, mostly during 2- or 3-day cold spells in December, January, and February. Occasional temperatures of below 20° have become more frequent in the last few years.

The average annual rainfall is 49 inches. Weather is usually wettest in March and July and driest in October. Wet weather in spring delays planting on the somewhat poorly drained or moderately well drained soils and occasionally damages crops on these soils.

The rainfall in July, August, and September can damage hay, cotton, and peanuts during harvest. During warm weather, showers and thundershowers generally occur in the afternoon or early in the evening. In winter the rainfall usually covers a large area and may last several hours.

Brief snow flurries are not unusual, but measurable amounts of snow have been reported only a few times. A severe snowstorm was recorded in February 1973, when an estimated 6 to 12 inches of snow fell in the survey area.

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## Glossary

**Alluvium.** Material, such as sand, silt, or clay, deposited on land by streams.

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

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

**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.

**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.

**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."

**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.

**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.

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

**Fragipan.** A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

**Gully.** A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

**Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. 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.

**Leaching.** The removal of soluble material from soil or other material by percolating water.

**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 single variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

**Nutrient, plant.** Any element taken in by a plant, essential to its growth, and used by it in the production of food and tissue. Plant nutrients are nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, zinc, and perhaps other elements obtained from the soil; and carbon, hydrogen, and oxygen obtained largely from the air and water.

**Percolation.** The downward movement of water through the soil.

**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).

**pH value.** (See Reaction, soil). A numerical designation of acidity and alkalinity in soil.

**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 material that has been called laterite.

**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* | | *pH* |
|---|---|---|---|
| Extremely acid | Below 4.5 | Neutral | 6.6 to 7.3 |
| Very strongly acid | 4.5 to 5.0 | Mildly alkaline | 7.4 to 7.8 |
| Strongly acid | 5.1 to 5.5 | Moderately alkaline | 7.9 to 8.4 |
| Medium acid | 5.6 to 6.0 | Strongly alkaline | 8.5 to 9.0 |
| Slightly acid | 6.1 to 6.5 | Very strongly alkaline | 9.1 and higher |

**Rill.** A steep sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

**Root zone.** The part of the soil that can be penetrated by plant roots.

**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.

**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.

**Soil.** A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

**Solum.** The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

**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.

**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.

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

**Tilth, soil.** The condition of the soil, especially the soil structure, as related to the growth of plants. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

**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.

## GUIDE TO MAPPING UNITS

For a full description of a mapping unit, read the description of the mapping unit and that of the soil series to which the mapping unit belongs. Borrow pits (Bp) was not assigned to a woodland group or a capability unit.

| Map symbol | Mapping unit | Page | Capability unit Symbol | Woodland group Number |
|---|---|---|---|---|
| ArB | Americus sand, 0 to 5 percent slopes | 8 | IIIs-1 | 3s2 |
| ArC | Americus sand, 5 to 8 percent slopes | 8 | IVs-1 | 3s2 |
| FeA | Faceville sandy loam, 0 to 2 percent slopes | 10 | I-2 | 3o1 |
| FeB2 | Faceville sandy loam, 2 to 5 percent slopes, eroded | 10 | IIe-2 | 3o1 |
| FeC2 | Faceville sandy loam, 5 to 8 percent slopes, eroded | 10 | IIIe-2 | 3o1 |
| FsB | Fuquay loamy sand, 1 to 5 percent slopes | 11 | IIs-1 | 3s2 |
| GoA | Goldsboro loamy sand, 0 to 2 percent slopes | 12 | IIw-2 | 2w8 |
| Gr | Grady soils | 13 | Vw-1 | 2w9 |
| GsA | Greenville sandy loam, 0 to 2 percent slopes | 14 | I-2 | 3o1 |
| GsB | Greenville sandy loam, 2 to 5 percent slopes | 14 | IIe-2 | 3o1 |
| GsC | Greenville sandy loam, 5 to 8 percent slopes | 14 | IIIe-2 | 3o1 |
| GtD2 | Greenville sandy clay loam, 5 to 12 percent slopes, eroded | 15 | IVe-2 | 3o1 |
| HdC | Henderson cherty sandy loam, 2 to 8 percent slopes | 16 | IVe-4 | 3o1 |
| Hm | Herod and Muckalee soils | 16 | Vw-2 | 1w9 |
| IgA | Irvington loamy sand, 0 to 2 percent slopes | 17 | IIw-2 | 2o7 |
| Jo | Johnston soils | 19 | VIw-1 | 1w9 |
| Kb | Kinston and Bibb soils | 19 | Vw-2 | 1w9 |
| LmB | Lucy loamy sand, 0 to 5 percent slopes | 20 | IIs-1 | 3s2 |
| LmC | Lucy loamy sand, 5 to 8 percent slopes | 20 | IIIs-1 | 3s2 |
| NhA | Norfolk loamy sand, 0 to 2 percent slopes | 22 | I-1 | 2o1 |
| NhB | Norfolk loamy sand, 2 to 5 percent slopes | 22 | IIe-1 | 2o1 |
| Oc | Ocilla loamy sand | 23 | IIIw-1 | 3w2 |
| OeA | Orangeburg loamy sand, 0 to 2 percent slopes | 24 | I-1 | 2o1 |
| OeB | Orangeburg loamy sand, 2 to 5 percent slopes | 24 | IIe-1 | 2o1 |
| OeC2 | Orangeburg sandy loam, 5 to 8 percent slopes, eroded | 24 | IIIe-1 | 2o1 |
| Pe | Pelham loamy sand | 25 | Vw-2 | 2w3 |
| Ra | Rains sandy loam | 26 | Vw-3 | 2w3 |
| RbA | Red Bay loamy sand, 0 to 2 percent slopes | 27 | I-1 | 2o1 |
| ReB | Red Bay sandy loam, 2 to 5 percent slopes | 27 | IIe-1 | 2o1 |
| ReC2 | Red Bay sandy loam, 5 to 8 percent slopes, eroded | 27 | IIIe-1 | 2o1 |
| Ro | Riverview soils | 28 | IIw-1 | 1o7 |
| SuC2 | Sunsweet sandy loam, 2 to 8 percent slopes, eroded | 29 | IVe-4 | 3c2 |
| SuD2 | Sunsweet sandy loam, 8 to 12 percent slopes, eroded | 30 | VIe-2 | 3c2 |
| TfA | Tifton loamy sand, 0 to 2 percent slopes | 31 | I-2 | 2o1 |
| TsB2 | Tifton sandy loam, 2 to 5 percent slopes, eroded | 31 | IIe-2 | 2o1 |
| TsC2 | Tifton sandy loam, 5 to 8 percent slopes, eroded | 31 | IIIe-2 | 2o1 |
| TwC | Troup soils, 0 to 8 percent slopes | 32 | IVs-1 | 3s2 |
| TwD | Troup soils, 8 to 12 percent slopes | 32 | VIs-1 | 3s2 |

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